COMPREHENSIVE SOLID WASTE MASTER PLAN

CITY OF GEORGETOWN, TEXAS
FEBRUARY 2019

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EXECUTIVE SUMMARY

Purpose

Developing a Comprehensive Solid Waste Master Plan (CSWMP) for the City of Georgetown (City) is a critical step in determining how the City will manage its municipal solid waste (MSW) over the next 20 years as the City's growth continues and market factors continue to evolve. Planning for and implementing an integrated MSW management system is a complex and challenging endeavor requiring consideration of many factors: technological, institutional, legal, social, economic, and environmental. Furthermore, as cities throughout the state and country pursue solutions to their MSW management challenges, it is increasingly apparent that no single strategy, technology, or program offers a complete solution; rather, a combination of methods is needed to provide for appropriate and cost-effective management of the varying types of MSW in accordance with the unique properties of these various MSW stream components. The City and its consultant, Burns & McDonnell developed this CSWMP to guide the City's MSW management through the next 20 years.

Guiding Principles

The CSWMP was developed to align the City's existing 2030 Comprehensive Plan (refer to Section 2.1) and the adopted mission of the City's Environmental Services Department (ESD):

ENVIRONMENTAL SERVICES DEPARTMENT'S MISSION

"Provide exceptional and friendly service at competitive prices while guiding the transformation from traditional solid waste services to a circular economy."

With these considerations and the approval of City Council, the ESD established four Guiding Principles to direct the development of the specific priorities and strategies presented throughout the CSWMP. The four Guiding Principles are:

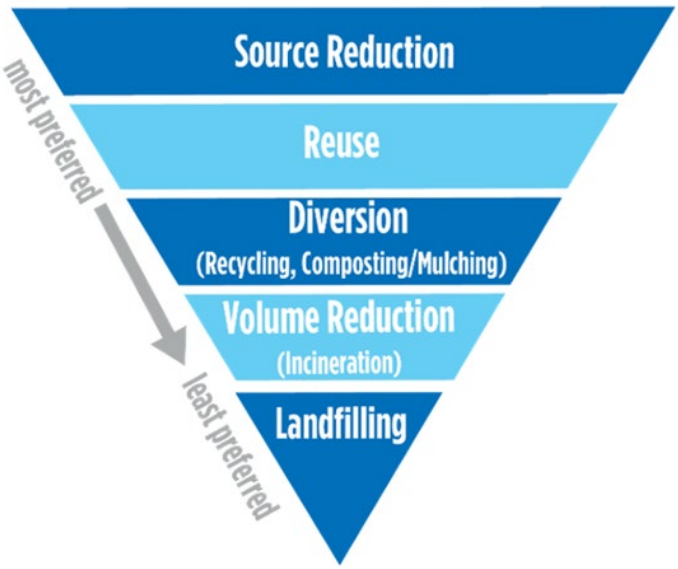
1. Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy (refer to Section 2.3)

2. MSW services must be convenient for customers and price-competitive

3. Enhance aesthetics and services for Downtown and City parks

4. Evaluate alternatives to landfill disposal; landfills are a finite resource in the region

U.S. EPA's Waste Management Hierarchy



Overview, Priorities and Objectives

In addition to describing the purpose of the CSWMP and detailing the guiding principles, Section 1.0 describes the stakeholder engagement process, defines key terms, and provides a guide on how to best understand the strategies and implementations plan included in Sections 4.0 through 11.0 of the CSWMP.

Planning Studies, Regulatory, and Trends Review

Section 2.0 provides a broad perspective of the historic and current state of the MSW management environment in which the City is developing this CSWMP. It provides a review of relevant existing planning studies, a summary of relevant laws and regulations, and summarizes recent key trends in MSW management. The key trends provide insight on how the industry is changing, as well as efforts being implemented by communities to address associated challenges.

Planning Area Characteristics

To properly plan for the City's future MSW management needs, an understanding of the factors that will impact those needs is important. Section 3.0 describes the City's demographic and economic characteristics as well as how these characteristics were applied to develop the City's current MSW generation profile and future MSW generation projections. With the City's population and employment projected to double over the next 20 years, this information reinforces the importance for the City to develop and implement this CSWMP that will guide MSW management efforts over that time.

Facilities and Infrastructure

Consideration of MSW processing facilities and infrastructure on both a regional and local level is essential for the future of MSW management for the City. The availability of local processing facilities will impact many of the decisions the City makes regarding MSW management and services provided to City customers and the timing (near-term, mid-term, or long-term) for implementation of various strategies. Section 4.0 provides an overview of existing MSW processing facilities and infrastructure located within the Capital Area Council of Governments (CAPCOG) region, including landfills, materials recovery facilities (MRF), the City's transfer station, and organics processing facilities.

This section identifies strategies for the City to plan for future infrastructure, focusing on a strategy to develop a combination of MSW facilities, operational capabilities, and contractual relationships to best serve the community now and in the future. For landfills, MRFs and organics processing facilities, strategies focus on continued public-private partnerships and/or interlocal agreements. For the transfer station, the CSWMP recommends that the City build a new transfer station at the site of the existing transfer station within the next five years in order to accommodate growth and the need to have the capability to process three material streams (e.g. landfill trash, recyclables, and organic materials).

Single-Family

As discussed in Section 5.0, the services and support the City provides to the single-family sector are particularly important in shaping the City's overall MSW management culture. Most residents' primary experiences with MSW are in their own homes, every day. About 85 percent of the City's population lives in single-family homes. Therefore, the City is able to reach a large portion of its residents through single-family residential services and outreach.

Core residential services include curbside collection of landfill trash, single-stream recyclables, bulky items, and yard trimmings. From a diversion perspective, single-family residents recycle 443 pounds of material per household per year, which is higher than the national average of 357 pounds. Key strategies to increase the single stream recycling participation will focus on targeted education and outreach initiatives. There is an opportunity to increase the diversion of yard trimmings as material collected for composting or mulching accounts for only about 2.6 percent of the City's current MSW stream. The City will continue to evaluate potential changes to the yard trimming program focused on increasing material quantities.

Multifamily

For the purposes of this CSWMP, multifamily refers to residential properties within the City having greater than four individual housing units as well as assisted living and long-term residential care facilities. As in the commercial sector, the City's contractor provides exclusive MSW services for multifamily properties within the City limits while properties in the extra-territorial jurisdiction (ETJ) are serviced via an open market system. Section 6.0 focuses on the multifamily sector.

Since multi-family customers are current tracked as commercial customers, there is a limited understanding of the multifamily MSW stream and composition. Currently, less than one third of apartment properties offer recycling to residents. Ultimately, the City's goal is to ensure multifamily residents have access to equal recycling, diversion, and disposal services as other Georgetown residents. As a part of the CSWMP, the City will strive to increase single-stream recycling participation and material generation rates by collaborating with property owners to provide technical assistance and to assist with resident education and communication. The City may also consider policies to encourage or ordinances to compel property owners to provide recycling service.

Commercial and Institutional

The commercial and institutional sector consists of non-residential customers, including commercial businesses and non-City institutional facilities, including schools. The City's contractor provides exclusive MSW services to all commercial and institutional customers within the City limits while customers in the ETJ are serviced via an open market system. Section 7.0 is focused on commercial and institutional customers within the City limits.

Through the City's contractor, Georgetown business can receive landfill trash and recycling collection services. Because the City's commercial recycling service is a relatively new service that began in 2017, a high percentage of commercial customers do not currently have recycling collection. Some Georgetown businesses and institutions have a strong interest in recycling and sustainability and are actively pursuing recycling options on their own or looking to the City as a leader to provide support and guidance. Similar to the multifamily sector, the City will help increase recycling participation and material generation rates by providing technical support (site assessments), recognition programs, education and best practices guides for commercial entities and institutions. The City may also consider policies to encourage or ordinances to compel property owners to provide recycling service. The City will take steps to prioritize partnerships with Georgetown ISD, Southwestern University and Williamson County.

Downtown

The City's Downtown is central to its identity. Preserving historic assets and the small-town character of the Downtown area, while also improving the quality, efficiency, and aesthetics of MSW management services is of critical importance in maintaining the City's vision for the future of Downtown and the City's economic growth. Section 8.0 focuses on the nine-block area of the Historic Overlay district, centered on the historic Williamson County Courthouse, encompassing the core of the City's cultural, dining, and entertainment activities.

Based on analysis completed during the planning process and input gather during multiple focus group discussions held with Downtown property owners and businesses, the current MSW management system in the Downtown area is likely not sustainable for the long-term. This is due to challenges such as space constraints, lack of public property for placing and storing containers, and negative aesthetics for visitors. Multiple Downtown collection system options were evaluated, incorporating extensive stakeholder input. A concierge (door-to-door) collection system is recommended because this type of system would maximize convenience for property owners and businesses, as well as allow for the collection of landfill trash, recycling and organic materials, and would accommodate the continued growth expected to occur in the Downtown area.

Public Spaces and Special Events

Section 9.0 addresses activities and special events taking place in various public locations throughout the City. Current MSW services, challenges, and strategies are addressed for the day-to-day operations, as well as events held in City-maintained facilities such as parks, pools, trails, and the Downtown area. These spaces are primarily maintained by the City's Parks and Recreation Department and the Georgetown Visitor Center (Red Poppy, Music on the Square, etc.).

For the parks system, City staff provide day-to-day MSW collection services and face challenges distinguishing landfill trash and recycling bags and with frequent and inconsistent collection needs. Public challenges include litter and container over flow, limited recycling options, and recycling contamination. The City will address these issues by providing paired landfill trash and recycling containers, as well as by strengthening public education and outreach.

The City hosts multiple special events, including the Red Poppy Festival. While the Red Poppy Festival is a Zero Waste event (reaching a nearly 70 percent diversion rate), other permitted events to not have MSW requirements. Future efforts will incorporate MSW management and diversion considerations into larger, long-term planning efforts for parks, public spaces, and special events.

Municipal Operations and Policies

The City of Georgetown values its role in demonstrating commitment to sustainable and environmentally conscious operations and its responsibility to lead by example for other sectors within the City. City employees work in 32 facilities across Georgetown. In addition, numerous residents, tourists, contractors, and vendors visit City facilities throughout the year. As discussed in Section 10.0, establishing and consistently implementing best practices for MSW management at City facilities will resonate throughout the City and encourage positive behaviors across all sectors.

In an effort to address challenges such as inconsistent use of recycling by City staff, contamination of recyclables, and improper separation of material streams, the City is will implement multiple strategies focused on a developing a comprehensive staff education program, requiring custodial contractors to provide guidance for correct collection procedures, and collaborating with other City departments on issues such as green purchasing policies, business practices for managing hazardous materials and incorporating MSW diversion terms in third-party contracts and emergency management plans.

Household Hazardous Waste

From 2008 to 2018, the City contracted with Williamson County Recycle Center (WCRC) to provide residents with a voucher-based drop-off collection program for household hazardous waste (HHW). WCRC was a privately-owned permanent HHW collection facility. Single-family and multi-family residents within City limits were eligible to participate in the program at no cost to the resident and out-of-City single-family and multi-family residents receiving City MSW services were eligible to participate in the program for a 50 percent cost to the resident. In December 2018, the WCRC unexpectedly terminated operations and closed its facility. Section 11.0 describes operation and participation in the City's former program, presents options for HHW services moving forward, and provides strategies and an implementation plan. In the short-term, the City will explore opportunities for collaboration with other local municipalities to provide a regional approach to HHW services.

City-wide Strategies

There are several MSW management strategies the City will implement that have applicability across multiple sectors. While the specifics for implementation of these City-wide and multi-sector strategies are tailored to each sector, the over-arching objective is to provide a convenient and consistent approach to MSW management for all customers in all sectors and geographic areas of the City. An overview of each City-wide and multi-sector strategy is addressed in Section 12.0. Key strategies included in this section include:

Ongoing MSW contract evaluations. The City will review the terms of each MSW service contract the City holds on an ongoing basis, considering changing market conditions for each sector and progress towards established priorities and strategies. Two to three years prior to the end of current contract terms and each subsequent term, the City will begin to review contracts and evaluate whether any changes are necessary.

Waste characterization audits and baseline establishment. Developing a thorough understanding of the current quantities and distribution of material types generated by each sector is a critical component of establishing appropriate goals for the City on an ongoing basis and developing strategies to target the specific needs and characteristics of each sector. Within the first one to five years of implementation of the CSWMP, the City will conduct an MSW characterization audit for each individual sector to gain a better understanding of the MSW stream to establish a detailed baseline against which future progress will be measures.

Standardized MSW collection containers and signage. The City will develop standards for the MSW collection containers and signage utilized for each sector, so that customers can expect a consistent, predictable MSW management experience regardless of the sector or geographic location within the City.

MSW infrastructure planning. Availability of adequate space for MSW collection containers and operations is another critical component of accomplishing the City's priority of establishing a three-stream collection system to maximize landfill diversion. The ESD will collaborate closely with the Planning Department to develop standards for MSW infrastructure and space allocation requirements for the multifamily, commercial and institutional, public spaces, and municipal operations sectors.

1.0 OVERVIEW, PRIORITIES, AND OBJECTIVES

1.1 Purpose

Developing a Comprehensive Solid Waste Master Plan (CSWMP) for the City of Georgetown (City) is a critical step in determining how the City will manage its municipal solid waste (MSW) over the next 20 years as the City's growth continues and market factors continue to evolve. Planning for and implementing an integrated MSW management system is a complex and challenging endeavor requiring consideration of many factors: technological, institutional, legal, social, economic, and environmental. Furthermore, as cities throughout the state and country pursue solutions to their MSW management challenges, it is increasingly apparent that no single strategy, technology, or program offers a complete solution; rather, a combination of methods is needed to provide for appropriate and cost-effective management of the varying types of MSW in accordance with the unique properties of these various MSW stream components. The City and its consultant, Burns & McDonnell developed this CSWMP to guide the City's MSW management through the next 20 years.

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1.2.1 Guiding Principles 1 and 4

Guiding Principles 1 and 4 are closely linked and are therefore best considered together. To provide a high level of service to its customers while continuing to support environmental responsibility, it is important for the City to continuously seek new and innovative methods for managing MSW. The Cities strategies were developed with the intent to progress the City toward source reduction, material reuse, and recycling as alternatives to landfill disposal to create a more long-term sustainable MSW management system for the City and the region.

Development of appropriate and achievable goals requires a comprehensive understanding of the City's current MSW material generation on a sector by sector basis and for each type of MSW (landfill trash, recyclables, bulky materials, organics, and household hazardous waste (HHW). In the first five years of CSWMP implementation, the City plans to conduct waste characterization audits and additional studies for each sector addressed in CSWMP to develop a more detailed understanding of its MSW streams and establish baselines against which to measure future growth.

The priorities, strategies, activities, and tactics presented throughout the CSWMP were developed based on currently available data. As baselines are established, the plan is implemented, and progress is measured, the City will work to establish specific, measurable goals as appropriate for each sector (e.g., percent diversion and/or program participation rate goals). The City plans to revisit and update the plan and specific goals every five years.

1.2.2 Guiding Principle 2

The City strives to provide service to its customers that are accessible from both a convenience perspective and an economic perspective. These are two aspects that drive customer participation in and satisfaction with many services. There are many potential approaches the City could take toward achieving its MSW management priorities of increased recycling and diversion, but all approaches have associated costs. The strategies included in the CSWMP are intended to strike a balance between

providing high levels of service for all sectors, while maintaining cost-effective programs for both residents and the City.

1.2.3 Guiding Principle 3

The City's public spaces, including City parks and the Downtown area are highly visible and important parts of the community and its identity. The City proudly promotes its abundance of public parks and its identity as the "Most Beautiful Townsquare in Texas" and it is committed to maintaining the beauty of its public spaces for residents and visitors alike. The City recognizes the value of these spaces and has prioritized providing effective MSW management in these spaces to enhance aesthetics and services provided in these spaces. Effective management will help to maintain the beauty of the City's public spaces and supports the City's image as an environmentally responsible, sustainability-minded community which also serves to promote economic development across all sectors.

1.3 Stakeholder Engagement

The CSWMP development process engaged stakeholders from each of the City's sectors and customer segments for the purpose of gathering insight and opinions regarding the current MSW management systems and needs for the future of the system. Stakeholder engagement included meetings and workshops between the ESD and Burns & McDonnell and the following groups:

- Multifamily properties
- Key commercial and institutional customers
- Downtown businesses and property owners
- City's Parks & Recreation Department
- City's Facilities management
- Current MSW services contractor
- Former HHW services contractor (program was terminated December 2018)

1.4 Key Terms

This section presents definitions of a selection of key terms used throughout the CSWMP that are necessary for a comprehensive understanding of the current MSW management systems and strategies that will be implemented in the future.

Municipal solid waste (MSW). MSW is used to refer to the entirety of waste stream that is generated by everyday activities in homes, institutions such as schools and hospitals, and commercial sources such as restaurants, offices, and small businesses. MSW can be further categorized by material types, as

described below. Different categories of MSW require different methods of handling for best management practices. Much of the MSW generated can be recycled, reused, or otherwise diverted from landfill disposal. MSW does not include hazardous, industrial, agricultural, mining, or sewage sludge wastes. Household hazardous wastes are included in this plan and addressed separately in Section 11.0.

Landfill trash. The portion of MSW that cannot practically be recycled, reused, or otherwise diverted is landfill trash. Landfill trash is considered true waste because there are no viable handling methods other than disposal in an MSW landfill. While alternatives may theoretically be possible (e.g. waste to energy, discussed in Section 2.3), there are currently no logistically and economically feasible alternatives.

Recyclables. Single-stream recyclables, or recyclables, refers to materials that are typically accepted through municipal curbside recycling programs, processed through materials recovery facilities (MRFs), and sold as commodities to markets where the material is then repurposed. Recyclables include items such as plastic and glass containers, aluminum and steel cans, cardboard, and other various paper products.

Bulky materials. Bulky materials consist of items generated from households or commercial customers that are too large to be placed inside a customer's regular collection container. Bulky materials include items such as furniture, mattresses, and large appliances.

Organics. Organics are plant or animal-based materials. Organics have the potential to be diverted from landfill disposal through composting or mulching processes. Within the category or organics, there are two sub-categories, yard trimmings and food scraps, used throughout the CSWMP to describe the material stream and associated processing options. Depending on available options, yard trimmings and organics may be processed together or separately.

> **Yard trimmings.** Vegetative material generated from residential, commercial, or parks maintenance is categorized as yard trimmings, including branches, limbs, grass clippings, leaves, and other plant trimmings. Currently, the City's provides service for collection of yard trimmings which are mulched by the City's contractor at the transfer station.
>
> **Food scraps.** Food scraps are materials such as fruit, vegetables, meat and dairy products. Often, processing of food scraps also includes food-soiled biodegradable items such as paper plates, paper towels, and to-go containers. Food scraps and yard trimmings can be diverted from landfill disposal by composting, the controlled decomposition of organic matter into humus or

soil-like material. In Texas, commercial composting of MSW requires an permit issued by the Texas Commission on Environmental Quality (TCEQ).

Household hazardous waste (HHW). HHW refers to common household chemicals or other materials that should not be disposed of in MSW landfills due to their potential for environmental contamination and health impacts. They require special disposal by an entity permitted by the TCEQ. HHW includes but is not limited to materials such as paints, fertilizers, pesticides and poisons, pool chemicals, household cleaners, and automotive products. HHW does not include chemicals generated by commercial or industrial entities.

1.5 Guide to Strategies and Implementation Plan Sections

Sections 4.0 through 11.0 are each dedicated to discussion of a specific sector within the City for which MSW needs to be managed. Each sector has unique characteristics requiring a customized approach to MSW management for its customers and material types. These "sector sections" begin with a summary of the current services and state of MSW management within the sector, present the City's priorities for future management, and then discuss the strategies by which management will be accomplished and an implementation plan for each activity. This section presents guidance for the reading and understanding key components of each sector's Strategies and Implementation Plan.

Strategy. A strategy is presented as a high-level approach to MSW management. Each sector has between one and four strategies, some of which are similar between sectors and some of which are unique. The strategies seek to support the four Guiding principles of the CSWMP. Multiple activities and tactics are presented for each strategy as specific actions the City will take to implement the strategy and work towards its established goals and priorities.

Priorities. Priorities are the objectives the City seeks to accomplish by implementing each strategy. Priorities vary in specificity, depending on the level of understanding or data the City currently has for each sector or type of MSW. As the City works to implement the CSWMP, establishes baselines for each sector, and revisits its priorities at five-year intervals, it plans to further define priorities and measurable goals.

Near, Mid, and Long-term. For purposes of the CSWMP, near-term is defined as 1-5 years, mid-term is 6-10 years, and long-term is 11-20 years. Activities and tactics are most numerous and detailed for the short-term. As the City implements these short-term activities and tactics and is able to measure the impacts and progress towards goals and priorities, it will be able to further define actions to be taken in the mid-term and long-term time frames.

Cost considerations. For each activity or tactic implemented there will be associated costs. This is meant to provide a summary of the potential types of costs each activity may require. It is not meant to provide a detailed cost analysis. Further evaluation prior to implementation will be conducted to detail the costs to the City for each activity.

Responsible party/department. The City's Environmental Services Department is the primary department responsible for implementing the CSWMP. The ESD will work with many other parties and carry out each activity, including but not limited to other City departments, institutions, community partners, residents, commercial customers, contractors, and consultants.

Implementation priority. The City has assigned a high, medium, or low implementation priority to each activity or tactic presented in the CSWMP. Each activity and tactic has value in working toward effective MSW management and support of the Guiding Principles. Because each activity has associated costs, time, and staffing requirements, the City will choose to first implement critically important activities (high priority) and then implement activities assigned medium and low implementation priority as resources are available.

2.0 PLANNING STUDIES, REGULATORY, AND TRENDS REVIEW

This section provides a broad perspective of the historic and current state of the MSW management environment in which the City is developing this CSWMP. It provides a review of relevant existing planning studies, a summary of relevant laws and regulations, and summarizes recent key trends in MSW management.

2.1 Review of Relevant Planning Studies

Understanding prior MSW and community planning projects completed at the local, regional, and state levels is a critical step in effectively and efficiently developing the CSWMP for the City. To inform development of this CSWMP, Burns & McDonnell reviewed the following studies and plans.

City of Georgetown 2030 Comprehensive Plan. The City developed this plan in 2008 to define its vision and provide a framework for future development. It is the intent of this CSWMP to align with the City's existing Comprehensive Plan and support progress of the City's vision, goals, and expectations for growth and development.[1]

CAPCOG Regional Solid Waste Management Plan 2002-2022. This plan was approved in 2005 and covers a 20-year planning period for the CAPCOG, the 10-county regional planning area that includes Williamson County. The primary purposes of this plan were to inventory closed landfills, quantify regional landfill capacity in relation to projected future growth in waste generation, identify the region's most prominent needs and problems, and outline activities and priorities to be initiated throughout the planning period.[2]

TCEQ Study on the Economic Impacts of Recycling. This 2017 study, completed by the Texas Commission on Environmental Quality (TCEQ), documented the quantities of MSW recycled and landfilled in Texas. The report provides a state-level understanding of 2015 recycling and landfill disposal quantities and composition and provides key economic and market trend data.[3]

[1] City of Georgetown. 2008. "2030 Comprehensive Plan." Available online: https://2030.georgetown.org/
[2] Capital Area Planning Council of Governments (CAPCOG). 2005. "Regional Solid Waste Management Plan 2002-2022." Available online: http://www.capcog.org/divisions/regional-services/solid-waste-planning
[3] Texas Commission on Environmental Quality (TCEQ). July 2017. "Study on the Economic Impacts of Recycling." Available online: https://www.tceq.texas.gov/p2/recycle/study-on-the-economic-impacts-of-recycling.

2.2 Regulatory and Policy Review

Prior MSW regulations and policies, as well as trends and the current regulatory climate, have largely shaped the state of MSW management and defined the environment in which this CSWMP was developed. This section provides a summary of federal and state regulations, policies, and trends.

2.2.1 Role of the Federal Government in Regulating Solid Waste

The federal government sets basic requirements for regulations that protect public health and the environment, which helps to provide consistency among states. The United States Environmental Protection Agency (U.S. EPA) is responsible for hazardous and non-hazardous solid waste management through the Office for Solid Waste and Emergency Response. There are three major pieces federal legislation pertaining to solid waste management:[4]

1. Prior to 1965, solid waste management was entirely dependent on the judgement and decisions of individuals or local departments of health and sanitation. In 1965, Congress made its first attempt to define the scope of the nation's waste disposal problems by enacting the Federal Solid Waste Disposal Act (SWDA), which financed statewide surveys of landfills and illegal dumps.
2. The first significant federal legislation governing the disposal of non-hazardous and hazardous waste was passed in 1976 under the Resource Conservation and Recovery Act (RCRA). The RCRA established landfill construction, management, and closure guidelines. It also regulates hazardous waste management facilities that treat, store, or dispose of hazardous waste. The RCRA has been amended three times since its inception:[5]
    1. 1984 Hazardous and Solid Waste Amendments, requiring the phasing out of land disposal of hazardous wastes and granting the U. S. EPA regulatory authority over landfills (Subtitle C Hazardous Waste and Subtitle D Non-hazardous waste)
    2. 1992 Federal Facility Compliance Act, strengthening enforcement of RCRA at federal facilities
    3. 1996 Land Disposal Program Flexibility Act, providing regulatory flexibility for land disposal of certain wastes
3. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, known as Superfund, was enacted by Congress to address abandoned hazardous waste sites

[4] Texas Center for Policy Studies. 1995. "Texas Environmental Almanac." Available online: http://www.texascenter.org/almanac/

[5] U.S. Environmental Protection Agency. 2017. "History of the Resource Conservation and Recovery Act (RCRA)." Available online: https://www.epa.gov/rcra/history-resource-conservation-and-recovery-act-rcra

in the United States. CERCLA was subsequently amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) to stress the importance of permanent remedies, provide for increased state involvement, and increase federal funding. [6] The Office of Air and Radiation regulates solid waste-related air emissions, enforcing the Clean Air Act of 1976 (CAA) and its subsequent amendments.[7]

2.2.2 Role of the State Government in Regulating Solid Waste

Texas has a long-standing MSW regulatory program, initiated with the Texas Solid Waste Disposal Act and passed by the state legislature in 1969. This Act required the Texas Health Department to adopt regulations pertaining to the design, construction, and operation of landfills and other MSW processing facilities. Today, the TCEQ holds jurisdiction over MSW. Several other major pieces of state legislation from the state Senate and House of Representatives have been enacted:

- The 1983 Comprehensive Municipal Solid Waste Management, Resource Recovery, and Conservation Act, which established the Municipal Solid Waste Management and Resource Recovery Advisory Council, prescribed criteria and procedures for regional planning agencies and local governments that wanted to develop solid waste management plans.
- The 1987 House Bill 2051 established a preferred hierarchy via state policy for the management of hazardous waste, municipal waste, and municipal sludge. Figure 2-1 illustrates a current version of the municipal waste management hierarchy.
- The 1989 Senate Bill 1519 established a solid waste disposal fee program to fund the state's MSW regulatory programs. It required the state's regional planning agencies (Councils of Governments, COG) to develop regional solid waste management plans and to provide grand funding to support development of local plans.
- The 1991 Omnibus Recycling Act (Senate Bill 1340), set a statewide recycling goal of 40 percent of its MSW by January 1, 1994 and directed several state agencies to develop a joint market study and strategies to stimulate markets for recycled goods.
- The 1993 Senate Bill 1051 expanded state recycling programs and amended the state's 40 percent recycling goal. The goal became a 40 percent waste reduction goal, aimed at reducing the total amount of MSW disposed of in the state through recycling as well as source reduction.

[6] U.S. Environmental Protection Agency (U.S. EPA). 2017. "Superfund: CERCLA Overview." Available online: https://www.epa.gov/superfund/superfund-cercla-overview
[7] City of Dallas, Texas. February 2013. "Local Solid Waste Management Plan 2011-2060." Available online: http://dallascityhall.com/departments/sanitation/Pages/default.aspx

- The 1993 House Bill 2537 addressed the risks associated with methane gas release from closed landfills by establishing a process for the TCEQ to review proposals and issue permits to build atop closed MSW landfills.[8]
- The 2007 Texas Computer Equipment Recycling Law required manufacturers to establish and implement a recovery plan for collection, recycling, and reuse of computer products.[9]
- The 2013 House Bill 7 reduced the disposal fees that landfills are required to pay to TCEQ from $1.25 per ton to $0.94 per ton and reduced the percentage allocated to Councils of Governments (COGs) to 33.3 percent.
- The 2015 House Bill 2736 required the TCEQ to conduct a study to quantify the amount of materials being recycled in the state, assess the economic impacts of recycling, and identify ways to develop new markets to increase recycling. The TCEQ completed *Study on the Economic Impacts of Recycling* in 2017.

2.2.3 Recent State Legislative Trends

When the Texas Legislature is in session, a variety of Senate and House bill proposals relating to MSW management are introduced. During recent legislative sessions, key topics of interest to state legislators have included

- Increased regulations over the handling and disposal of scrap tires, including proposals for programs to support enforcement of laws related to illegal dumping of tires
- Proposed legislation placing responsibility for recycling and proper disposal on manufacturers and retailers of certain products, including tires and electronics
- Increased regulations regarding the disposal of electronic waste, including producer responsibility, mandatory recycling programs, and prohibition of disposal in MSW landfills
- The regulation and recycling of plastic retail bags, including proposed recycling programs, educational programs, as well as proposed legislation to prohibit municipalities from adopting "bag ban" ordinances
- Stricter regulations for locations of new landfills or the expansion of existing landfills in environmentally sensitive areas, such as over sole source aquifers or within special flood hazard areas

[8] Texas Center for Policy Studies. 1995. "Texas Environmental Almanac." Available online: http://www.texascenter.org/almanac/
[9] City of Dallas, Texas. February 2013. "Local Solid Waste Management Plan 2011-2060." Available online: http://dallascityhall.com/departments/sanitation/Pages/default.aspx

- The expansion of programs for recycling and disposal and requirements for hard to recycle and hazardous materials, including used oil, paint, household batteries, mercury thermostats, scrap metal, and electronics

2.3 MSW Management Industry Trends

This section provides perspective on key MSW management trends that may influence the development of the CSWMP and the industry moving forward.

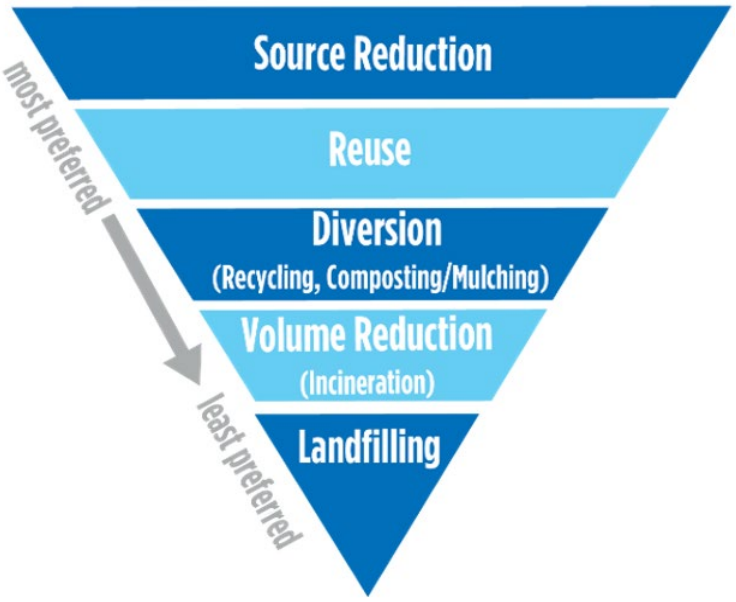
Sustainable materials management. Sustainable materials management (SMM) is a systematic approach to using and reusing materials more productively over their entire life cycles.[10] SMM encourages changes in how communities think about the use of natural resources and environmental protection, and goes beyond traditional thinking about waste reduction, reuse, recycling, and disposal. SMM emphasizes the consideration of a product's life from manufacturing to disposal and the need to make sustainable choices throughout that life cycle. An SMM approach seeks to

- Use materials in the most productive way with an emphasis on using less,
- Reduce toxic chemicals and environmental impacts throughout a material's life cycle, and
- Provide sufficient resources to meet the material needs of today and the future.

It has been a trend for the MSW management industry for MSW management plans to apply the broad view of SMM to better plan for their community's economic and environmental future. For example, as discussed in Table 2-4, several cities in Texas have adopted plans with high diversion goals, which typically include addressing SMM concepts.

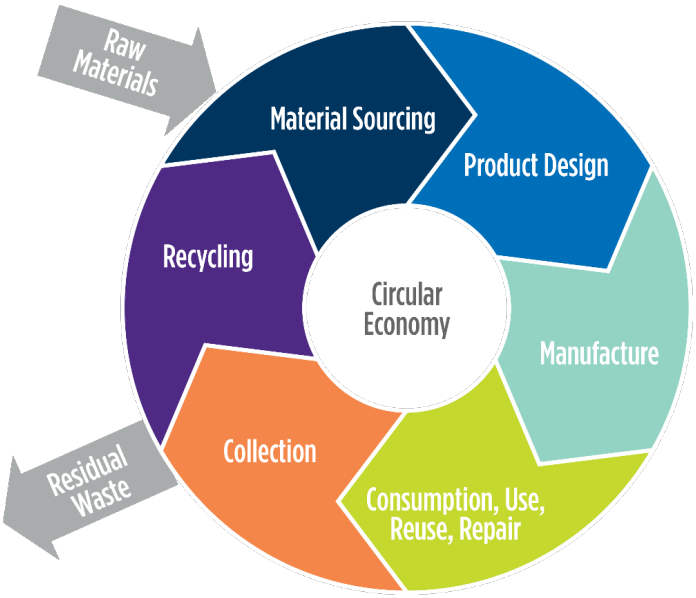
[10] U.S. Environmental Protection Agency (U.S. EPA). 2017. "Sustainable Materials Management Basics." Available online: https://www.epa.gov/smm/sustainable-materials-management-basics

Figure 2-1: U.S. EPA's Waste Management Hierarchy



Waste management hierarchy. The waste management hierarchy, developed by the U.S. EPA, has been adopted by many communities as a guide to managing MSW. This hierarchy is used as a tool in implementing an SMM approach to waste management. It was developed in recognition that no single waste management approach is suitable for managing all materials and all waste streams in all circumstances. The hierarchy ranks various management strategies from most to least environmentally preferred. It places emphasis on reducing, reusing, and recycling as key to SMM.[11]

Figure 2-2: Circular Economy



Circular economy. Like an SMM approach to planning for a community's future, the concept of a circular economy considers environmentally and economically sustainable decision-making throughout a material's life cycle. It offers a shift from the traditional linear manufacture-use-dispose concept of materials to a circular economy model that keeps resources in use for as long as possible, maximizes life and extracted value, and emphasizes that used materials are recovered and regenerated for other uses. This economic approach allows the cycle to begin again while minimizing material disposal.

[11] U.S. Environmental Protection Agency. 2017. "Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy." Available online: https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy

Waste-to-energy and emerging technologies. While recycling and disposal have been considered traditional MSW management methods in Texas, some components of the MSW stream can be converted into energy or further processed. Over the past several years, many local governments in the United States have considered various technologies (e.g. mass burn combustion, mixed waste processing, gasification, anaerobic digestion, etc.) to manage their MSW stream.

The cities included in Table 2-1 have considered and evaluated various technologies for their communities, but none have implemented any waste-to-energy or other conversion technology. Key reasons for deciding against implementation of these technologies included preferring to focus on more traditional recycling (e.g. single-stream) and organics diversion programs and the relatively low cost of landfill disposal.

Table 2-1: Summary of Texas Cities' Efforts to Evaluate Conversion Technologies

City	Year	Summary
San Antonio	2011	Evaluated the feasibility of waste-to-energy and concluded that those technologies are not economically feasible "at this time or in the foreseeable future." City decided to focus zero waste implementation efforts on traditional recycling strategies.
Waco	2013	Issued request for proposals for waste-to-energy and received five responses. City declined to further pursue proposals as none of the companies were in commercial operation in the U.S. at the time.
Killeen	2013	While the City entered into negotiations for a gasification facility, the private company did not secure financing and the project was terminated.
Dallas	2014	Following adoption of its zero waste plan, City evaluated the feasibility of technologies such as single-stream processing, mixed-waste processing, anaerobic digestion and gasification. Elected to focus on the more proven single-stream recycling.
Fort Worth	2016	City's request for proposals for recycling processing included consideration of alternative technologies. However, City decided to continue contracting for recycling via single-stream processing.
Houston	2017	Evaluated "One Bin for All" approach, where all MSW would be collected together (i.e. mixed waste), but City declined to enter into contract for "One Bin for All" concept.

Landfill trends. As regulations become more restrictive and it becomes increasingly more challenging to obtain permits for new landfills, the MSW industry is seeing an increase in the vertical and horizontal expansion of established landfills. As discussed in Section 3.5.1.2, several landfills in central Texas received permits for expansions through 2009 and 2010. Owners are more commonly seeking to extend the useful life of their landfill by expanding the landfill footprint, improving operations, or implementing

additional technologies such as enhanced leachate recirculation (a process in which liquids or air are added into a landfill to accelerate degradation of the waste and prolonging its useful life).

Landfill tipping fees. The Environmental Research and Education Fund (EREF) conducted studies in 2016 and 2017 comparing landfill tipping fees across the country. In 2016, average per-ton landfill tipping fees in Texas were lower than both the national average and the South Central Region (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas) average. In 2017, the average landfill tipping fees in Texas remained below the national average but rose slightly higher than the regional average. The average tipping fees in Texas increased at a much higher rate than both the regional and national averages. [12] This increase could be attributed to differences in economic growth across regions or that EREF received responses from a different set of landfills from one year to the next.

The tipping fees shown in Table 2-2 reflect the average of posted tipping fees at surveyed landfills. Negotiated tipping fees between a landfill and individual haulers may be significantly lower, as is the case under the City of Georgetown's solid waste services contract.

Table 2-2: Average Per-ton Landfill Tipping Fees

	January 2016	April 2017	Difference	Percent Increase
Texas	$28.00	$38.19	$10.19	36.4%
South Central Region	$36.34	$36.94	$0.60	1.7%
United States	$48.27	$51.82	$3.55	7.4%

Source: Environmental Research & Education Foundation (EREF)

Recycling processing fees. The per-ton fees that a municipality pays for the processing of recyclable and organic materials collected from its customers are impacted by various factors including, but not limited to, the market value of recovered materials and the level of contamination present. Over the past 10 years, the changing market value of recovered materials has had a significant impact on single stream material (commingled collection of paper, plastics, metal, and glass) processing costs.

MRFs typically charge per ton for processing a municipality's recyclable materials and offer a share of the revenue generated through sale of the material back to the municipality. In 2008, at the beginning of the recession, the market value of recyclable materials fell from record highs to record lows. Some MRFs experienced negative cash flows because they were no longer able to cover the entirety of their processing costs through processing fees (average of $30-$40 per ton prior to 2008) charged to municipalities and

[12] Environmental Research & Education Foundation (EREF). January 2016 and April 2017. "Analysis of MSW Landfill Tipping Fees. Available online from EREF: https://erefdn.org/bibliography/datapolicy-projects/

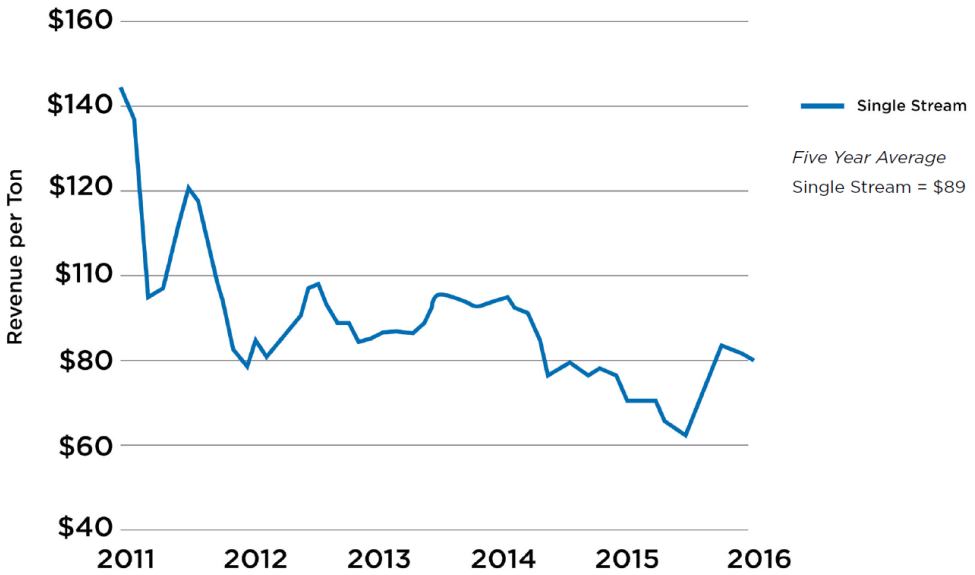
material revenues. Due to the dramatically reduced market values of recovered materials, many MRFs changed their cost recovery structure by charging higher processing fees that would fully recover all processing costs rather than relying on material revenues. As a result, MRFs were then typically willing to offer municipalities a greater share of material revenues. Table 2-3 compares the average single stream materials processing fees and recyclable materials revenue shares in Texas before and after the 2008 recession.

Table 2-3: Average Single-Stream Recyclables Processing Fees and Municipal Revenue Shares

Fee/Revenue	Prior to 2008	After 2008
Processing fee per ton	$30-40	$60-90
Recyclables revenue share to municipality	40-70%	50-90%

The average value of single stream materials varies based on the composition of the materials (i.e. quantity of paper, plastics, metal, and glass) and the quality of the materials. The average blended market value of processed recyclable materials collected single stream (paper, plastics, metal, and glass) from municipal collection programs in Texas over the five-year period from 2011 to 2016 was $89 per ton. Figure 2-3 illustrates the changes in the average value of single stream materials in Texas over this period.[13]

Figure 2-3: Single Stream Material Revenue (per Ton)



Source: TCEQ. 2017. "Study on the Economic Impacts of Recycling."

[13] Source: Texas Commission on Environmental Quality (TCEQ). July 2017. "Study on the Economic Impacts of Recycling." https://www.tceq.texas.gov/p2/recycle/study-on-the-economic-impacts-of-recycling.

Contracting for services versus municipalization. In Texas, many cities provide MSW services either with City resources or through a single private hauler contracted to provide those services. A small number of cities have an open market system in which several private haulers are permitted to operate within the city; however, open market systems are much more common for commercial, rather than residential, services. Generally, cities of smaller size in Texas may choose to contract for MSW services, likely due to limited resources available for operation of a municipal system. Among some smaller cities and many cities with higher populations, there is a split between those that have municipally and privately provided services. The City of Georgetown has chosen to contract with one company as its exclusive provider for both residential and commercial services within City limits. This approach is consistent with cities of comparable size in Texas.

High recycling or zero waste goals by other Texas cities. Over the last 10 years, several cities in Texas have developed MSW management plans that include goals to recycle or divert a high percentage of material from being landfilled. Some of these cities have specifically developed "zero waste" plans, while others have preferred to use terminology such as "high diversion." Zero waste is a philosophy that encourages the redesign of resource life cycles so that all products are reused. The goal for zero waste is that no MSW be sent to landfills or waste-to-energy facilities. Zero waste is more a goal or ideal rather than a hard target, as multiple cities with zero waste plans set maximum goals that still include some MSW going to landfills (e.g. 80% landfill diversion).

It has become common for cities to set short-, mid-, and long-term goals for recycling and diversion and to develop progressive programs and strategy implementation plans to meet those benchmarks. Texas cities that have established high diversion or zero waste goals include but are not limited to those presented in Table 2-4.

Table 2-4: Texas Cities with High Diversion or Recycling Goals

City	Goal
Dallas[1]	40% diversion by 2020 60% diversion by 2030 Maximize diversion by 2040
Austin[2]	20% reduction in per capita solid waste disposal by 2012 75% diversion by 2020 90% diversion by 2040
Fort Worth[3]	30% residential recycling rate by 2021 40% total City recycling rate by 2023 50% total City recycling rate by 2030 60% landfill diversion by 2037 80% landfill diversion by 2045
San Antonio[4]	60% single family residential recycling rate by 2025

[1] Source: City of Dallas, Local Solid Waste Management Plan 2011-2060
[2] Source: City of Austin, Zero Waste Strategic Plan
[3] Source: City of Fort Worth, 2017-2037 Comprehensive Solid Waste Management Plan
[4] Source: City of San Antonio, Recycling and Resource Recovery Plan, 2013 Update

Importance of transfer stations. Transfer stations are facilities that are used to consolidate MSW from multiple collection vehicles into larger, high-volume transfer vehicles for economical shipment to distant disposal or processing facilities. Transfer stations can be used for material destined for landfilling, recycling, or composting. With a nationwide trend toward larger disposal and processing facilities, there has been an enhanced need for transfer stations. When transport distances are longer, transfer stations allow collection vehicles to be more productive by maximizing the amount of time spent collecting material rather than driving to a distant facility. Key factors that affect the financial feasibility of transfer stations include:

- Collection cost
- Disposal cost
- Distance/travel time to landfill
- Fuel costs
- Annual tonnage hauled
- Payload of transfer trailers versus collection vehicles

Section 4.0 provides further perspective on specific aspects of transfer station hauling distances for the City.

Recycling Measurement. Traditionally, a recycling rate has been calculated as a means to measure recycling efforts. A recycling rate indicates the percentage of MSW generated that is recycled. It is typically calculated using the following formula.

$$\frac{total\ recycled}{total\ recycled + total\ disposed} \times 100\% = recycling\ rate\ percentage$$

Over the past decade, the weights and composition of materials in MSW streams have changed. For example, there is now typically less newspaper but more cardboard, and individual plastic bottles and aluminum cans weigh less. Some consumer packaging contains multiple materials, making recycling more challenging. Due to these factors, some communities are considering alternative methods to recycling measurement, other than recycling rates as described above:

- **Capture rate:** Percentage of recyclable material that is recycled versus disposed
- **Disposal rate:** Based on per capita/employee disposal quantities
- **Participation rate:** Based on how frequently a resident or business recycles over a defined time period (e.g. monthly)
- **Life cycle analysis:** Analysis of the total environmental impacts associated with a product or process and evaluation of opportunities to reduce impacts throughout its life cycle, using methods such as replacing virgin material inputs with recycled material
- **Greenhouse gases:** Quantification of greenhouse gas reductions through increased use of recycled materials as product inputs (life cycle analysis) and reduction of material landfilled, which reduces the generation of greenhouse gases due to decomposition

3.0 PLANNING AREA CHARACTERISTICS

To properly plan for the City's future MSW management needs, an understanding of the factors that will impact those needs is important. This section describes the City's demographic and economic characteristics as well as how these characteristics were applied to develop the City's current MSW generation profile and future MSW generation projections.

3.1 Demographic and Economic Characteristics of Georgetown

Demographic and economic growth will largely determine the level of growth in MSW generation that the City will see over the planning period through 2040. Burns & McDonnell utilized a selection of existing population and employment projections to develop the future MSW generation projections for the City, as presented in Section 3.3.3.

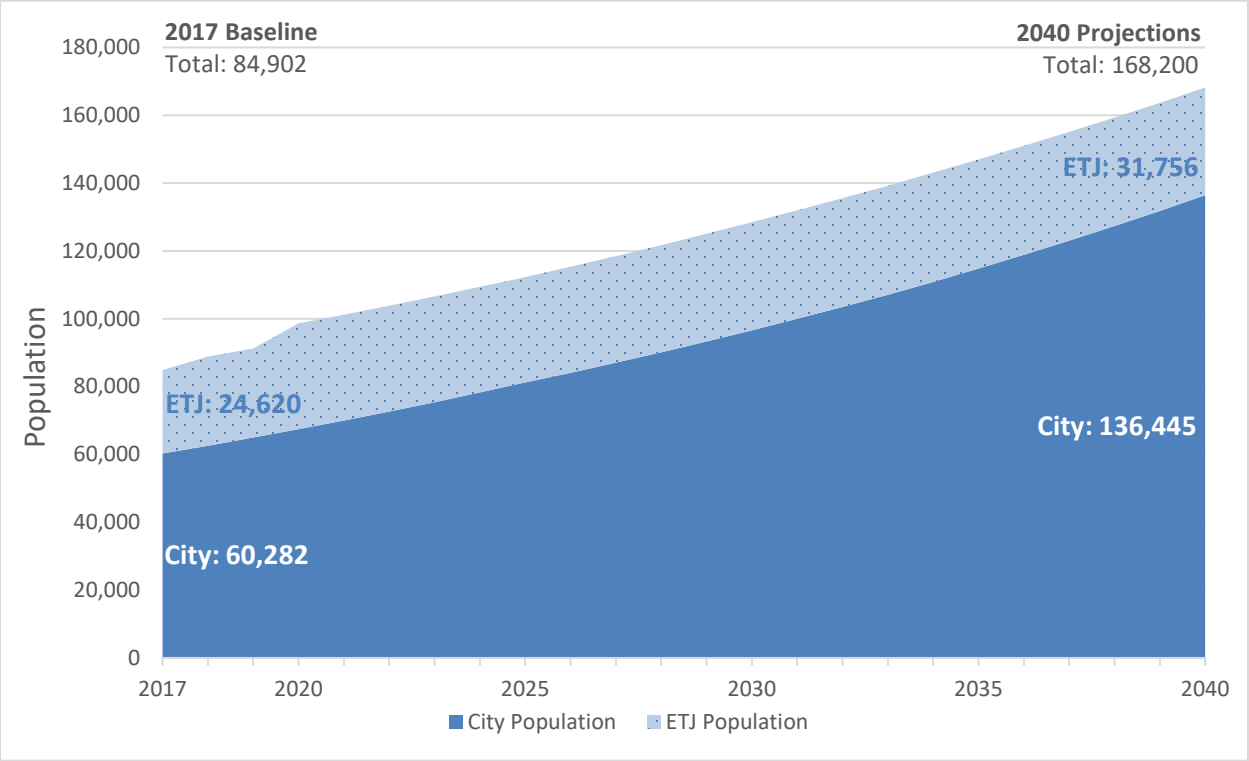
3.1.1 Population Projections

The City's Planning Department previously developed population projections for both the City and the City's extraterritorial jurisdiction (ETJ) through 2030.[1] To project the City and ETJ populations through 2040, Burns & McDonnell applied the average annual population growth rates from the years 2025 to 2030. City estimates indicate that there were approximately 60,300 people living within the City limits and 24,600 people living in the ETJ in 2017. Burns & McDonnell's population projections indicate that City and ETJ populations may grow to approximately 136,400 and 31,800, respectively, in 2040.

Figure 3-1 shows the projected population growth for the City and ETJ from 2017 through 2040. While the City population is projected to increase steadily, the population of the ETJ remains relatively constant from 2020 to 2040. The City anticipates expanding the City limits over the course of the planning period to incorporate some current ETJ areas. These areas are expected to see population growth, but these population increases will become part of the City population when portions of the ETJ are annexed.

[1] The actual population data and projections utilized to estimate population levels and to inform the waste generation forecast for this CSWMP were as provided by the City in the fall of 2017. With the City's dynamic and continued growth, population projections may have changed since the development of these population and waste generation estimates. This data is intended to provide guidelines for the City over the 20-year planning period and may be updated as appropriate in the future.

Figure 3-1: 2017-2040 Population Projections, City Limits and ETJ



The City estimates that approximately 85 percent of residents currently live in single-family residences and the remaining 15 percent live in multifamily residences. The City expects that this distribution may shift to 80 percent single-family residents and 20 percent multifamily residents by the year 2040. This anticipated change in proportion of single-family and multifamily residents was incorporated into population and MSW generation projections for both City and ETJ populations. Table 3-1 shows the single-family and multifamily residential projections within the City limits and in the ETJ.

Table 3-1: Single-Family and Multifamily Population Projections, City and ETJ[1]

Year	Total Population		Single-Family		Multifamily	
	City	ETJ	City	ETJ	City	ETJ
2017	60,282	24,620	51,240	20,927	9,042	3,693
2020	67,418	31,271	56,866	26,376	10,552	4,895
2025	81,239	31,031	67,640	25,837	13,599	5,194
2030	96,567	31,898	79,353	26,212	17,214	5,686
2035	114,787	32,209	93,077	26,117	21,710	6,092
2040	136,445	31,756	109,156	25,404	27,289	6,351

[1] The total ETJ populations do not reflect the number of residents receiving solid waste services through the City's contractor but are intended to illustrate the level of growth the City may see during the planning period. Distinction between residents and households that are City customers and those that are not are discussed further in Sections 3.1.2 and 3.2.1.

3.1.2 Additional Population Considerations

The City's contractor has the exclusive right to provide MSW services to residents within City limits and to some single-family residents in the ETJ who live in municipal utility districts (MUDs) that have service agreements with the City. Single-family residents in the ETJ that do not also reside in these MUDs are not considered City customers and therefore contract directly with an MSW service provider of their choice.

In planning for future MSW generation, processing, and disposal capacities, the CSWMP considers only MSW from residents who are City customers and whose waste is likely to continue being handled by the City or its contractor in the future. In 2017, about 42 percent of ETJ residents received solid waste services from the City's contractor. This assumption was carried forward through 2040 to develop MSW generation projections.

Under the City's current MSW services contract, City residential customers residing within City limits are considered Tier I customers and City residential customers residing within the ETJ are considered Tier II customers. Single-family customers may be either Tier I or Tier II customers. For contractual purposes, multifamily residential customers are considered commercial customers because they receive the same types of MSW services and are subject to the same rate schedules. The City's multifamily customers are the property owners and managers of multifamily properties, not the individual residents or households. The City has Tier I multifamily customers but does not have Tier II multifamily customers. The definition of the City's commercial customers, which include multifamily customers, is further discussed in Section 3.2.1.

3.2 Economic Characteristics

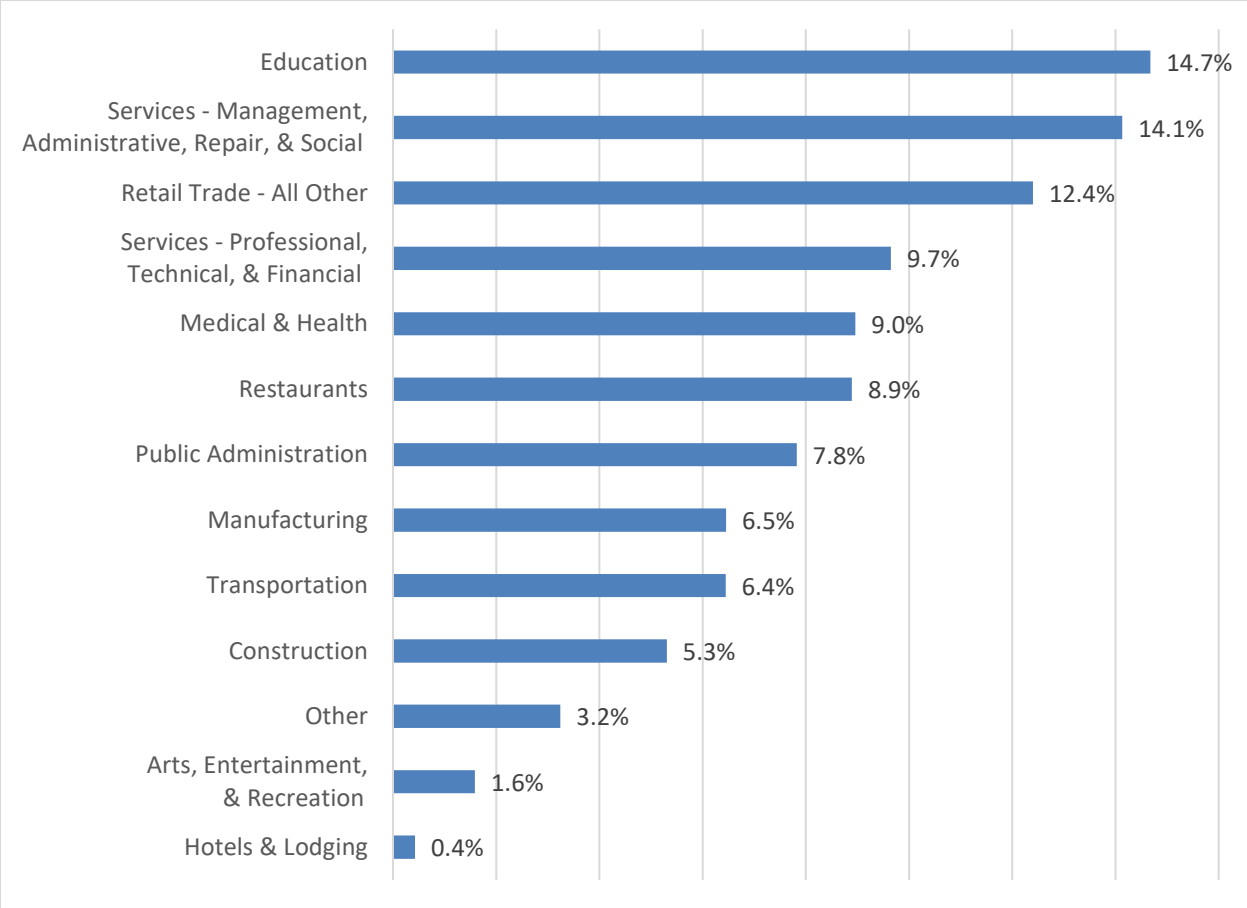
The City's adopted vision statement, "Georgetown: A caring community honoring our past and innovating for the future" reflects two of the City's major focal points for future development:

- To vigorously promote business development within the City and a high quality built environment
- While actively preserving the community's heritage and historic character[2]

[2] City of Georgetown. City of Georgetown website, Planning Department homepage. Accessed April 2018. Available online: https://planning.georgetown.org/

As part of the Austin metro area, the City is part of one of the healthiest business climates in the United States and is home to a diverse mix of successful businesses, creating a strong and stable economic base.[3] Based on data provided by Jobs EQ, there were an estimated 27,181 people employed within the City limits as of fall of 2017.[4] Figure 3-2 illustrates the City's employment by industry.

Figure 3-2: 2017 City of Georgetown Employment by Industry



There are currently over 3,300 businesses in the City, with more than 250 having over 20 employees and more than 500 having over 10 employees. In 2017, Williamson County, Georgetown Independent School District (GISD), the City of Georgetown, Southwestern University, Airborn, Inc., and St. David's Georgetown Hospital were among the largest employers in the City, each with over 450 employees.[5]

[3] City of Georgetown. City of Georgetown website, "Business Community." Accessed April 2018. Available online: https://invest.georgetown.org/industries-companies/

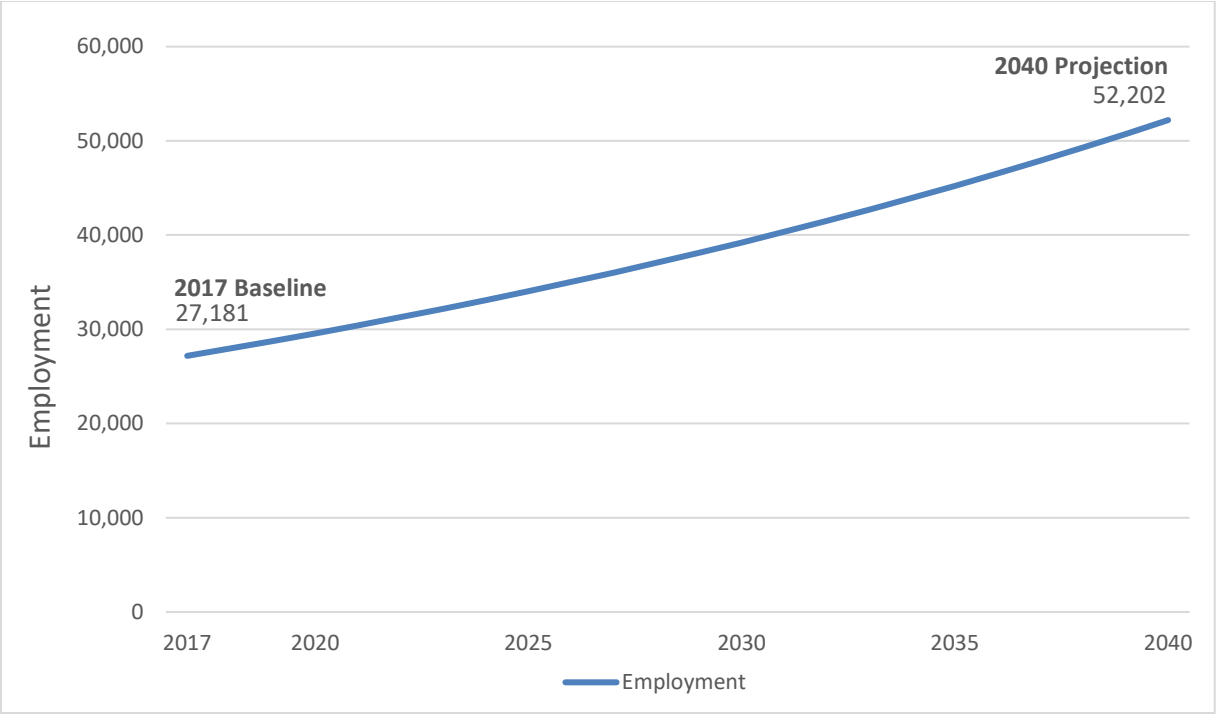
[4] Jobs EQ is a provider of market data for the City. Data utilized in the CSWMP was provided to the City by Jobs EQ in a report generated on February 16, 2018 with data updated through the third quarter of 2017. Available online: http://www.chmuraecon.com/jobseq

[5] City of Georgetown. City of Georgetown website, "Major Employers." Accessed May 2018. Available online: https://invest.georgetown.org/industries-companies/major-employers/

3.2.1 Employment Projections

Employment projections were used as the basis for the commercial sector MSW generation forecast. City employment is projected to grow from approximately 27,200 employees in 2017 to 52,200 employees in 2040. Figure 3-3 shows the projected employment growth for the City from 2017 through 2040.[6]

Figure 3-3: 2017-2040 City of Georgetown Employment Projections



The City's MSW services contractor provides exclusive service to commercial customers within the City limits. As with residential customers, commercial customers within the City limits are referred to as Tier I customers. Business and institutional entities (all non-residential entities) outside the City limits receive MSW services through an open-market system and contract directly with a service provider of their choice and are not considered City customers; therefore, there are no Tier II commercial MSW customers. Commercial MSW generation projections considered only generation and employment growth of businesses and institutions within City limits (Tier I customers).

3.3 MSW Current Generation and Forecast

Understanding current and projected future MSW generation allows the City to appropriately plan for solid waste and recycling system needs, including services, programs, and infrastructure. For purposes of

[6] Employment projections were developed based on 2017 employment data by industry and a projected 10-year average annual growth rate provided by Jobs EQ. Burns & McDonnell utilized the projected 10-year average annual growth rates to extrapolate the City's employment growth through 2040.

the CSWMP, it is assumed that the City will handle all MSW generated by City customers, both Tier I and Tier II.

3.3.1 MSW Generation Forecast Methodology

The following data served as the basis for development of the MSW generation forecast for the City through the end of the CSWMP planning period, in the year 2040.

- Population projections (presented in Table 3-1)
- Employment projections (presented in Figure 3-3)
- Current MSW generation rates by sector and material type (presented in Table 3-2)

This data was used to develop an MSW generation forecast for the residential and commercial sectors. As with any long-term planning activity, the development of the MSW generation forecast required a number of assumptions to be made. Key assumptions, data considerations, and limitations are described below.

Residential. The residential sector includes both single-family and multifamily customers. However, multifamily services are provided similarly to commercial services and material is often combined in the same collection vehicles. Total reported commercial MSW generation data included multifamily quantities, but specific multifamily data was unavailable. Reported residential MSW generation data included only single-family material quantities. Therefore, Burns & McDonnell utilized single-family MSW generation estimates to predict multifamily MSW generation levels.

Single-family residential MSW generation estimates for each material category (landfill trash, recyclables, and yard trimmings) were made on a per-person basis by dividing total reported residential MSW quantities by the total single-family population. Adjustments were made to estimate multifamily residential per-person MSW generation.[7] Per-person MSW generation estimates were then applied to population projections to develop the residential MSW generation forecast.

[7] Burns & McDonnell assumed that per-person MSW generation for multifamily residents was equal to the total amount of MSW generated by single-family resident, less yard trimmings material. Because multifamily recycling services are limited in the City, it was assumed that the average per-person amount of material recycled by multifamily residents would be 25 percent of the total material recycled per-person for single-family residents. The additional material assumed to not be recycled by multifamily residents was assumed to be disposed of as landfill trash.

To calculate per-household MSW generation estimates, Burns & McDonnell utilized ratios of 2.38 people per household for single-family households and 1.8 people per household for multifamily households, based on information provided by the City.

Commercial. For planning purposes, the commercial sector includes commercial and industrial businesses, institutions (e.g., schools and hospitals), and local governmental facilities other than City facilities (e.g., County facilities). Commercial MSW quantities include material collected with regular landfill trash and recyclables collections service via front-load dumpsters and carts as well as roll-off services.[8] The amount of MSW generated by each commercial entity varies significantly depending on factors such as size of the entity and nature of business or operation (i.e., industry sector). Therefore, Burns & McDonnell calculated the current average amount of MSW generated per person employed within the City by dividing the total commercial MSW generation by the total number of employees.

3.3.2 Current MSW Generation

As discussed in Section 3.3.1, MSW generation projections through the end of the planning period were based on per-resident MSW generation for the residential sector and per-employee MSW generation for the commercial sector. Table 3-2 provides a summary of the total MSW generation, number of residents or employees, and annual per-person MSW generation by sector. Table 3-3 presents further breakdown of total MSW generation by sector.

Table 3-2: 2017 MSW Generation per Person

Sector	Total MSW Generation (Tons)	Total Residents/ Employees	Annual MSW Generation Per Person
Single-Family Residential (Tier I and II)	31,764	51,240	0.53 tons/resident
Multifamily Residential	4,671	9,042	0.52 tons/resident
Commercial	28,870	27,181	1.06 tons/employee
Total MSW Generation	65,305		

The City-owned transfer station is operated by the City's contractor and accepts MSW from both City customers and non-City customers. In fiscal year (FY) 2017 (October 1, 2016-September 30, 2017), a

[8] MSW quantity data received from the City's contractor did not differentiate between roll-off tonnages generated by commercial Tier I customers and non-City customers. The contractor estimates that approximately 50 percent of roll-off tonnage received at the transfer station are received from the City's commercial Tier I customers and 50 percent is received from non-City customers. Burns & McDonnell utilized this assumption to develop commercial MSW generation projections.

total of approximately 86,000 tons of MSW were delivered to the transfer station from City and non-City customers from the residential (single-family and multifamily) and commercial sectors.[9]

For purposes of the CSWMP and MSW generation projections, only MSW quantities generated by City customers were considered. Total MSW generated by City customers, Tier I and Tier II, and delivered to the transfer station in FY 2017 was approximately 65,300 tons.[10] Table 3-3 provides a detailed breakdown of FY 2017 MSW generation by sector and material type.

Table 3-3: 2017 Total City Customer MSW Generation (Tons)[1]

Sector[2]	Landfill Trash	Recyclables	Yard Trimmings[3]	Totals
RESIDENTIAL				
Single-Family Tier I	21,534	4,933	626	27,093
Single-Family Tier II	3,713	851	108 (estimated drop-off tonnage)	4,671
Multifamily Tier I[4]	4,459	211	0	4,671
Residential Total	**29,706**	**5,995**	**734**	**36,435**
COMMERCIAL[5]				
Commercial Tier I	27,013	1,198	659 (estimated drop-off tonnage)	28,870
Commercial Total	**27,013**	**1,198**	**659**	**28,870**
Total MSW Generation	**56,803**	**7,003**	**1,499**	**65,305**

[1] Values are based on summary reports provided by the City's contractor for MSW received at the transfer station in FY 2017. Where MSW quantities were reported in units other than tons, Burns & McDonnell utilized standard material conversion factors published by the U.S. EPA.

[2] Tier I customers include all City MSW service customers located within City limits. Tier II customers include all City MSW service customers located in the ETJ. Single-family Tier II customers are single-family residents located in the ETJ and within MUDs having service agreements with the City. There are no multifamily residential or commercial Tier II customers.

[3]Yard trimmings collection service is provided only to single-family Tier I customers under the City's current contract. Yard trimmings tonnage shown for commercial Tier I customers and single-family Tier II customers reflects estimated quantities of brush and yard trimmings dropped off at the transfer station.

[4] Per-person MSW generation for multifamily residents was assumed to be equal to the total amount of MSW generated by single-family residents, less yard trimmings material. Because multifamily recycling services are limited in the City, it was assumed that the average per-person amount of material recycled by multifamily residents would be 25 percent of the total material recycled per-person for single-family residents. The additional material assumed to not be recycled by multifamily residents was assumed to be disposed of as landfill trash.

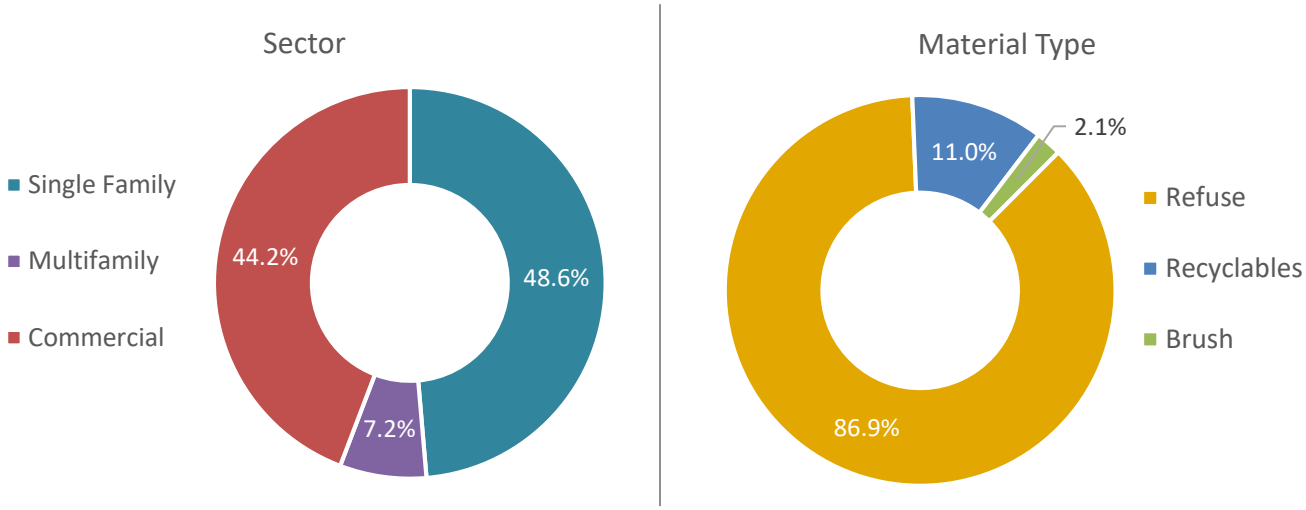
[5] Currently, commercial customers located outside of City limits receive MSW services through an open market system and are not included in the service contract with the City's contractor.

[9] Values are based on summary reports provided by the City's contractor for MSW received at the transfer station in FY 2017. Where MSW quantities were reported in units other than tons, Burns & McDonnell utilized standard material conversion factors published by the U.S. EPA.

[10] Total tons generated primarily includes material collected through collection services provided by the City's contractor. A smaller portion was dropped off at the transfer station by residential and commercial customers.

Figure 3-4 illustrates distribution of the City's FY 2017 MSW generation by sector and type for all City MSW customers, including Tier I and Tier II.

Figure 3-4: 2017 City Customer MSW Distribution by Sector and Type



3.3.3 MSW Generation Forecast

Utilizing the methodology and data described herein, Burns & McDonnell developed a forecast of the City's MSW generation over the 2017-2040 planning period, as summarized in Table 3-4. This table summarizes the scenario where the current levels of MSW generation and recycling rates for each sector (per resident and per employee) are maintained. Landfill disposal and recycling quantity estimates increase in relation to projected increases in population and employment.

Landfill disposal quantities include material collected and delivered to the transfer station as landfill trash. Recycling, unless otherwise specified, includes all materials delivered to the transfer station that are not landfill trash, including single-stream recyclables and yard trimmings. The City's current recycling rates are discussed further in Section 3.4.3.

Table 3-4: City Customer MSW Generation Forecast[1,2]

	2017	2020	2030	2040
Single-Family				
Landfill Disposal	25,247	28,578	37,999	50,381
Recycling	6,518	7,378	9,810	13,006
Multifamily				
Landfill Disposal	4,459	5,204	8,490	13,458
Recycling	211	246	402	637
Commercial				
Landfill Disposal	27,013	29,381	38,972	51,879
Recycling	1,857	2,020	2,680	3,567
Total				
Total Landfill Disposal	56,719	63,163	85,460	115,718
Total Recycling	8,586	9,644	12,891	17,211
Total Generation	**65,305**	**72,808**	**98,352**	**132,929**

[1] Landfill disposal quantities include material collected and delivered to the transfer station as landfill trash.

[2] Recycling quantities includes all materials delivered to the transfer station that are not landfill trash, including single-stream recyclables and yard trimmings.

3.4 Waste Characterization

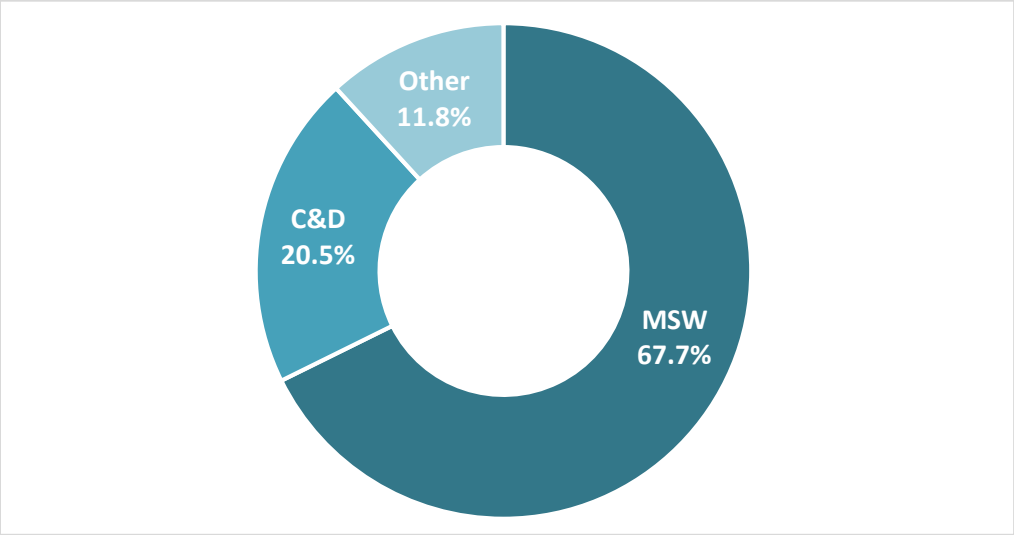
Waste characterization is the analysis of the composition of a waste stream. The CSWMP uses estimated state-level waste characterization percentages, which include MSW and other waste types, from the 2017 Texas Commission on Environmental Quality (TCEQ) Study on the Economic Impacts of Recycling (TCEQ SEIR Report)[11] since waste characterization data specific to the City was unavailable.

3.4.1 Statewide Waste Characterization

Of the estimated 31.0 million tons of material disposed of in landfills in Texas in 2015, approximately two thirds was MSW and the remaining third was comprised of construction and demolition (C&D) material and other materials (e.g., sludge, septage, tires, and medical waste). All three categories include both recyclable and non-recyclable materials that end up in landfills across the state. Figure 3-5 presents the high-level distribution of materials disposed of in Texas landfills in 2015.

[11] Texas Commission on Environmental Quality (TCEQ). July 2017. "Study on the Economic Impacts of Recycling." Available online: https://www.tceq.texas.gov/p2/recycle/study-on-the-economic-impacts-of-recycling.

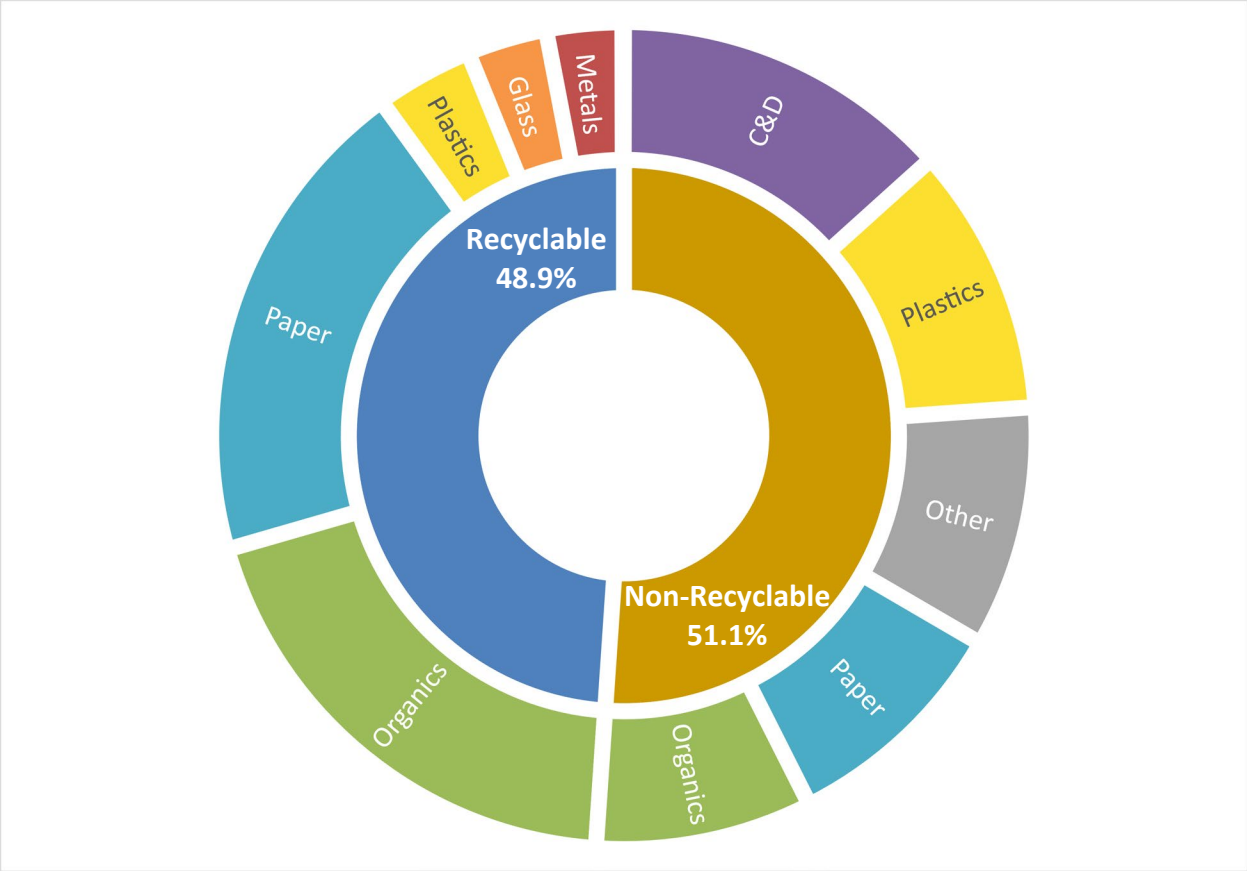
Figure 3-5: 2015 Composition of Material Disposed in Texas Landfills



Composition of MSW material disposed in landfills (including recyclable and non-recyclable material) varies from region to region based on many factors, such as ratio of residential to commercial sectors, access to recycling programs, and vegetative growth. Based on data from the 2017 TCEQ SEIR Report, which incorporated available waste characterization studies from large Texas cities (including but not limited to Austin, Dallas, and Fort Worth), approximately 51 percent of MSW that is disposed in landfills the state is non-recyclable, while 49 percent is recyclable. This indicates that there is a significant amount of material currently being disposed in landfills that could be recycled.

Figure 3-6 presents the estimated composition of MSW disposed in Texas landfills and whether it was recyclable or non-recyclable. Recyclable and non-recyclable materials are further broken down by material categories, including paper, plastics, metals, glass, organics, C&D materials, and other materials. Some material types such as paper, organics and plastic appear in both the recyclable and non-recyclable categories. Non-recyclable paper, plastics and organics are typically materials that are too contaminated to be recycled.

Figure 3-6: 2015 Statewide Composition of MSW Disposed in Landfills by Material Type



3.4.2 Georgetown MSW Characterization

Burns & McDonnell applied statewide MSW characterization distribution to the City's total landfill trash generation to estimate the amount of recyclable and non-recyclable materials that are disposed in the City. Table 3-5 presents the estimated number of tons by material type that make up the City's landfill trash disposal and does not include material diverted through recycling or yard trimmings collection.

Table 3-5: 2017 City Estimated Composition of MSW Disposed by Material Type

	Paper	Plastic	Organics	C&D	Metals	Glass	Other	Total
Distribution								
Recyclable	19.4%	3.9%	19.5%	0.1%	3.0%	3.1%	0.0%	**48.9%**
Non-Recyclable	9.2%	10.5%	8.5%	13.4%	0.0%	0.0%	9.5%	**51.1%**
Quantity (Tons)								
Recyclable	11,021	2,187	11,050	34	1,683	1,774	0	**27,749**
Non-Recyclable	5,212	5,979	4,824	7,573	0	0	5,383	**28,970**
Total Disposed	16,233	8,167	15,873	7,607	1,683	1,774	5,383	**56,719**

Based on the City's MSW composition estimates presented in Table 3-5, the City's residents (Tier I and Tier II) and businesses may dispose of approximately 27,749 tons of material as landfill trash annually that has the potential to be recycled. This may include approximately 16,700 tons of single-stream recyclables (paper, plastic, metals, glass), 11,000 tons of organics, and a relatively small quantity of C&D material.

However, it is important to recognize that there are challenges to capturing all material that seemingly has the potential to be recycled. Even if a material has the potential to be recycled or diverted, it may be impractical from a cost and/or environmental perspective for all of the material to be recycled due to factors such as

- Lack of recycling infrastructure
- Contamination of recyclable materials
- Access to end markets
- Need for additional public education and outreach

3.4.3 Recycling Rates

Recycling rate is defined as the proportion of MSW that is diverted from landfill disposal and has value as a commodity or as an input into other products or processes. There are various methods for measuring a city's recycling rate. In calculating the City's overall recycling rate, the CSWMP includes single-stream recyclables and yard trimmings delivered to the transfer station separately from landfill trash material. The City's current overall recycling rate (including residential and commercial material) is approximately 13.1 percent, including approximately 7,200 tons of single-stream recyclables and 1,400 tons of yard trimmings annually.

Based on the data in Table 3-5, there is significant potential for the City to continue increasing its recycling rate. As previously discussed, there are an estimated 11,000 tons of paper and 11,000 tons of organics each year that are disposed that could potentially be recycled. These categories represent the largest potential for the City to increase its overall recycling rate.

The City's current single-family residential recycling rate is approximately 20.5 percent, including approximately 5,800 tons of single-stream recyclables and 730 tons of yard trimmings annually. Single-family residential recycling has traditionally been the larger focus when measuring a city's recycling rate and progress toward recycling goals.

However, the City, like many other Texas cities, has potential to significantly increase recycling rates by capturing recyclables present in material disposed of as landfill trash. Achieving maximum potential recycling rates requires significant investment and program development over time.

As described in Section 3.4.2, there are several challenges to maximizing recycling rates. Table 3-6 presents the estimated tonnages of material that are currently disposed as landfill trash but that could be recycled, given scenarios of recycling 20, 40, and 60 percent of the disposed material. The table also presents the City's potential overall recycling rate given each scenario.

Table 3-6: Potential Scenarios for Recycling of Disposed Materials

	Current Total Disposed (Tons)	Assumed Recovery Rate of Currently Disposed Recyclables		
		20%	40%	60%
Recyclable Material				
Paper	11,021	2,204	4,408	6,613
Plastic	2,187	437	875	1,312
Organics	11,050	2,210	4,420	6,630
C&D	34	7	14	21
Metals	1,683	337	673	1,010
Glass	1,774	355	710	1,064
Subtotal	**27,749**	**5,550**	**11,100**	**16,650**
Existing Recycled Tonnage		8,586	8,586	8,586
Total Recycled Tonnage		**14,136**	**19,686**	**25,236**
Potential Overall Recycling Rate		**21.6%**	**30.1%**	**38.6%**

The City's potential for increased recycling though various programs and initiatives is discussed throughout the CSWMP. Sections 3.4.3.1 and 3.4.3.2 further break down the City's recycling rates by sector and material types.

3.4.3.1 Current Residential Recycling Rate

Single-stream recyclable material as well as yard trimmings contribute to the City's overall residential recycling rate, which is currently approximately 20.5 percent. Single-stream recyclables account for the largest portion of the City's residential recycled material, at 5,784 tons in FY 2017. Yard trimmings account for a small portion of recycled material, at 734 tons in the same year. It should be noted that this yard trimmings tonnage does not necessarily account for all yard trimmings that are disposed of in the City, but represents all yard trimmings material that is recycled through the residential yard trimmings collection service or dropped off at the transfer station by residents.

For single-stream residential recycling programs, the annual number pounds of recyclable materials recovered per household is often used to evaluate the success of a program. Including all single-family customers, the City's current single-stream, residential recycling rate is 458 pounds of recyclables per household per year.[12]

Based on a study conducted in 2016, the national average pounds per household per year recovered through cities single-stream recycling programs is 357. By this measure, the City's single-stream recycling program is successful, generating a healthy amount of material per household per year.

3.4.3.2 Commercial Recycling Rate

Overall, the City's current commercial recycling rate, including single-stream recyclables and yard trimmings, is approximately 6.4 percent based on reported tonnages received at the transfer station in FY 2017. While this is conservative and likely an under-estimated rate since it does not account for any independent recycling activities commercial customers may undertake beyond City collection services, it is apparent that the City has potential to increase its commercial recycling rate.

[12] 458 pounds per household per year is based on 2017 single-family recycling tonnage of 5,784 tons and a total of 25,241 single-family households, including Tier I and Tier II customers.

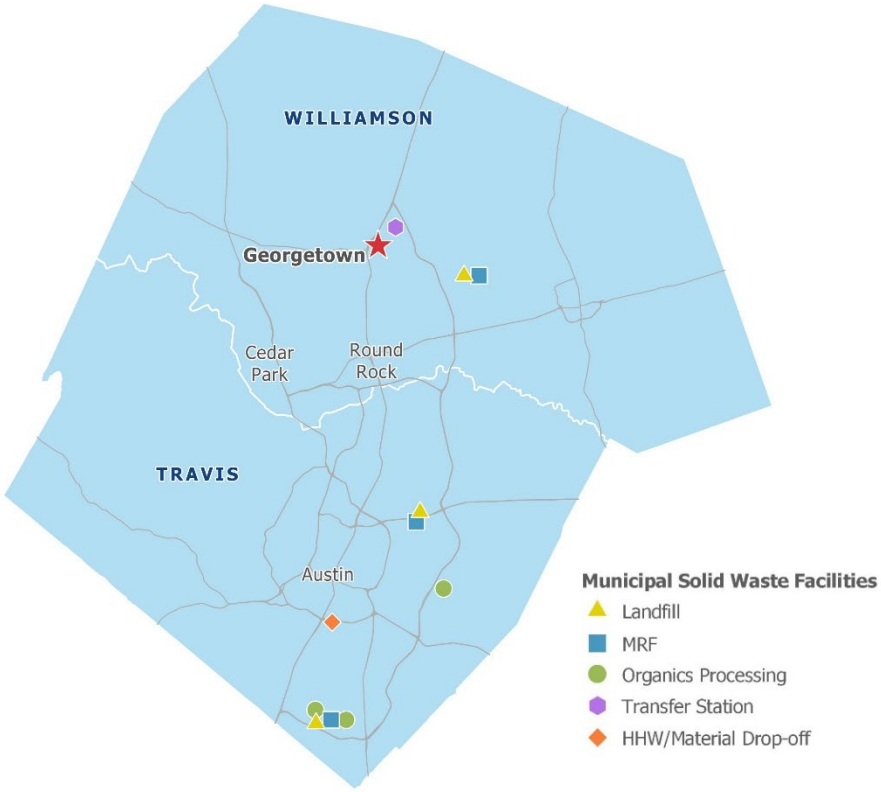
4.0 FACILITIES AND INFRASTRUCTURE

Consideration of MSW processing facilities and infrastructure on both a regional and local level is essential for the future of MSW management for the City. The availability of local processing facilities will impact many of the decisions the City makes regarding MSW management and services provided to City customers and the timing (near-term, mid-term, or long-term) for implementation of various strategies. This section provides an overview of existing MSW processing facilities and infrastructure located within the CAPCOG region, including landfills, MRFs, the City's transfer station, and organics processing facilities.

4.1 Current System Review

Figure 4-1 indicates locations of each MSW facility in the CAPCOG region identified in Table 4-1 through Table 4-2.[1] Additionally, the map communicates the location of household hazardous waste drop-off facilities, which are discussed in Section 11.0.

Figure 4-1: Regional MSW Facility Locations within Williamson and Travis Counties



[1] The CAPCOG region is comprised of 10 counties, including Bastrop, Blanco, Burnet Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson. Since the City would be unlikely to utilize facilities beyond Williamson and Travis County due the general lack of facilities with sufficient capacity and longer transport distances beyond this area, the map focuses on these two counties.

4.1.1 Landfills

One of the primary guiding principles identified by the City and many other recent MSW management plans is the need to identify and evaluate alternatives to disposal. Landfill capacity is a finite resource in the region and permitting new landfills is becoming increasingly difficult. Increasing single-stream recyclables and organic material diverted would serve to ease the constraint of disposal capacity in the future. This section provides an overview of existing landfill facilities, provides an estimate of when landfills may reach capacity and provides a discussion of potential future uses of the City's closed landfill.

4.1.1.1 Landfill Facilities Overview

CAPCOG currently has three active Type I landfills (landfills that accept all types of MSW, including C&D materials and special waste). Two are located in Travis County and one is located in Williamson County. Table 4-1 identifies the Type I landfills currently in operation in the region and provides disposal and remaining capacity data, as reported by the TCEQ for 2017.[2] Landfill trash from the City is disposed at the Texas Disposal Systems (TDS) Landfill, located in Creedmoor, Travis County.

Table 4-1: CAPCOG Type I Landfill Disposal and Remaining Capacities, 2017

Permit	Permit Holder/Site Name	County	Tons Disposed[1]	Remaining Capacity, Tons
249D	Austin Community Recycling & Disposal Facility	Travis	999,836	7,723,247
2123	TDS Landfill	Travis	848,106	13,848,288
1405B	Williamson County Recycling and Disposal Facility	Williamson	418,944	43,068,735
Total			**2,266,886**	**64,640,270**

[1] Tons disposed in the region does not reflect total MSW generation, as a certain amount of MSW is recycled and diverted as well as imported and exported from the region each year.

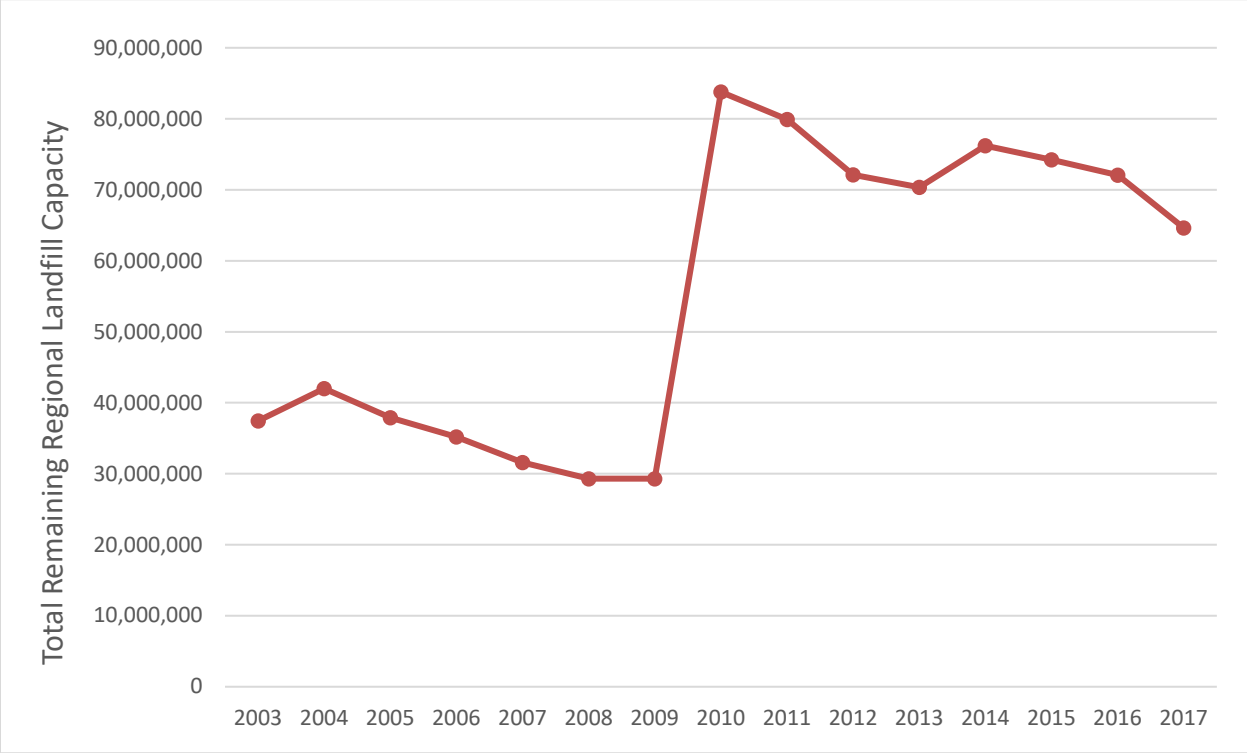
In addition to the Type I landfills identified in Table 4-1, the region has one Type IV landfill (landfills that accept only C&D waste), the IESI Travis County Landfill. Based on 2017 TCEQ data, this landfill has an estimated six years of remaining life and would therefore have minimal impact on future regional landfill life projections.

[2] Texas Commission on Environmental Quality (TCEQ). October 2018. "Municipal Solid Waste in Texas: A Year in Review; FY 2017 Data Summary and Analysis."
https://www.tceq.texas.gov/permitting/waste_permits/waste_planning/wp_swasteplan.html

4.1.1.2 Historic and Projected Landfill Capacities

Figure 4-2 illustrates how remaining CAPCOG regional landfill capacity and total annual regional disposal has changed from 2003 to 2017. During this time, total annual regional disposal has trended upward, from 1.98 million tons in 2003 to 2.27 million tons in 2017, with an intermediate period of decline from 2008 to 2011, corresponding with the economic recession. Data is based on past annual TCEQ summary reports.[3]

Figure 4-2: CAPCOG Regional Landfill Capacity, 2003-2017 (Tons)



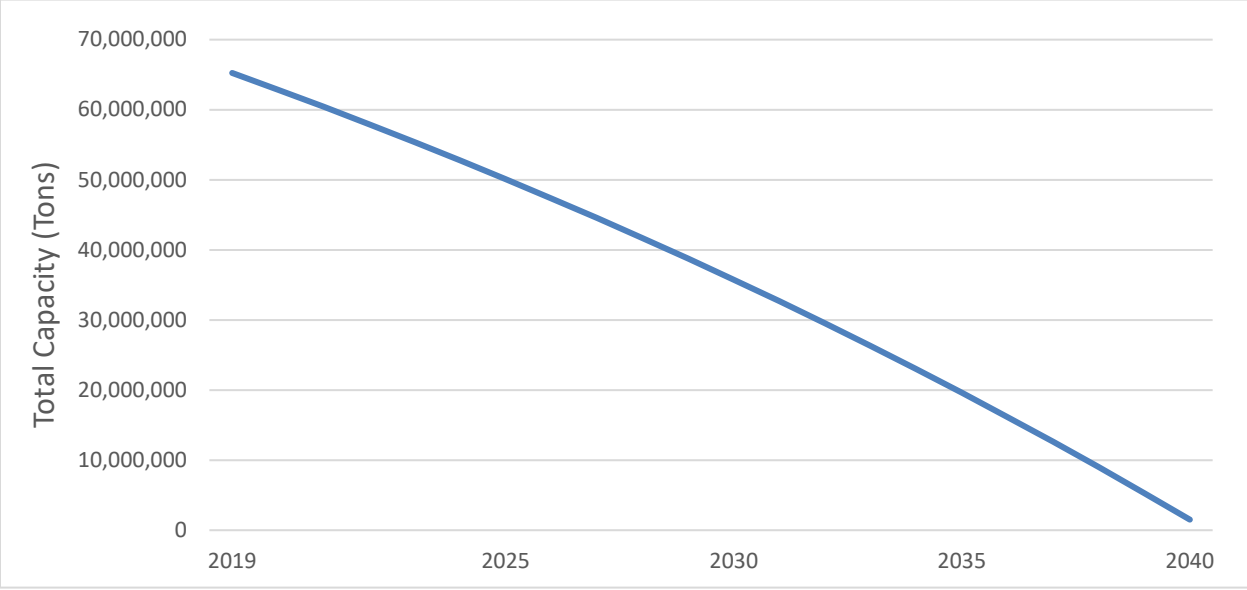
The region saw a sharp increase in available MSW landfill capacity from 2009 to 2010, due to the permitted expansion of three landfills. The TCEQ approved a major expansion of the Williamson County Recycling and Disposal Facility in 2009, expanding the landfill's footprint from a 160 to 423-acre area. A vertical expansion of the BFI Sunset Farms Landfill (which closed in 2015) was also approved in 2009, increasing capacity without increasing the landfill footprint. In 2010, an approximate 70-acre expansion of the Austin Community Recycling and Disposal Facility landfill was approved. Other minor increases in regional landfill capacity (such as 2003-2004 and 2013 to 2014) can likely be attributed to adjustments

[3] Texas Commission on Environmental Quality (TCEQ). Annual Summary of Municipal Solid Waste Management in Texas archive. https://www.tceq.texas.gov/permitting/waste_permits/waste_planning/wp_swasteplan.html

to the pounds-per-cubic yard conversion factors used to calculate remaining tons for each landfill, which could be caused by various changes in landfill operations.

Based on data from the TCEQ's 2017 annual review of MSW generation and facilities in Texas, the region has approximately 29 years of total Type I Landfill capacity remaining at current annual disposal rates. However, this estimate does not account for future population and economic growth and actual total remaining landfill life, given current remaining capacities, is likely to be lower.[4] Based on population projections from the Texas Demographic Center,[5] the population of the 10-county CAPCOG region is projected to grow at an average annual rate of 2.35% from 2019 to 2040. This is an increase of 63 percent over the CSWMP planning period. In 2017, TCEQ estimated the remaining landfill capacity of the region to be approximately 64.6 million tons. If annual disposal quantities, totaling approximately 2.3 million tons in 2017, were to increase at the same rate as population projections, the remaining CAPCOG regional landfill capacity would be depleted in the year 2040. This equates to total remaining landfill life of 21 years for the region, from the year 2019. Figure 4-3 shows the projected remaining CAPCOG region landfill capacity through 2040, assuming no landfill capacity is added through existing landfill expansion or new permitted landfills.

Figure 4-3: Projected CAPCOG Remaining Regional Landfill Capacity (Tons)



[4] Data from the TCEQ's 2017 MSW annual report, presented in Table 3-7 and discussed in this section, is reflective of the way data has traditionally been presented by TCEQ in its MSW annual reports. TCEQ data provides an understanding of facilities and capacities at a given point in time and does not incorporate population and economic growth projections.

[5] Texas Demographic Center. 2018 Texas Population Projections Data Tool. Accessed January 2019. http://txsdc.utsa.edu/Data/TPEPP/Projections/.

Projections for remaining landfill capacity and regional landfill life could change for various reasons. If the existing landfills identified in Table 4-1 received additional permitted expansions or if new landfills were permitted by TCEQ, the projected life of the region's landfills would be extended beyond 2040. Waste reduction efforts could also increase the projected landfill capacity.

4.1.1.3 Additional Long-term Disposal Considerations

Within the CAPCOG region, a permit was issued in 2017 by the TCEQ for another Type I landfill near Lockhart (Caldwell County) but the site has not yet been constructed.[6] Because the City of Georgetown has a transfer station, long-term disposal facility options could include landfills within and outside of the CAPCOG region. The City of Temple Recycling and Disposal Facility is located in Bell County, approximately 42 miles north of the transfer station. The City of Waco has an existing landfill located in McLennan County with an estimated remaining life of 7 years approximately 73 miles north of Georgetown's transfer station. Waco is in the process of permitting and developing a new landfill that would be a comparable distance from the Georgetown. For comparison, the TDS Landfill in Creedmoor, where the City's landfill trash is currently disposed, is approximately 45 miles south of the transfer station.

4.1.1.4 City of Georgetown Closed Landfill

In 1974, the City of Georgetown permitted a landfill that operated until its closure in 1990; the City closed the landfill due to the impending Subtitle D requirements for all landfills. While the original permit included 191 acres, only about 43 acres were utilized for burying landfill trash. This site is adjacent to the City's existing transfer station. In 1996, the TCEQ performed a post-closure inspection of the landfill. No deficiencies were noted and the file for the landfill was marked 'closed,' leaving care and responsibility to the City for any post-closure monitoring and maintenance. The final post-closure period is 30 years from the closure date of 1990.

When the landfill completes the post-closure period in 2020, the City could consider repurposing the site for another use. Other landfills have been repurposed for recreational uses (e.g. golf courses, nature parks, fields, and walking or biking trails). However, the City has many existing parks and recreational areas, including those near the closed landfill. Because of this, repurposing the landfill as a park or recreational area would be a long-term, low priority for the City.

In some cases, commercial or industrial buildings have been constructed on closed landfills. However, some sites have had problems with buildings being built on top of closed landfills; thus, building an

[6] This is based on available information as of September 2018.

enclosed facility on top of a closed landfill is not necessarily recommended. If the City would consider repurposing the closed landfill in the future, there would be a need to comply with applicable TCEQ regulations, which become more stringent if an enclosed structure would be built on the property.

4.1.2 Material Recovery Facilities (MRF)

The CAPCOG region has three major MRFs that process single-stream recyclables. These facilities operate in a manner typical of large MRFs and accept the typical range of materials seen in most single-stream recycling programs. Generally, they accept material from both commercial and municipal collection and hauling operations, from residential and commercial sources. Each uses a combination of large processing equipment and manual labor to sort and process recyclable materials.

The City's collected recyclable materials are hauled to the City's transfer station and then transported to the TDS MRF in Creedmoor for processing. Table 4-2 identifies the region's major MRFs.

Table 4-2: CAPCOG Materials Recovery Facilities (MRFs)

Site Name	County
Balcones Resources	Travis
TDS Materials Recovery Facility	Travis
Wilco Recycling (Central Texas Refuse)	Williamson

4.1.3 Transfer Stations

This section provides an overview of City's transfer station, including the role the transfer station serves in the City's MSW system, a description of the current facility, the capacity of the existing facility, and future options the City recently evaluated.

4.1.3.1 Role of a Transfer Station

Figure 4-1 illustrates the location of disposal, recycling and organics processing facilities in relation to the City. Landfill trash, recycling, and yard trimmings collection vehicles in the City must either haul material directly to one of these facilities (referred to as "direct haul") or utilize a transfer station, which aggregates material into larger transfer trailers for more efficient transportation (referred to as "long haul"). The financial feasibility of a transfer station and whether material should be direct-hauled or long-hauled is dependent on a number of factors, including:

- Collection cost
- Disposal cost

- Distance/travel time to landfill
- Fuel costs
- Annual tonnage hauled
- Payload of transfer trailers vs. collection vehicles

Assuming other factors are held constant, the further the landfill or processing facility is from the collection point, the more financially feasible long-hauling with a transfer station is compared to direct hauling. Most of the growth and development for Georgetown is on the west side of the City. The Williamson County Recycling and Disposal Facility (Williamson County landfill) is the closest landfill to the City, but it is located in the eastern side of the County, so as the City grows, the collection points are getting further away from the Williamson County Landfill. In addition, the Williamson County landfill has the highest landfill disposal gate rates in the region. Based on the contract with its current MSW contractor, the cost of long-hauling to the Texas Disposal Systems Landfill is more cost effective for the City than direct-hauling to the Williamson County Landfill. By utilizing a transfer station, the City has the flexibility on which disposal and processing facilities to use based on the factors discussed and the overall financial impact to the City. While disposal pricing may change in the future between facilities, having a transfer station provides the City with much greater flexibility on which facilities to use.

4.1.3.2 Current Facility and Capacity

The current transfer station consists of a drop-off area with six roll-off containers for small haulers; and an open-air, direct-dump with one transfer trailer for collection vehicles; and a compactor for overflow and back-up (when the transfer trailer is not available). The current transfer station originally opened in 1984 and went through a series of improvements from 2006 to 2009. A new stormwater pond was recently completed at the site. The City has committed to the TCEQ to make certain improvements to the facility, including the recent stormwater pond and covering any exposed landfill trash storage areas (e.g., roll-offs, transfer trailers, and tipping areas). Before investing in the current facility, the City retained Burns & McDonnell to evaluate two transfer station options, which are described in Section 4.1.3.3.

The current transfer station accepts both landfill trash and recycling loads, but collection vehicles can only unload into one transfer trailer at a time. Each time the transfer station operator needs to switch the transfer trailer from landfill trash to recycling, or vice versa, the transfer station experiences some downtime, which impacts the overall capacity the transfer station is able to accommodate. Based on data received from the transfer station operation, Burns & McDonnell estimated the average hourly capacity of the transfer station to be approximately 50 tons per hour.

Figure 4-4: Existing Transfer Station Aerial View

After analyzing incoming transfer station transactions, Burns & McDonnell estimated that the transfer station was already at or near its hourly capacity during certain peak times of the day. By 2028, Burns & McDonnell projected that the transfer station would be operating at capacity for six of the nine hours the facility is open to the public (8:00 am – 5:00 pm).

The impacts of the transfer station operating at or near its capacity include:

- Collections vehicles must wait longer to unload, impacting collection routes
- Collection operations would have to shift to earlier in the day or later in the day
- Recycling trucks could not be unloaded during peak hours since only one material stream can be managed at a time
- Site becomes more congested, with less space for self-haulers, and more interaction between collection vehicles and self-haulers

4.1.3.3 Transfer Station Evaluation Study

Based on the need to make additional infrastructure investments at the transfer station, the City retained Burns & McDonnell to evaluate two transfer station options:

- Make improvements to the existing transfer station to comply with current TCEQ standards, or
- Build a new transfer station at the same site, adjacent to the current transfer station.

Appendix A includes a copy of the April 24, 2017 City Council presentation that provides additional detail on the evaluation of the two options.

Figure 4-5: Conceptual Rendering of Potential New Transfer Station

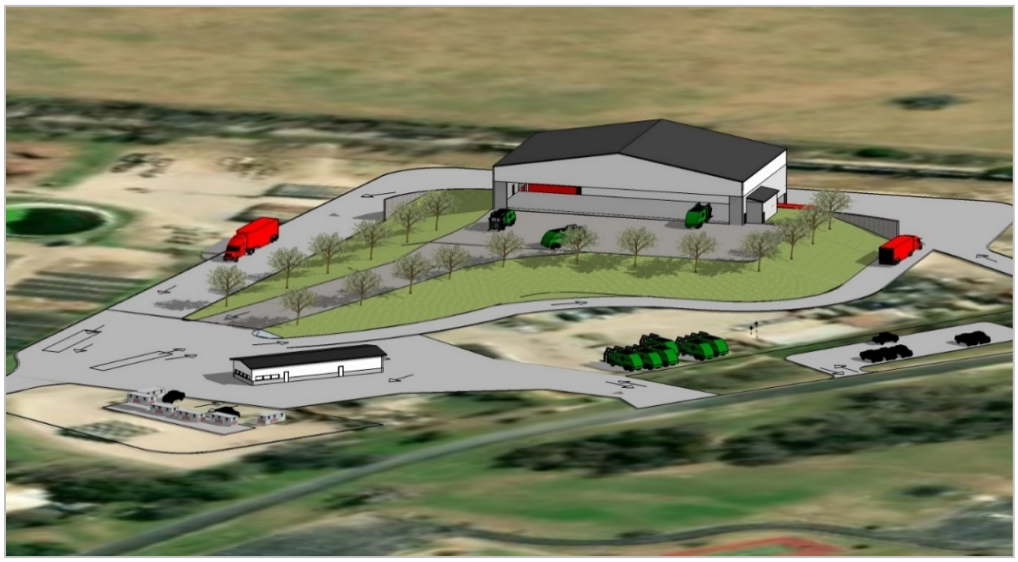


Table 4-3 summarizes the comparison of the options. Beyond the longer-term capacity of a new transfer station, one of the key advantages is that it would allow the City, or its operator, to accept three material streams, landfill trash, recycling, and organics, simultaneously for transportation to the appropriate disposal or processing location. This would allow more future options for the City to manage MSW and increase diversion from the landfill.

Table 4-3: Comparison of Transfer Station Options

Criteria	Improvements to Existing Facility	New Facility
Capacity	8-12 years	30+ years
MSW Streams	One MSW stream at a time	Up to three MSW streams at time
Safety	Self-haul, collection vehicles and transfer equipment operating in close proximity	Better separation of self-haul and collection vehicles
Permitting requirements	No TCEQ permitting required, some local permitting	New TCEQ transfer station registration, additional local permitting
Conceptual level cost estimate	$1.34 - $1.93 million	$5.92 - $8.52 million
Impact to facility operations	Minimal	Less downtime to process multiple material streams
Implementation schedule	6-12 months	24-30 months
Impact to collection operations (after completion)	None	Reduce waiting time to unload

4.1.4 Organics Processing Facilities

Based on the MSW characterization data presented in Table 3-5 of Section 3, the City has significant potential to increase diversion of organics materials, including yard trimmings and food scraps. This section provides an overview of existing organics processing facilities in the region as well as discussion on quantities of organics materials that would be required to consider developing a new composting operation in the local Georgetown area.

4.1.4.1 Organics Processing Facilities Overview

Organics processing regulations vary depending on the types of materials a facility accepts. Generally, facilities that process yard trimmings, vegetative material, clean wood, paper products, and manure for composting and mulching are exempt from TCEQ compost permit, registration and notification requirements. These facilities must follow general composing and air quality requirements but are not required to register with the state. Facilities that process mixed MSW, meats and fish, animal carcasses, dairy, oils, and grease are subject to increased regulations and documentation with TCEQ. These additional requirements can make economical and feasible food scrap processing options challenging for municipalities.

Table 4-4 identifies major organics processing facilities within the Travis and Williamson County areas that accept a combination of yard trimmings and food scraps. Because the state does not actively regulate all organics processing facilities, it is challenging to develop a comprehensive inventory. There may be

additional organics processing operations in the region that do not process as many materials types (e.g. no food scraps) or that may focus on mulching, as compared to composting.

Table 4-4: CAPCOG Organics Processing Facilities Accepting Yard Trimmings and Food Scraps

Site Name	County	Accepted Materials
Micro Dirt	Travis	Septic sludge, food scraps, wood
Organics by Gosh	Travis	Brush, yard trimmings, food scraps (fruit, vegetable, meat), paper products, clean and untreated wood
Texas Organic Products (TDS)	Travis	Brush, yard trimmings, food scraps (fruit, vegetable, meat), paper products, clean and untreated wood

4.1.4.2 Material Quantities for Organics Processing

Presently the City is diverting about 1,500 tons annually of yard trimmings via mulching. In addition, the City diverts approximately 1,400 tons of biosolids annually for composting. Based on strategies discussed throughout this CSWMP, the City is planning to increase the quantities of organics that will be composted. Based on statewide MSW characterization data (as discussed in Section 3.4), the City may currently have approximately 11,000 tons of organic material that is disposed but has the potential to be diverted. This would equate to an approximate potential total of 13,900 tons of organic material available annually for composting. However, implementing programs that will significantly increase the quantities of diverted organics will require multiple years.

Since there are limited numbers of facilities that can process both yard trimmings and food scraps at a composting operation, Burns & McDonnell contacted multiple organics processors to gauge their potential interest in operating a composting facility in the Georgetown area that could serve the needs of the City (including the processing of yard trimmings and food scraps). Based on these discussions, it is expected that there would be a need to process a minimum of approximately 25,000 tons annually in order to be commercially viable, and that increased quantities would further enhance the financial viability of the operation. Since this amount exceeds the current and projected generation quantities from the City, a composting facility would also need to source material from other commercial sources and/or cities.

4.2 Comparison to Benchmark Cities

Four of the six benchmark cities contract with private companies for the disposal of landfill trash and processing of recyclables from both residential and commercial customers. One city provides all services with city resources and once city uses city resources for all refuse services and an open market system for all recycling services. For cities that divert yard trimmings, they also contract with private companies for mulching and composting processing services.

4.3 Current System Findings

Landfill options and capacity. While landfills are a finite resource, the CAPCOG region presently has approximately 29 years of remaining disposal capacity at current disposal rates. Additional capacity may be available in the future if current facilities expand and/or new facilities receive permits. While the Williamson County Landfill is relatively close to the City, as the City continues to grow to the west, hauling distances to this facility will increase. Continuing to use a transfer station will provide flexibility for the City to consider options to utilize landfills that are located further away from the City. This is the City's current practice in sending trash to the TDS Landfill located south of Austin in Creedmoor.

Recycling processing options. The three commercial MRFs in the CAPCOG region have the processing equipment and capacity to meet the City's current and future recycling processing needs. Similar to the landfill discussion above, utilizing the City's transfer station provides flexibility for the City to have the option to utilize any of these MRFs in the future.

Transfer station planning. The City's current transfer station will reach capacity in the next 8-12 years and can only process one material stream at a time. Building a new transfer station at the existing site, will enable the City to have sufficient capacity for more than 30 years and allow processing of up to three materials streams (landfill trash, recycling and organics) simultaneously. Developing a new transfer station will cost approximately $5.92 - $8.52 million and require 24 - 30 months for design, construction and start-up operations.

Organics processing options. There are currently only three composting operations in the CAPCOG region that have the capability to accept both yard trimmings and food scraps. Since these facilities are in central and south Travis County, utilizing a transfer station to access these facilities allows for more efficient collection of these materials. While the City could consider building a new composting facility closer to the Georgetown area, the City alone will not likely have sufficient quantities of organics to make a facility commercially viable. Developing partnerships with other cities and/or commercial operations to source additional organic material could enhance the feasibility of developing a new facility.

4.4 Public-Private Partnership Options

The City will need to rely on a combination of facilities going forward to meet needs for landfilling trash and processing recyclables and organics. This section describes various public-private partnerships that the City can consider and recommends specific partnership options for landfills, transfer stations, MRFs and organics processing facilities.

Public-private partnerships can be an effective model to provide needed infrastructure without the full financial risk falling on either the local government or the private business. Effective public-private partnerships exist when both local governments and the private industry collaborate to share resources, capital investment, risk, and revenue. When considering a public-private partnership, a local government should consider the degree to which it wants to be involved in the operations and capital investment of a facility.

There are advantages and disadvantages to the different types of arrangements and which entity takes ownership of the land, capital investment, and operations. While the processing services agreement is the most common option in Texas (currently utilized by the City for landfilling and recycling and organics processing), public-private partnerships are gaining more appeal as a means to share risk given recent market volatility.

Table 4-5 provides an overview of the different public-private partnership options available to local governments and private businesses.

Table 4-5: Examples of Public-private Partnership Options for Recycling Operations

Responsibility	City-Owned and Operated	City-Owned with Private Operations*	Privately Owned and Operated on City Land*	Processing Services Agreement
Land Ownership	City	City	City	Private
Capital Investment	City	City	Private	Private
Operations	City	Private	Private	Private

*True public-private partnership arrangement

Based on the public-private partnerships described in Table 4-5, the following paragraphs provide recommendations for the City for each facility type:

Landfill and MRF: The City currently utilizes the processing services agreement option for landfilling and processing recyclables. Recognizing that landfills and MRFs are capital intensive facilities that require extensive expertise and that the City generates only a portion of the material quantities needed for a facility to be financially viable, the City should continue to enter into processing services agreements to meet future landfill and recycling processing needs.

Transfer Station: The City has a true public-private partnership for its existing transfer station. For a new transfer station, the City will provide the land and capital investment. At this time, the City is planning to continue partnering with the private sector to operate the facility. Given that the City is not in

the MSW operations business, partnering with the private sector is a viable option. However, the City could consider operating the transfer station in future if needed.

Organics Processing Facilities: As the City provides a broader range of organics-focused collection services, there will be a need to send this material to an organics processing facility that can accept a broad range of materials. Given that the material quantities will initially be relatively low, the City should utilize a processing services agreement for these materials. As the quantity of organics materials diverted increases over time, the City could consider establishing a facility close to the Georgetown area. To incentivize the private sector to partner with the City, the City could offer more of a true public-private partnership by providing the land and/or capital investment. Operations of the facility could be contracted as private companies are typically in a better position to source additional incoming materials and to sell end products (e.g. compost).

4.5 Facilities and Infrastructure Priorities and Future Outlook

Appropriately planning for and developing the City's MSW facilities and infrastructure operations, ownership, and partnerships is critical for successful achievement of the priorities and strategies presented in each subsequent section of the CSWMP. Facilities, infrastructure, and contractual service relationships allow the City to properly handle and process each of the three MSW streams (landfill trash, recycling, and organics) from all sectors of the City.

The City's priorities for MSW facilities and infrastructure are to develop the City's combination of facilities, operational capabilities, and contractual relationships to:

- Provide cost-effective collection and processing services for all MSW types
- Manage increasing amounts of all types of MSW generated in the City

The priorities and strategies presented in Section 4.6 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for the facilities and infrastructure is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

In order to successfully implement the MSW recycling and diversion strategies developed for each of the City's sectors, the City must have sufficient capabilities to handle the current and future amounts

of MSW generated. The City is planning to own and/or contract for operations with facilities that have the capabilities to handle and process both recyclables and organic materials. This includes the construction of a new transfer station that has capabilities to handle a three-stream MSW system. This will allow the City to have flexibility in the future to utilize the transfer station or direct haul materials, depending on the most cost-effective processing options and locations available.

Guiding Principle 2: Services must be convenient for customers and price-competitive.

This City could consider many options as it continues to develop the optimal solutions for handling of each MSW stream. The most critical component of evaluating each option is its financial viability to ensure that changes do result in overly burdensome costs to the City or its MSW customers. The construction of a new transfer station is intended to make collection of each of the three MSW streams more cost effective as the City's growth continues. The capability of the transfer station to handle three MSW streams will allow the City to provide enhanced service options (e.g., organics collection, and greater flexibility in collection, hauling, and processing options moving forward.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

By developing the best combination of facilities, operational capabilities, and contractual relationships for MSW handling, the City will be better able to provide high levels of service in the Downtown area and City parks, thereby increasing aesthetics of the City's public places.

4.6 Strategies and Implementation Plan

Multiple MSW streams and facilities require the City to engage in contractual relationships for various aspects of ownership and/or operations of facilities and material hauling. The City's next MSW services procurement process or contract renewal will be in 2022. Beginning in 2020, and two to three years prior to the end of every subsequent contract cycle, the City should evaluate its current contracting strategy. This includes the types of services offered, whether to City has a single contractor (bundled services) or multiple contractors to provide services (unbundled services), and the types of public-private partnerships the City has. The ongoing evaluation of the City's MSW contracts is presented in further detail in Section 12.0, City-wide Strategies.

STRATEGY 1:	**Develop the City's combination of MSW facilities, operational capabilities, and contractual relationships to best serve the community now and in the future.**
Description:	Appropriately planning for and developing the City's MSW facilities and infrastructure operations, ownership, and partnerships is critical for successful achievement of the priorities and strategies presented in each subsequent section of the CSWMP. Facilities, infrastructure, and contractual service relationships allow the City to properly handle and process each of the three MSW streams (landfill trash, recycling, and organics) from all sectors of the City.
Initial Difficulty:	Very High
Waste Types Targeted:	All
Impact:	Very High
Priority:	Provide cost-effective collection and processing services for all MSW types and sufficiently handle increasing amounts of all types of MSW generated by the City.
Timeline:	Complete new transfer station construction within five years; Additional strategies will be conducted on an ongoing basis.
Measuring Progress/KPI:	The City will continue to review all services and contractual relationships prior to the end of contract terms and upon completion of the new transfer station.

Strategy 1: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Overall			
Through the end of the City's current MSW services contract period (2022) continue to provide all MSW services under a single contract.	Continued costs per current contract	ESD, MSW contractor	Medium
Two to three years prior to the end of the current contract period, begin to evaluate the City's current MSW services contracting strategy and plan for procurement processes as determined necessary. This strategy is discussed in further detail in Section 12.0, City-wide Strategies.	Staff time, potential consultant costs	ESD	High
Landfills			

Strategy 1: Near-term, Years 1-5			
Evaluate feasibility of entering into an Interlocal Agreement with Williamson County for disposal of the City's landfill trash at the County-owned landfill located in Hutto.	Staff time	ESD, Williamson County	Medium
Materials Processing Facilities (MRFs)			
Continue providing single-stream recyclables processing through the utilization of processing services agreements to meet future recycling processing needs as the City continues to grow.	Continued costs per current contract	ESD, MSW contractor	High
Transfer Stations			
Finalize the City's decision on whether to build a new transfer station at the site of the existing transfer station. If the City decides to build a new transfer station, over the next three years, the City should:	Preliminary cost estimate of $5.9-8.5 million	Capital Improvement Projects	High
Year 1 (10-14 month duration): Design new transfer station facility			High
Year 1-2 (6-10 month duration): Conduct necessary permitting activities for TCEQ and local permitting requirements			High
Year 1-2 (6-8 month duration): Construction procurement process			High
Year 2-3 (12-18 month duration): Construct new facility			High
Year 3 (2-4 month duration): Facility commissioning and beginning of operations			High
Organics Processing			
Closely track quantities of organic materials generated within the City as well as the surrounding area to identify potential opportunities there may be to partner with other local cities or commercial entities to source organic materials. Increased quantities of organics materials may increase the viability of various organics processing options.	Staff time	ESD	High

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue evaluating the City's MSW services contracting strategy on an ongoing basis, at least two to three years prior to the end of each contract term. This strategy is discussed in further detail in Section 12.0, City-wide Strategies.	Staff time, potential consultant costs	ESD	High
Continue to evaluate the viability of various organics processing options based on the operation of the new three-stream transfer station and continued monitoring of local organics quantities and interest of other cities and commercial entities in partnering with the City.	Staff time	ESD	High

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue evaluating the City's MSW services contracting strategy on an ongoing basis, at least two to three years prior to the end of each contract term. This strategy is discussed in further detail in Section 12.0, City-wide Strategies.	Staff time, potential consultant costs	ESD	High
Continue to evaluate the viability of various organics processing options based on the operation of the new three-stream transfer station and continued monitoring of local organics quantities and interest of other cities and commercial entities in partnering with the City.	Staff time	ESD	High

5.0 SINGLE-FAMILY

5.1 Single-Family Overview

The services and support the City provides to the single-family sector are particularly important in shaping the City's overall MSW management culture. Most residents' primary experiences with MSW are in their own homes, every day. About 85 percent of the City's population lives in single-family homes. Therefore, the City is able to reach a large portion of its residents through single-family residential services and outreach. These are the channels by which the City can most directly communicate with and effectively shape a positive experience for individuals and families. Currently, the single-family residential sector is comprised of approximately 21,500 single-family households within the City (Tier I) and 3,700 single-family households within the ETJ (Tier II). With an average of 2.38 residents per single-family household, the City serves approximately 60,000 total residents under the City's contract for single-family residential MSW services, approximately 51,000 of which live within the City limits and 9,000 of which live within the ETJ.

5.1.1 Current System

Core MSW services. The City's contractor exclusively provides single-family MSW services to Tier I customers, whereas City services are optional for Tier II customers. Core residential services include curbside collection of landfill trash, single-stream recyclables, bulky items, and yard trimmings. Residents with a City utility account and who receive MSW services through the City's contractor are also eligible for HHW disposal service in the form of a drop-off voucher program in partnership with Williamson County. The HHW voucher program is further discussed in Section 11.0. Table 5-1 provides additional details regarding current single-family residential MSW services provided to Tier I and Tier II residential customers.

Additional services. In addition to the core residential services presented in Table 5-1, residents have access to other services, including:

- Self-haul of MSW materials to the City's Collection Station (co-located with the Transfer Station) for a fee, dependent on type and quantity of material. Residential recycling of one cubic yard or less, Christmas trees, and holiday lights may be dropped off at no charge.
- Bag-in-bag recycling (plastic bags can be recycled as a part of the core recycling program).
- A medication collection kiosk at the Public Safety Operations and Training Center.

Table 5-1: Current Single-Family MSW Services, Tier I and Tier II Customers[1]

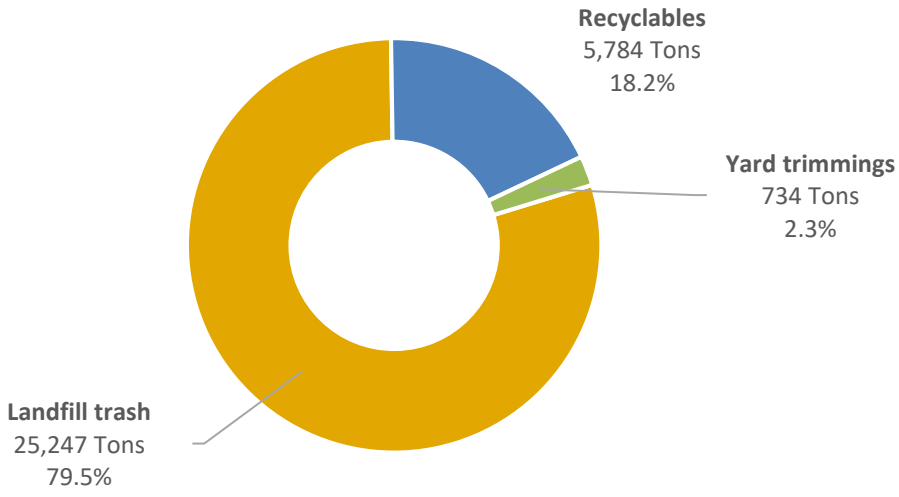
	Landfill Trash	Recyclables	Bulky Items[2]	Yard Trimmings[1]
Base rate and Fees	Monthly rate: $18.80 (in-City), $26.40 (ETJ) $9.00 per additional cart; $5.00 per tag for extra bags	Service included in base rate; $9.00 per additional cart	Service included in base rate; $28.00 per cubic yard for extra material/additional collections	Service included in base rate; $5.00 per tag for extra bags/ bundles/containers
Collection Frequency	Weekly	Every other week	Twice per year upon request	Monthly
Material Types	Household landfill trash, including materials that are not recyclable or organic	Single-stream: metal, plastic and glass food, beverage, and other containers; paper, cardboard, cartons, film plastic	Furniture, mattresses, toilets, large appliances	Branches, leaves, grass, other yard trimmings
Collection Container/ Method	95-gallon standard cart, 65- or 35-gallon carts upon request	95-gallon standard cart, 65- or 35-gallon carts upon request	Items set out at curb, no container	Compostable paper bags, bundles, marked personal containers
Setout Limits/ Requirements	Out-of-cart setouts collected only with purchased tag	Contained (boxed) out-of-cart setouts accepted	Limit 3 cubic yards per collection; additional fees for extra material	Limit 20 bags, bundles, or containers per collection; additional items collected with purchased tag
Disposal or Diversion Method	Landfilled	Processed at MRF and recovered materials are marketed	Landfilled	Mulched
Additional Information			Not intended for brush and yard trimmings	Mulched material is available free to all City customers

[1] The City's HHW voucher program was terminated in December 2018 by its former contractor.

[2] Bulky item and yard trimmings collection services are provided only to Tier I residential customers.

Recycling insight. The single-family residential sector generates approximately 48.6 percent of the City's total MSW. In FY 2017, the single-family residential sector disposed of approximately 31,800 tons of MSW via residential services. Figure 5-1 presents the City's tonnage and percentage of single-family residential MSW by type.

Figure 5-1: Single-family Residential MSW Overview



Single-stream recyclables and yard trimmings contribute to the sector's overall recycling rate. This accounts for all MSW that is diverted from landfill disposal through residential services. The City's current overall single-family recycling rate, including single-stream recyclables and yard trimmings, is 20.5 percent (18.2 percent for single-stream recyclables; 2.3 percent for yard trimmings).

The number of pounds of recyclable material collected per household per year is often used as a performance metric for curbside recycling programs. Table 5-2 presents the City's current recycling quantities by household, by material type, for the single-family residential sector.

Table 5-2: Current Single-family Household Recycling Quantities

Recyclable Material	Annual Pounds per Household
Single-stream recyclables	458
Yard trimmings	58
Total Recycling:	**516**

Based on a study conducted in 2016 that surveyed 465 cities across the country, the national average for the amount of single-stream recyclables collected curbside is 357 pounds per household per year.[1] However, state-level averages varied widely, and four states had average per-household annual rates above 500 pounds. At 458 pounds per household per year, the City's residential curbside single-stream recycling program generates quantities of recyclables above the national average. Based on available data, the City may be able to increase its single-stream recycling rate through strategies presented in Section 5.3.

Yard trimmings collected through the City's curbside yard trimming collection service is converted to mulch at the City's Collection Station and either made available to City customers for free or hauled to the contractor's organics processing facility. While quantities of yard trimmings material can vary significantly based on seasonal variations, abundance of vegetation, and from city to city, the City's current yard trimmings diversion quantities are relatively low, at an average of 58 pounds per household per year, or 2.3 percent of total MSW generation. Cities with well-established yard trimmings (including brush) diversion programs, such as the City of Austin, may see as much as 10 to 20 percent of their residential MSW diversion quantities achieved through yard trimmings diversion. Based on this data and conversations with City staff, the single-family residential sector has potential to significantly increase yard trimmings diversion quantities.

Single-stream recycling participation. In June 2018, the City and its MSW services contractor conducted a study to establish the current household participation rate for the curbside single-stream recycling program. Along the collection routes observed, an average of 70.3 percent of single-family households set out their recycling carts for collection on their service day. The results of this study were used to inform development of the priority for achieving a 90 percent household participation rate for curbside recycling service and will be used as the baseline against which to measure future progress. Priorities established for the single-family residential sector are further discussed in Section 5.3.

5.1.2 Comparison to Benchmark Cities

This section provides an overview of MSW services provided for the single-family sector for the benchmark cities identified by the City, which include Cedar Park, Frisco, Kyle, New Braunfels, Richardson, and Round Rock. Table 5-3 provides a summary of the single-family services each benchmark city provides with monthly base rates and the frequency of collection for each service.

[1] The Recycling Partnership. January 31, 2017. "The 2016 State of Curbside Report." Available online: https://recyclingpartnership.org/state-of-curbside-report/

Generally, the City provides comparable service types as each of the benchmark cities. The City's monthly residential base service rate falls in the middle of the six cities. Four of the six cities' residential monthly base rates fall within ten percent of the City's current rate of $18.69 (for in-City customers). Frisco and New Braunfels have rates approximately 30 percent lower than Georgetown; however, recycling services are not included in New Braunfels' base rate and residents must pay an additional fee to receive recycling service.

All except one benchmark city provide weekly landfill trash collection. Three benchmark cities provide weekly curbside single-stream recycling collection and three provide this service every other week, as Georgetown does. Service frequencies provided by the benchmark cities for bulky item collection and yard trimmings or brush collection are more variable than landfill trash and recycling services.

All except one benchmark city provides an HHW collection service to residential customers in some capacity, though service details vary. HHW services are addressed in Section 11.0. A detailed matrix providing further details regarding each benchmark city's current services is provided in Appendix B.

Table 5-3: Single-Family Residential Services Benchmark Comparisons

	Georgetown	Cedar Park	Frisco	Kyle	New Braunfels	Richardson	Round Rock
Base Rate[1]	$18.80	$18.69	$13.50	$20.42	$13.40	$19.40	$18.96
Landfill Trash							
Provided with base rate	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Collection frequency	Weekly	Weekly	Weekly	Weekly	Weekly	Twice per week	Weekly
Recyclables							
Provided with base rate	Yes	Yes	Yes	Yes	No; $4.26 per month	Yes	Yes
Collection frequency	Every other week	Every other week	Weekly	Every other week	Weekly	Weekly	Every other week
Bulky Items							
Provided with base rate	Yes	Yes	Yes	Yes	No; $25.00 per collection	Yes	Yes
Collection frequency	Twice per year	Weekly	Monthly	Once per year	Unlimited, upon request	Weekly	Once per year[2]
Yard Trimmings							
Provided with base rate	Yes	Not provided	Yes	Yes	Yes	Yes (with bulky items)	No; $25.00 per collection
Collection frequency	Monthly	N/A	Weekly	Every other week	Weekly	Weekly	Weekly

[1] Base rates do not include sales tax paid by customers. Georgetown's rate of $18.80 reflects the rate paid by in-City customers. Out-of-City customers pay $26.40 per month.

[2] Round Rock provides one bulky item collection per year included in services provided with the base monthly rate. Residents may receive additional collection upon request for an additional fee of $25.00 per collection.

5.1.3 Current System Findings

Robust service offerings. The City offers a robust set of residential MSW services and has an effective delivery system in place. The City values continuing to provide comprehensive, reliable services in ways that are cost effective for both the City and its residents as the City continues to grow.

Effective single-stream residential recycling program. With an average of 458 pounds per household recycled annually, the City has an effective single-stream recycling program that is higher than the national average.

Low yard trimmings diversion rates. The City offers separate monthly collection of yard trimmings. However, this program is underutilized, and yard trimmings diversion rates are low when compared to other cities with well-established programs. Based on this data and conversations with City staff, a focus on yard trimmings diversion offers an opportunity for the City to significantly increase its overall residential diversion rate.

Variable rate structure. Some cities have implemented a variable rate structure, under which residents pay monthly rates based on the size of their landfill trash cart, as a method to incentivize residents to generate less landfill trash and recycle and compost more. With options for residents to choose a 35, 65, or 95-gallon landfill trash cart, the City's residential collection system is already set up in a way that variable rates could be implemented. Cities in Texas that have variable residential rate structures include Austin, Denton, Fort Worth, and San Antonio. Potential advantages and challenges of implementing a variable rate structure are provided in Table 5-4.

Table 5-4: Potential Advantages and Challenges of a Variable Rate Structure

Advantages	Challenges
• Typically increases the volume of recyclables captured for cities that have wider rate gaps between cart sizes. • There is a direct link between rates and the amount of service provided, similar to utilities like water, electricity, and gas	• City may incur costs to purchase new carts • Residents with more landfill trash would pay more; City could face opposition • Potential increased contamination of recycling and organic streams

5.2 Sector Priorities and Future Outlook

According to data released by the U.S. Census Bureau in early 2018, of cities with a population greater than 50,000, the City of Georgetown is the sixth fastest growing City in the country.[2] The City estimates that the number of residents receiving MSW from the City and its contractor (within the City and the ETJ) is projected to double from approximately 60,000 to 120,000 over the course of the 20-year planning period.

The City is actively working to develop a consistent, comprehensive MSW management system throughout the City, across all sectors. This is a commitment to providing a robust set of convenient and affordable services to residents. Engagement of single-family residents will be key in shaping the overall success of the City's MSW management program. Customer habits and interactions with MSW services begin at home and are carried with them though other areas of life, whether that be when enjoying time with friends and family in the City's numerous parks, attending special events in Downtown, or while at their place of work.

The priorities and strategies presented in Section 5.3 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for the single-family residential sector is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

The strategies and actions developed for the single-family residential sector are designed to implement and services and programs to shift MSW management behaviors towards methods other than traditional landfill disposal. As presented in the tables below, the City plans to implement new programs and provide education to residents to encourage increased MSW diversion. The City also plans to evaluate additional innovative service options in the mid- and long-term.

[2] United States Census Bureau. May 24, 2018. "Census Bureau Reveals Fastest-Growing Large Cities." Available online: https://www.census.gov/newsroom/press-releases/2018/estimates-cities.html

Guiding Principle 2: Services must be convenient for customers and price-competitive.

The evaluation of any potential new services or changes to existing services will include a cost of service analysis to ensure that changes do result in overly burdensome costs to single-family residents or the City.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

Strategies for the single-family residential sector have an indirect, but important applicability to the guiding principle to enhance the aesthetics of Downtown and City parks. Based on the Citizen Survey conducted in 2016, 44 percent of City residents visit Downtown and 26 percent visit City parks more than 12 times per year. Engaging residents in consistently and effectively participating in recycling and waste diversion activities at home will make it more likely that they will carry these practices with them into the public sphere, including visits to the City's public spaces.

5.3 Strategies and Implementation Plan

The tables below present the priorities and strategies developed for the single-family residential sector. In addition to these sector-specific priorities and strategies, there are various strategies the City plans to employ which are applicable to multiple sectors addressed within the CSWMP. The City-wide strategies further addressed in Section 12.0 that are applicable to the single-family residential sector include:

- Ongoing MSW contract evaluations
- Waste characterization audits and baseline establishment
- Standardized MSW collection containers and signage

STRATEGY 1:	**Continue to increase participation in the City's residential curbside recycling program.**
Description:	The City already has an effective system in place for its residential curbside recycling program. Leveraging this system and encouraging increased participation will continue to increase quantities of recyclables recovered, thereby reducing the quantities of MSW that are landfilled.
Initial Difficulty:	Moderate
Waste Types Targeted:	Single-stream recyclables
Impact:	High
Priorities:	Achieve a 90 percent participation rate for the City's residential curbside single-stream recycling program.
Timeline:	Achieve by 2025
Measuring Progress/KPI:	Participation rate will be measured at least annually based on annual in-field surveys or tracked through use of technology, such as RFID chips. Rates will be compared to previous annual rates to determine progress and evaluate the need for program or strategy revisions.

Strategy 1: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct an MSW characterization audit to gain a better understanding of the composition of the single-family residential MSW stream allow for detailed analysis of the MSW stream and provide a baseline against which to measure future progress. Refer to Section 12.0, City-wide Strategies for further details.	Staff time, potential consultant costs	ESD, MSW contractor	High
Based on baseline waste characterization and diversion data, including assessment of contamination levels in single-stream recycling, the City will develop measurable goals for ensuring acceptable levels of contamination found in residential single-stream recyclables. If needed, development of goals will be paired with "Recycle Right" education initiatives to work toward contamination reduction goals.	ESD	ESD, Communications Department	High
Develop targeted education and outreach efforts for single-stream recyclables.	Staff time, little to no associated additional costs	ESD, Communications Department	High
Evaluate the use of RFID technology in recycling carts.	Staff time, potential consultant costs, potential for inclusion in next RFP process	ESD, MSW contractor	Low
Evaluate the implementation of a variable residential rate structure, based on landfill trash cart capacities. This should include evaluations of customer willingness to pay, cost of transition, and potential increases to recyclable quantities that may be recovered.	Staff time, potential consultant costs, potential for inclusion in next RFP process	ESD, Utility Billing, Finance, contractor	Medium

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct in-depth participation study which includes evaluation of cart contents for proper participation or contamination. Compare participation rates to the study conducted in 2018 to measure progress.	Staff time, potential consultant costs	ESD, MSW contractor	Medium
Conduct an MSW characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	High
Continue education and outreach activities regarding the City's recycling priorities and proper participation, with an emphasis on targeting new residents.	Staff time, little to no associated additional costs	ESD, Communications Department	High
Develop annual public recycling education events, such as a film at the library or interactive presentation for adults and children.	Staff time, minimal cost for additional presentation materials	ESD, Library, Communications Department, residents	Low

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to provide education and outreach, based on needs identified though continued program participation and proper recycling analysis.	Staff time, little to no associated additional costs	ESD, Communications Department	High

STRATEGY 2:	Encourage individual and community engagement.
Description:	Individual and community engagement is a key component of developing an MSW management culture focused less on landfill trash alone and more on following the waste management hierarchy. There are several supportive programs or tools the City could implement to increase engagement in the residential sector. Programs, resources and outreach should be available to Tier I and Tier II residential customers.
Initial Difficulty:	Low
Waste Types Targeted:	Single-stream recyclables, reusable items and materials, bulky items
Impact:	Moderate to high
Priorities:	Reach 80 percent of the community annually with at least one message.
Timeline:	Achieve by 2020 and on an ongoing basis.
Measuring Progress/KPI:	Progress should be measured based on the number of individuals participating in community engagement programs as well as the visibility of such programs within the community. This may be measured by tracking participation where practical, and including related questions on periodic Citizen Surveys administered to residents

Strategy 2: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Develop marketing and outreach campaigns to engage community members and provide education about the importance of practicing responsible MSW management and making decisions based on the waste management hierarchy and reducing landfill disposal (Guiding Principles 1 and 4). This includes encouraging residents to reuse items and materials, buy recycled and recyclable products, donate items, and reduce their overall material consumption. It also includes education and outreach for each of the programs discussed below for Strategy 2.	Staff time, little to no associated additional costs	ESD, residents	High
Establish a Keep Georgetown Beautiful through the Keep Texas Beautiful Program.	Staff time	ESD	High

Strategy 2: Near-term, Years 1-5			
Develop a variety of program proposals to educate, incentivize and encourage residents to keep the City clean. Program examples may include a "refuse a straw" campaign or a "most beautiful yard in Georgetown" initiative.	Staff time, little to no associated additional costs	ESD, residents	Medium
Complete a cost and benefits analysis for each proposed program and make recommendations for implementation priority.	Staff time, little to no associated additional costs	ESD	High
Apply for grants to off-set any cost(s) associated with program implementation and administration.	Staff time, little to no associated additional costs	ESD	Medium
Develop community programs for avenues for residents to reduce, reuse, donate, recycle, or by some other means divert material from landfill disposal. Such programs may include repair clinics, lunch and learns, clothing swaps, and an upcycle art show.	Staff time, some minimal costs for supplies	ESD, Library, Facilities, residents	Medium
For each program implemented, develop a method to report diversion quantities, successes, and challenges. Recommendations for continued or expanded programs should be based on review of these reports.	Staff time, little to no associated additional costs	ESD	Medium
Establish a community Block Leader/Volunteer Program for engaged residents to partner with the City to both learn about waste reduction and diversion and serve as communicators and educators to their communities, neighborhoods, friends, and family for approved messages.	Staff time, little to no associated additional costs	ESD, residents	Medium
Develop framework for the program, including recruitment, acceptance criteria, meeting frequency and schedule, and a training agenda.	Staff time, little to no associated additional costs	ESD	Medium
Implement program tracking for criteria including participation hours, successes, and challenges.	Staff time, little to no associated additional costs	ESD	Medium
Conduct a program review and evaluation annually to develop program recommendations for the following year cycle, and to highlight program successes and publicize within the community.	Staff time, little to no associated additional costs	ESD	High

Strategy 2: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Review program data and reports from previous years and develop program recommendations for program changes or continuation based on this analysis.	Staff time, any additional costs to be determined upon review	ESD	High

Strategy 2: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Review program data and reports from previous years and develop program recommendations for program changes or continuation based on this analysis.	Staff time, any additional costs to be determined upon review	ESD	High

STRATEGY 3:	**Prevent organics from being landfilled.**
Description:	Based on state-wide MSW characterization data (refer to Section 3.4.1) and the current quantities of material diverted through the curbside yard trimmings program, the City likely has significant potential to increase waste diversion by preventing organic material (yard trimmings and food scraps) from being disposed in the landfill. The City already has a framework for provision of curbside residential services and a curbside yard trimmings collection program in place, both of which should be leveraged and modified as determined, based on consideration of the activities below.
Initial Difficulty:	Moderate to high
Waste Types Targeted:	Organics, including yard trimmings and food scraps
Impact:	High
Priorities:	Increase the participation rate for the City's residential yard trimmings program by five percent per year.
Timeline:	Achieve fiver percent increase by 2025, and each subsequent year.

STRATEGY 3:	Prevent organics from being landfilled.
Measuring Progress/KPI:	Progress will be measured through annual participation rate studies for the residential yard trimmings collection service. Further progress measurement will be possible through periodic MSW characterization audits as presented under Strategy 1.

Strategy 3: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Evaluate, recommend, and implement expanded organics diversion program options and develop a cost and benefit analysis for each, including:	Staff time, potential consultant costs	ESD, MSW contractor	High
Increased collection frequency for residential curbside yard trimmings	Capital and operational costs, staff time, potential consultant costs	ESD, MSW contractor	Medium
Implementation of cart-based residential curbside organics collection, to include yard trimmings and food scraps	Capital and operational costs, staff time, potential consultant costs	ESD, MSW contractor	Low
Development of a residential drop-off composting program	Capital and operational costs, staff time, potential consultant costs	ESD, MSW contractor	Medium
Develop targeted education and outreach efforts for recommended organics diversion programs.	Staff time	ESD, Communications Department	Medium
Conduct annual participation studies, measuring customer participation in the curbside yard trimmings program. Compare participation rates to each subsequent year to measure progress toward the priority of an annual five percent participation rate increase.	Staff time, potential consultant costs	ESD, MSW contractor	High
Monitor market conditions including local organics processing options and residential demand for food scraps collection. These should be used as factors in determining if, when, and how provision of food scraps collection may be financially feasible for the City.	Staff time, potential consultant costs	ESD	High

Strategy 3: Near-term, Years 1-5			
If an organics collection program is implemented to include food scraps, re-define organics to include food scraps (vegetables, meat and dairy), paper products (paper plates, paper towels, pizza boxes) and vegetation (yard trimmings, leaves, branches, floral bouquets) and any other items created from plant or animal resources, in addition to yard trimmings	Minimal staff time	ESD	Low
Develop and support the use of community resources to reduce or divert organics material from landfill disposal. Program considerations could include community gardens, providing composting at community gardens, food forests, waste reduction/diversion neighborhood competitions, and wildlife habitat preservation.	Staff time, potential material costs	ESD, other City departments such as Parks and Recreation	High
Conduct annual program reviews, highlighting successes and challenges and make recommendations for program continuation, expansion, or removal.	Staff time	ESD	High

Strategy 3: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for any approved new or expanded programs implemented in Years 1-5. Make recommendations for each program's continuation, adaption, or removal.	Staff time, any additional costs to be determined upon review	ESD	High
Continue to assess market and technology developments for innovative organics diversion programs and make recommendations for new or additional programs as appropriate.	Staff time, any additional costs to be determined upon market assessments	ESD	Medium

Strategy 3: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for any approved new or expanded programs implemented in Years 6-10. Make recommendations for each program's continuation, adaption, or removal.	Staff time, any additional costs to be determined upon review	ESD	High
Continue to assess market and technology developments for innovative organics diversion programs and make recommendations for new or additional programs as appropriate.	Staff time, any additional costs to be determined upon market assessments	ESD	Medium

STRATEGY 4:	**Ensure the optimal suite of services is provided to the maximum number of residents and that all residents regularly receive pertinent and consistent information.**
Description:	These activities apply to the single-family residential sector as a whole and to all services provided for these residents. They are targeted at ensuring the optimal suite of services continues to be provided and that all residents are provided the support to properly participate in programs and services on a continual basis.
Initial Difficulty:	Moderate
Waste Types Targeted:	All
Impact:	Moderate to high
Priorities:	Achieve at least 85 percent customer satisfaction for all MSW collection services provided to single-family residents.
Timeline:	Achieve by 2025 and on an ongoing basis.
Measuring Progress/KPI:	Progress will be measured through future Citizen Surveys as well as periodic MSW characterization audits and program participation studies.

Strategy 4: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Two to three years prior to the end of the City's current MSW services contract term and each subsequent term, the City should begin to review the terms of the contract and evaluate whether any contractual changes are necessary. This tactic applies to all of the sectors addressed in this CSWMP and is described in further detail in Section 12.0, City-wide Strategies.	Staff time, potential consultant costs	ESD, MSW contractor	High
After standard container types and colors are determined (refer to Section 12.0, City-wide Strategies for detailed description), replace residential carts, if needed, to be consistent with the standardized cart system that is to be developed for implementation across all sectors. During the next contract renewal, re-negotiation or procurement process, include request for costs and transition timeline.	Staff time, potential cost of replacement containers is to be evaluated further	ESD, MSW contractor	High
Continue to develop strong education and outreach channels that are used on a regular basis for residential communications for all programs and initiatives. This should include channels such as social media, City's website, mailed information, and collaboration with other City departments, such as the Library, that may have strong communication channels and networks in place.	Staff time, minimal material costs	ESD, Communications Department	High
Develop a regular schedule for information distribution, such as social media posts, to residents and for ensuring all posted information is up to date, such as guidelines on the City website. The objective is to continuously encourage residential participation in all services and programs by maintaining visibility.	Staff time	ESD, Communications Department	High
Develop simple, standardized, graphics-based guidance for residential customers. This will be particularly important to communicate program or service changes. Evaluate the cost of affixing "what material goes where" signage to residential carts. Refer to Section 12.0 City-wide Strategies for detailed description.	Staff time, material costs are to be evaluated	ESD, MSW contractor	High

Strategy 4: Near-term, Years 1-5			
Provide avenues for Tier II residents to reduce, reuse, donate, recycle or otherwise divert material from landfill disposal.	Potential increased contract costs if Tier II services are expanded, staff time	ESD, MSW contractor, Communications Department	High
Include Tier II residents in mandatory residential services in the City's next contract renewal, re-negotiation, or procurement process. A cost differential between in-City and ETJ residents may be evaluated as necessary.	Potential increased contract costs if Tier II services are expanded	ESD, MSW contractor	Medium
Include Tier II residents in all single-family residential education, outreach, and marketing campaigns.	Staff time, minimal material costs	ESD, Communications Department	Medium
In future Citizen Surveys conducted by the City, request residential customer feedback regarding satisfaction with MSW services and levels of education provided by the City.	Staff time	ESD, Communications Department, residents	High

Strategy 4: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Evaluate suite of core residential services on an ongoing basis as a key part of ongoing contract evaluations. Refer to Section 12.0, City-wide Strategies for detailed description). Evaluate whether current services continue to meet the needs of residential customers or whether different or additional services should be procured.	Staff time, potential consultant costs	ESD, MSW contractor	High

Strategy 4: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Evaluate suite of core residential services on an ongoing basis as a key part of ongoing contract evaluations. Refer to Section 12.0, City-wide Strategies for detailed description). Evaluate whether current services continue to meet the needs of residential customers or whether different or additional services should be procured.	Staff time, potential consultant costs	ESD, MSW contractor	High

6.0 MULTIFAMILY

6.1 Multifamily Overview

For the purposes of this CSWMP, multifamily refers to residential properties within the City having greater than four individual housing units as well as assisted living and long-term residential care facilities. As in the commercial sector, the City's contractor provides exclusive MSW services for multifamily properties within the City limits while properties in the ETJ are serviced via an open market system. This section presents an overview of the current MSW services provided to the multifamily sector, sector-specific priorities, and an evaluation of potential strategies.

6.1.1 Current System

MSW services. From an MSW services perspective, the multifamily sector is distinct from the single-family and commercial sectors, though it shares characteristics with both. Generally, most multifamily properties are serviced with front load dumpsters, which can provide landfill trash and recyclables collection services. Some multifamily properties in the City choose to provide residents with at-your-door valet service in addition to on-site dumpster access. This is a growing trend both within the City and for the broader multifamily sector across the country. Multifamily properties may choose to receive roll-off service as well. Residents living in multifamily buildings are eligible to participate in the City's HHW voucher program along with single-family residents. Other single-family residential services, including bulky item collection and yard trimmings collection are not provided to residents living in multifamily properties.

Multifamily compactor enclosure

Multifamily properties are subject to the commercial services rate structure. Property managers or owners are billed by the City for MSW services, and in turn choose how to charge residents for these services and any additional services (e.g., valet service). The City's commercial MSW services rates and rate structure are discussed in Section 7.0.

Recycling insight. While there are currently no requirements for the provision of recycling services by multifamily properties, some properties choose to offer recycling collection services. Based on available data, fewer than one third of the City's multifamily properties provide recyclables collection in addition to

landfill trash collection. Further, most multifamily properties that provide recycling in addition to landfill trash collection have a significantly lower weekly recycling capacity than landfill trash capacity. This leaves a significant portion of the multifamily population that must either dispose of recyclables with landfill trash or find recycling options on their own. Residents have the option to self-haul recyclables to the recycling drop-off facility located at the City's Transfer Station; however, service ease and convenience are important factors that impact participation in any program.

Because multifamily material is co-collected with commercial material by the City's contractor, specific landfill trash and recyclables tonnage data for the multifamily sector is limited and the actual multifamily recycling quantities are unavailable.

6.1.2 Comparison to Benchmark Cities

This section provides an overview of MSW services provided for the multifamily sector for the benchmark cities identified by the City, which include Cedar Park, Frisco, Kyle, New Braunfels, Richardson, and Round Rock.

Like Georgetown, each of the benchmark cities provides landfill trash and recycling collection services to multifamily properties and residents in the same way they provide commercial services. Except for New Braunfels, multifamily properties are subject to the same MSW services rate structure as commercial customers. In New Braunfels, most multifamily residents pay the same monthly base rate as single-family residents directly to the city. Section 7.0 Commercial and Institutional provides further information regarding commercial rates and services.

City's typically do not provide bulky waste or organics collection services for multifamily customers. If a multifamily property chooses to provide these services their residents, they would contract directly with the service provider of their choice authorized to operate with their city.

Most of the benchmark cities reported having similar difficulties to Georgetown for multifamily recycling participation. They reported that many multifamily residents have inquired about or requested to be provided with recycling services. The primary issues noted are that multifamily properties are not required to provide recycling services in most cities and a general lack of space for recycling containers at multifamily properties. Frisco is the only benchmark city that has an ordinance requiring multifamily properties to provide recycling collection to residents.

A detailed matrix providing further details regarding each benchmark city's current services is provided in Appendix B.

6.1.3 Current System Findings

Nature of multifamily services. The multifamily sector is similar to the commercial sector in terms of billing and provision of services; however, service needs and MSW generation of individual multifamily households are more similar to the single-family sector with the exception of yard trimmings and bulky waste. Yard trimmings are not generated by individual multifamily households but may be generated through property landscaping. Generation rates of bulky waste by multifamily households are unknown but are likely generated at lower rates than for single-family households.

Recycling participation and rates. Currently, a relatively low percentage of multifamily properties provide on-site recycling access to multifamily residents. Therefore, it is likely that there is a significant potential for increasing recycling rates for multifamily households. Specific data for multifamily single-stream recycling rates is not available because material is collected with the same equipment and services as commercial material.

Property owner engagement. Multifamily property owners and managers are not generally interested in providing recycling services to residents. Some may offer recycling because of both resident demand and corporate sustainability initiatives. Multifamily properties may be generally be interested in collaborating with and receiving support from the City to provide MSW services in a cost-effective and convenient manner for residents.

Multifamily resident motivation. Convenient access and sufficient capacity are the primary determining factors in whether multifamily residents participate in a recycling program. While a property may have a recycling dumpster, if it is not easily accessible or if containers are regularly overflowing, residents may still dispose of recyclables in landfill trash containers.

6.2 Sector Priorities and Future Outlook

The City estimates that approximately 15 percent (about 9,000 residents) of its population within City limits currently lives in multifamily housing units. At an average of 1.8 people per multifamily household, the City's total multifamily household estimate is about 5,000. The City expects that the proportion of multifamily residents will increase over the planning period, estimating that approximately

20 percent of the total population will live in multifamily housing by 2040. For planning purposes, the multifamily portion of the City's population was projected to grow at a fixed annual rate, from 15 percent in 2017 to 20 percent in 2040.

The priorities and strategies presented in Section 6.3 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for the multi-family residential sector is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

The strategies and actions developed for the multi-family residential sector are designed to implement services and programs to shift MSW management behaviors towards methods other than traditional landfill disposal. The City recognizes the need to increase availability of such services and programs for multifamily residents, as reflected in Strategy 1 below. As presented in the following tables, the City plans to implement programs and provide education to residents to encourage increased MSW diversion within the multifamily sector. The City also plans to evaluate additional innovative service options in the mid- and long-term.

Guiding Principle 2: Services must be convenient for customers and price-competitive.

The City recognizes that there is a lack of convenient recycling services with sufficient capacity for multifamily residents and has developed strategies to target this issue. The evaluation of potential new services or changes to existing services will include a cost of service analysis to ensure that changes do result in overly burdensome costs to residents, property owners and managers, or the City.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

As for the single-family sector, strategies for the multifamily residential sector have an indirect, but important applicability to the guiding principle to enhance the aesthetics of Downtown and City parks, though to a lesser extent because a much smaller portion of the population lives in multifamily households. Engaging residents in consistently and effectively participating in recycling and waste diversion activities at home will make it more likely that they will carry these practices with them into the public sphere, including visits to the City's public spaces.

6.3 Strategies and Implementation Plan

The tables below present the priorities and strategies developed for the multifamily residential sector. In addition to these sector-specific priorities and strategies, there are various strategies the City plans to employ which are applicable to multiple sectors addressed within the CSWMP. The City-wide strategies further addressed in Section 12.0 that are applicable to the single-family residential sector include:

- Ongoing MSW contract evaluations
- Waste characterization audits and baseline establishment
- Standardized MSW collection containers and signage
- MSW infrastructure planning

STRATEGY 1:	**Ensure multifamily residents have access to equal recycling, diversion, and disposal services as other Georgetown residents.**
Description:	The City has an established system in place to provide landfill trash and recycling services to multifamily residents. However, multifamily residents do not receive the same capacity of service as single-family residents and do not receive all of the same types of service. The activities below are designed to ensure multifamily residents receive comparable services and to encourage participation in the multifamily recycling program, thereby reducing the quantities of materials that are disposed in the landfill.
Initial Difficulty:	Low to high
Waste Types Targeted:	Landfill trash, single-stream recyclables, bulky waste
Impact:	High to very high
Priorities:	Make progress toward ensuring multifamily residents have the same residential services as single-family residents and duplexes.
Timeline:	Achieve by measuring on an ongoing basis. Specific goals will be developed after baseline is established.
Measuring Progress/KPI:	Methods will be developed to readily track whether multifamily properties provide any minimum service standards (to be established in Years 1-5), including recycling participation and per-unit capacities.

Strategy 1: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct an MSW characterization audit to gain a better understanding of the composition of the multifamily MSW stream to allow for detailed analyses and to provide a baseline against which to measure future progress for increases in MSW diversion.	Staff time, potential consultant costs	ESD, MSW contractor	High
Establish a method for identifying multifamily complexes in the City's billing system, separately from commercial customers. This will allow for targeted data analysis as well as outreach for multifamily residents and properties.	Staff time	ESD, Utility Billing	High
After a method is established for identifying multifamily properties, identify which facilities offer recycling services and the per-unit capacity of each property.	Staff time	ESD, MSW contractor	High
Evaluate the need to provide periodic bulky waste collection at multifamily properties. If it is determined there is a need, include multifamily bulky waste services into the City's next contract renewal, re-negotiation, or procurement process.	Staff time	ESD, MSW contractor, multifamily property owners	High
Develop policies and ordinances that either encourage or compel multifamily properties to offer diversion services to residents. This includes developing minimum standards for recycling services at multifamily properties, including sufficient capacity per unit, access to service, and bulky collections service.	Staff time, potential consultant costs	ESD, City Council	High
Develop policies and ordinances that establish minimum recycling standards for multifamily properties, including requirement for provision of services and a capacity threshold for residents. Requirements should ensure that multifamily residents have access to the same level of landfill trash and single-stream recycling services as single-family residents.	Staff time	ESD, City Council	High

Strategy 1: Near-term, Years 1-5			
Develop methods by which to verify that multifamily properties meet the established minimum standards for landfill trash and recycling service provision	Staff time	ESD, MSW contractor	High
Develop a KPI/PMP to track recycling participation, generation rates, and per-unit capacities for the multifamily sector.	Staff time	ESD, MSW contractor	High
Develop educational information and trainings for the multifamily sector about all services provided. Separate materials will be designed specifically to educate property owners and managers and other will be designed for property owners and managers to easily distribute to their residents.	Staff time, some material costs	ESD, Communications Department	High
Topics for educational materials will include ensuring owners and residents are aware of all services available to them; complete and accurate information regarding proper participation in each service, clear definition of accepted single-stream recyclables, and best practices for community engagement and internal MSW management for property owners.	Staff time	ESD, Communications Department	High
Develop a targeted marketing campaign for any properties that do not meet the minimum standards for landfill and recycling service provisions.	Staff time	ESD, Communications Department	High

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to evaluate recycling participation against established baseline using the developed KPI/PMP. Make recommendations for service adjustments or additional policies and ordinances based on measured progress.	Staff time	ESD, MSW contractor	Medium
Conduct an MSW characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	Medium

Strategy 1: Mid-term, Years 6-10			
Continue education and outreach activities regarding the City's recycling priorities and proper participation, with an emphasis on targeting new properties.	Staff time, little to no associated additional costs	ESD, Communications	High

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to evaluate recycling participation against established baseline using the developed KPI/PMP. Make recommendations for service adjustments or additional policies and ordinances based on measured progress.	Staff time	ESD, MSW contractor	High
Conduct an MSW characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	Medium
Continue education and outreach activities regarding the City's recycling priorities and proper participation, with an emphasis on targeting new properties.	Staff time, little to no associated additional costs	ESD, Communications	High

STRATEGY 2:	**Regularly engage with multifamily property owners and managers regarding MSW services.**
Description:	The City's multifamily sector customers are property owners and managers rather than individual residents and households. Regular engagement with multifamily property owners and managers has the potential to influence both the customer's MSW management practices and the MSW management practices of individual residents because. Property owners and managers have much more frequent direct contact with their residents than does the City.
Initial Difficulty:	Easy to Moderate
Waste Types Targeted:	All
Impact:	Minimal to High
Priorities:	Increase program participation and engagement of multifamily property owners and managers through implementation of supportive programs.
Timeline:	Achieve by 2025 and on an ongoing basis.
Measuring Progress/KPI:	Each program implemented will be reviewed on an annual basis for perception, participation, successes, and challenges and recommendations for any changes will be made as needed.

Strategy 2: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Create a network of multifamily properties to provide support, ideas, and assistance to each other in developing MSW diversion, reduction and recycling programs and initiatives at their properties. This includes developing a listserv of properties and hosting monthly meetings to discuss a recycling or diversion topic of their choosing.	Staff time	ESD, multifamily properties	Low
On an annual basis, review perception, participation, successes, and challenges of the networking program and make recommendations for continuation, expansion, or removal of the program.	Staff time	ESD, multifamily properties	Low
Develop a program for recognition of multifamily properties that meet or exceed the established minimum criteria for standard recycling and diversion services and participation. Recognition of these properties will be based on the KPI/PMP evaluation established under Strategy 1.	Staff time	ESD	Medium
For properties meeting or exceeding minimum standards, provide a logo or stamp they can display and use on their website and marketing materials in recognition of their efforts.	Staff time	ESD	Medium
Create a page on the City website listing the multifamily properties that meet or exceed minimum standards.	Staff time	ESD	Low
Survey multifamily properties to evaluate interest in creating joint or group purchasing agreements or contracts with each other for third party services. Such services may include contracts for cleaning of empty units or a method by which to share the costs of managing illegal dumping. The survey should be designed to identify other areas of interest for shared resources.	Staff time	ESD, multifamily properties	Low
Encourage multifamily property owners and managers to include recycling and diversion terms in their third-party contracts. Such terms may include requirements to divert landscaping material and requirements to recycle materials resulting from new construction or remodeling projects.	Staff time	ESD, multifamily properties	Medium

Strategy 2: Near-term, Years 1-5			
Provide technical assistance for multifamily properties, including the existing Site Assessment program. Provide additional, individual technical assistance to multifamily properties as needed. While the City should actively support multifamily properties in this manner, the support should not excessively burden City staff and resources.	Staff time, some potential materials costs	ESD, multifamily properties	High
On an annual basis, review perception, participation, successes, and challenges of each of the above programs and make recommendations for continuation, expansion, or removal of the program.	Staff time, some potential materials costs	ESD, multifamily properties	High

Strategy 2: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Review program reports from previous years and develop program recommendations for program changes or continuation based on this analysis.	Staff time, any additional costs to be determined upon review	ESD	High

Strategy 2: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Review program data and reports from previous years and develop program recommendations for program changes or continuation based on this analysis.	Staff time, any additional costs to be determined upon review	ESD	High

STRATEGY 3:	Create avenues to directly engage multifamily residents.
Description:	While property owners and managers are the City's direct customers in the multifamily sector, the success of programs and accomplishing increases in recycling and diversion is also dependent on participation and engagement of individual multifamily residents. If the City is able to implement successful supportive programs for individual residents as well, overall likelihood of success in the multifamily sector will be increased.
Initial Difficulty:	Low to Moderate
Waste Types Targeted:	All
Impact:	Minimal to High
Priorities:	Increase participation and engagement of multifamily residents through implementation of supportive programs.
Timeline:	Achieve by 2025 and on an ongoing basis.
Measuring Progress/KPI:	Each program implemented will be reviewed on an annual basis for perception, participation, successes, and challenges and recommendations for any changes will be made as needed.

Strategy 3: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Establish a community Block Leader/Volunteer Program for engaged residents to partner with the City to both learn about MSW reduction and diversion and serve as communicators and educators to their communities, neighborhoods, friends, and family for approved messages.	Staff time, little to no associated additional costs	ESD, residents	Medium
Develop framework for the program, including recruitment, acceptance criteria, meeting frequency and schedule, and a training agenda.	Staff time, little to no associated additional costs	ESD	Medium
Implement program tracking for criteria including participation hours, successes, and challenges.	Staff time, little to no associated additional costs	ESD	Medium

Strategy 3: Near-term, Years 1-5			
Conduct an annual program review and evaluation to develop program recommendations for the following year cycle, and to highlight program successes and publicize within the community.	Staff time, little to no associated additional costs	ESD	Medium
Develop and support the use of community resources to reduce or divert organics from landfill disposal. Program considerations could include community gardens, providing composting at community gardens, food forests, waste reduction or diversion neighborhood competitions, and wildlife habitat preservation. Encourage multifamily residents and property owners to establish similar programs for their communities.	Staff time, potential material costs	ESD, other City departments such as Parks and Recreation	Medium
Conduct annual program reviews, highlighting successes and challenges and make recommendations for program continuation, expansion, or removal.	Staff time	ESD	High

Strategy 3: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for any approved new or expanded programs implemented in Years 1-5. Make recommendations for each program's continuation, adaption, or removal.	Staff time, any additional costs to be determined upon review	ESD	High

Strategy 3: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for any approved new or expanded programs implemented in Years 6-10. Make recommendations for each program's continuation, adaption, or removal.	Staff time, any additional costs to be determined upon review	ESD	High

STRATEGY 4:	Conduct additional evaluations and develop additional standardized practices for the multifamily sector at the municipal level.
Description:	These activities are additional actions the City will take to ensure standardized services and requirements are established for the multifamily sector, as well as assurances that the optimal suite of multifamily services provided by the City continues to be provided over the duration of the planning period.
Initial Difficulty:	Moderate to High
Waste Types Targeted:	All
Impact:	Moderate to High
Priorities:	Work toward increasing multifamily resident satisfaction for all MSW collection services provided by the City to multifamily properties.
Timeline:	Achieve by measuring on an ongoing basis.
Measuring Progress/KPI:	Progress will be measured through future Citizen Surveys and other survey tools as well as periodic MSW characterization audits and program participation studies.

Strategy 4: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Two to three years prior to the end of the City's current MSW services contract term and each subsequent term, the City should begin to review the terms of the contract and evaluate whether any contractual changes are necessary. This tactic applies to all sectors addressed in this CSWMP and is described in further detail in Section 12.0, City-wide Strategies.	Staff time, potential consultant costs	ESD, MSW contractor	High
After standard container types and colors are determined for City-wide implementation (refer to Section 12.0, City-wide Strategies for detailed description), replace multifamily containers, if needed, to be consistent with the standardized container system that is to be developed for implementation across all sectors. During the next contract renewal, re-negotiation or procurement process, include request for costs and transition timeline.	Staff time, potential cost of replacement carts is to be evaluated further	ESD, MSW contractor	High

Strategy 4: Near-term, Years 1-5			
Develop simple, standardized, graphics-based guidance to provide to multifamily property owners and managers to distribute to their residents. This will be particularly important to communicate program or service changes. Evaluate the cost of affixing "what material goes where" signage to residential carts. Refer to Section 12.0, City-wide Strategies for detailed description.	Staff time, material costs are to be evaluated	ESD, MSW contractor	Medium
Collaborate with the Planning Department to develop standards for MSW infrastructure requirements for construction of new multifamily properties or structures being redesigned. Incorporate these standards into building permit requirements. At a minimum, require allocation of space for adequate landfill trash and recycling containers, based on minimum capacity standards established under Strategy 1.	Staff time	ESD, Planning Department	High
Procure master contract for multifamily valet MSW services under which any multifamily property in the City could individually contract with the selected company based on the terms of the agreement procured by the City. The intent of such an agreement is to provide more cost-effective service options, thereby encouraging multifamily properties to provide convenient recycling access.	Staff time	ESD, Purchasing Department	Medium
In future Citizen Surveys and with other appropriate survey tools conducted by the City, request multifamily resident and property owner feedback regarding satisfaction with MSW services and levels of education provided by the City.	Staff time	ESD	High

Strategy 4: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Evaluate types of services provided to the multifamily sector on an ongoing basis as a key part of ongoing contract evaluations. Refer to Section 12.0, City-wide Strategies for detailed description. Evaluate whether current services continue to meet the needs of customers or whether different or additional services should be procured.	Staff time, potential consultant costs	ESD, MSW contractor	High

Strategy 4: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Evaluate types of services provided to the multifamily sector on an ongoing basis as a key part of ongoing contract evaluations. Refer to Section 12.0 City-wide Strategies for detailed description. Evaluate whether current services continue to meet the needs of customers or whether different or additional services should be procured.	Staff time, potential consultant costs	ESD, MSW contractor	High

7.0 COMMERCIAL AND INSTITUTIONAL

7.1 Commercial and Institutional Overview

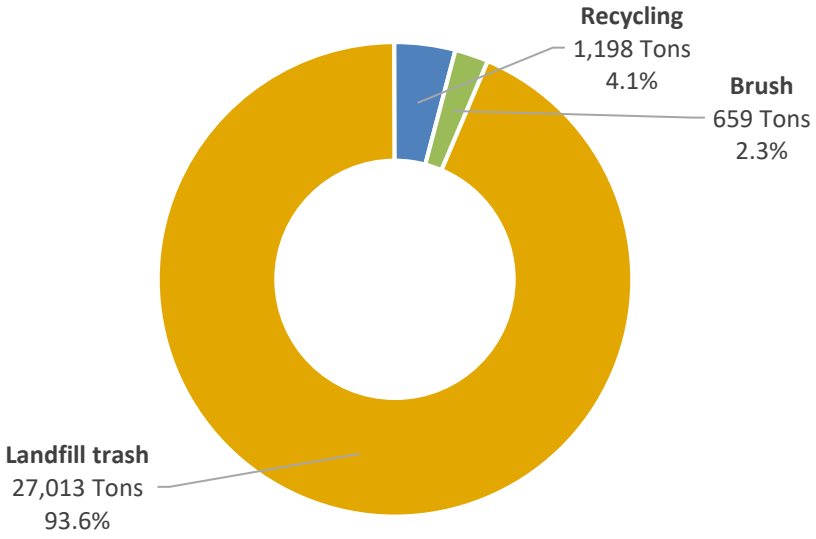
The commercial and institutional sector consists of non-residential customers, including commercial and businesses and non-City institutional facilities, including schools. City facilities are addressed in Section 10.0 Municipal Operations and Policies. The City's contractor provides exclusive MSW services to all commercial and institutional customers within the City limits while customers in the ETJ are serviced via an open market system. This section is focused on commercial and institutional customers within the City limits. It presents an overview of the current MSW services provided for the commercial sector, sector-specific priorities, and an evaluation of potential strategies for achieving them. The Downtown area is a unique subset of the commercial sector, requiring additional considerations and planning and is addressed in Section 8.0.

7.1.1 Current System

MSW services. For purposes of the CSWMP, the commercial sector includes businesses and institutions located within the City limits. The City's contractor currently serves approximately 1,000 MSW commercial customer accounts, though in some instances multiple entities may be serviced by a single account. The City's contractor provides landfill trash and recycling collection services to the majority of commercial customers with front load dumpsters. Yard trimmings and brush collection is not provided to commercial customers. A smaller number of commercial customers, concentrated in the Downtown area, receive services via commercial carts. Customers select the number of containers, size of containers, and the service frequency up to seven times per week that meets the needs of their operations. The commercial rate structure is based on collection container capacity and service frequency.

Recycling insight. The commercial sector generates approximately 44.2 percent of the City's total MSW. In FY 2017, approximately 29,000 tons of material were generated by commercial customers. Figure 7-1 presents the City's tonnage and percentage of commercial MSW by type.

Figure 7-1: Commercial MSW Overview[1]



[1] Commercial tons of landfill trash and recycling primarily consist of material collected via commercial collection services and dropped off at the transfer station. Tons of brush consist material dropped off at the transfer station. Brush collection is not provided to commercial customers.

The City began providing commercial recycling collection services in 2017. While recycling services are available to all commercial sector customers, a relatively small percentage of customers subscribe to the service. Based on the material collected through City services, the current commercial recycling rate is about 6.4 percent (including single stream recyclables and yard trimmings), lower than the current 20.3 percent residential recycling rate. Based on the typical MSW type distributions in Texas discussed in Section 3.0, this indicates that there is significant MSW that is currently being disposed in landfill trash that could be recovered and diverted from the landfill. Having a lower recycling rate for commercial MSW, as compared to residential, is common for many cities. However, it should be noted that this recycling rate does not account for any recycling or diversion activities that commercial and institutional entities may participate in independently of City services. For example, these numbers exclude efforts by a "big box" store that bales and recycles cardboard.

Organics collection. Organics (yard trimmings and brush) collection is not currently provided to commercial customers under the City's current MSW services contract. However, the City's contractor does have the capability to provide separate organics collection service. A small number of the City's commercial and institutional MSW customers contract separately (directly with the service provider) to receive organics collection service.

Roll-off services. The City's contractor exclusively provides the option for collection services via permanent 40-cubic yard roll-off containers for commercial customers regularly generating large amounts of material. Customers may also rent temporary roll-off containers; however, temporary service is open-market as it is not included under the City's MSW services contract. Customers contract directly with the hauler of their choice for temporary roll-off service.

Site Assessment program. The City's Site Assessment program is a technical assistance program offered by the Environmental Services Department to all commercial and institutional MSW customers within the City. A Site Assessment audit analyzes the types and amounts of MSW a customer produces and makes recommendations for MSW reduction and diversion of materials that are landfilled but could be diverted and proposes optimal container size and collection frequency for the customer's MSW services.

7.1.2 Comparison to Benchmark Cities

This section provides an overview of landfill trash and recyclables collection services provided for the commercial and institutional sector for the benchmark cities identified by the City, which include Cedar Park, Frisco, Kyle, New Braunfels, Richardson, and Round Rock.

Most services provided to the commercial and institutional sectors for benchmark cities are provided by private haulers. This includes a combination of exclusive service contracts and open franchise systems. New Braunfels provides all commercial services with city crews. Richardson provides landfill trash collection with city crews and recycling services are provided through an open market system.

Table 7-1 provides a comparison of commercial landfill trash collection and disposal rates, and the system each benchmark city uses to provide commercial landfill trash and recycling collection services. A detailed matrix providing further details regarding each benchmark city's current services is provided in Appendix B.

Comparison of current commercial landfill trash service rates, on the basis of monthly cost per cubic yard of collection capacity, shows that the City has a higher rate than benchmark cities at $4.40 per cubic yard compared to an average of $3.66 per cubic yard. There may be multiple factors impacting the City's relatively higher rate, such as collection efficiencies, distance to disposal facilities and the cost of disposal.

Table 7-1: Comparison of Commercial Services Provision

Benchmark City	Service Provider		Landfill Trash Average Monthly Rate per CY[1]
	Landfill Trash	Recyclables	
Georgetown[2]	Private – Exclusive franchise	Private – Exclusive franchise	$4.40
Cedar Park	Private – Open franchise	Private – Open franchise	Varies by hauler
Frisco	Private – Exclusive franchise	Private – Open franchise	$3.41
Kyle	Private – Exclusive franchise	Private – Open franchise	$3.87
New Braunfels	City	City	$2.72
Richardson	City	Private – Open franchise	$3.91
Round Rock	Private – Open franchise	Private – Open franchise	Varies by hauler

[1] Rates include cost of collection and cost of disposal and are based on average monthly rate per cubic yard for six and eight cubic yard front load dumpsters.

[2] Landfill trash and recycling collection is provided exclusively by the City's contractor for commercial and institutional customers within the City limits (Tier I customers). For out-of-City customers, services are provided via an open market system.

7.1.3 Key Partnerships

The City is home to a number of large institutions that are interested in partnering with the City on various MSW management initiatives and activities. These institutions are integral parts of the community and partnerships with them would help to achieve the City's priorities and would also help to elevate the City's sustainability vision among residents and businesses, further cultivating the environmentally responsible culture that is becoming central to the City's identity.

During the development of the CSWMP, the City conducted extensive outreach to these potential key partners who would be willing to collaborate with the City to develop MSW management programs, policies, or initiatives. The City would welcome collaboration with additional partners and values its role in supporting its institutions and businesses in practicing responsible MSW management.

Georgetown Independent School District. Georgetown Independent School District (GISD) is a City MSW services customer. In addition to having landfill trash and recyclables collection at all campuses, the district also provides separate organics collection (food scraps) at all elementary school campuses and plans to expand organics collection to all secondary campuses in the near future. Because organics collection is not included in the City's current contract, GISD contracts directly with the City's MSW service contractor for organics collection. Sustainability and environmental responsibility are key values for the district and are regular considerations in a wide range of its operating plans and decisions, while continuing to operate cost-effectively. GISD would be a willing partner in ongoing collaboration with the

City to identify mutually beneficial strategies for enhancing MSW services, including increased recycling and diversion. These strategies could include but not be limited to participating in the Site Assessment program, additional technical support (such as designing kitchen and cafeteria layouts), MSW characterization audits, staff and student trainings and education, identifying or developing viable food donation programs, and shared green purchasing contracts.

Southwestern University. Southwestern University is also a City MSW services customer. The University, and its student body in particular, are highly focused on exploring ways in which it can increase its sustainability-related practices and activities. Many of the existing initiatives on campus are student-driven and the University is actively seeking ways to be an engaged partner and would welcome collaboration with the City in improving MSW management activities. Some of the current programs and activities the University and its student body have in place are an established Green Fund to which students contribute to fund sustainability initiatives, a sustainability-focused student organization, on-site reuse of mulched leaves and brush, dog-waste collection stations, and permanent Goodwill donation collections stations on campus. The University would be a willing partner in exploring potential strategies similar to GISD.

Williamson County. Williamson County owns and holds the permit issued by the TCEQ for the Williamson County Landfill located in Hutto, Texas. The County contracts for operation and development of the landfill. County residents can drop off recyclables and landfill trash for a fee and drop off Christmas trees to be recycled for free. The County also operates a permanent HHW collection facility and holds HHW collection events twice per year, at no cost to County residents. Based on discussions with the County, the County is open to collaboration with the City to identify ways in which the City and County could partner to provide convenient and affordable MSW services and support to residents. These may include items such as an interlocal agreement to share MSW educational resources, co-funding events for residents of both entities (e.g., a paper shredding event), and shared purchasing contracts to procure more favorable pricing.

7.1.4 Current System Findings

Recycling rates and participation. The City's commercial recycling service is a relatively new service that began in 2017. Based on the distribution of materials collected through City MSW services, the current commercial and institutional recycling rate is relatively low. Participation (percentage of

commercial customers that have recycling service) is also relatively low. These low rates are due in part to the recent implementation of recycling service. This presents an opportunity for the City to promote the service and significantly increase recycling participation rates among its commercial customers.

Standard MSW services. The City presently contracts for MSW services to commercial and institutional customers within City limits and has a long-standing, positive working relationship with its contractor. With the recent addition of commercial recycling services, the City's core services (landfill trash and recycling collection provided via dumpsters and carts) provided to this sector are typical of core services provided in most similarly-sized cities in Texas.

Leadership among commercial and institutional customers. Based on stakeholder engagement and discussions with City staff, many entities within the City already have strong interest in increasing their sustainability efforts, including interest in activities that align with the City's priorities for recycling and waste diversion. While some are actively pursuing these priorities on their own, many are looking to the City as a leader in responsible MSW management.

Key partnerships. The City has the opportunity to create strong partnerships in MSW management with several large entities. While these key partners are large MSW generators and could have an impact on the City's overall recycling and diversion rates, the benefit of their visibility in the community could be just as, if not more, significant in shaping the City's larger MSW management culture.

7.2 Sector Priorities and Future Outlook

The City values fiscally responsible environmental stewardship and has taken various steps to position itself as a leader, including becoming the first City in Texas to use 100 percent renewable energy. Continuing to advance this mission through financially sound practices across all areas of municipal operations, including MSW management, will sustain the City's visibility as a leader and attract high-quality growth from like-minded businesses, large and small, and support the City's economic growth.

Cultivating healthy commercial growth is a top priority for the City. The City has been very intentional in the growth of its commercial sector. As discussed in Section 3.2.1, Employment Projections, the number of people employed within the City is projected to nearly double from 27,200 to 52,200 over the planning period through 2040. It is critical that the City develop a culture of both environmentally and financially responsible MSW management and build systems that will be able to grow and evolve as demands from the commercial and institutional sector increase.

The priorities and strategies presented in Section 7.3 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for the commercial and institutional sector is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

The strategies and actions developed for the commercial and institutional sector are designed to implement services and programs to shift MSW management behaviors towards methods other than traditional landfill disposal. In the near-term these efforts for the commercial and institutional sector are focused on increasing recycling program participation. Commercial recycling was begun recently, and some customers may not be aware it is available or how to best participate. Over time, the City will evaluate how best to provide organics diversion programs to the sector as well to maximize landfill diversion. The City plans provide technical support and education to customers to encourage increased MSW diversion.

Guiding Principle 2: Services must be convenient for customers and price-competitive.

The evaluation of any potential new services or changes to existing services will include a cost of service analysis to ensure that changes do result in overly burdensome costs to commercial and institutional customers or the City. The City has already begun to increase convenience by implementing a recycling collection program for commercial and institutional customers and plans to continuously evaluate the MSW management needs of the sector as the City continues to grow.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

Strategies focused specifically on enhancing aesthetics and services for Downtown are presented in Section 8.0.

7.3 Strategies and Implementation Plan

The tables below present the priorities and strategies developed for the commercial and institutional sector. In addition to these sector-specific priorities and strategies, there are various strategies the City plans to employ which are applicable to multiple sectors addressed within the CSWMP. The City-wide strategies further addressed in Section 12.0 that are applicable to the commercial and institutional sector include:

- Ongoing MSW contract evaluations
- Waste characterization audits and baseline establishment
- Standardized MSW collection containers and signage
- MSW infrastructure planning

STRATEGY 1:	**Increase recycling participation and recycling rates among commercial and institutional customers.**
Description:	The commercial and institutional sector generates approximately 27,000 tons (44.2 percent) of the City's total MSW, but only 6.4 percent of that material is recycled. Based on typical state-level MSW characterization, much of the landfilled material could be recycled or diverted instead. With the recent inception of the City's commercial recycling service and the strategies presented below, the City may be able to significantly increase recycling and diversion rates for the commercial and institutional sector.
Initial Difficulty:	Moderate to High
Waste Types Targeted:	Single-stream recyclables,
Impact:	High to Very High
Priority:	Establish baseline data for current commercial and institutional recycling and diversion rates. Based on current diversion rates, develop specific recycling goals for the sector and work to increase recycling according to the goal metric(s).
Timeline:	Establish baseline by 2020. Develop goals by 2025.
Measuring Progress/KPI:	Progress will be measured by conducting future MSW characterization audits and participation studies and comparing results to baseline data.

Strategy 1: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct an MSW characterization audit to gain a better understanding of the composition of the commercial and industrial MSW stream to allow for detailed analyses and to provide a baseline against which to measure future progress for increases in waste diversion. Refer to Section 12.0, City-wide Strategies for further details.	Staff time, potential consultant costs	ESD, MSW contractor	High
Develop a KPI/PMP to establish a baseline and track commercial and institutional recycling participation and participation in other diversion activities.	Staff time	ESD, MSW contractor	High
Based on baseline waste characterization and diversion data, develop measurable goals for increasing recycling. Goals may potentially be based on participation rates, percentage of material recycled, or tonnage of material recycled.	Staff time	ESD	High
Research, develop, and recommend policies and ordinances that incentivize or compel commercial and institutional customers to implement recycling, organic and/or other diversion activities.	Staff time	ESD, City Council	High
Provide individualized professional level consulting and technical support to businesses and institutions to help them establish or improve recycling and diversion practices, reduce waste, and better manage materials, including continuation of the Site Assessment program. Develop a manageable format to offer these services in a way that does not overly burden City Staff.	Staff time, potential consultant costs	ESD, customers	Medium
Utilizing the KPI/PMP and data tracking methods developed as well as self-reported results, develop annual report presenting participation and results from customers that participate in consulting and technical support services. To the extent possible, this will be compared with non-participating customers to better understand the impact of these services.	Staff time	ESD	Medium

Strategy 1: Near-term, Years 1-5			
Develop a robust, targeted education and outreach campaign to educate customers about the City's recycling collection service and ways in which the Site Assessment may support recycling participation. This is especially important in increasing participation rates because the commercial recycling program is still relatively young. Customers may not be aware or familiar with the program yet.	Staff time	ESD, Communications	High
Refer also to Strategy 3. Many of the activities and tactics that will develop the City's leadership in MSW management among commercial and institutional customers will also help to provide education and support to these customers with the intent of increasing recycling participation.	Refer to Strategy 3	Refer to Strategy 3	Refer to Strategy 3

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to evaluate recycling participation against established baseline using developed KPI/PMP. Make recommendations for service adjustments or additional policies and ordinances based on measured progress.	Staff time	ESD, MSW contractor	High
Conduct a waste characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	Medium
Continue education and outreach activities regarding the City's recycling priorities and goals and proper participation, with an emphasis on targeting new entities.	Staff time, little to no associated additional costs	ESD, Communications	High

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to evaluate recycling participation against established baseline using developed KPI/PMP. Make recommendations for service adjustments or additional policies and ordinances based on measured progress.	Staff time	ESD, MSW contractor	High
Conduct a waste characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	Medium
Continue education and outreach activities regarding the City's recycling priorities and goals and proper participation, with an emphasis on targeting new entities.	Staff time, little to no associated additional costs	ESD, Communications	High

STRATEGY 2:	**Provide avenue(s) for commercial and institutional customers to divert organic material from landfill disposal. Increase organics diversion among commercial and institutional customers.**
Description:	Currently, commercial and institutional customers do not have any City-provided or City-supported options for diverting organic material from the landfill. The level of organic material produced by these customers will vary significantly based on the type of business or institution. As organics collection potentially becomes more feasible for the City from a processing perspective (three-stream transfer station and/ or local organics processing facilities) the City will continue to explore options for providing organics diversion opportunities to the commercial and industrial sector.
Initial Difficulty:	High
Waste Types Targeted:	Organics including food scraps
Impact:	High
Priority:	Establish baseline data for current commercial and institutional diversion rates (refer to Strategy 1). Based on current diversion rates, develop specific organics diversion goals for the sector and work to increase organics diversion according to the goal metric(s).
Timeline:	Establish baseline by 2020. Develop goals by 2025.

STRATEGY 2:	**Provide avenue(s) for commercial and institutional customers to divert organic material from landfill disposal. Increase organics diversion among commercial and institutional customers.**
Measuring Progress/KPI:	Progress will be measured by conducting future MSW characterization audits and participation studies and comparing results to baseline data.

Strategy 2: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Monitor market conditions including local organics processing options and commercial and institutional demand for organics collection including food waste. These should be used as factors in determining if, when, and how provision of food scraps collection may be financially feasible for the City.	Staff time, potential consultant costs	ESD	Medium
Develop options for a public drop-off location for commercially-generated organic material to be processed via composting or a dehydrator and provide recommendations. Development and evaluation of options will include a cost and benefit analysis, potential locations, rate proposals, security plan, and participation approval criteria for businesses and institutions.	Staff time, potential contractor costs, potential site operations cost	ESD, contractor, customers	Medium
In all MSW outreach and supportive and interactions with commercial and institutional customers, emphasize the waste management hierarchy and educate customers regarding the potential of organics materials to be diverted from landfills. Educating customers even before organics diversion options are provided by the City will help generate support within the community and develop the local organics market and supply.	Staff time	ESD	High

Strategy 2: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for any approved new or expanded programs implemented in Years 1-5. Make recommendations for each program's continuation, adaption, or removal.	Staff time, any additional costs to be determined upon review	ESD	High
Continue to assess market and technology developments for innovative organics diversion programs and make recommendations for new or additional programs as appropriate.	Staff time, any additional costs to be determined upon market assessments	ESD	High

Strategy 2: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for any approved new or expanded programs implemented in Years 6-10. Make recommendations for each program's continuation, adaption, or removal.	Staff time, any additional costs to be determined upon review	ESD	High
Continue to assess market and technology developments for innovative organics diversion programs and make recommendations for new or additional programs as appropriate.	Staff time, any additional costs to be determined upon market assessments	ESD	High

STRATEGY 3:	**Solidify City as leader for innovative and cost effective MSW management. Increase collaboration with key partners and supportive opportunities for all commercial customers.**
Description:	There are many businesses and institutions in the City actively pursuing environmental sustainability, including MSW landfill diversion. Many more are aware of and interested in these ideas and are looking to the City as a leader in responsible MSW management. The City values its role in supporting its institutions and businesses in providing opportunities and the proper education to participate in programs, as well as develop internal best practices.
Initial Difficulty:	Moderate
Waste Types Targeted:	All

STRATEGY 3:	**Solidify City as leader for innovative and cost effective MSW management. Increase collaboration with key partners and supportive opportunities for all commercial customers.**
Impact:	Moderate to High
Priority:	Provide support to commercial and institutional customers to support them in increasing their participation in recycling activities.
Timeline	Achieve by measuring on an ongoing basis.
Measuring Progress/KPI:	Progress will be measured through future surveys of commercial an institutional customers, opportunistic interviews, MSW characterization audits, and program participation studies.

Strategy 3: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Prioritize key partnerships with large businesses and institutions that have shown strong interest in partnering with the City in MSW management efforts, particularly those efforts that maximize recycling and diversion and have the potential to create mutual financial benefit for both the City and the partnering entity. Prioritize ongoing collaboration including contracting partnerships, technical assistance and facility design, education and training programs, and individualized collaborative events. Successful partnership activities and collaboration event notices should be included in community publications.	Staff time	ESD, third party vendors, key partners	High
Collaborate with Southwestern University's ongoing efforts to hold on-campus student move-in and move-out recycling and waste diversion events and/or collection stations.	Staff time, minimal material costs	ESD, key partners, community partners	High
Develop proposals for additional individual collaborative events or activities with each key partner. Evaluate costs, benefits and implementation plan with partners and make recommendations for adoption.	Staff time	ESD	Medium
Develop a professional certification program to train individuals from City businesses and institutions regarding City requirements and implementation of internal best practices for reduction and recycling. These individuals then, in their professional positions, educate their colleagues and implement practices within their organizations. Develop program topics, format, testing, and certification process. Targeted individuals will include but not be limited to those whose responsibilities include food handling, those with a commercial driver's license (CDL), etc.	Staff time, minimal material costs	ESD, customer leadership	High

Strategy 3: Near-term, Years 1-5			
Develop a program to recognize and promote businesses and institutions that voluntarily adopt practices that support recycling, diversion, and/or waste reduction, including green purchasing practices. The program will include but not be limited to recognition of one business per month, a package of awards to publicly recognize selected businesses, and mode by which residents may nominate businesses for recognition.	Staff time, minimal material costs	ESD, Communications Department	Low
Develop criteria for recognition and award eligibility. If needed, recruit a committee or peers and/or residents to review applicants and nominees and select which organizations will be recognized each year.	Staff time	ESD, independent review committee	Low
Develop digital technical resources for commercial businesses by type (e.g., restaurant, automotive, retail, etc.). Resources will be easily accessible and easy to use at any time and should not require individualized consultation or guidance.	Staff time	ESD	High
Examples of resources to be developed include: - Waste tracking software - Online business-to-business materials swap - Material assessment with auto-generated diversion suggestions	Staff time	ESD	High
Develop additional technical resource alternatives proposals, conduct cost and benefit analyses for each, and make recommendations for implementation.	Staff time	ESD	Medium
Develop a best MSW management practices guide for businesses and institutions. The guide will include day-to-day practices as well as broad approaches and will be published online and easily accessible to all customers.	Staff time	ESD, Communications Department	High
Topics to address include but are not limited to standard green purchasing policies, inclusion of recycling or diversion terms in third-party contracts (e.g., construction, landscaping), internal waste reduction and diversion plans, provision of training and education for employees, standardized containers, and internal or business-to-business reuse exchanges.	Staff time	ESD, Communications Department	High

Strategy 3: Near-term, Years 1-5			
Allow and encourage commercial and institutional customers to participate in cooperative purchasing (or "piggybacking") with the City to facilitate green purchasing. As the City further develops its internal green purchasing policies and procures contracts, allowing customers to utilize any contracts the City has in place will help to make green purchasing more financially viable for both the City and customers.	Staff time	ESD, third party vendors, customers	High
Launch or partner in regional coalitions with commercial businesses, non-profits, recyclers, haulers, and other stakeholders to discuss and support each other with education and insight about recycling and diversion processes and programs. Determine if a regional coalition exists. If so, the City will request to participate. If not, the City will compile a list of entities and invite them to participate in regional discussions.	Staff time	ESD, local organizations, customers	Low
Conduct annual program reviews for each program or service, highlighting successes and challenges and make recommendations for continuation, expansion, or removal.	Staff time	ESD	High

Strategy 3: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for each approved new or expanded programs implemented in Years 1-5. Make recommendations for each program's continuation, adaption, or removal.	Staff time	ESD	High

Strategy 3: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a performance analysis for each approved new or expanded programs implemented in Years 6-10. Make recommendations for each program's continuation, adaption, or removal.	Staff time	ESD	High

STRATEGY 4:	Conduct additional evaluations and develop additional standardized practices for the commercial and institutional sector at the municipal level.
Description:	These activities are additional actions the City will take to ensure standardized services and requirements are established for the commercial and institutional sector, as well as assurances that the optimal suite of commercial and institutional services provided by the City continues to be provided over the duration of the planning period.
Initial Difficulty:	Moderate to High
Waste Types Targeted:	All
Impact:	Moderate to High
Priorities:	Standardize services and support programs for all commercial and institutional customers across the City.
Timeline:	Achieve by 2025 and on an ongoing basis.
Measuring Progress/KPI:	Progress will be measured through future surveys of commercial and institutional customers, opportunistic interviews, MSW characterization audits, and program participation studies.

Strategy 4: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
After standard container types and colors are determined for City-wide implementation (refer to Section 12.0, City-wide Strategies for detailed description), replace commercial containers, if needed, to be consistent with the standardized container system that is to be developed for implementation across all sectors. During the next contract renewal, re-negotiation or procurement process, include request for costs and transition timeline.	Staff time, potential cost of replacement containers is to be evaluated further	ESD, MSW contractor	High

Strategy 4: Near-term, Years 1-5			
Collaborate with the Planning Department to develop standards for MSW infrastructure requirements for construction of new commercial and institutional properties or structures being redesigned. Incorporate these standards into building permit requirements. At a minimum, require allocation of space for adequate landfill trash and recycling containers.	Staff time	ESD, Planning Department	High
Establish regular lines of communication and information distribution for commercial and institutional customers. Regular topics should include MSW goals established by the City and updates on progress, complete and accurate information regarding new services and programs, gathering feedback from customers on what works well and what needs improvement, and monitoring of customer needs for additional service or support.	Staff time	ESD, Communications Department	Medium
Conduct periodic surveys of commercial and institutional customers to gauge their satisfaction with services and programs and to assist in identifying any concerns or challenges. During any one-on one educational or technical support activities, engage customers in discussions about service and program satisfaction.	Staff time	ESD	Medium

Strategy 4: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Evaluate types of services provided to the commercial and institutional sector on an ongoing basis as a key part of ongoing contract evaluations. Refer to Section 12.0, City-wide Strategies for detailed description. Evaluate whether current services continue to meet the needs of customers or whether different or additional services should be procured.	Staff time, potential consultant costs	ESD, MSW contractor	High

Strategy 4: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Evaluate types of services provided to the commercial and institutional sector on an ongoing basis as a key part of ongoing contract evaluations. Refer to Section 12.0, City-wide Strategies for detailed description. Evaluate whether current services continue to meet the needs of customers or whether different or additional services should be procured.	Staff time, potential consultant costs	ESD, MSW contractor	High

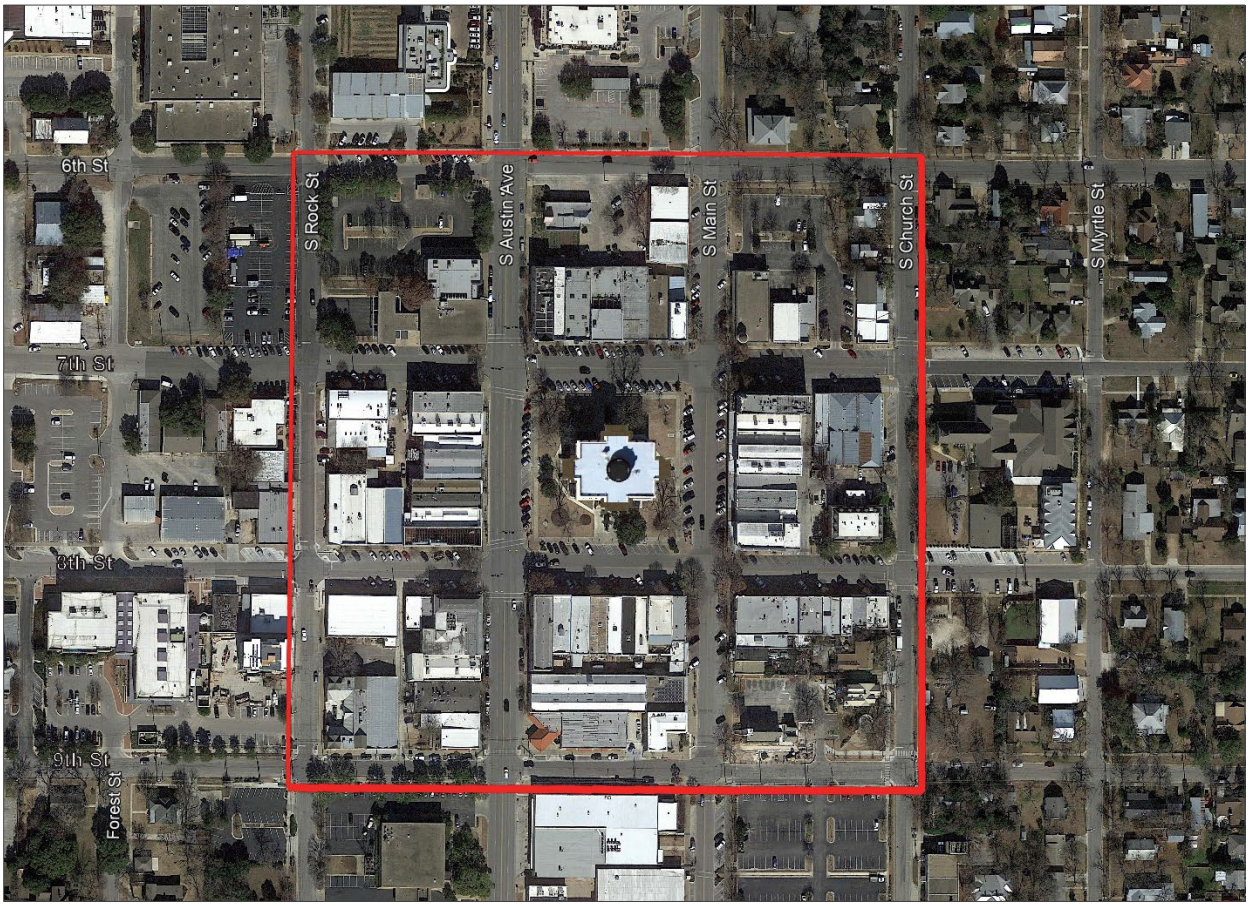
8.0 DOWNTOWN

8.1 Downtown Overview

The City's Downtown is central to its identity. Preserving historic assets and the small-town character of the Downtown area, while also improving the quality, efficiency, and aesthetics of MSW management services is of critical importance in maintaining the City's vision for the future of Downtown and the City's economic growth. This section focuses on the nine-block area of the Historic Overlay district, centered on the historic Williamson County Courthouse, encompassing the core of the City's cultural, dining, and entertainment activities. For purposes of the CSWMP, this nine-block core area is referred to as Downtown from this point forward. Downtown is highlighted separately from the larger commercial sector discussed in Section 7.0 because of the unique MSW management planning considerations and challenges the area faces.

This section addresses MSW services for commercial entities within Downtown. MSW generation by the public in Downtown is addressed in Section 9.0.

Figure 8-1: Nine-Block Downtown Core Area



8.1.1 Current System

MSW services. As of November 2018, there are 93 businesses within the Downtown area that receive MSW services, including landfill trash and recyclables collection, from the City's contractor through a combination of carts and dumpsters. While Downtown customers have the same service options as commercial customers elsewhere in the City, the proportion of customers with cart service is higher due primarily to limited space for dumpsters. Some businesses utilize shared dumpsters due to space constraints.

Collection container configuration. Some of the businesses in Downtown utilize alleys for dumpster and cart collection, but not all businesses have back-door alley access. Many of the businesses that use carts for landfill trash and recyclables store the carts in public rights of way due to a lack of alternative storage locations. This creates additional challenges for public-use areas, including impeded accessibility for walkways and unsightly aesthetics.

Businesses that do have back-door alley access face their own set of challenges. Typically, a business that abuts an alley and has back-door access also owns a portion of that alley, but property lines are not uniform and a business's property may not be large enough to accommodate a dumpster, or they may have to cross property lines in order to access dumpsters. Operation of this system is highly dependent on shared space and collaboration, which is not a dependable, long-term solution.

Organics management. Consistent with current services in other sectors throughout the City, separate organics collection including food scraps is not provided in Downtown. There is high concentration of restaurant establishments, which are large generators of food scraps and other materials (such as napkins and paper dinnerware) with the potential to be composted and diverted from landfill disposal.

Recycling participation. There are three shared recycling dumpsters within the core nine-block Downtown area, for which service is paid by each business that uses the dumpsters. Additional customers receive recycling service via carts, where space allows. During the focus groups, many Downtown customers expressed a strong interest in recycling participation. Many customers already participate; however, the limited availability of space for recycling containers leads some businesses that would otherwise be motivated to recycle to forego recycling service, instead disposing of recyclables with landfill trash.

8.1.2 Stakeholder Engagement Overview

The ESD and Burns & McDonnell conducted stakeholder engagement throughout the Downtown CSWMP development process. A total of four public meetings were held in which businesses and

property owners had opportunities to share their input regarding the current system, challenges faced, and potential service options.

- **Downtown Focus Groups.** Downtown businesses and property owners were invited to attend two focus group sessions held on March 21, 2018 (morning and afternoon) with City staff and Burns & McDonnell. The objective was to develop a thorough understanding of the current system, challenges faced by customers and the City, and gather input regarding potential alternative MSW collection system configurations the City could choose to develop in the future to best serve Downtown. Section 8.1.3, Current System Findings, incorporates stakeholder feedback from these focus groups.
- **Downtown Workshops.** After potential Downtown collection system options were developed (refer to Section 8.3), Downtown businesses and property owners were invited to participate in two public workshops held on October 30 and November 5, 2018. The City presented four collection system options and gathered feedback from stakeholders in the forms of discussion, a short written survey, comment cards, and voting boards (ranking options in order of preference). A summary of stakeholder feedback from these workshops is presented in Section 8.3.3.

8.1.3 Current System Findings

Limited space. The primary factor contributing to multiple challenges in provision of MSW services in Downtown is the extremely limited space for collection containers and collection vehicle access. This issue will only become more challenging as Downtown growth continues and it is therefore critical that the City develop an effective solution in the near-term.

Real estate ownership. The City owns very little real estate in Downtown. Some shared dumpsters are currently on private property and the continued use of these dumpsters and properties cannot be guaranteed. To establish permanent, guaranteed future availability of space, the City would need to designate City-owned property within the Downtown area for MSW collection containers, infrastructure, and operations. However, the availability of such space is limited. If the use of MSW collection containers is continued in the Downtown area, the City should identify permanent space for these needs, and then optimize the use of that space.

Aesthetics. The sight of visible or overflowing containers and the smell from containers in proximity to public spaces is a deterrent to potential patrons and does not maintain the aesthetics and atmosphere the City works to preserve in Downtown. Overflowing containers also lead to litter being windblown and scattered. Maintaining a clean, welcoming Downtown promotes economic growth of the City.

Public health. In addition to being unsightly, overflowing containers and scattered litter pose public health risks, attracting rodents and other pests.

Illegal dumping. Within the current MSW collection system in Downtown, containers (carts and dumpsters) and alleyways are relatively easily accessible to businesses or individuals that do not pay for landfill trash or recycling services. This leads to illegal placement of material into containers and illegal dumping of materials in the alleyways. Due to the structure of the current system, it is difficult to know where material was generated (within Downtown or elsewhere) and who places it there illegally. Accountability and enforcement of rules is difficult under the current system.

Rate equity. Due to shared containers and past agreements, current MSW customer rates in Downtown are inequitable and irregular among Downtown commercial customers. Based on current commercial rates, some businesses pay too much and some pay too little for the service capacity they receive. For any Downtown MSW collection system the City chooses to implement moving forward, an equitable rate structure should be developed.

Organics. Downtown hosts many restaurants and food-oriented businesses that generate food scraps at higher rates than the overall commercial sector. This presents an opportunity for the City to increase waste diversion rates through separate organics collection in Downtown if a feasible and financially viable option for service were to be identified or developed in the future.

Recycling rates and opportunities. Based on discussions with the City and its contractor, the recycling rate among Downtown commercial customers is significantly higher than the City's overall commercial sector recycling rate; however, data for specific rates and quantities is not available. Many Downtown customers have a strong interest in recycling and support the City's sustainability goals but face challenges in recycling participation.

Continued growth. The City anticipates and promotes the continued growth of the Downtown area. As this growth occurs, the challenges of the current system will be intensified and transition to a new type of system will become more difficult to implement.

8.2 Sector Goals and Future Outlook

The City plans to continue the development and promotion of the Downtown area as a cultural center of community life in the City and expects that the density of businesses and multifamily properties as well as

the number of residents and visitors spending leisure time in the area will continue to increase. Because MSW services for Downtown customers are already constrained by availability of space, it is critical that the City develop an efficient system that will be able to accommodate anticipated future growth. While this will require investment of resources in the near-term, it will help to avoid the need for more costly investments that would be required if the City were to postpone changes to the Downtown MSW management system until the area were built to maximum density.

The City's MSW management priorities for Downtown include the following:

- Develop near- and long-term solutions to the challenges currently facing customers and the City in Downtown
- Increase recycling and organics diversion rates for Downtown commercial customers
- Develop a more equitable MSW services rate structure
- Over time, develop a comprehensive, three-stream (landfill trash, recyclables, and organics including food scraps) MSW management system for the Downtown

The priorities and strategies presented in Section 8.4 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for Downtown is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

The strategies and actions developed for the Downtown sector are designed to implement services and programs to shift MSW management behaviors towards methods other than traditional landfill disposal. The City plans to implement a new downtown collection system (recommended system is the concierge collection system, Section 8.3), new programs, and provide technical support and education to customers to encourage increased MSW diversion. The City plans to continuously evaluate the MSW management needs of the Downtown area as it continues to change and grow.

Guiding Principle 2: Services must be convenient for customers and price-competitive.

Based on engagement with Downtown customers, it is clear that changes must be made to make MSW collection services more convenient for customers. This will help to improve customer satisfaction and to support the City's recycling and diversion goals.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

As described in Section 8.1.2, the Downtown area currently faces several challenges under the current MSW collection system. A thriving Downtown is a core component of the City's continued overall economic well-being and it is therefore important that the Downtown MSW systems functions in a way that helps continue to attract residents and visitors alike. The strategies developed for this section of the CSWMP are focused on optimizing services and aesthetics of the Downtown area.

8.3 Downtown Collection System Options

It is evident that the City must take action in the near-term to improve the MSW management system for Downtown and remedy existing challenges. Multiple challenges exist that are likely to become more pronounced and more difficult to resolve as growth continues. There is a need to beautify Downtown for improved public health, safety, aesthetics, and to promote commerce.

Through extensive engagement with City staff, Downtown customers, the City's MSW contractor, and the City's consultant, a set of potential Downtown MSW collection system options was developed. Each system option has unique benefits and challenges to development and implementation. The collection system options considered are identified below and further detailed descriptions of each option follow.

- Carts and shared dumpster collection (current system), with restructured customer rates
- Shared dumpsters
- Shared compactors
- Concierge service

Carts and shared dumpsters (current system). The City could choose to continue providing Downtown commercial MSW services with a combination of carts and shared dumpsters, as described in Section 8.1.1. Although this option would require no significant investment in the near-term, it is not a sustainable option given the anticipated continued growth of Downtown. The challenges and constraints present currently would be intensified as growth continues and the City would likely only be deferring the need to invest in a new type of system. At a minimum, the City has identified the need to restructure service rates paid by Downtown customers to develop a more equitable, volume-based rate structure.

Shared dumpsters. The City may choose to transition away from cart service, to exclusive use of shared dumpsters for all MSW services. This includes removal of all carts and maximizing use of existing dumpsters, and potentially increasing the number of dumpsters located in Downtown. This option would help to improve aesthetics of the area through removal of carts from alleys and public rights of way. While transition to a shared dumpster system may increase the total capacity for landfill trash and recycling collection in the short-term, the limited space available for dumpsters would make long-term capacity growth with this system or introduction of separate organics collection unfeasible. In the future, the City would again face the challenge of designing a new system to accommodate continued growth. Availability of space and City-owned property would continue to be a limiting factor with this option.

With a shared dumpster system, the City would also develop a volume-based rate structure, though the large shared capacities of this system may make an equitable rate structure more challenging. This system would require minimal capital investment by the City, with each front-load dumpster costing $400-$600 (ranging based on the size of the container).

Shared compactors. A shared compactor system is another type of shared container system but has some unique benefits and challenges from the shared dumpster system. A compactor is a large (typically 30-40 cubic yard capacity), stationary material collection container. It is different from a dumpster in that it has built-in material compaction capabilities, which allows for greater material collection and/or lower collection frequency. If the City were to implement a shared compactor system, two to three compactors would be required in and/or around Downtown. While shared compactors could increase total capacity and would allow for removal of carts and dumpsters (on sidewalks, parking spaces, and parking lots), there are other challenges with this type of system.

Due to limited City-owned property, compactors would likely need to be placed further from businesses. This would require business employees to transport material off-site or up to several blocks to dispose of it, creating safety concerns (physical strain, walking extended distances in the dark, etc.). Similar to a shared dumpster system, developing an equitable rate structure for this type of system would be more challenging due to the shared nature of containers. Additionally, if a shared compactor system were implemented, limited public space would likely to continue to be a limiting factor as Downtown growth continues.

Concierge service. With a concierge service, Downtown customers would set out their landfill trash, recyclables, and organics at designated times and locations (front or back door of each establishment). Customers would set out all MSW, in separate bags by type, at collection locations and the City's contractor would manually collect each MSW stream. The contractor would collect material utilizing smaller, pick-up truck sized collection vehicles that could more easily maneuver in the Downtown area than traditional collection vehicles. The contractor would then haul material directly to the City's transfer station (located approximately one mile from Downtown) for appropriate transport and/or processing.

A concierge system would allow for removal of all commercial collection containers from alleys, sidewalks, parking space and other public rights of way, helping to improve aesthetics of the area. Individual businesses may choose to have on-site containers for short-term holding of bagged material

prior to collection. Removal of containers would eliminate the concern for container overflow and would reduce instances of illegal dumping by removing the most targeted areas (dumpster sites). A concierge service would have the flexibility to accommodate projected future growth in Downtown, which is a critical factor for any option the City implements.

The rate structure for a concierge system could be based on the level and frequency of service the business chooses to receive as well as the volume of material the business generates. For example, multiple service levels could be available to provide the appropriate levels of service to customers based on their business type. Some businesses, such as restaurants, may require service every day or multiple times per day, whereas an office may require service only once per week. Table 8-1 summarizes four potential service levels and presents examples of types and estimated number of business likely to require each service level.

Table 8-1: Potential Service Level Summaries for Concierge System

Service Level	Description	Potential Collection Frequencies	Anticipated Business Types	Anticipated Number of Businesses
Level 1	Customers require frequent service, often multiple times per day. They typically have high material generation levels, including food scraps.	Seven days per week, multiple daily collections	Restaurants	12
Level 2	Customers require consistent, regular service usually once per day at closing time. They typically have some food scraps.	Seven days per week, one collection per day	Some restaurants, entertainment venues such as bars and saloons, coffee shops, and others having some food scraps	10
Level 3	Customers require standard service two to three times per week. They produce smaller amounts of waste and small amounts of food scraps.	Two days per week, one collection per day	Retail, government facilities, some entertainment venues with minimal food scraps	30
Level 4	Customers require infrequent service, once per week or less. They produce little waste and very little to no food scraps. Most waste is dry and often recyclable.	One day per week, one collection per day	Offices, museums, some retail	41

If a concierge service is implemented, the City would need to carefully consider the timing and frequency of set-out collections and work closely with its contractor to maintain attractive aesthetics of the Downtown area. Other cities with Downtown areas similar to Georgetown that utilize concierge services

have noted challenges associated with materials set out by customers outside of allowable times or difficulty maintaining consistent collections, which can lead to an unattractive environment.

A concierge service would require close coordination between the City and Downtown commercial customers. The City would provide individualized transition and implementation support for customers, including assistance in determining the appropriate service level and configuration for material storage and collection locations. The City would also provide technical support to customers for ongoing services.

8.3.1 Summary and Comparison of Options

Table 8-2 provides a summary of the advantages and challenges of Downtown collection system options.

Table 8-2: Downtown MSW Collection System Options Summary

Option	Advantages	Challenges
Carts and shared dumpsters (current system)	• Current system • Requires no capital investment • Least expensive option	• Does not address current operational, spatial, aesthetic, or public health challenges • Unsustainable for continued growth • Does not allow for three-stream system • New rate design for same system could be contentious
Shared dumpsters	• Removes carts on sidewalks, streets • Allows for three-stream system in the future	• Siting of additional required dumpsters is challenging (up to seven) • No impact on container overflow, litter, and illegal dumping • Unsustainable for continued growth
Shared compactors	• Removes carts and dumpsters on sidewalks, streets, parking spaces • Allows for three-stream system in the future	• Siting of two to three compactors is challenging • Minimal impact on container overflow, litter, and illegal dumping • Customers must transport material offsite, up to several blocks (safety concerns)
Concierge service	• Most viable option for future growth; prevents City from needing to overhaul Downtown system again in the future • All containers removed; eliminates space and property ownership constraints • Prevents illegal dumping and container overflow • Convenient for customers • Allows for three-stream system immediately	• Requires close initial and ongoing coordination between customers, City, and contractor • Most expensive option

8.3.2 Cost of Service and Rate Structure

Out of necessity, improvements to the current Downtown system will result in increases in the total cost of services provided for the area. Development of a new, equitable, volume-based rate structure for Downtown commercial customers will be required for any collection system option the City chooses. Table 8-3 provides estimates of the annual cost of service for each collection system option, which were developed based on discussions between the City and its contractor.

Table 8-3: Downtown MSW Collection System Options, Annual Cost of Service

Option	Annual Cost of Service
Carts and shared dumpsters (current system)	Current: $120,000 Future: $150,000
Shared dumpsters	$276,000
Shared compactors	$274,000
Concierge service	$300,000

8.3.3 Downtown Stakeholder Feedback: Collection System Options

During two public workshops held October 30 and November 5, 2018 (refer to Section 8.1.2), the City presented the four Downtown collection system options, along with annual cost of service, described in Section 8.3 to Downtown businesses and property owners, and gathered their feedback regarding preferences and concerns.

In general, continuation of the current system (carts and shared dumpsters) is the least preferred option by Downtown customers. Customers expressed a strong desire for improved aesthetics and cleanliness over the current system and current conditions. Most businesses that chose to attend the workshops indicated a preference for a concierge service, with the understanding that their service costs would likely increase. However, they also expressed concern about the impact that increased costs could have to their businesses.

8.4 Strategies and Implementation Plan

Based on the evaluation of four potential collection system option presented in Section 8.3, Burns & McDonnell recommends that the City implement a concierge system for the Downtown area. This option has the greatest potential for growth and flexibility as the area continues to grow and would alleviate many of the challenges faced under the current system (refer to Section 8.1.3). It would also allow the City to continue to make progress toward increased waste diversion by accommodating a three-stream

MSW collection system for Downtown businesses. The tables below present the priorities and additional strategies developed for the Downtown MSW management system.

In addition to Downtown-specific priorities and strategies, there are various strategies that the City plans to employ which are applicable to multiple sectors addressed within the CSWMP. The City-wide strategies further addressed in Section 12.0 that are be applicable to Downtown include:

- Ongoing MSW contract evaluations
- Waste characterization audits and baseline establishment
- Standardized MSW collection containers and signage
- MSW infrastructure planning

As a subset of the commercial and institutional sector, the strategies developed for the commercial and institutional sector and presented in Section 7.3 should also be applied for the Downtown. Downtown customers should have access to the same resources and support as all other commercial customers as well as specialized resources due to their unique needs.

STRATEGY 1:	Develop near- and long-term solutions to the challenges currently facing the Downtown area.
Description:	As described in this section, the nine-block core Downtown area and commercial customers within the area face MSW management challenges under the current MSW collection system. The City will continue to evaluate Downtown collection system options (refer to Section 8.3) and select the most appropriate option, pending approval by City Council. Burns & McDonnell recommends that the City implement a concierge system for Downtown commercial customers.
Initial Difficulty:	High
Waste Types Targeted:	Landfill trash, single-stream recyclables, organics including food scraps
Impact:	Very High
Priorities:	Alleviate challenges related to space constraints, limited City-owned property, aesthetics, and rate equity for Downtown customers
Timeline:	Achieve by 2020
Measuring Progress/KPI:	Progress will be measured through an annual workshop and survey of Downtown customers.

Strategy 1: Immediate, Year 1			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Utilize Year 1 of the CSWMP to select a Downtown collection system (refer to Section 8.3), receive approval from City Council, and continue to plan for and design the selected option. Year 2 will begin implementation and operation of the selected system.	Staff time, potential consultant costs	ESD, City Council, MSW contractor	High
Conduct a planning study to develop details for the selected Downtown collection system, including system operations, updated customer rate structure, and implementation plan.	Staff time, consultant costs	ESD, MSW contractor, Utility Billing Department	High
Develop and evaluate equitable, volume-based rate structure options and system funding options, if needed, to offset potential customer monthly rate increases. Receive approval for implementation from City Council.	Staff time, potential consultant costs	ESD, City Council	High

Strategy 1: Immediate, Year 1			
Initiate education and outreach to Downtown customers who will be impacted by collection system changes to provide implementation and ongoing technical support, as needed.	Staff time, potential consultant costs, minimal material costs	ESD	High

Strategy 1: Near-term, Years 2-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Begin new selected Downtown collection service.	Increased cost of service, staff time, minimal material costs	ESD, MSW contractor, Utility Billing Department	High
Continue to provide education and outreach to Downtown customers regarding new system operations and any adjustments to the system that are made after initial implementation.			
Continue to provide technical service to Downtown customers during their transition to the new system. Individualized assistance should be provided to customers as needed.			
Implement updated equitable, volume-based rate structure.			
For first three years of service, annually survey and hold a workshop for Downtown customers to gauge satisfaction and identify any challenges with the system. Make recommendations for system adjustments as needed.	Staff time, minimal material costs	ESD, customers	High

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Review and report on the performance of the new implemented Downtown collection system. Make recommendations for continuation or changes to the system based on analysis of Years 1-5.	Staff time, any additional costs to be determined upon review	ESD	High

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Review and report on the performance of the new implemented Downtown collection system option. Make recommendations for continuation or changes based on the analysis of Years 6-10.	Staff time, any additional costs to be determined upon review	ESD	High

STRATEGY 2:	**Prevent recyclables and organics from being landfilled.**
Description:	Preventing recyclables and organic material from being disposed with landfill trash supports the City's Guiding Principles for the CSWMP. The activities and tactics presented below support increased MSW diversion from landfills.
Initial Difficulty:	Moderate
Waste Types Targeted:	Recyclables, organics including food scraps
Impact:	High
Priorities:	Achieve a 100 percent participation rate for Downtown commercial customers in all recycling and organics collection services provided by the City.
Timeline:	Achieve by 2025
Measuring Progress/KPI:	Progress will be measured utilizing KPI/PMPs developed for participation in recycling and organics collection. To further measure progress, a waste characterization audit will be conducted to establish a baseline diversion rate for downtown against which subsequent waste characterizations will be compared.

Strategy 2: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a waste characterization audit to gain a better understanding of the composition of the material stream generated within Downtown allow for detailed analyses and to provide a baseline against which to measure future progress for increases in waste diversion. As part of this audit, gain a comprehensive understanding of what disposal and diversion activities are already being utilized.	Staff time, potential consultant costs	ESD, MSW contractor	High
Establish diversion goals specific to Downtown based on baseline numbers.	Staff time	ESD	High
Develop a KPI/PMP to track Downtown recycling and diversion participation, quantities, and destination facilities. Develop a report measuring tracked metrics against established baseline on an annual basis.	Staff time	ESD, MSW contractor	High
Research, develop, and recommend policies and ordinances that incentivize or compel Downtown customers to participate in City-provided recycling and organics collection services.	Staff time	ESD, City Council	High

Strategy 2: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Develop report based on KPI/PMP of Years 1-5. Make recommendations for maintaining or developing new measurement metrics. Make recommendations for service adjustments or additional policies and ordinances based on measured progress.	Staff time	ESD, MSW contractor	Medium
Conduct a waste characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	Medium

Strategy 2: Mid-term, Years 6-10			
Plan for a three-stream collection system including landfill trash, recyclables, and organics including food waste. This should be addressed with the implementation of a new collection system for Downtown.	Staff time, MSW contractor, potential consultant costs	ESD, MSW contractor	High

Strategy 2: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Develop report based on KPI/PMP of Years 1-5. Make recommendations for maintaining or developing new measurement metric. Make recommendations for service adjustments or additional policies and ordinances based on measured progress.	Staff time	ESD, MSW contractor	Medium
Conduct a waste characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	Medium
Continue education and outreach activities regarding the City's recycling goals and proper participation, with an emphasis on targeting new entities.	Staff time, little to no associated additional costs	ESD, Communications	High

STRATEGY 3:	**Provide specialized support and guidance for Downtown customers.**
Description:	Downtown is a unique area of the City and will have specialized services designed to meet the differing needs of customers and activities in the area. Therefore, customers will require support and guidance designed specifically to meet their needs and challenges. This includes support for initial implementation of the new Downtown collection system that is selected as well as ongoing support. Providing specialized support and outreach for Downtown will help to ensure successful operation of the Downtown MSW system, increased recycling and diversion activities, and customer satisfaction.
Initial Difficulty:	Low
Waste Types Targeted:	All
Impact:	High

STRATEGY 3:	Provide specialized support and guidance for Downtown customers.
Priorities:	Ensure successful transition to a new Downtown collection system and ongoing success of MSW operations.
Timeline:	Achieve transition by 2020; Achieve ongoing success
Measuring Progress/KPI:	Progress will be measured through an annual workshop and survey of Downtown customers.

Strategy 3: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Allow and encourage commercial and institutional customers to participate in cooperative purchasing (or "piggybacking") with the City to facilitate green purchasing. This support will be particularly important to provide to Downtown customers upon adoption of a City ordinance mandating use of recyclable and compostable materials.	Staff time	ESD, third party vendors, customers	High
Conduct a series of workshops with Downtown customers to educate and guide them through the transition from the current to the new Downtown collection system. Content will include but not be limited to discussion of reasons for the transition, the City's established MSW management goals, and proper participation in new services.	Staff time, minimal material costs	ESD	High
Provide individualized technical support to Downtown businesses to guide their transition from the current to the new Downtown collection system.	Staff time, minimal material costs	ESD, MSW contractor	High
Provide ongoing education and outreach support specific to Downtown customers as needed.	Staff time	ESD	High

Strategy 3: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to monitor the educational and support needs unique to Downtown customers and develop modifications or new support services and outreach activities as needed.	Staff time	ESD	High

Strategy 3: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to monitor the educational and support needs unique to Downtown customers and develop modifications or new support services and outreach activities as needed.	Staff time	ESD	High

STRATEGY 4:	**Continue to evaluate and plan for the future needs of the Downtown area and customers as a whole and incorporate Downtown MSW planning into larger City planning initiatives as appropriate.**
Description:	Downtown is a dynamically changing and growing area of the City and it is likely that the MSW management needs of the City will continue to evolve over time. Additionally, as a cultural and entertainment focal point of the community, it is important that the needs of Downtown are considered in various City-wide planning efforts. Given the visibility and importance of Downtown, successful MSW management in Downtown can be used as a launching point for improved MSW operations across all City sectors.
Initial Difficulty:	Moderate
Waste Types Targeted:	All
Impact:	High
Priorities:	Achieve an efficient Downtown MSW collection systems that is integrated into large City planning efforts.
Timeline:	Achieve by 2025 and on an ongoing basis.
Measuring Progress/KPI:	Progress will be measured through an annual workshop and survey of Downtown customers.

Strategy 4: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Two to three years prior to the end of the City's current MSW services contract term and each subsequent term, the City should begin to review the terms of the contract and evaluate whether any contractual changes are necessary. This tactic applies to all of the sectors addressed in this CSWMP and is described in further detail in Section 12.0, City-wide Strategies.	Staff time, potential consultant costs	ESD	**High**
Incorporate MSW management into the City's Downtown Master Plan at its next revision. The ESD will collaborate with the Planning department and other appropriate City departments to incorporate this plan for MSW management in Downtown into the overall Downtown Master Plan.	Staff time	ESD, Planning Department	High
After the new Downtown collection system is selected and implemented, continue to monitor customer needs and whether services continue to meet the needs of customers or whether different or additional services should be procured. This should be revisited on an ongoing basis during each contract renewal, renegotiation, or procurement process Section 12.0, City-wide Strategies.	Staff time, potential consultant costs	ESD, MSW contractor	High
During collaboration with the Planning Department to develop standards for MSW infrastructure requirements for commercial properties (refer to Section 7.3, Commercial and Institutional Strategies and Implementation Plan, Strategy 4 for detailed description), evaluate whether any specialized requirements need to be developed for Downtown.	Staff time	ESD, Planning Department	High

Strategy 4: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to monitor Downtown customer needs and evaluate the services provided and how the services are provided to them. This should be revisited on an ongoing basis during each contract renewal, renegotiation, or procurement process (refer to Section 12.0, City-wide Strategies for detailed description).	Staff time	ESD	High

Strategy 4: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to monitor Downtown customer needs and evaluate the services provided to them. This should be revisited on an ongoing basis during each contract renewal, renegotiation, or procurement process (refer to Section 12.0, City-wide Strategies for detailed description).	Staff time	ESD	High

9.0 PUBLIC SPACES AND SPECIAL EVENTS

9.1 Public Spaces and Special Events Overview

This section includes activities and special events taking place in various public locations throughout the City. Current MSW services, challenges, and strategies are addressed for the day-to-day operations, as well as events held in City-maintained facilities such as parks, pools, trails, and the Downtown area. These spaces are primarily maintained by the City's Parks and Recreation Department and the Georgetown Visitor Center (Red Poppy, Music on the Square, etc.).

The Parks and Recreation Department maintains 40 parks, ranging from small neighborhood parks to the large McMaster Athletic Complex and new 525-acre Garey Park. Several parks have pavilions and open areas that can be rented for residents and organizations to hold gatherings and events. Over nine miles of hike and bike trails are maintained by Parks and Recreation and are available to residents as well. Special events addressed in this section include large City-sponsored events, such as the Red Poppy Festival (the City's largest annual event) and other events that require a Special Event Permit from the City, which are managed by the Georgetown Visitor Center.

San Gabriel Park

9.1.1 Current System

Day-to-day MSW operations for public spaces. City crews and Community Service and Restitution (CSR) workers service the City's 210 landfill trash and recycling cans (typically large, cylindrical metal or plastic containers) distributed throughout the parks, sports complexes, trails, and Downtown area. Most containers are landfill trash containers, with some recycling containers Downtown. There are only a few recycling containers in parks and other public spaces. Bagged material is collected from the containers by City crews and transported directly to the transfer station in City pick-up trucks. The frequency of collection in public spaces varies depending on the needs of the space and day of the week. MSW collection for parks typically occurs between three and seven times per week. City crews also service public MSW containers in Downtown with increased frequency on Fridays and weekends, when greater numbers of residents and visitors are in the area.

Parks events and rentable spaces operations. The City continues to increase the number of public pavilions and spaces available for events and gatherings. Events held in these areas may require a Parks Event Permit if they meet certain criteria. Currently, there are no landfill trash or recycling management requirements associated with permit approval and renters utilize the existing City-provided collection containers. If renters are motivated to recycle, they typically must self-haul materials separately from landfill trash. On weekends when there are higher numbers of renters reserving time at pavilions within parks, City crews make an effort to collect cans between each reservation time block, though this is not always possible given the volume of collections that need to be made across the City.

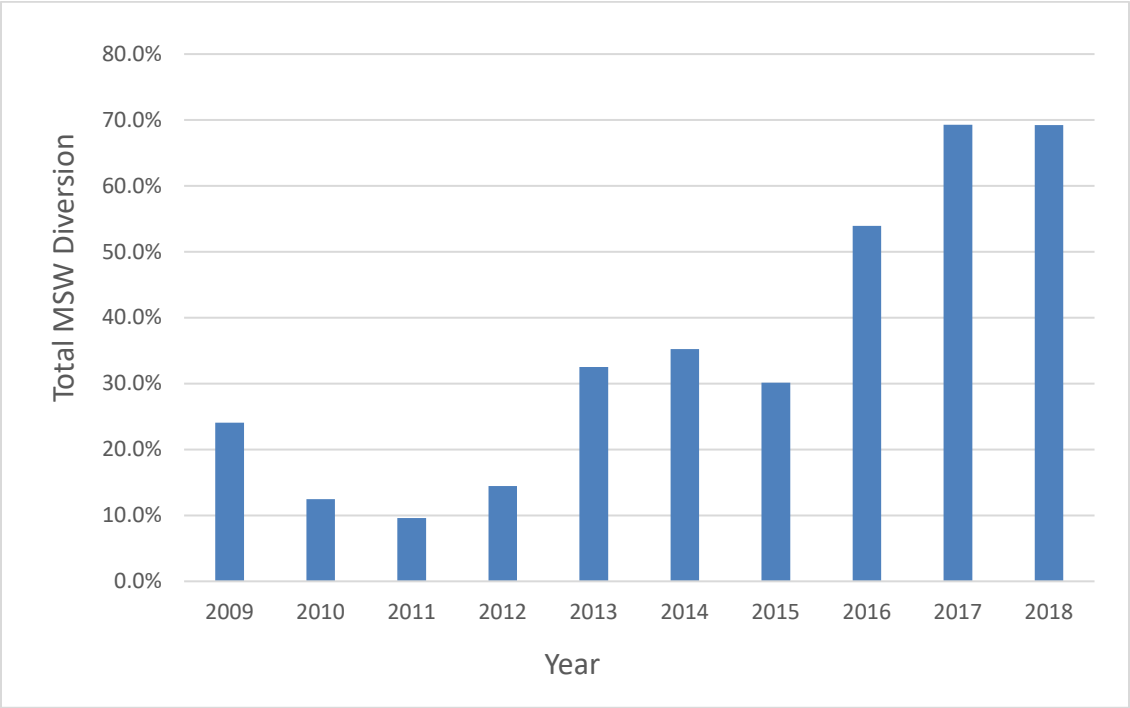
Organic waste management. In addition to landfill trash and recycling, organic waste management is a significant aspect of overall waste management in the City's parks and public spaces, which total approximately 600 acres of developed park land and an additional 800 acres of undeveloped park land. Landscaping and vegetation management are largely provided by third-party contractors and result in significant amounts of organic material (largely brush, branches, and vegetation trimmings) that have the potential to be diverted from landfill disposal. Contractors are required to remove materials after performing work, however, actual quantities of material are not currently tracked by the City. While there are no recycling or diversion requirements included in landscaping contracts, most contractors divert material for processing into mulch or compost. City crews occasionally provide tree trimming for parks and haul material directly to the transfer station.

Special events. Special events refers to City-sponsored events such as the Red Poppy Festival and other large events requiring a City-issued Special Event Permit. These may include parades, runs and bike races, concerts, carnivals and similar events. Special events are managed by the Georgetown Visitor Center.

The Red Poppy Festival is the City's largest annual event and is a celebration that City residents and visitors alike look forward to each year. The festival showcases the City's character in the Downtown Square, providing free entertainment for families including arts and crafts booths, live music, a classic car show, and a run and bike ride, among many other activities. The City, in close partnership with its MSW services contractor, has prioritized establishing the festival as a Zero Waste event, making every effort to divert as much material from landfills as possible through recycling and composting. The designation of the City's most popular event as a Zero Waste event is a key demonstration to residents and the central Texas region of Georgetown's commitment to sustainability and environmental stewardship. Because of the City's and contractor's dedication to this effort, diversion rates for the Red Poppy Festival have increased significantly over the past ten years, as shown in Figure 9-1.

Red Poppy Festival Parade

Figure 9-1: Historical Red Poppy Festival MSW Diversion Rates, 2009-2018



For other special events, the City does not currently have official policies or guidelines in place for recycling, organics diversion, or other materials management. The Special Event Permit application required the applicant only to specify whether the City's contractor will be used for the event's MSW management. The ESD may comment on the application and provide additional requests or guidance (e.g., to provide recycling), but this is not an official component of the special events approval process.

9.1.2 Comparison to Benchmark Cities

This section provides an overview of MSW services provided for public spaces and special events for the benchmark cities identified by the City, which include Cedar Park, Frisco, Kyle, New Braunfels, Richardson, and Round Rock. Because parks and public spaces in each city are unique, the ways in which MSW collection services are provided in benchmark cities varies widely.

Similar to Georgetown, four benchmark cities provide collection services in parks and public spaces with city crews, typically through the Parks and Recreation Department. Cedar Park and Frisco provide services through their MSW contractor. Several benchmark cities also noted an absence of or limited recycling opportunities in public spaces.

Challenges reported by benchmark cities for MSW management in public spaces includes recycling contamination and associated public education and a lack of adequate container capacity to handler the volume of material generated in public spaces.

A detailed matrix providing further details regarding each benchmark city's current services is provided in Appendix B.

9.1.3 Current System Findings

Limited day-to-day recycling opportunities. The City provides separate recycling collection containers (Bigbelly containers) in the Downtown area. However, there are limited recycling opportunities in public spaces and parks. While actual recycling rates and quantities are not currently measured for public spaces, it is likely that rates are relatively low. Because most spaces do not have separate recycling containers accessible by the public, a significant amount of recyclables are likely disposed. This may be especially true due to the nature of activities in these areas that are likely to generate high amounts of beverage containers that could be recycled: large get-togethers, sports games, hiking, exercising, and children playing, among many others.

Incorrect placement of material can lead to litter. City staff has noted that material is often placed on the edge of or next to landfill trash containers, rather than inside the container, leading to windblown litter

in City parks and public spaces. Based on conversation with City staff, this is one of the primary MSW management concerns for parks. It is an environmental as well aesthetic concern. The City will work to identify the reasons and solutions for incorrect placement, which could include the need for increased collection frequency (due to full cans) or enhanced public education including signage on collection containers in parks.

Limited space for additional MSW containers in Downtown area. Placement of additional landfill trash or recycling containers in the Downtown could create additional concerns (e.g. accessibility on public walkways) and would require coordination among multiple City departments.

Sports complexes. The City sees it as a priority to provide recycling collection at sports complexes, where higher volumes of recyclables are generated (e.g., water and sports drink bottles, cardboard from concessions) and the potential to increase diversion is significant.

Diversion confirmation for landscape waste. The City contracts with third parties for most landscaping and vegetation management activities in its parks and public spaces. While most contractors divert a large portion of the brush and other vegetative material generated, they are not currently required to do so. By including diversion and tonnage reporting requirements in landscaping contracts, the City could verify diversion of organic material and establish a baseline for organics diversion rates against which to measure future progress.

Separate day-to-day organics collection. While separate organics collection, specifically food waste, is an important waste diversion strategy that communities can employ, this option is not a near-term priority for the Parks and Recreation Department. There are other aspects of MSW management, such as recycling and correct placement of material in collection containers, that should be addressed first. Organics collection should be reevaluated on an ongoing basis as markets, public demand, and the presence of local processing facilities may continue to shift. If separate organics collection becomes more viable for the City as a whole, it should also be reevaluated for the public spaces sector.

Red Poppy Festival diversion. The City has established its largest annual event as a Zero Waste event with a high diversion rate of 69.2 percent in 2018, having grown significantly over the past ten years. The City has made MSW diversion for this event a priority. This highlights the City's dedication to responsible MSW management and helping establish itself a leader in both MSW management and sustainability for residents, businesses, and institutions across the City as well as the region.

Collection and disposal challenges for City staff. Where recycling is provided in public spaces, the same type and color of plastic bags is used for collection of both landfill trash and recycling. This can lead to confusion for City crews who collect and load bags from all containers into pick-up trucks and haul loads directly to the transfer station. Upon arrival at the transfer station, it is difficult to differentiate between bags containing landfill trash and bags containing recyclables, so recyclables may be disposed unintentionally. This issue is compounded by high turnover of staff and CSR workers performing collections from day to day and presents a need for continuous and easily accessible training and education in both English and Spanish.

Varied container types throughout City. There is not an established standard for the types of MSW collection containers provided in public spaces. Consistency in container types, colors, and signage would allow residents and visitors to become accustomed to one system that they can expect and use in the same manner throughout the City, increasing proper participation rates and therefore increasing recycling rates. If implemented, containers in public spaces should correspond with a larger effort in providing container and service consistency across sectors.

Potential for recycling contamination. Contamination of recyclables is a common concern for communities in their public spaces, due in large part to a lack of proper recycling education among the general public, visitors who may not be familiar with the system, and limited opportunities for enforcement of proper participation. To minimize this concern, expanded recycling opportunities in public spaces should be paired with a robust education and outreach campaign, which may be part of a larger education program encompassing all sectors.

9.2 Sector Priorities and Future Outlook

Because the City's parks and other public spaces are a highly visible and important part of the community and its identity, the City has the opportunity to significantly influence the public's perceptions and attitudes toward MSW management activities through provision of services and associated messaging within these spaces. Having a well-established, standardized, and simple-to-use recycling program available to residents and visitors in all public spaces throughout the City supports the City's image as an environmentally responsible, sustainability-minded community which would continue to support economic development across all sectors.

The priorities and strategies presented in Section 9.3 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for public spaces and events is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

MSW management activities in the City's parks and public spaces are, by nature, highly visible to the public. This includes residents, visitors, established businesses, and businesses considering locating in the City. Demonstration of the City's commitment to MSW management practices based on the waste management hierarchy can influence the overall behavior and engagement in both the residential and commercial sectors. The City has many parks frequented by residents and seeing these practices actively implemented will help residents to understand both the City's true commitment to responsible MSW management, and help educate and encourage them to participate in the same types of practices at home. From a commercial standpoint, the attractiveness of public spaces and the sustainability culture perceived by businesses is a factor in determining whether to locate in the City, therefore supporting the City's economic growth.

Guiding Principle 2: Services must be convenient for customers and price-competitive.

People are much more likely to follow the City's guidance about which materials to place where if the City provides convenient methods of disposal and diversion. Many of the strategies presented in Section 9.3 with both the means for convenient participation and the educational support to understand how to do so. From a cost perspective, the City will evaluate any potential new operations or changes to existing operations to identify the most cost-effective solutions.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

Guiding Principle 3 is directly targeted at recognizing the value and visibility of the City's public spaces and the need to prioritize providing effective MSW management in these spaces. The City proudly promotes its abundance of parks and its identity as the "Most Beautiful Townsquare in Texas" and it is committed to maintaining the beauty of its public spaces for residents and visitors alike.

9.3 Summary of Key Strategies

The tables below present the priorities and strategies developed for the City's public spaces and special events. In addition to these sector-specific priorities and strategies, there are various strategies the City plans to employ which are applicable to multiple sectors addressed within the CSWMP. The City-wide strategies further addressed in Section 12.0 that are applicable to public spaces and special events include:

- Ongoing MSW contract evaluations
- Waste characterization audits and baseline establishment
- Standardized MSW collection containers and signage
- MSW infrastructure planning

STRATEGY 1:	**Encourage the public to consistently place materials in the correct containers to maximize landfill diversion and facilitate ease of participation.**
Description:	A current primary challenge in the City's parks is MSW that is not placed in a container, leading to windblown litter and environmental and aesthetic challenges for the City. In addition, recycling opportunities in public spaces is currently limited. The City will utilize tactics to educate park visitors about the importance of litter abatement and MSW diversion and encourage and facilitate proper participation.
Initial Difficulty:	Moderate to High
Waste Types Targeted:	Landfill trash and recycling
Impact:	Medium
Priority:	Expand recycling opportunities in public spaces and reduce occurrences of litter.
Timeline:	Complete recycling implementation in all public spaces by 2023.
Measuring Progress/KPI:	Progress will be measured by the recycling opportunities and containers available in public spaces. The City will develop a detailed recycling implementation plan for expansion of recycling in public spaces.

Strategy 1: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct complete audit of locations of landfill trash and recycling containers located in City parks, trails, swimming pools, and other public spaces. The audit should include mapping of all container locations.	Staff time	ESD	High
After container location audit is conducted, the City will develop a recycling implementation plan to expand recycling availability in all public spaces on a progressive basis. Recycling implementation will include the following activities/tactics:	Staff time and additional considerations detailed below	ESD, MSW contractor, residents and visitors	High
Based on the City's developed standards for MSW collection containers City-wide (refer to Section 12.0, City-wide Strategies for detailed description), replace landfill trash and recycling containers for public use based on these standards. Containers across all parks and public spaces should be consistent to promote ease and consistency of use by the public.	Staff time, potential cost of replacement containers is to be evaluated further	ESD, MSW contractor	High
Provide paired containers (landfill trash and recycling containers side by side) at all locations where MSW collection containers are located. This encourages the placement of materials into the proper collection stream at all time.	Staff time, cost of additional containers	ESD, MSW contractor	High
Develop guidelines for standardized placement of MSW containers along the City's trails. This should include consistent spacing and frequency of containers to both decrease occurrences of litter and increase recycling. Provide additional containers as appropriate.	Staff time, cost of additional containers	ESD, MSW contractor	High
Strengthen public outreach and education the City's parks. Efforts will focus on at-the-source touchpoints, which are likely to be the most effective tactics for engaging the public about proper MSW management in public spaces.	Staff time	ESD, residents and visitors	High

Strategy 1: Near-term, Years 1-5			
Develop simple, graphics-based signage to affix to all MSW collection containers in parks and other public spaces. The signage should clearly indicate the types of materials that belong in each type of container.	Staff time, some materials costs	ESD	High
City staff will hold on-the-ground engagement with park visitors and in Downtown on select, high-traffic days. Staff will provide verbal guidance and demonstrations at landfill trash and recycling containers.	Staff time	ESD	High

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
After recycling has been established in public spaces, conduct an MSW characterization audit specific to materials generated within parks and other public spaces. This will allow the City to gain a better understanding of the composition of its MSW stream in these areas. This will allow for detailed analyses and to provide a baseline against which to measure future progress.	Staff time, potential consultant costs	ESD, MSW contractor	Medium
Based on baseline recycling data, establish measurable goals for increasing recycling in parks and public spaces. Goals may potentially be based on participation rates, percentage of material recycled, or tonnage of material recycled	Staff time	ESD	Medium
Based on results of waste characterization audits and observations of success or challenges in Years 1-5, develop recommendations for changes to services as appropriate.	Staff time	ESD	Low

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a waste characterization audit at least once every five years to enable further evaluation of program effectiveness.	Staff time, potential consultant costs	ESD, MSW contractor	Medium
Based on results of waste characterization audits and observations of success or challenges in Years 6-10, develop recommendations for changes to services as appropriate.	Staff time	ESD	Low
Evaluate the feasibility of providing separate organics collection, including food scraps, in parks and public spaces. Evaluation should be based on the progress toward proper landfill trash and recycling collection in these spaces and on whether local, cost-effective organics processing options are identified by the City.	Staff time, any additional costs to be determined upon market assessments	ESD	Low

STRATEGY 2:	**Enhance the efficiency of MSW collection from parks and public spaces to maximize waste diversion and operational consistency.**
Description:	City staff are responsible for collecting MSW material from parks and public spaces and hauling material to the transfer station. The City will implement the strategies described below to alleviate identified challenges and support staff in their collections operations in order to work toward the City's priority of increasing MSW diversion from landfill disposal.
Initial Difficulty:	Moderate
Waste Types Targeted:	All
Impact:	Medium
Priority:	Optimize collection efficiencies for landfill trash and recycling containers in parks and public spaces.
Timeline:	Achieve by 2023.
Measuring Progress/KPI:	On average, all containers should be approximately 75 percent full when collected to avoid overflow. This buffer will allow for any unforeseen daily schedule adjustments to be incorporated and still allow containers to be collected prior to reaching full capacity.

Strategy 2: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Develop educational materials and trainings for City staff responsible for collections and hauling of MSW from parks and public spaces. This will include guidance on proper identification and separation of materials both at the site of collection and during drop-off at the transfer station. As the City works to provide paired landfill trash and recycling containers, it will be especially important to provide the support to collections staff to ensure they are knowledgeable about and able to efficiently carry out proper collection procedures.	Staff time, minimal material costs	ESD, Parks and Recreation Staff	High
Utilize bags of different colors in public landfill trash and recycling containers. This will help staff in efficiently identifying the material once collected from containers and ensure proper sorting upon delivery to the transfer station so that recyclables are not inadvertently mixed with landfill trash.	Costs of color-coded bags	ESD, Parks and Recreation Department, Purchasing Department	High
Conduct a study to review and evaluate the effectiveness of regular collection frequencies at parks and public collection containers Downtown. The purpose is to ensure optimal collection frequency to alleviate the challenge of container overflow and windblown litter in the parks. Adjustments should then be made to collection frequencies as appropriate.	Staff time, potential consultant costs	ESD, Parks and Recreation Department	High
Conduct annual reviews of MSW operations for parks and public spaces to assess efficiency and success of material collections and proper stream separation for landfill diversion. Develop recommendations for operational improvements as appropriate. This will be a collaborative effort between the ESD and Parks and Recreation Department.	Staff time	ESD	Medium

Strategy 2: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a review of MSW operations for parks and public spaces every two years (or as determined by the City to be appropriate or feasible) to assess efficiency and success of material collections and proper stream separation for landfill diversion. Develop recommendations for operational improvements as appropriate. This will be a collaborative effort between the ESD and Parks and Recreation Department.	Staff time	ESD	High

Strategy 2: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct a review of MSW operations for parks and public spaces every two years (or as determined by the City to be appropriate or feasible) to assess efficiency and success of material collections and proper stream separation for landfill diversion. Develop recommendations for operational improvements as appropriate. This will be a collaborative effort between the ESD and Parks and Recreation Department.	Staff time	ESD	High

STRATEGY 3:	Incorporate MSW management and diversion considerations into larger, long-term planning efforts
Description:	Long-term MSW planning for parks, public spaces, and special events intersects with many other City operations and planning by other City departments and community partners. The ESD will collaborate with other City departments and community partners as appropriate to ensure that considerations for the City's MSW management priorities and guiding principles are included where necessary and that MSW management activities will function well with the planning needs and operations of other departments and recreational entities within the City.
Initial Difficulty:	Moderate
Waste Types Targeted:	All
Impact:	Moderate
Priority:	Establish baseline data for current recycling rates in parks and public places (refer to Strategy 1). Based on current recycling rates, develop specific recycling goals for parks and public spaces and work to increase recycling according to the goal metric(s).
Timeline:	Establish baseline by 2020. Develop goals by 2025
Measuring Progress/KPI:	Progress will be measured by conducting future MSW characterization audits and participation studies and comparing results to baseline data

Strategy 3: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Incorporate best practices for MSW management into future updates of the City's Parks, Recreation, and Trails Master Plan. This should include such topics as planning for adequate space for MSW infrastructure and collection containers, recommended numbers of containers, and pairing of containers at all locations.	Staff time, potential consultant costs	ESD, Parks and Recreation department	High

Strategy 3: Near-term, Years 1-5			
Incorporate MSW management planning into Parks Event Permits and Special Events Permit requirements. Applicants should be required to submit a plan for recycling as part of the permit approval process. This will help to establish recycling as part of expected activities throughout the City.	Staff time	ESD, Parks and Recreation	High
In addition to the Red Poppy Festival, evaluate the feasibility of designating other large City-sponsored events as Zero Waste events.	Staff time	ESD, Parks and Recreation, MSW contractor	Medium
Incorporate diversion and material reporting requirements in landscaping contracts. Include standard language in all third party landscaping contracts requiring contractors to haul and divert all materials that have the potential to be diverted. Tonnage reporting requirement should also be included to support the City in establishing a baseline for diversion rates.	Staff time	ESD, Park and Recreation, third party contractors	High
Evaluate the feasibility of placing additional landfill trash and recycling containers for public use in Downtown. A need has been identified for increased numbers of containers to alleviate overflow; however, there are other considerations, such as accessibility, that must be considered.	Staff time, potential additional container costs determined upon result of evaluation	ESD, Convention and Visitors Bureau (CVB), MSW contractor	High
Conduct outreach and collaborate with community recreation partners within the City to help them establish MSW management practices consistent with the City's priorities and MSW services. The City is home to various independent entities involved in recreation activities for which the City and its contractor do not provide collection services. Examples include but are not limited to those provided below.	Staff time	ESD, CVB, Parks and Recreation Department	Medium
The Georgetown Youth Baseball Association (GYBA) leases its baseball fields from the City and operates the fields independently of the City, including MSW services. The City should include requirements for recycling and diversion participation in renewed contract terms with GYBA.	Staff time	ESD, Parks and Recreation Department, GYBA	Medium

Strategy 3: Near-term, Years 1-5			
The U.S. Army Corps of Engineers (USACE) owns and maintains hiking trails surrounding lake Georgetown. The City should collaborate with USACE to provide services in a similar manner to City-owned trails. Consistency will improve public participation in responsible MSW management for both the City and USACE.	Staff time	ESD, Parks and Recreation Department, USACE	Medium

Strategy 3: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
On an annual basis, collaborate with other City departments to identify any upcoming planning efforts, updates to existing plans, or revisions of event permitting requirements that should incorporate MSW planning elements. When opportunities are identified, create a work plan to incorporate MSW management considerations into long-term City planning efforts.	Staff time	ESD, Parks and Recreation Department, other City departments as appropriate.	High

Strategy 3: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
On an annual basis, collaborate with other City departments to identify any upcoming planning efforts, updates to existing plans, or revisions of event permitting requirements that should incorporate MSW planning elements. When opportunities are identified, create a work plan to incorporate MSW management considerations into long-term City planning efforts.	Staff time	ESD, Parks and Recreation Department, other City departments as appropriate.	High

10.0 MUNICIPAL OPERATIONS AND POLICIES

10.1 Municipal Operations and Policies Overview

The City of Georgetown values its role in demonstrating commitment to sustainable and environmentally conscious operations and its responsibility to lead by example for other sectors within the City. City employees work in 32 facilities across Georgetown. In addition, numerous residents, tourists, contractors, and vendors visit City facilities throughout the year. Establishing and consistently implementing best practices for MSW management at City facilities will resonate throughout the City and encourage positive behaviors across all sectors.

Georgetown Municipal Complex

This section presents an overview of current MSW management operations within City facilities, describes challenges and identifies priorities for future operations, and presents an evaluation of potential strategies for achieving those priorities.

10.1.1 Current System

MSW services. The City currently provides landfill trash and recycling collection in all City facilities, public spaces, common spaces, and individual work spaces for City staff. Facilities are serviced with a combination of 96-gallon carts and dumpsters for both landfill trash and recycling and collection is provided by the City's contractor. All City facilities have separate carts and/or dumpsters for recycling collection.

The City contracts with a third party for custodial services in City facilities, including internal collection and set-out of MSW for collection by the MSW services contractor. City staff have small, separate landfill trash and recycling containers in work spaces (e.g., desks, offices, and conference rooms). Each day, custodial staff collect material from these containers as well as containers in public and common spaces, utilizing large open-top wheeled carts, or "tilt trucks," and transport that material either to 96-gallon carts or dumpsters. Custodial staff set out carts for collection according to each facility's collection schedule.

Large and bulk materials management. City facilities typically do not generate significant amounts of large or bulky materials for collection and disposal. For projects that generate large volumes of material, such as construction or repairs within City buildings, City facility staff transport the material directly to the transfer station. The City's Information Technology (IT) Department has third-party contracts for the removal of old or unused electronic equipment. Large items such as desks, chairs, storage cabinets, and other furniture are rarely disposed. When a facility or department no longer needs items, the items are either repurposed for use by other City departments or are sold at auction. This practice diverts items from landfill disposal while generating a revenue source for the City.

Hazardous and special waste management. The City has various methods of handling hazardous and special wastes generated by or within City facilities. For example, the City owns a lightbulb crusher and contracts with a third party for the transport and disposal of lightbulbs. The City occasionally has excess paint, which is donated to Habitat for Humanity. Use of cleaning chemicals within City facilities is primarily conducted by the City's custodial contractor, who then manages disposal of the chemicals. Several City facilities have household battery collection containers and many more anticipate providing receptacles in the future. Batteries are collected from each facility by City staff and shipped to a third party disposal contractor for proper disposal. The City also contracts on an as-needed basis for disposal of additional types of hazardous or special wastes. In these cases, the City issues a request for bids and selects a disposal contractor from the bids received.

10.1.2 Current System Findings

Consistent and proper use of recycling opportunities within City facilities. Recycling opportunities, including single stream recycling containers in all work spaces, common areas, and public areas, are provided in all City facilities. However, based on observations, there may be some inconsistent use among staff, potentially leading to contamination of single-stream recyclables and recyclables being disposed with refuse instead of separated for collection. Measured recycling contamination data for City facilities is not currently available.

Recyclables comingled with landfill trash during internal facilities collection. The City's contracted custodial staff are generally receptive to education and direction from the City. However, City staff have observed landfill trash and recycling material being collected in the same collection cart by contracted custodial staff, which is a common issue for many municipal and commercial facilities. This is likely due to a need for improved education for custodial staff and/or improved ease of separate collection for landfill trash and recyclables within City facilities. This challenge is compounded by frequent turnover of contracted custodial staff.

Recycling infrastructure planning for new City facilities. The new City Hall building and Garey House at Garey Park do not have adequate space to accommodate recycling dumpsters in addition to landfill trash dumpsters. Incorporating recycling infrastructure considerations into all planning processes for City facilities would further demonstrate to the public the City's commitment to environmental responsibility and encourage recycling participation.

10.2 Sector Priorities and Future Outlook

The intent of the strategies developed for this section of the CSWMP, is not only to improve services and MSW diversion within City facilities, but also to allow the City's internal operations to serve as an example of best MSW management practices to other entities and sectors across the City. To accomplish this, the City will work to cultivate a strong culture of responsible waste management across all City departments, and establish recycling participation as part of normal, day-to-day business practices. The City will also continue to provide comprehensive and innovative waste management solutions, so as to lead by example for other entities (businesses, institutions) within the City. To accomplish these priorities, the City will also provide support to City staff and contractors working within its facilities.

The priorities and strategies presented in Section 10.3 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for municipal operations and policies is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

Commitment to developing innovative MSW management methods that maximize waste diversion should begin with the City's internal operations. The strategies and actions developed for the commercial and institutional sector are designed to first establish an ingrained culture of sustainability within City facilities and among City employees and contractors. Then, the City will be better positioned to continuing to lead the community by example and provide support to all other sectors of the City to develop their own MSW management methods in accordance with the waste management hierarchy.

Guiding Principle 2: Services must be convenient for customers and price-competitive.

The City has a responsibility to provide ample opportunities for recycling and waste diversion within its facilities, but it must keep in mind that convenience of participation significantly impacts

participation levels among any customer, including City employees and contractors. Through the strategies presented in Section 10.3, the City will establish convenient recycling and MSW diversion opportunities within facilities and will also provide robust educational information and trainings to all individuals to further increase the ease of participation.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

Strategies focused specifically on enhancing aesthetics and services for Downtown and the City's parks and public spaces are presented in Sections 8.0 and 9.0, respectively. An important aspect of the intent of developing strong and innovative strategies to employ with in City facilities is to extend successful strategies (with adjustments as appropriate) to other sectors and areas of City operations, which include decisions and strategies for Downtown and public spaces.

10.3 Strategies and Implementation Plan

The tables below present the priorities and strategies developed for municipal operations and policies. In addition to these sector-specific priorities and strategies, there are various strategies the City plans to employ which are applicable to multiple sectors addressed within the CSWMP. The City-wide strategies further addressed in Section 12.0 that are applicable to municipal operations and policies include:

- Ongoing MSW contract evaluations
- Waste characterization audits and baseline establishment
- Standardized MSW collection containers and signage
- MSW infrastructure planning

STRATEGY 1:	**Establish consistent MSW management participation and collection practices within City facilities.**
Description:	To increase participation diversion activities and increase diversion rates in City facilities, City staff and contractors working within the facilities need to have a clear understanding of why diversion is important, what proper MSW management procedures are, and receive support to enable their engagement and participation. Establishing clear and consistent policies and expectations for MSW management will increase diversion rates and also supports the City's priority to lead by example for the larger community, which is discussed further in Strategy 2.
Initial Difficulty:	Moderate
Waste Types Targeted:	All, with an emphasis on recyclables
Impact:	Medium
Priority:	Achieve high levels of participation in all internal recycling and diversion programs by City facilities staff and third party contractors.
Timeline:	Achieve by 2022 for existing programs. As new programs are developed, allow one to two years for achievement of full participation.
Measuring Progress/KPI:	Progress will be measured through staff surveys regarding participation (including assessment of ease) and annual MSW characterization to quantify increases in facility diversion rates and identify and locations or materials facing challenges.

Strategy 1: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Conduct an MSW characterization audit specific to materials generated within City facilities. This will allow the City to gain a better understanding of the composition of its internal MSW stream. This will allow for detailed analyses and to provide a baseline against which to measure future progress.	Staff time, potential consultant costs	ESD, MSW contractor	High
If contamination of recyclables is at high levels, conduct a recycling contamination audit to quantify and identify problem materials and develop targeted educational information to distribute to City staff about how to properly handle those materials.	Staff time, potential consultant costs	ESD, MSW contractor	High
Develop standardized criteria for having "disposal stations" in all shared and public areas within City facilities. Stations will include receptacles for landfill trash, recycling, and other diversion opportunities if feasible (e.g., battery collection containers, organics collection containers, etc.)	Staff time	ESD, facilities management	High
Establish a City-wide "green team" that will help to coordinate staff trainings, educational efforts, and other MSW operations coordination within and among City facilities. There may be a green team leader at each facility. However, it is important that participation does not put excessive strain on City staff and resources.	Staff time	ESD, facilities management, individual City staff members	Medium
Develop a comprehensive educational program for City staff. The City will develop a suite of educational resources and tools to support City staff in proper MSW management while at work. This will include both immediate and ongoing support.	Staff time	ESD, human resources, department managers, individual City staff members, Facilities management, Communications Department	High

Strategy 1: Near-term, Years 1-5			
Develop mandatory staff trainings for internal MSW management. Trainings will include information about the City's priorities, recycling and diversion opportunities in City facilities, and proper use and participation. Trainings should be required for all new hires and short refresher trainings will be conducted annually for all employees.	Staff time	ESD, human resources, department managers, individual City staff members	Medium
Develop permanent guidance signage for display in shared spaces and on collection containers.	Staff time, minimal material costs	ESD, facilities management	High
Develop internal best practices guides and post online for easy access by all employees. Guides will include both general information and facility-specific information as needed. Guides should be provided to all new employees.	Staff time	ESD, Communications Department	High
As needed, develop specific and targeted educational materials whenever adjustments are made to internal practices or when new services are developed	Staff time	ESD, Communications Department	High
Instruct custodial contractor to develop educational materials and provide support for custodial staff responsible for internal MSW collections in City facilities. Materials will include trainings and distributable educational materials regarding proper collection and material separation procedures. Educational materials will be provided to current and new custodial staff and they should be available in both English and Spanish. The custodial contractor will develop educational materials and the City will have final approval of content.	Staff time	ESD, custodial contractor, facilities management	High
Require the use of tilt trucks with two separate compartments for internal collection to facilitate proper and separate collection of landfill trash and recyclable. The City will collaborate with the custodial contractor to determine purchase and ownership responsibilities of the tilt trucks.	Staff time	ESD, custodial contractor, facilities management	High
For future custodial contracts, include in contract terms requirements to properly manage MSW streams, as defined by the City, and to continue training custodial staff on proper collection procedures.	Staff time	ESD, custodial contractor	High

Strategy 1: Near-term, Years 1-5			
On an annual basis, survey City employees to gauge their participation and engagement in the City's MSW management practices and programs. Include request for suggestions on improvement of internal practices, program adjustments, or new program ideas.	Staff time	ESD, individual City staff members, Communications Department	High
Pilot new programs or operational practices at select City facilities prior to roll-out City-wide. Large and/or new facilities (e.g., the Library, Municipal Complex, and new City Hall), present opportunities for to allow the City to identify and address potential challenges of new operations and make adjustments prior to implementation in all facilities.	Staff time, costs will vary depending programs implemented	ESD, facility managers	Medium
Evaluate the feasibility of providing separate organics collection in City facilities. This will incorporate considerations regarding the availability of local and cost-effective processing options, as further addressed in Section 4.1.4 Organics Processing Facilities.	Staff time	ESD	Low

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to evaluate the need for improved and/or additional internal policies and procedures based on the level of success achieved in Years 1-5. Success will be measured by employee feedback utilizing surveys and measurement of progress against baseline generation rates through additional waste characterization audits.	Staff time	ESD, MSW contractor, City staff	High

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to evaluate the need for improved and/or additional internal policies and procedures based on the level of success achieved in Years 6-10. Success will be measured by employee feedback utilizing surveys and measurement of progress against baseline generation rates through additional waste characterization audits.	Staff time	ESD, MSW contractor, City staff	High

STRATEGY 2:	**Solidify the City as a leader for innovative and cost effective MSW management, especially in terms of internal operations. Be a visible, supportive, and interactive source for information on best practices.**
Description:	It is critical that internal City operations reflect best practices of MSW management and actively support the City's recycling and diversion priorities established in this plan. Establishing consistent practices, as discussed in Strategy 1, is the first step in this process of leading by example. The second step is for the City's internal practices to be visible to the community and for the City to provide support to other sectors in establishing best practices as well.
Initial Difficulty:	Moderate
Waste Types Targeted:	All, with an emphasis on recyclables
Impact:	Medium
Priority:	Solidify the City as a leader for innovative and cost effective MSW management, especially in terms of internal operations. Be a visible, supportive, and interactive source for information on best practices.
Timeline:	Achieve by measuring on an ongoing basis.
Measuring Progress/KPI:	Feedback from all City sectors obtained through surveys, as recommended in each of the Strategies and Implementation sections throughout the CSWMP.

Strategy 2: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
After standard container types and colors are determined for City-wide implementation (refer to Section 12, City-wide Strategies for detailed description), replace both internal containers and containers services by the City's MSW contractor, as needed. Containers will be consistent with the standardized container system that is developed for implementation across all sectors. During the next contract renewal, re-negotiation or procurement process, include request for costs and transition timeline.	Staff time, potential cost of replacement containers is to be evaluated further	ESD, MSW contractor	High
Collaborate with the Planning Department to develop standards for MSW infrastructure requirements for construction of new City facilities or facilities undergoing renovation. Incorporate these standards into building permit requirements. At a minimum, require allocation of space for adequate landfill trash and recycling containers.	Staff time	ESD, Planning Department	High
Develop an external-facing best practices guide. Once the City has established and evaluated the effectiveness of its internal practices and policies, the City will develop a public best practices guide to assist entities in other sectors with developing their own internal MSW management practices. The guide should be promoted through various communications channels and easily accessible to the public.	Staff time	ESD, Communications Department	Medium
Incorporate diversion and sustainability terms into all of the City's third-party contracting agreements. For each type of contract, establish standardized language for recycling and diversion requirements. For example, require landscapers to divert all organic material from landfill disposal, require building contractors to recycle construction and demolition debris, and require custodial contractors to follow separation and collection procedures established by the City.	Staff time	ESD, Purchasing Department	High

Strategy 2: Near-term, Years 1-5			
The ESD will collaborate with other City departments, as appropriate, to evaluate options for developing standard business processes and/or longer-term (instead of as-needed) contracts for the handling and disposal of hazardous and special wastes generated by or within City facilities.	Staff time	ESE, other City departments as appropriate	Medium
The ESD will collaborate with the Purchasing Department to develop green purchasing policies such as policies for purchasing products made with recycled materials and products that can more easily be recycled or composted. For example, the City will evaluate its current coffee and disposable cup purchasing contract for opportunities to improve terms from a recycling and diversion standpoint.	Staff time	ESD, Purchasing Department	High
The Georgetown Public Library is an active community partner with established public outreach channels. Facilities and ESD staff will partner with the library to develop and facilitate community engagement efforts such as community education, pilot programs, and reuse, repair, and rental clinics.	Staff time, some material costs	ESD, Georgetown Public Library	Medium
The ESD will assist the Office of Emergency Management (OEM) to incorporate best practices for handling and diversion of MSW and storm/disaster debris (e.g., large quantities of brush). Encourage OEM to include these best practices into emergency management plans and programs.	Staff time	ESD, OEM	Medium

Strategy 2: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Utilize feedback from all City sectors (methods are addressed in each respective sector of the CSWMP) to identify areas in which additional leadership by the City would be beneficial to the public and to private businesses. Evaluate the success of tactics implemented in Years 1-5. Develop additional tactics as needed.	Staff time	ESD	High

Strategy 2: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Utilize feedback from all City sectors (methods are addressed in each respective sector of the CSWMP) to identify areas in which additional leadership by the City would be beneficial to the public and to private businesses. Evaluate the success of tactics implemented in Years 6-10. Develop additional tactics as needed.	Staff time	ESD	High

11.0 HOUSEHOLD HAZARDOUS WASTE

11.1 Household Hazardous Waste Overview

The purpose of a household hazardous waste (HHW) voucher program is to provide residents with access to safe and proper disposal options for household materials that are not suitable for disposal in a landfill or for collection with other curbside residential programs (refer to Section 11.1.1 for materials accepted under the program). Local provision of convenient HHW disposal options decreases the potential for improper disposal with other MSW or illegal dumping of environmentally harmful materials.

From 2008 to 2018, the City contracted with Williamson County Recycle Center (WCRC) to provide residents with a voucher-based drop-off collection program for HHW. WCRC was a privately-owned permanent HHW collection facility. Single-family and multi-family residents within City limits and out-of-City single-family and multi-family residents receiving City MSW services were eligible to participate in the program. In December 2018, the WCRC unexpectedly terminated operations and closed its facility. This section of the CSWMP describes operation and participation in the City's prior program, presents options for HHW services moving forward, and provides strategies and an implementation plan.

11.1.1 Current System

With the unexpected termination of the City's HHW voucher program, the City does not currently provide HHW services to residents, but is actively seeking options to replace the former program.

Program summary. The City's contract with WCRC allowed City residents and residents of ETJ areas receiving MSW services from the City's contractor to receive vouchers for disposal of HHW materials at WCRC at no cost. The WCRC was located approximately 8.5 miles northeast of Downtown and was open for HHW collection three days per week (Thursday, Friday, and Saturday). Each household was eligible to request one voucher every 90 days (up to four times per year), with vouchers valid for 30 days after issuance. Vouchers covered 100 percent of material disposal costs for in-City customers and 50 percent of disposal costs for out-of-City customers.

There was no specified limit to the amount of HHW material a resident may drop off per voucher. However, WCRC accepted only residentially-generated material. Home business, small business, and commercial wastes were not accepted under the program. City staff were not involved in the operation of WCRC or handling of HHW materials. WCRC owned the facility and its personnel handled all collection, packing, and disposal operations for the program.

Transition to online voucher system. In January of 2018, the City transitioned to a primarily online voucher system. This transition was intended to increase ease and convenience of program participation by eliminating the need for residents to visit a City facility to obtain a paper voucher prior to visiting the WCRC. After the transition, customers applied for a voucher via the City's website and received a voucher by email if they met the program's residency requirements. Electronic vouchers were accepted at the WCRC facility in place of the prior paper vouchers. City residents who lived in Jonah Water Special Utility District (SUD) were eligible to participate in the voucher program but were required to visit the City utility office to obtain a paper voucher.

Accepted materials. The range of HHW materials accepted at the WCRC was typical of permanent HHW collection and disposal programs. Materials accepted under the HHW voucher program included, but were not limited to:

- Aerosol spray cans
- Antifreeze
- Art and hobby chemicals
- Automotive products
- Batteries (wet and dry cell)
- Fertilizers
- Fluorescent lights (tubes or CFLs)
- Household cleaners and disinfectants
- Mercury thermometers and liquid
- Motor oil or transmission fluid
- Paints, latex and oil-based
- Pesticides and poisons
- Pool and spa chemicals
- Thinners and solvents
- Used cooking oil

Tires, electronics, and other special wastes were not accepted under the program. These materials are further addressed in Section 11.1.1.1, Other Special Wastes.

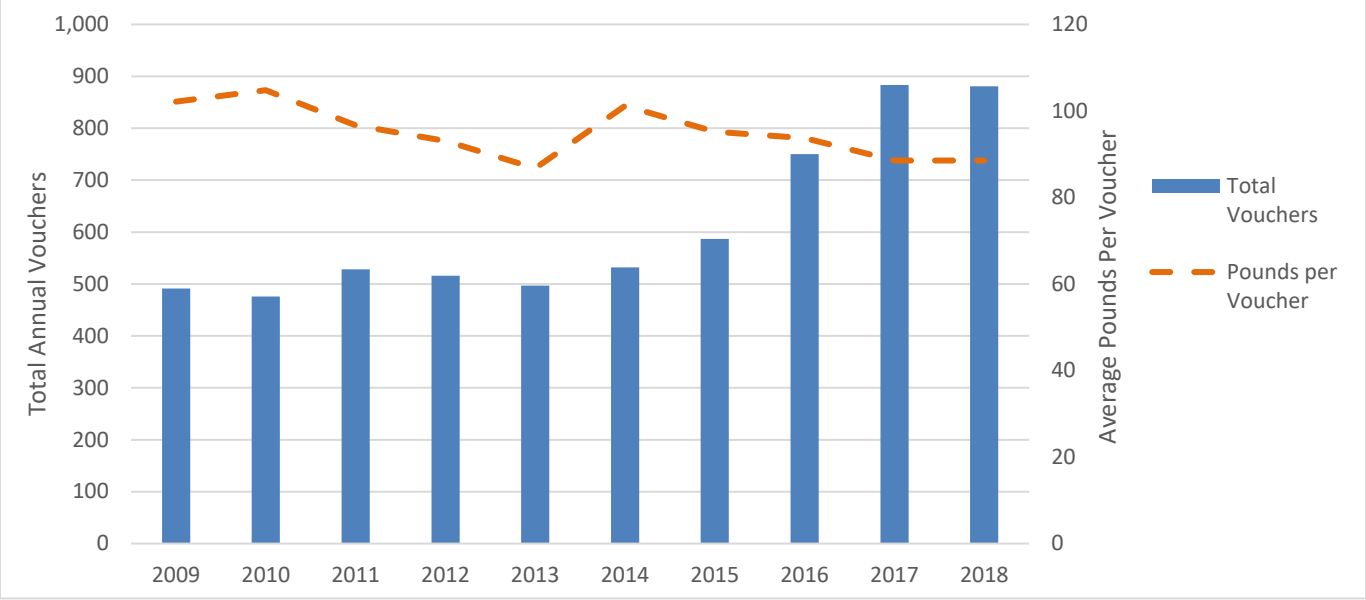
Reuse program. The WCRC also operated a reuse program. Unused or leftover HHW materials suitable for consumption were available to residents at no charge. Reuse programs benefit residents by helping reduce household costs and benefit the larger community by discouraging improper disposal of HHW materials in landfills or elsewhere, helping to reduce environmental contamination. The City's reuse program also provided materials for free for use by other local municipalities and businesses.

Program participation. Historic full-year program participation data is available for fiscal years 2009 through 2018. Over the past five-year period from 2014 to2018, the number of vouchers used by City and ETJ residents annually increased, from 532 in 2014 to 881 in 2018. This increase in program participation was likely due to both population growth and the City's efforts to promote the program and educate the community. For 2018, approximately 2.7 percent of the eligible households participated in the voucher program.

Dallas County, Texas operates a regional HHW disposal facility and program where residents of 15 participating local municipalities may bring their HHW for disposal at no cost. For comparison, Dallas County's program had an overall average household participation rate of 3.2 percent in 2016, with individual municipalities' household participation rates ranging from 0.4 to 8.4 percent.

Figure 4-1 depicts the City's annual program participation and average amount of HHW material generated per voucher for fiscal years 2009 to 2018.

Figure 11-1: 2009-2018 HHW Program Participation and Material Quantities



During the initial five years of the voucher program, total program participation fluctuated between just below and just above 500 per year. Total program participation steadily increased from 532 in 2014 to

881 in 2018, a total increase of 66 percent over the five-years period.[1] The total number of pounds the program received annually followed a similar pattern, seeing small changes in the first five years and growing steadily during the most recent five-year period, from 54,000 pounds in 2014 to 78,000 pounds in 2018. The change in program growth pattern can be attributed to two primary factors:

- Continued and increased rate of the City's population growth
- The City's increased focus on education and outreach for the HHW program

HHW program participation is also often measured in average pounds per customer or per voucher. While the number of participants and total annual pounds of material collected annually increased significantly in recent years, the average pounds disposed per voucher decreased by 12.5 percent, from 101 pounds in 2014 to 89 pounds in 2018. This decrease is typical as programs become more well established. The typical per-voucher material disposal rate for established programs is between 85 and 100 pounds.[2] The City's material disposal rate under the voucher program was within the typical range.

Program Funding and Costs. The ESD included funding for the HHW voucher program in its annual budget with supplemental funding from the General Fund if resident participation exceeded the City's projections for that year. As City customers' participation in the program increased, total annual cost to the City increased proportionally.

Per-voucher (or per-customer) and per-pound disposal costs are commonly used as metrics to evaluate the cost-effectiveness of HHW drop-off programs. Table 11-1 presents program costs for fiscal years 2009 to 2018.

[1] An exception to this was the 2017-2018 fiscal year, in which participation remained at the same level as the previous year. This is attributed to technical challenges associated with the switch to a new program software system, which impacted the convenient availability of vouchers for a period of time.
[2] Based on a 2017 study conducted by Burns & McDonnell which evaluated program performance and participation for Dallas County's and the City of Fort Worth's HHW collection programs. There is very limited publicly available data regarding HHW program performance and participation in Texas.

Table 11-1: City of Georgetown Historic HHW Program Costs, 2009-2018

Fiscal Year	Total Annual Costs	Average Cost per Voucher	Average Cost per Pound Disposed
2009	$33,047	$67.31	$0.66
2010	$31,724	$66.65	$0.64
2011	$33,473	$63.40	$0.66
2012	$35,792	$69.36	$0.75
2013	$34,768	$69.95	$0.81
2014	$44,628	$83.89	$0.83
2015	$47,004	$80.08	$0.84
2016	$63,168	$84.22	$0.90
2017	$72,159	$81.72	$0.92
2018	$74,087	$84.09	$0.95

In 2018 the average cost to the City per customer voucher was $84.09, and the average disposal cost per pound was $0.95. Based on a study conducted by Burns & McDonnell in 2017, these costs are relatively higher that other local HHW drop-off programs in Texas. In 2016, two regional programs North Texas (serving a total of 65 municipalities) saw an average per-voucher or per-customer cost of $45-$62, and a per-pound cost of $0.48-$0.76. However, the programs studied (Dallas County and City of Fort Worth) generally served significantly larger population and received much higher total annual material quantities (2.2 and 2.5 million pounds, respectively) than the City and WCRC received. These programs are likely able to achieve lower per-voucher and per-pound costs due to economies of scale.

11.1.1.1 Other Special Wastes

Disposal options provided for other special wastes that are not categorized as HHW continue to be provided, though are limited. Special waste disposal options within the City include:

Electronic waste. There are limited options for recycling electronic waste (computers, small appliances, televisions, etc.) within in the City. The Goodwill Store in the City provides drop-off collection for some electronics to be recycled. Many HHW or voucher programs do not provide collection and disposal of electronic waste, largely due to the unpredictability of the electronics recycling market, which makes the electronics recycling not reliably cost-effective.

Medications. The City provides a kiosk for collection of medications, both prescription and over-the-counter, at the Public Safety Operations and Training Center and is accessible to residents during all

regular business hours. Installation of the kiosk was grant-funded and provides a safe, secure, and convenient means for disposal of potentially harmful substances.

Tires. Residents and businesses may drop off used tires for recycling for a fee at the City's transfer station. In FY 2017, a total of approximately 10.5 tons of tires were recycled at the transfer station.

11.1.2 Comparison to Benchmark Cities

This section provides an overview of HHW services that each benchmark provides to its residents. Five of the six benchmark cities provide some form of HHW collection service to both their single-family and multifamily residents. The City of Kyle does not provide HHW service through the City, but its residents receive service as residents of Hays County through the county's partnership with the City of San Marcos.

Three benchmark cities have drop-off programs at permanent collection facilities with varying levels of drop-off opportunities.[3] The cities of Cedar Park, New Braunfels, and Round Rock have periodic collection opportunities with frequencies ranging from once per year to once per month. In general, cities with drop-off programs tend to have more collection opportunities for residents. Frisco and Richardson residents have multiple opportunities per week for drop-off of HHW materials.[4]

Each of the city's HHW programs accepts the typical range of HHW materials similar to the range of materials that were accepted under Georgetown's previous voucher program. A smaller number of cities also accept some additional special wastes such as electronics and tires.

A detailed matrix providing further details regarding each benchmark city's current services is provided in Appendix B.

11.1.3 Current System Findings

Alternative HHW program options needed. The City's previous HHW voucher program through WCRC was a successful and effective approach to providing residents with regular drop-off opportunities. With the unexpected termination of this program, it is important that the City identify alternative service options to continue to provide residents with convenient disposal options and avoid improper disposal, which could cause environmental or human health risks. Alternative service options the City may consider are discussed in Section 11.3.

[3] The City of Kyle was excluded from this comparison because HHW service is provided by Hays County and is not provided by the City.
[4] Round Rock also provides additional opportunities for scheduled facility drop-off for a fee, as well as residents having access to Williamson County's spring and fall annual events.

11.1.3.1 Previous Voucher System Findings

Typical program approach. The City's approach to providing local HHW disposal options to residents was similar to many other small and mid-sized Texas cities. These types of cities typically partner with larger entities or multiple municipalities to provide services due to the costs of program operations and the large volumes of material that must be generated to achieve the economies of scale that make a permanent collection facility financially viable.

Accepted materials. The City's participation in the voucher drop-off program at WCRC's permanent facility provided City resident with disposal options for a wide range of HHW materials typical of established permanent collection facilities. Mobile collection or periodic collection programs are more likely to accept a limited range of materials.

Program participation. The City achieved a significant increase (66 percent) in the number of vouchers used annually from 2014 to 2018, likely due to both population growth and public education and outreach. From the perspective of household participation, the City's participation rate (2.8 percent of eligible households) was normal to slightly lower than other Texas cities for which data is available. This suggests that the City may be able to achieve increased participation rates with an alternative program through increased education or program convenience.

Program costs. The City's per-voucher and per-pound disposal costs were relatively high compared to other Texas programs for which data is available. However, this should be understood with the perspective that the City and the WCRC likely did not have the potential to reach the same cost efficiency as programs serving larger metropolitan areas. If the City is able to participate in a regional or collaborative program with other local municipalities, it may be able to achieve greater cost efficiencies.

11.2 Sector Priorities and Future Outlook

Providing local options for HHW collection and disposal is an important component of providing comprehensive materials management services to residential customers. Options for re-use of these materials is also important and supports the City's vision for providing services consistent with the waste management hierarchy. These services are important for the continued health of both residents and the physical environment, particularly to avoid groundwater and drinking water contamination. With the recent termination of the voucher program, the City plans to identify alternative HHW service options for its residents, seeking services that that maximize the relationship between convenience and affordability.

The priorities and strategies presented in Section 11.4 were developed to align with the four established Guiding Principles. The significance of the Guiding Principles for Downtown is described below:

Guiding Principles 1 and 4: Develop innovative MSW management methods for residential and commercial sectors consistent with the waste management hierarchy; Evaluate alternatives to disposal; landfills are a finite resource in the region.

HHW disposal services is a critical component of a City's MSW program due to the potential for environmental contamination if these materials are not handled and disposed of properly. HHW materials should always be disposed of properly, and not included in material for MSW landfill disposal. To provide residents with an opportunity to dispose of materials following the waste management hierarchy, the alternative service options the City chooses to provide should ideally include access to a reuse store.

Guiding Principle 2: Services must be convenient for customers and price-competitive.

The City must balance providing a sufficient level of HHW service, for residents with the costs associated with providing the program. The City will continue to evaluate different program options for providing services based on local markets and customer satisfaction. In recent years, the City actively worked to improve its HHW program to make participation more convenient and to reach as many residents as possible through the program.

Guiding Principle 3: Enhance aesthetics and services for Downtown Square customers and City parks.

Strategies focused specifically on enhancing aesthetics and services for Downtown are presented in Section 8.0. Proper disposal of HHW materials helps to preventing environmental contamination, including in the parks and public spaces.

11.3 Alternative HHW Service Options

There are multiple options for municipalities seeking to provide HHW collection and disposal services to their residents, including regular curbside collection, regular drop-off opportunities, periodic collection events, and intergovernmental programs. On an ongoing basis, the City may consider alternative HHW service options, as markets and customer demands change over time. Any preferred option should consider both customer convenience and cost effectiveness for the City and its residents.

The intent of any HHW program is to safely dispose of the maximum quantity of material possible, and therefore must be convenient enough to encourage customer participation but must also be financially feasible for individual customers and for the City. Evaluation of any alternative options should include, at a minimum:

- Potential customer participation (this would include evaluation of program convenience)
- Potential material recovery quantities
- Potential costs, including per-customer and per-pound disposal costs

Potential alternative HHW program options are described below:

Curbside collection. The City could consider evaluating the financial feasibility and customer interest in a curbside collection service for HHW materials. During the City's next contract renewal or request for proposal process, the City could request bids for a curbside collection service and then further evaluate the option based on pricing and potential customer participation.

Drop-off and storage unit. The City could consider purchasing a stationary drop-off and storage unit at which residents would drop off HHW materials during designated hours. This unit would be a ventilated storage unit and material processing would not occur on site. For disposal of material collected at a drop-off storage unit program, there are two primary options:

- **Disposal contractor.** The City could contract with a third party for collection of material from the storage unit, and transport to a facility for proper disposal.
- **Interlocal agreement for material disposal.** The City could enter into an interlocal agreement with the City of Austin under which the City would transport collected material in bulk on a regular basis from the storage unit to Austin's permanent collection facility for processing and disposal.

Prior to construction of the new transfer station and reconfiguration of the existing site, the City may consider the feasibility and relative convenience of siting a drop-off and storage unit within its existing transfer station property. The cost for purchase of a safe and properly ventilated unit would be approximately $5,000 to $10,000. This option would also require that the drop-off unit be staffed during drop-off hours and that City staff receive training on proper handling and storage of HHW materials.

Mobile collection unit. A mobile HHW collection unit would allow the City to hold regular collection events at determined intervals (e.g., monthly, quarterly, bi-annually, etc.) at varying locations around the City. The option to hold collection events in varying locations could potentially increase customer convenience. The cost of purchasing a mobile collection unit may be approximately $40,000. The City could potentially share the cost and ownership of a mobile collection unit and program with other local depending on their interest. The options for material disposal for a mobile collection program would be similar to those presented for drop-off and storage program. The operation of a mobile collection unit and

program would also require additional staff training for proper handling of materials and/or additional staff to be hired.

Regional collaboration. Intergovernmental or regional collaboration among municipalities and planning entities is a common approach for developing cost effective and convenient options for residential HHW services. HHW management often requires specialized operations and significant capital and it can be challenging for individual cities, often with limited resources, to provide convenient and cost-effective programs to their residents on their own. There are several successful regional HHW collection programs in Texas, including in Austin, Fort Worth, Frisco, Dallas County, Hays County and Harris County.

Based on preliminary discussions with other local municipalities, there is currently interest for collaboration within Williamson County and the CAPCOG region. A regional program could take various forms and would require extensive planning efforts among cities in the County or region. A regional study to identify the most effective program structure may facilitate planning efforts and program development. Georgetown and other local cities may apply for grant funding from CAPCOG to support a study and/or eventual implementation of a regional program.[5]

[5] Capital Area Council of Governments (CAPCOG) supports eligible projects within its jurisdiction that help implement its regional solid waste management plan. http://www.capcog.org/divisions/regional-services/solid-waste-grant-program/

11.4 Strategies and Implementation Plan

The tables below present the priorities and strategies developed for management of HHW. In addition to these sector-specific priorities and strategies, there are various strategies the City plans to employ which are applicable to multiple sectors addressed within the CSWMP. The City-wide strategies further addressed in Section 12.0 that are applicable to HHW include:

- Ongoing MSW contract evaluations
- Waste characterization audits and baseline establishment (for HHW, this may be obtained through existing program material tracking in partnership with the WCRC)

STRATEGY 1:	**Continue to seek opportunities to provide a high level of convenient and cost effective HHW service options to residents.**
Description:	The initial step in ensuring residents receive HHW service is to ensure they are aware of their service options and how to participate through continued education and outreach. Services must be convenient and cost effective for residents and they must understand the benefits of program participation. On an ongoing basis, the City will evaluate its current program as well as alternative program options as appropriate.
Initial Difficulty:	Low
Waste Types Targeted:	Household hazardous waste (HHW)
Impact:	High
Priorities:	Provide a high level of convenient and cost effective HHW service options to residents.
Measuring Progress/KPI:	Progress will be measured by ongoing data tracking and annual program evaluations. When possible, customer satisfaction data obtained through future Citizen Surveys will be incorporated.

Strategy 1: Near-term, Years 1-5			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
In Year 1, provide residents with interim solutions for HHW disposal, until a more permanent alternative program can be developed to replace the former voucher program. Option include: • Collaborating with Williamson County to host one of the County's annual collection events in the City of Georgetown • Promote other local opportunities that that the City's residents are able to participate in, such as Williamson County's annual event in Cedar Park and the City of Austin's permanent collection facility • Contract with a private disposal contractor to provide supplemental, a supplemental one-time collection event(s) within the City	Staff time, potential contractor costs	ESD	High
Explore opportunities for intergovernmental collaboration. Williamson County and several local municipalities have expressed preliminary interest in collaborating to provide their residents with convenient and cost-effective HHW disposal options. The City should coordinate with local cities to explore interest and potential program options to provide a County-wide or regional HHW solution. This could include: • Commissioning, in partnership with other municipalities, a regional study to assess various options and costs • Submitting a grant funding application (potentially a joint application with other cities) to CAPCOG in the upcoming FY 2020 grant cycle and in subsequent years	Staff time, potential consultant costs	ESD	High

Strategy 1: Near-term, Years 1-5			
Continue to develop educational materials and ongoing outreach to residents about the importance of proper HHW disposal program and collection event opportunities. Program-focused materials should be developed after the City identifies and implements a new program alternative. Primary focus areas for education and outreach efforts will include the following topics: • Environmental importance – Educate residents on the environmental risks of improper HHW disposal • Source reduction – Encourage residents to minimize their purchase of materials, emphasizing the financial benefit of utilizing materials at WCRC's Reuse Store for free • Reuse program – Encourage reuse by ensuring information about the availability of WCRC's Reuse Store is a key component of education • Program visibility – Continue to promote the HHW program through multiple channels, emphasizing convenience and no cost to residents	Staff time, minimal material costs	ESD, Communications Department	High
After the City identifies a program alternative, it will establish protocols and practices for consistent program data collection to facilitate future program evaluations. Data collection should include, at a minimum: • Baseline for customer satisfaction, and annual survey to measure customer satisfaction and opportunities for improvement • Program costs on a total, per-pound, and per-customer basis • Program participation rates and material generation quantities, including for HHW collection and reuse materials, if applicable			
Every five years, evaluate options for providing cost-effective options for electronics recycling to residents. This could consist of including electronic waste to the City's new program or procuring service through disposal contractor specifically for electronic waste.	Staff time	ESD, WCRC	Medium

Strategy 1: Near-term, Years 1-5			
On an ongoing basis, consider if the City's chosen program structure continues to best meet the needs of the City and its residents. Using the metrics described in this section (e.g., participation rates, cost per customer, per-pound disposal costs, and customer satisfaction) will help the City to recognize if it should further consider alternative options for HHW services If the City determines it should consider alternative program options, it should further evaluate the options presented in Section 11.3.	Staff time	ESD	High
During the City's next MSW services contract renewal or request for proposal process, request bids for a curbside collection service and then further evaluate the option based on pricing and potential customer participation. This would not necessarily require a decision by the City but would rather provide additional data for considering the most beneficial service option.	Staff time	ESD	Medium

Strategy 1: Mid-term, Years 6-10			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**
Continue to track and annually evaluate program metrics (e.g., participation rates, cost per voucher, per-pound disposal costs, and customer satisfaction). Based on annual evaluations, the City may choose to conduct further evaluations of alternative HHW program options.	Staff time	ESD	High

Strategy 1: Long-term, Years 11-20			
Activity/Tactic	**Cost Considerations**	**Responsible Party/Department**	**Implementation Priority**

Strategy 1: Long-term, Years 11-20			
Continue to track and annually evaluate program metrics (e.g., participation rates, cost per voucher, per-pound disposal costs, and customer satisfaction). Based on annual evaluations, the City may choose to conduct further evaluations of alternative HHW program options.	Staff time	ESD	High

12.0 CITY-WIDE STRATEGIES

There are several MSW management strategies the City will implement that have applicability across multiple sectors. While the specifics for implementation of these City-wide and multi-sector strategies are tailored to each sector, the over-arching objective is to provide a convenient and consistent approach to MSW management for all customers in all sectors and geographic areas of the City. An overview of each City-wide and multi-sector strategy is presented below.

This section does not include specific implementation planning information for the City-wide strategies. The Strategies and Implementation Plan sections included in Sections 5.0-11.0 of the CSWMP contain further sector-specific information and implementation plans for these strategies as they are applicable to each sector.

Ongoing MSW contract evaluations. The City will review the terms of each MSW service contract the City holds on an ongoing basis, considering changing market conditions for each sector and progress towards established priorities and strategies. Two to three years prior to the end of current contract terms and each subsequent term, the City will begin to review contracts and evaluate whether any changes are necessary. This includes an evaluation of the types of services provided for each sector, methods by which services are provided, whether the City should exercise any contract renewal terms or re-bid for procurement of services, and an evaluation of whether the City should continue with an exclusive franchise system.

Ongoing MSW contract evaluations will heavily consider data and analyses that will be conducted for each sector, including waste characterization baselines and progress toward the City's priorities and established goals, customer satisfaction and participation surveys and studies, monitoring of local organics and other markets, and any other relevant sector-specific data and evaluations the City conducts through implementation of the strategies presented in Sections 5.0-11.0.

Waste characterization audits and baseline establishment. Developing a thorough understanding of the current quantities and distribution of material types generated by each sector is a critical component of establishing appropriate goals for the City on an ongoing basis, and developing strategies to target the specific needs and characteristics of each sector. Within the first one to five years of implementation of the CSWMP, the City will conduct an MSW characterization audit for each individual sector to gain a better understanding of the MSW stream to establish a detailed baseline against which future progress will be measures. It is important that this process includes development of standardized protocols for each sector so that analysis is repeatable, and results are directly comparable from year to year. At a

minimum, data obtained will include the tonnages and percentages of the MSW stream by landfill, recyclables, and organics, including yard trimmings and food scraps. A waste characterization audit will be conducted for each sector a minimum of every five years.

Standardized MSW collection containers and signage. The City will develop standards for the MSW collection containers and signage utilized for each sector. It is important that the City provide standardized containers and guidance so that customers can expect a consistent, predictable MSW management experience regardless of the sector or geographic location within the City they are at any given time. People flow from place to place and from sector to sector (e.g., from home to work to Downtown or public spaces, back to home) every day. Consistency will allow for the highest opportunity for proper, consistent, and convenient participation in MSW management by all customers. Standards should include, but not be limited to:

- Recognizable color of container used for each of the three waste streams
- Expectation that there will be multiple waste streams, with additional organics diversion opportunities added over time
- Consistent graphics and signage with guidance on the specific materials that are accepted with each waste stream
- Same types of containers for similar uses; for example:
    - Residential containers will all be the same type of carts, through capacity may vary
    - Residents serviced by front-load dumpsters will have the same type of dumpster, though capacity may vary
    - Public collection containers provided in parks, public spaces, and Downtown will be uniform

Once standards have been developed, each subsequent contract renewal or procurement will include terms requiring the contractor to either utilize containers provided by the City or to provide containers for collection that follow the City's established container standards.

MSW infrastructure planning. Availability of adequate space for MSW collection containers and operations is another critical component of accomplishing the City's priority of establishing a three-stream collection system to maximize landfill diversion. The ESD will collaborate closely with the Planning Department to develop standards for MSW infrastructure and space allocation requirements for the multifamily, commercial and institutional, public spaces, and municipal operations sectors. Requirements will be developed to allow for adequate space for landfill trash, recycling, and organics collection containers (dumpsters and public receptacles) for any newly constructed establishments or new

developments as well as those undergoing significant renovations or additions. Organics collection may not initially be required or provided in all locations, but space should be allocated for organics collection for future planning purposes.

Transfer Station Evaluation

for the

City of Georgetown, Texas

April 24, 2018

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Presentation Overview

- Transfer Station Evaluation
  - Understanding the Purpose of the Transfer Station
  - Overview of Existing Site and Project Background
  - Capacity of Existing Transfer Station
  - Planning Workshop
  - Improvements to Existing Transfer Station
  - Conceptual Design of New Transfer Station
  - Comparison of Options

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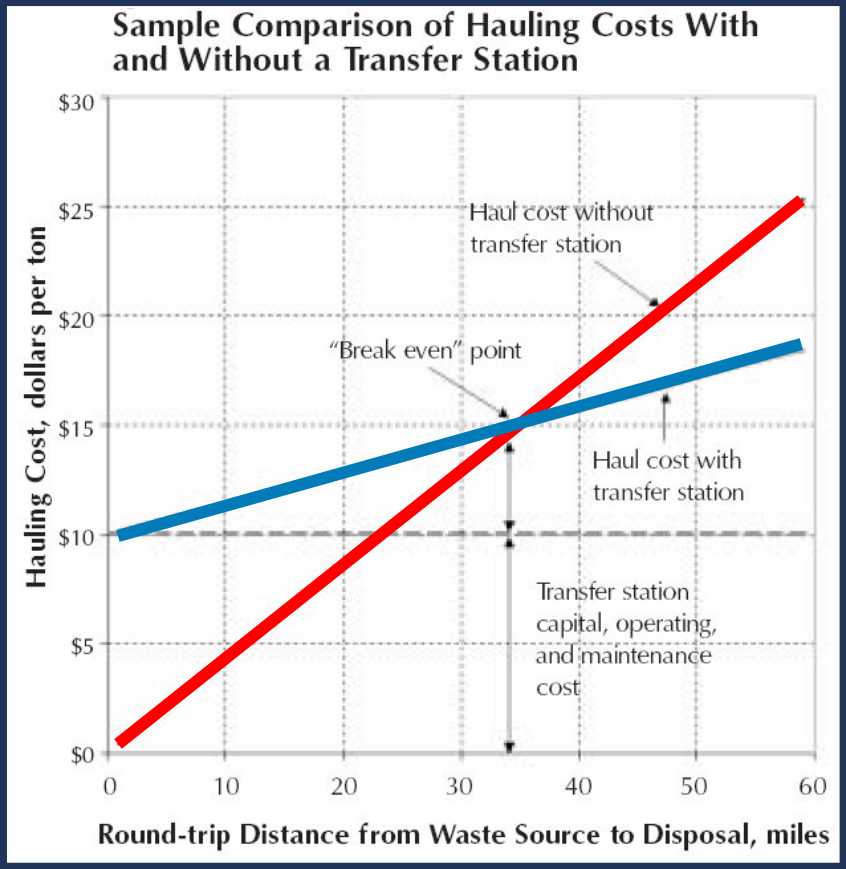
Why a Transfer Station?

- Materials must be direct-hauled in the collection vehicle or long-hauled using transfer trailers
- Factors that affect financial feasibility include:
  - Collection cost
  - Disposal cost
  - Distance/travel time to landfill
  - Fuel costs
  - Annual tonnage hauled
  - Payload of transfer trailers vs. collection vehicles



Source: U.S. EPA's Waste Transfer Stations: A Manual for Decision Making

Current landfill is approximately 90 miles round-trip

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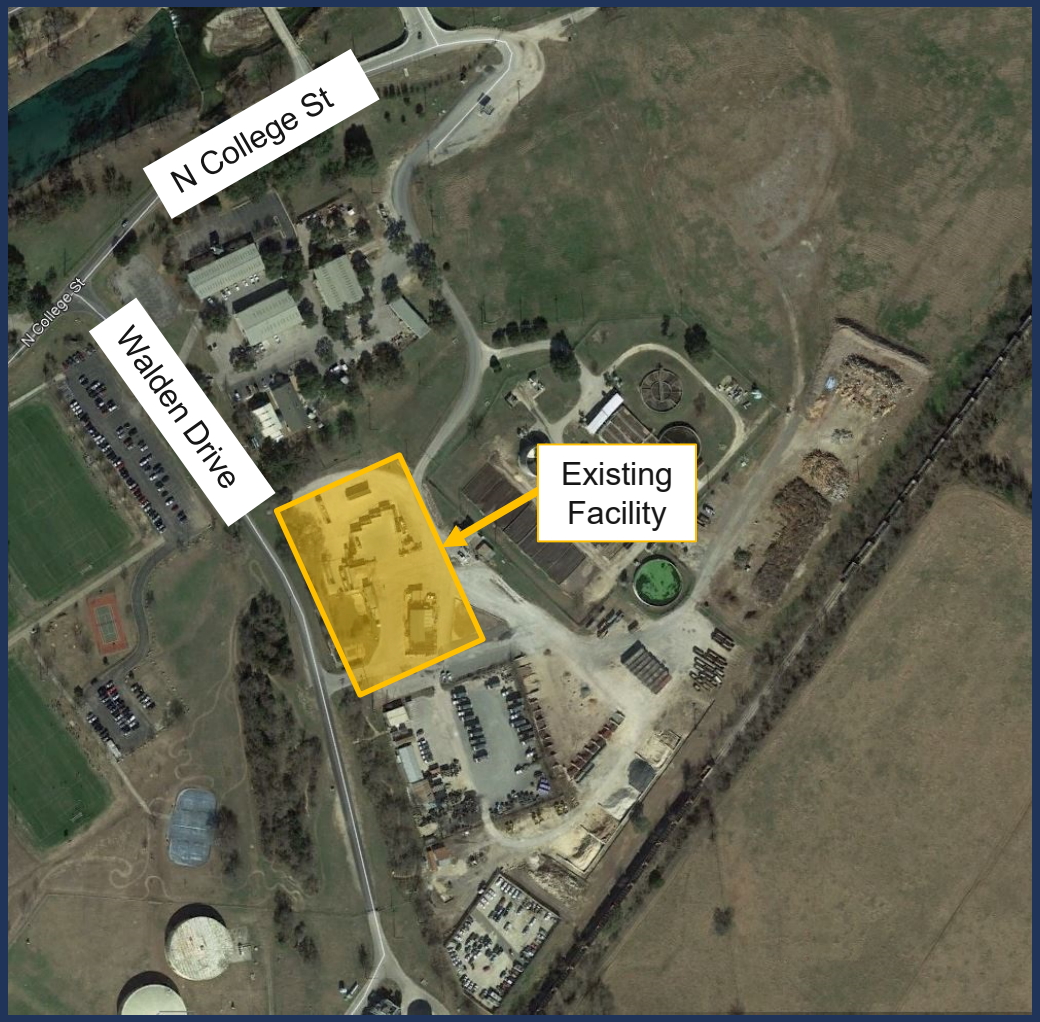
Existing Site and Facility



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Background

- The City has committed to the Texas Commission on Environmental Quality (TCEQ) to make certain improvements at the transfer station
- Improvements include covering areas where waste is exposed and better storm water management
- The existing facility was originally opened in 1984 and improvement made in 2006-2009
- Prior to investing in the existing facility, the City wanted to compare that option to building a new facility at the same location

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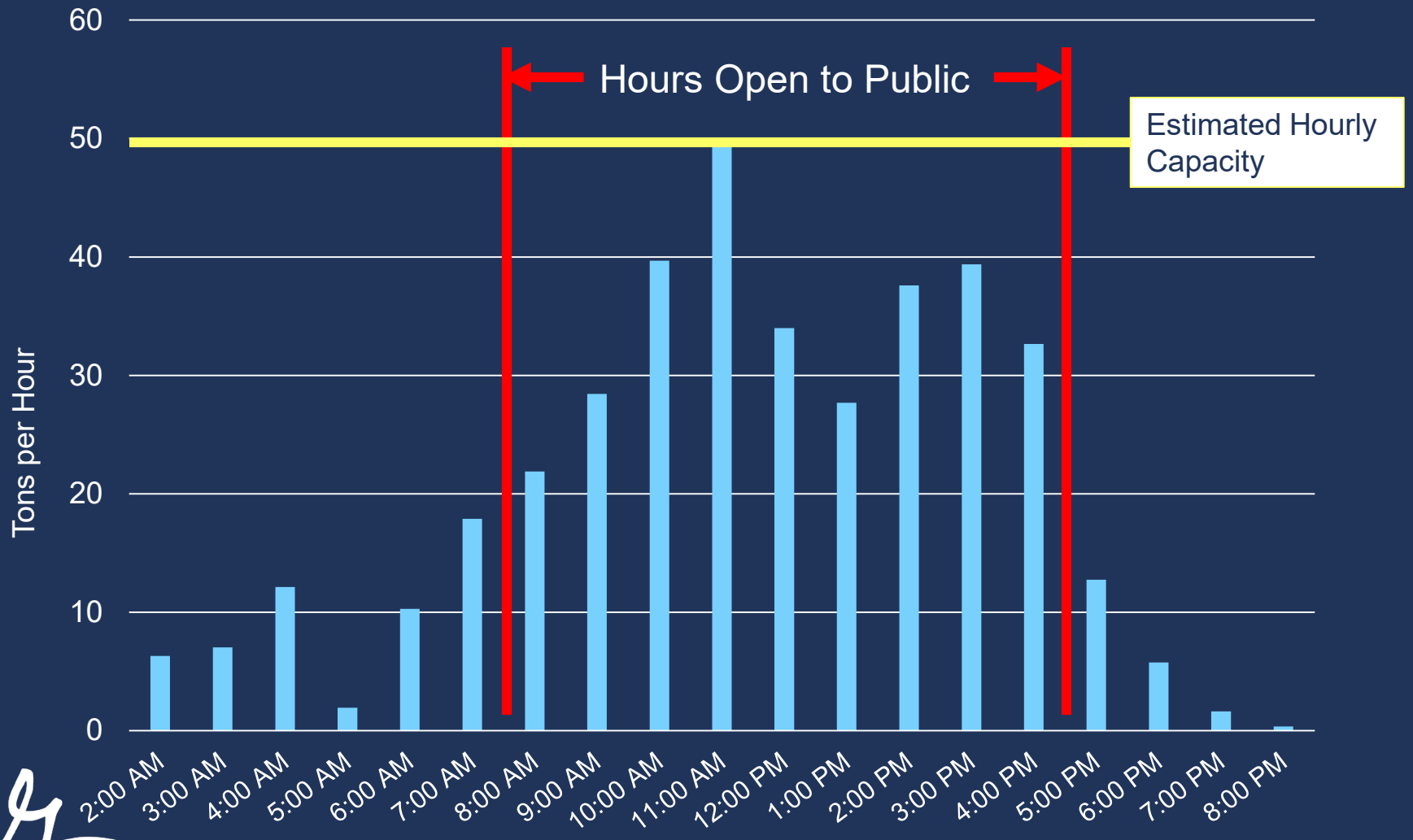
Current Transfer Station Traffic



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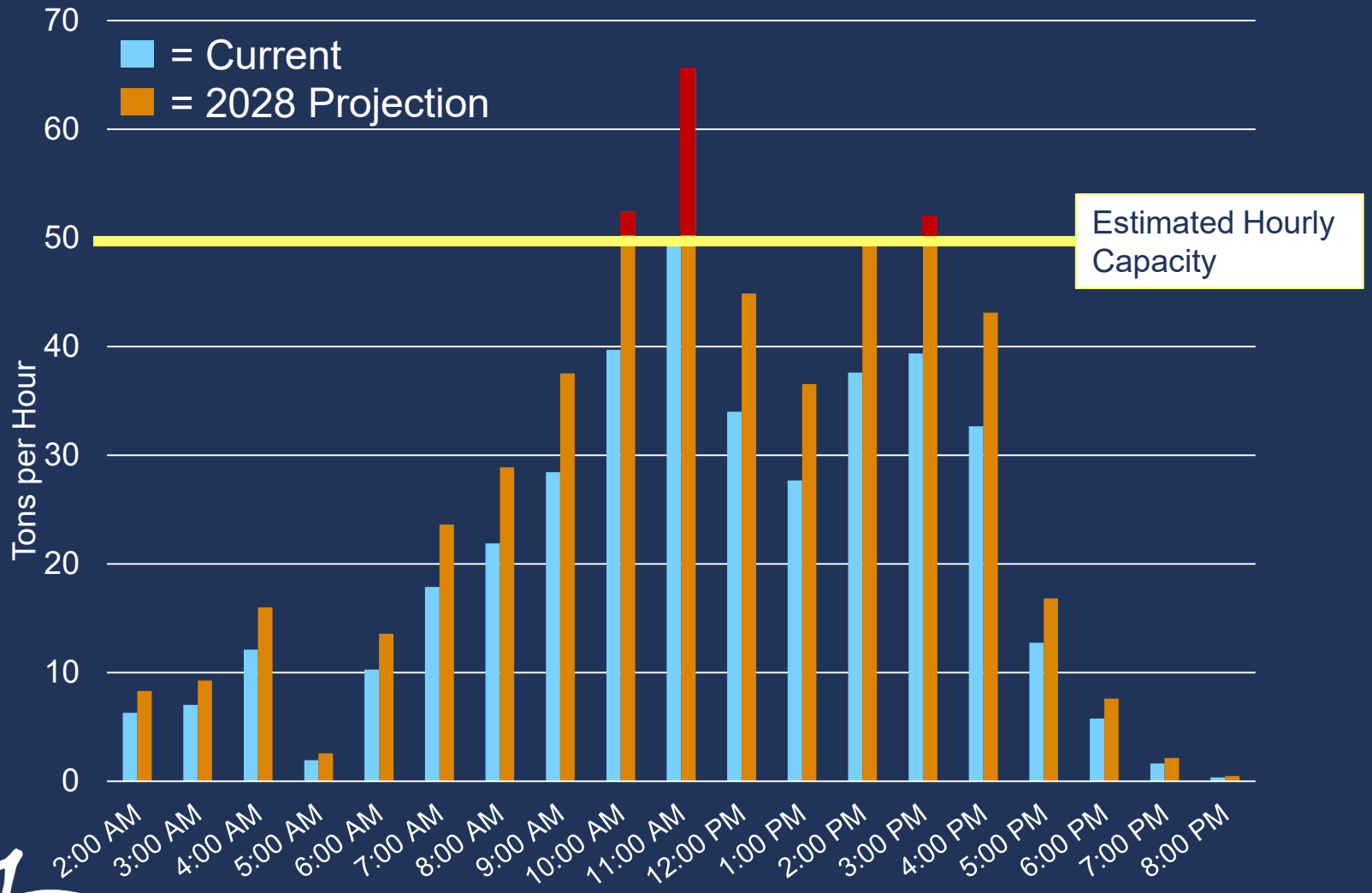
Current vs 2028 Projection



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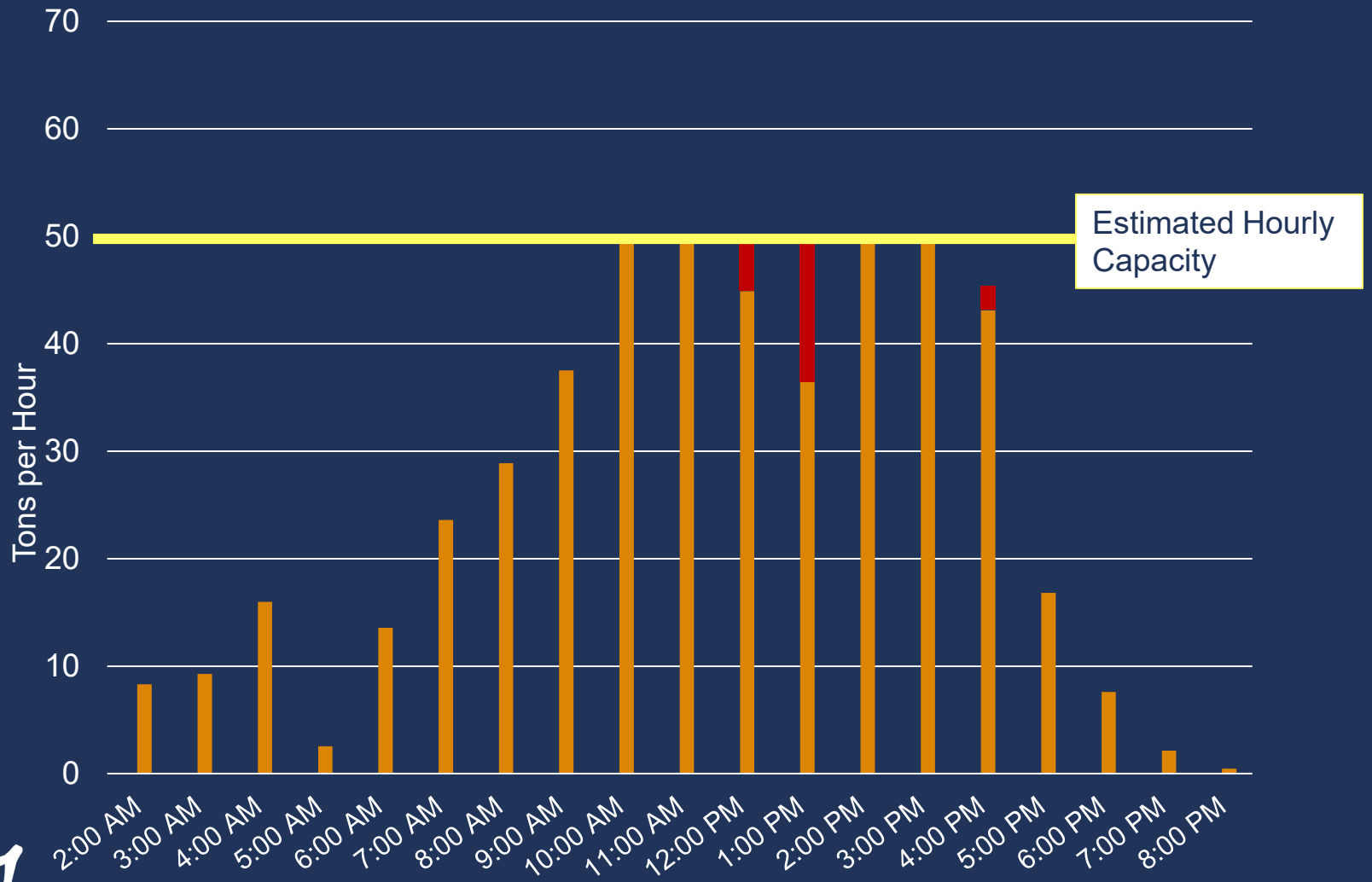
2028 Operational Capacity



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Impact of Operating At or Near Capacity

- Since the transfer station cannot operate over its capacity, the operations would be impacted in several ways:
  - Collections vehicles must wait longer to unload, impacting collection routes
  - Collection operations would have to shift to earlier in the day or later in the day
  - Recycling trucks could not be unloaded during peak hours since only one material stream can be managed at a time
  - Site becomes more congested, with less space for self-haulers

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Planning Workshop

- Planning session to review current operations and requirements for both options
- Participants included key staff from the City of Georgetown, Burns & McDonnell, and current contractor Texas Disposal Systems (TDS)
- Key assumptions from Workshop:
  - Existing facility: Cover over tipping area, cover over self-haul drop off, improvements to paving and drainage, additional fire protection
  - New facility: 3 material streams, 3-sided building, cover over self-haul drop off, improvements to paving and drainage, additional fire protection

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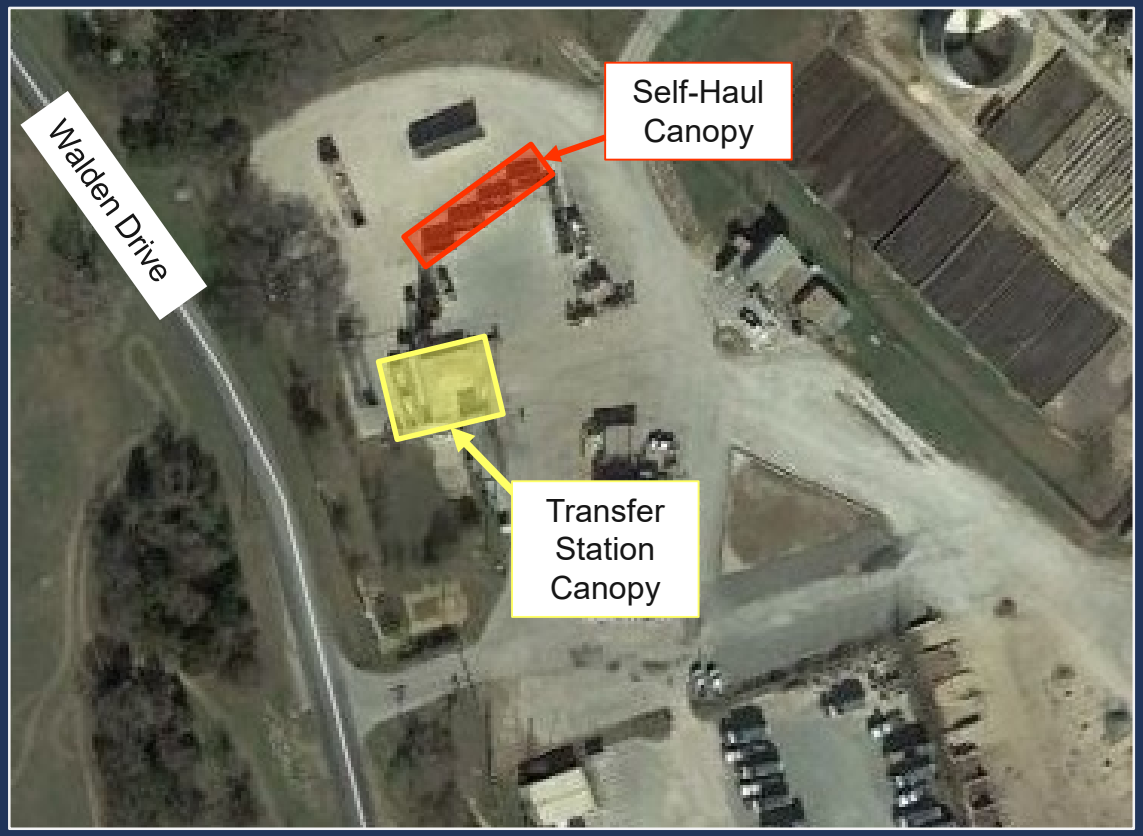
Improvements to Existing Facility

- Additional Improvements:
  - New compactor
  - New paving near self-haul area
  - New waterline and enhanced fire protection



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Cost of Improvements – Existing Facility

Description	Conceptual Budget
Transfer Station Canopy	$607,400
Self-Haul Canopy	$139,000
New Compactor	$30,000
Subtotal	**$776,400**
Self-Haul Area Paving	$475,200
Waterline and Enhanced Fire Protection	$271,400
Entrance Road Pavement	$88,700
Total	**$1,611,700**
Range (+/- 20 percent)	**$1,343,100 – $1,934,000**

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Summary for Existing Facility Improvements

- Advantages
  - Meet regulatory requirements
  - Does not require new TCEQ transfer station registration
  - Lower cost alternative
  - Less interruption to collection services (due to construction)
- Disadvantages
  - Does not increase capacity or extend life of existing facility
  - Will require investment in new facility in 8-12 years
  - Limits diversion options for recycling or organics
  - Does not improve aesthetics or noise containment

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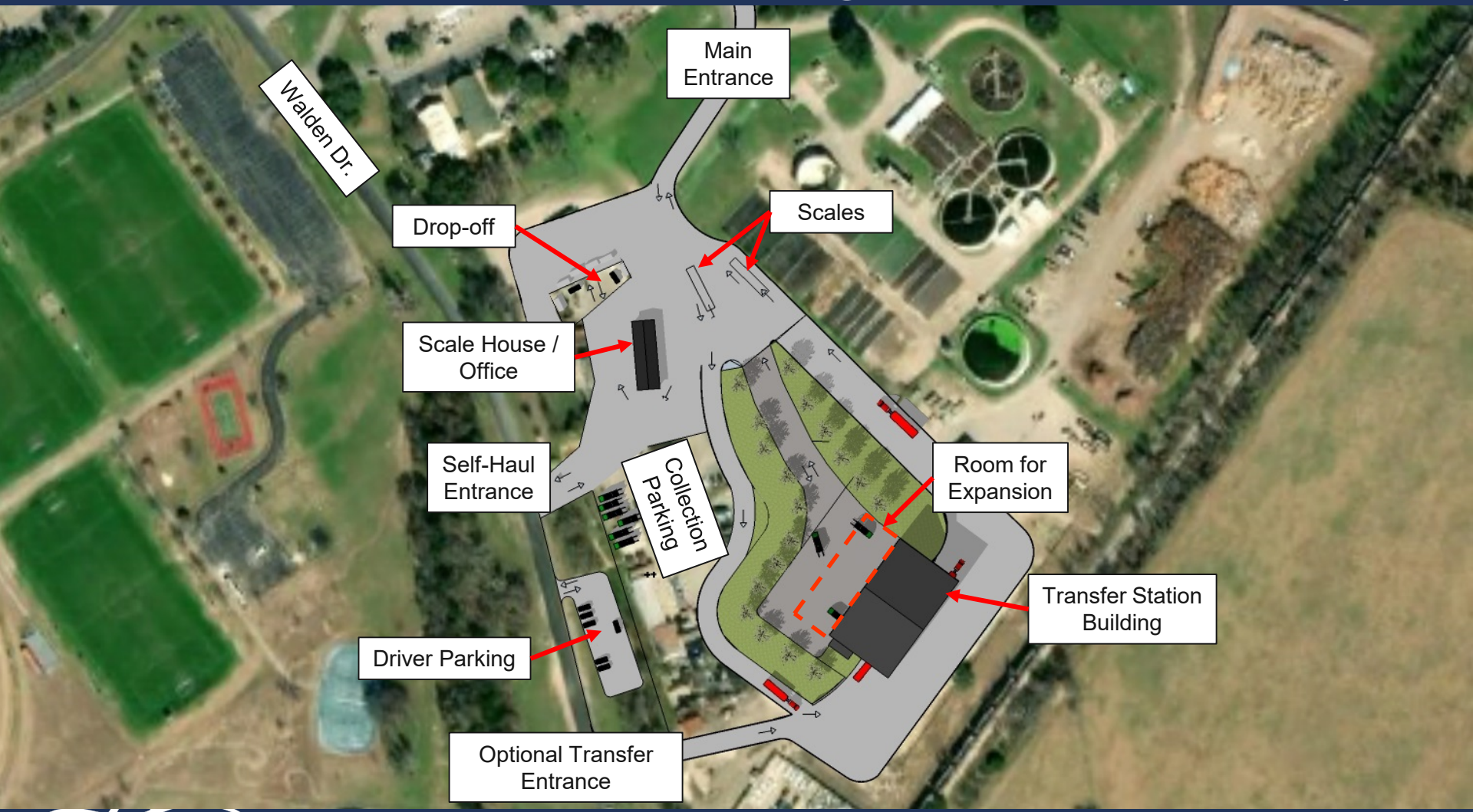
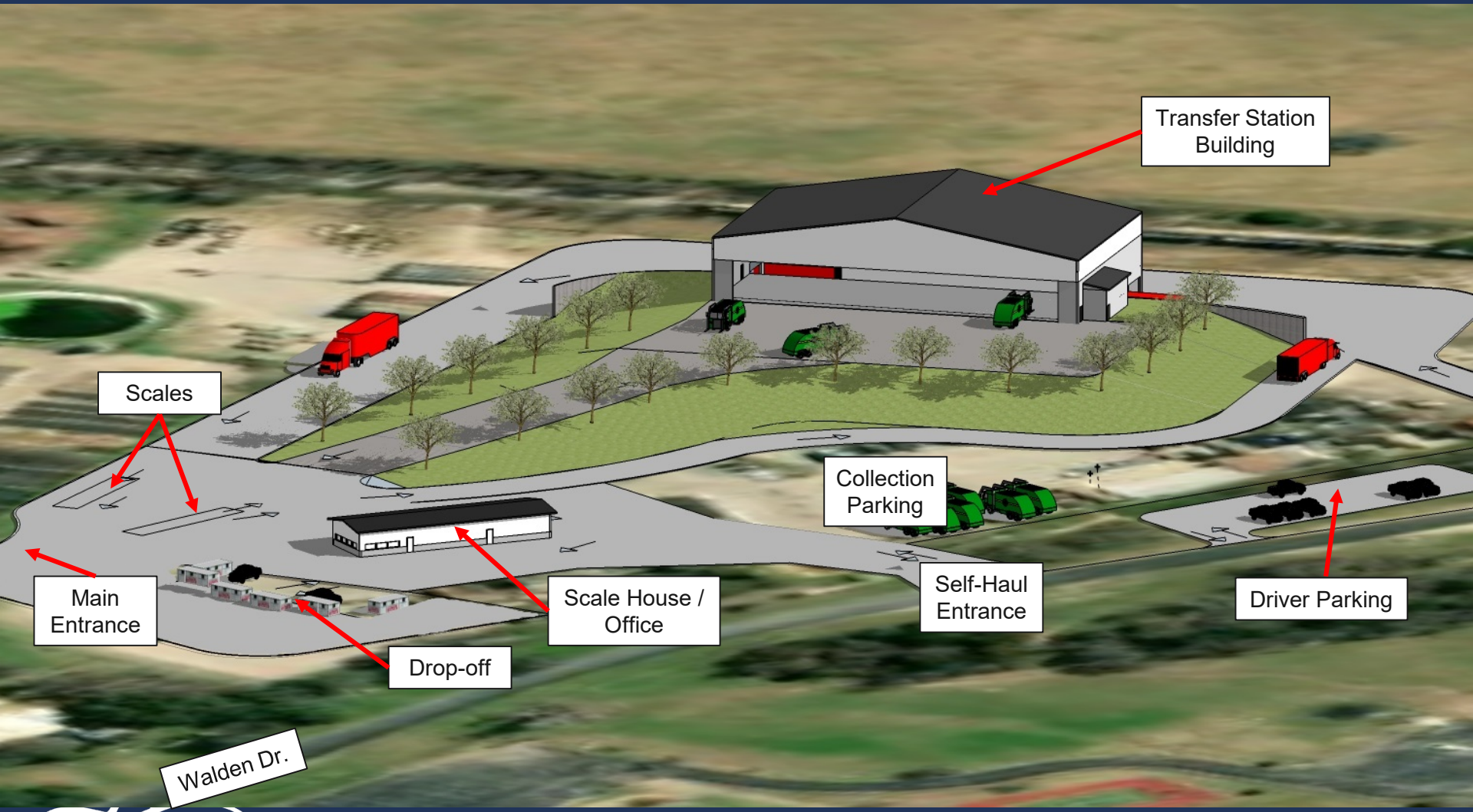
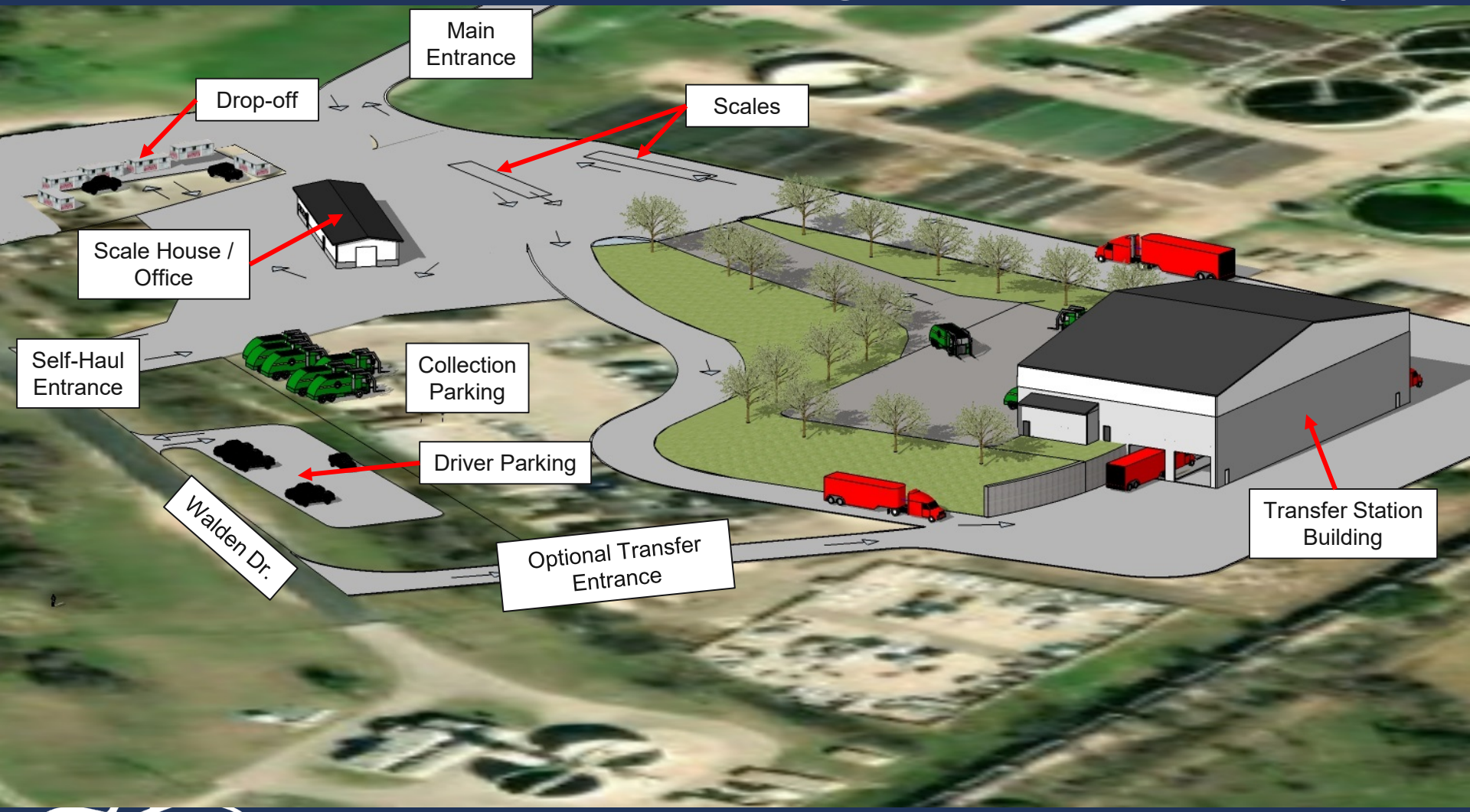
Conceptual Rendering – New Facility



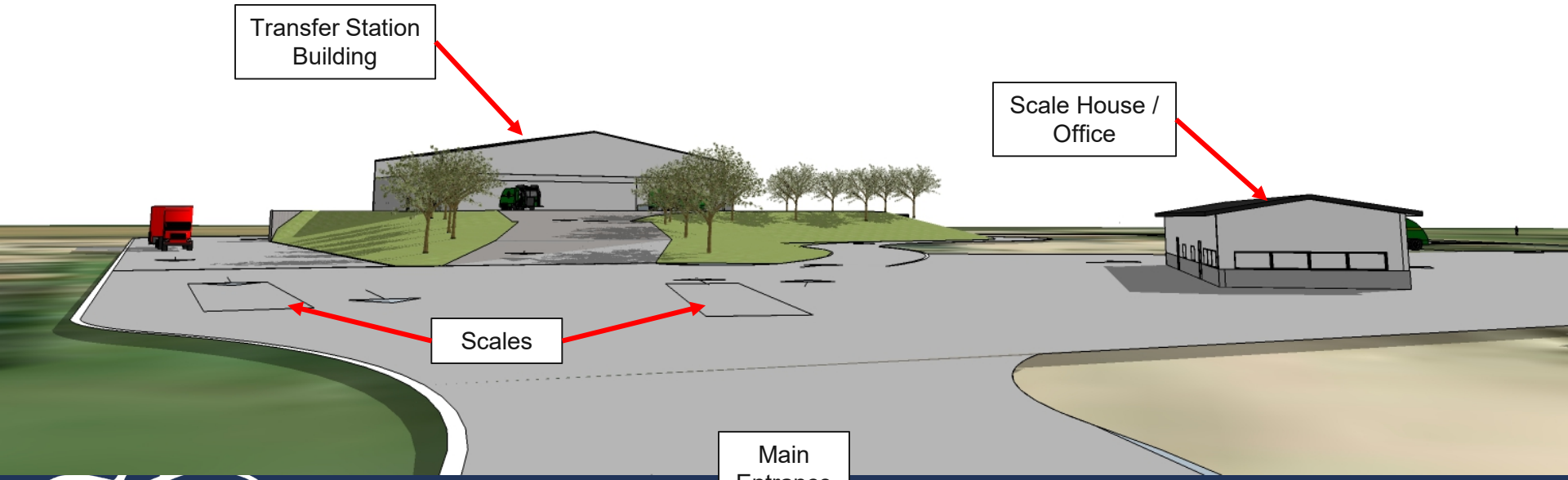
Conceptual Rendering – New Facility



Conceptual Rendering – New Facility



Conceptual Rendering – New Facility



Conceptual Cost Estimate of New Facility

Description	Conceptual Budget
Site Work and Paving	$2,845,100
Foundations & Concrete	$423,300
Pre Engineered Metal Building	$794,700
Electrical, Plumbing, HVAC, Fire	$338,700
Equipment	$202,400
Other	$240,300
Engineering, Permitting, Construction Mgmt	$654,800
Contingencies and Fees	$764,600
Subtotal	**$6,263,900**
Waterline and Enhanced Fire Protection	$271,400
Self-Haul Area Paving	$475,200
Entrance Road Pavement	$88,700
Total	**$7,099,200**
Range (+/- 20 percent)	**$5,916,000 – $8,519,000**

GEORGETOWN TEXAS

Annual Debt Service for Capital Costs

Description	Amount
Total Cost	**$7,099,200**
Debt Term	20
Debt Interest Rate	3%
Annual Debt Service	$477,178

- Debt service would require approximately 4-5 percent increase in annual revenue requirement within two years

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Summary for New Facility

- Advantages
  - Provides long-term capacity
  - Allows the City to manage up to three material streams (refuse, recycling, organics) simultaneously
  - Provides more separation between self-haulers and collection vehicles
  - Improves aesthetics and noise containment
- Disadvantages
  - Requires new TCEQ transfer station registration
  - May disrupt collection operations during construction

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Typical Timeline

- Factors that could influence schedule:
  - Procurement process (design-bid-build, design-build, etc.)
  - Permitting
  - Weather
  - Unexpected site conditions

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Comparison of Options

Criteria	Improvements to Existing	New Facility
Capacity	8-12 years	30+ years
Material Streams	1 material stream at a time	Up to 3 material streams at time
Safety	Self-haul, collection vehicles and transfer equipment operating in close proximity	Better separation of self-haul and collection vehicles
Permitting requirements	No TCEQ permitting required, some local permitting	New TCEQ transfer station registration, additional local permitting
Conceptual level cost estimate	$1.34 - $1.93 million	$5.92 - $8.52 million
Impact to facility operations	Minimal	Less downtime to process multiple material streams
Implementation schedule	6-12 months	24-30 months
Impact to collection operations (after completion)	None	Reduce waiting time to unload
Revenue requirement impact	None	4 - 5%

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SINGLE-FAMILY							
	Georgetown	**Cedar Park**	**Frisco**	**Kyle**	**New Braunfels**	**Richardson**	**Round Rock**
SINGLE-FAMILY OVERVIEW							
Residential service provider	Private (Texas Disposal Systems)	Private (Cedar Park Disposal (Central Texas Refuse)	Private (Waste Connections)	Private (Texas Disposal Systems)	Public; City provides services	Residential landfill trash service is provided by the City; residential recycling services are open market	Private (Round Rock Refuse)
Monthly residential solid waste rate (not including tax)	$18.80 for in-City customers; $26.40 for out-of-city customers	$18.69	$13.50	$20.42	$13.40	$19.40	$18.96
Additional Monthly Fees (e.g., admin, public education, etc.)	None	None	None	Solid Waste Admin Fee: $2.63 Franchise Fee: $2.04	None	None	
Additional information				The City is approaching the end of its 10-year contract with TDS. The City has changed significantly during that time. City will soon begin the process of talking to City council about changing solid waste service needs. For example, the City may ask for more services such as more frequent brush and bulky service.			
SINGLE FAMILY SERVICES							
Landfill trash							
Collection frequency	Weekly	Weekly	Weekly	Weekly	Weekly	Twice per week	Weekly
Collection type	Cart-based, automated	Cart-based, automated	Cart-based, automated	Cart-based, automated	Cart-based, automated	Manual	Cart-based, automated
Container type and sizes available	95-gallon standard cart; 65- or 35-gallon carts available upon request	95-gallon	95-gallon	90-gallon	96-gallon standard, 48-gallon upon request (rate not variable)	Bag-based collection, no containers are permitted	96-gallon cart
Additional cart availability	$9.00/month per additional cart	$5.50/month per additional cart	$10.50 (plus tax)/month per additional cart	$11.74/month per additional cart (plus $1.07 franchise fee and $1.07 sales tax)	Additional $6.50 per month per additional cart (plus one-time $10 processing fee)	N/A	If requested, customers may receive an additional cart for no additional cost, though requests are uncommon.
Additional Fees	$5.00 per bag tag for extra landfill trash	None	Request for additional collections may be made for additional $22.80 per cart per collection request	$6.52 per bag tag for extra landfill trash	$2.00 per bag tag (5 for $10.00) for extra landfill trash	30-gallon black plastic trash bags may be purchased from the City for $6.50/roll, 50 bags/roll	
Additional information	Out-of-cart set-outs collected only if bagged and tagged			C&D material is not accepted		Most collection occurs in alleys, except where alleys are unpaved	Material contained in the cart and up to seven additional items bags, or bundles will be collected with regular landfill trash collection. Out-of-cart items must not exceed 40 pounds and must not be larger than 4x4x4 feet. Items may include bagged leaves and bundled brush.
Recyclables							
Service provided in monthly rate	Yes	Yes	Yes	Yes	Provided but not with base rate; additional fee of $4.26 per month	Yes	Yes
Collection frequency	Every other week	Every other week	Weekly	Every other week	Weekly	Weekly	Every other week
Collection type	Cart-based, automated	Cart-based, automated	Cart-based, automated	Cart-based, automated	Cart-based, automated	Manual	Cart-based, automated
Container type and sizes available	95-gallon standard cart; 65- or 35-gallon carts available upon request	95-gallon blue cart	95-gallon blue cart	90-gallon	96-gal standard, 48-gal upon request (rate not variable)	30-gallon blue plastic recycling bags	96-gallon cart
Additional cart availability	$9.00/month per additional cart	$5.50/month per additional cart	Additional car is available at no additional monthly cost There is a one-time $15.00 delivery fee.	Not reported	Additional carts available at no cost per month (only one-time $10 processing fee)	N/A	Additional carts available at no additional cost.
Additional information	Contained (boxed) out-of-cart set-outs of recyclables are accepted	Unlimited recyclables are accepted				Recycling bags may be purchased for $3.50/roll with 26 bags/roll. Most collection occurs in alleys, except for homes with unpaved alleys; bags must not exceed 50 pounds.	
Bulky Items							
Service provided in monthly rate	Yes	Provided as part of refuse service, not provided as separate collections	Yes	Yes	Provided for an additional fee.	Yes	One annual collection with base rate; additional collections for additional fee
Collection frequency	Twice per year, upon request	Weekly; additional collections are provided upon request for an additional fee	Monthly	Once per year, on-call	Upon request (unlimited)	Once per week, upon request	Once per year (Annual Spring Clean Up); additional bulky waste collections may be scheduled for a fee
Materials accepted	Furniture, mattresses, toilets, large appliances. Service is not intended for brush and yard trimmings	Extra bags of landfill trash, large appliances, mattresses and furniture, bundled tree and brush clippings	Items too large for landfill trash cart including but not limited to furniture, large appliances, televisions, carpet, fencing. Excess bagged or boxed landfill trash is not accepted with bulky collection.	Furniture, large appliances, bundled brush up to three cubic yards per collection	Furniture, appliances, large limbs or large volumes of brush	Intended for large items generally over 50 pounds; furniture, toilets, carpet, large appliances, large electronics, mattresses, fencing (no concrete or nails) scrap metal; green waste including brush, tree trunks, grass, cacti, vegetative debris is collected separately from other items if indicated upon service request.	Annual Spring Clean up accepts large appliances, furniture, scrap metal, lumber, mattresses; brush is not accepted; no tires or TVs. Additional scheduled bulky collections accept excess large items and brush.
Set-out limit and configuration	Limit 3 cubic yards per collection; additional fees for extra material	Limit of seven items per collection outside of landfill trash cart; tree and brush clippings should be bundled (4 feet length, 4 inch-diameter, less than 50 pounds)	Limit of 5 bulky items; items should not be longer than six feet or weigh more than 50 pounds	Limit of three cubic yards per collection	No limit	None	None
Material diverted or landfilled	Landfilled	Landfilled	Landfilled	The City's contractor, TDS, has a substantial program for diversion of large items. If materials/item have the potential to be diverted, it is diverted. City does not have specific diversion data on brush and bulky items, but a significant amount of these materials are diverted from the landfill.	Brush is mulched. Bulky items are landfilled.	Bulky items are taken to the Lookout Transfer Station. Brush that has been separated from the bulky is taken to Plano for composting.	Landfilled
Additional fees	Additional fee of $28.00 per cubic yard for material in excess of set-out limit, and for additional scheduled collections	Additional handling charge of $25 for appliances containing Freon; Additional collections are provided upon request for an additional fee	None	N/A	$25 minimum for 30 minutes then $25 per 30 minutes after that to include travel if more than one load.	None	Additional pick-ups may be specified as brush or non-brush; fees are $25 plus $1 for each minute over five minutes
Additional information				N/A	The City also holds quarterly bulky waste drop-off events at no cost to residents.	Service is referred to as Brush and Bulky Item Collection (BAIBC)	

SINGLE-FAMILY							
	Georgetown	**Cedar Park**	**Frisco**	**Kyle**	**New Braunfels**	**Richardson**	**Round Rock**
Organics							
Service provided in monthly rate	Yes	No	Yes	Yes	Yes	Yes, collected as part of Brush and Bulky service	No
Is this a separate organics collection service	Yes, monthly yard trimmings collection is provided	Separate organics collection is not provided.	Yes, weekly 'yard waste' collection is provided	Yes, curbside compost collection is provided via carts. City has a three-cart system.	Yes, separate collection of Green Waste is provided on the same day as recycling collection.	Yes; Collected as part of Brush and Bulky service, but green waste will be collected separately if indicated by resident upon service request	Yes, services provided upon request
Accepted materials:							
Yard trimmings	Branches, leaves, grass, other yard trimmings	N/A	Grass, leaves, plants, small cuttings, brush and tree limbs	Yard debris including grass clippings, tree and shrub limbs; soiled paper and cardboard including pizza boxes, paper towels, napkins	Grass clippings, garden trimmings, leaves, twigs, Christmas trees; not intended for large volumes of brush or branches	Brush, tree trimmings, grass clippings, and leaves	Brush (unbundled, no longer than 10 feet)
Food scraps	No	N/A	No	None	No	No	No
Collection frequency	Monthly	N/A	Weekly	Every other week (alternating weeks with recycling collection)	Weekly	Weekly, upon request	Up to weekly, upon request
Collection type	Automated	N/A	Automated	Cart-based, automated	Rear-load	Manual & Knuckle-boom truck	Brush truck with grapple arm
Container type and sizes available	N/A; material is bagged in compostable paper bags, bundled, or placed in a customer-provided container	N/A	N/A; material is bagged in compostable paper bags or bundled	90-gal	No cart; Material must be bagged or bundled	N/A	N/A
Does the City offer separate organics collection?	Yes, monthly yard trimmings collection is provided	N/A	Yes, weekly 'yard waste' collection is provided	Yes, curbside compost collection is provided via carts. City has a three-cart system.	Yes, separate collection of Green Waste is provided on the same day as recycling collection.	Yes; Collected as part of Brush and Bulky service, but green waste will be collected separately if indicated by resident upon service request	Yes, upon request
Set-out limit and configuration	Limit 20 bags, bundles, or containers per collection	N/A	Small material such as grass clippings and leaves must be placed in compostable paper bags (plastic not accepted); brush/limbs must be cut to 3ft and bundled, not to exceed 30 pounds	Cart-based collection; material should be placed loose in cart, not in plastic bags	Material must be bagged in Green Waste paper bags (no plastic) or cut and bundled not exceeding four feet in length or 40 pounds in weight.	Organics must be separated from non-organic bulky items; bundled (maximum 6-ft length) or bagged in compostable bags	No limit; brush must be unbundled and no longer than 10 feet
Material composted, mulched, or other	Mulched	N/A	Composted	Composted; material is processed at TDS's Garden-Ville facility	Mulched	Mulched or composted (if indicated as organic material upon request)	Mulched
Additional fees	Additional bags/bundles/containers are collected with purchased tags for $5.00 per tag	N/A	None	None		None	Fee is $25 per collection plus $1 per minute over five minutes
Additional information		Brush and tree trimmings are currently placed in landfill trash carts or set out with bulky collection.		Specific participation data is not available but participation in the organics program is pretty low. Participation is also seasonal, with higher participation in spring and fall with yard cleanups and lower participation in summer and winter.		Upon service request for Brush and Bulky collection, resident must indicate that material is organic or it will be taken to landfill; Service is referred to as Brush and Bulky Item Collection (BAIBC)	City residents may also drop off up to 2 CY of brush at the Brush Recycling Center at no cost
Household Hazardous Waste (HHW) & Other Special Wastes							
Are HHW services provided to residents by the city?	No. The City's former contractor unexpectedly terminated the City's voucher program in December 2018. The City is actively seeking options to replace the program.	Yes	Yes	No	Yes	Yes, the City participates in Dallas County's HHW voucher drop-off program	Yes
Service Summary	The City no longer provides service. Residents may participate in Williamson County's two annual drop-off events held within the County. Prior to December 2018, the City offered residents a vourcher drop-off program (four vouchers per year) though a private contractor at a permanent facility, at no cost to residents.	In collaboration with Williamson County, the City hosts on annual HHW drop-off event that is free to residents. This is one of the County's two annual events. Residents may also participate in the County's other annual event.	The City owns and operates a permanent collection facility where City residents and voucher program participant city residents may drop off material at no cost.	City residents have access to the San Marcos HHW collection facility through its partnership with Hays County. The City is not involved in services or funding for the program. This program is described below.	City and Comal County partner to provide periodic HHW collection events to City and County residents. The HHW drop-off events are preformed by a contractor 3 x per year with labor assistance from the City.	Permanent facility drop-off collection	The City has a drop-off location where residents may drop off material for free once per month, or pay an additional fee for additional scheduled drop-offs
Type of Service:	Periodic collection events held by Williamson County	Periodic collection events	Permanent facility drop-off collection	Permanent facility drop-off collection. Residents may drop material off any time during facility operating hours at no cost to residents (not voucher-based).	Periodic collection events	The County provides residents with drop-off at permanent collection facility with voucher	Periodic collection events at the City's recycling center, with the option for pre-scheduled drop-offs.
Collection or event frequency	Twice per year	Annual by City; one additional annual event by the county	Permanent facility open for HHW collection two days per week	San Marcos' facility accepts drop-offs two days per week (Tuesdays and Fridays)	Two to four times per year	Three to four days per week	Monthly for free; additional drop-offs can be scheduled for a fee
Does the city have a permanent collection facility?	No	No	Yes, the City owns and operates a permanent collection facility	The City does not own or contract for a permanent facility; the City of San Marcos has a permanent collection facility that Hays County residents are eligible to use.	No	No. Dallas County owns and operates a permanent facility.	The City has a permanent collection facility where material is classified, segregated, and consolidated. It is then picked up by a vendor (who is considered the generator for regulatory purposes) and hauled away for treatment, storage, and disposal.
Materials accepted (e.g., HHW, electronic waste, tires, other special wastes)	HHW, tires, electronics (computers, TVs, cell phones, etc.), brush for recycling, scrap metal, textiles and other household items for Goodwill donation; Commercial wastes not accepted	HHW, tires, electronics (computers, TVs, cell phones, etc.), brush for recycling, scrap metal, textiles and other household items for Goodwill donation; Commercial wastes not accepted	Standard HHW materials (paints, cleaners, automotive fluids, cooking oil, light bulbs, etc.), electronics, batteries. Tires are not accepted	Household hazardous waste only; special wastes (tires, electronics) and commercial waste are not accepted	Batteries, HHW materials are accepted; tires and electronics are not accepted	HHW; tires and electronics are not accepted	Typical HHW is accepted; tires and other special wastes are not accepted
Program funding	Events are hosted and sponsored by Williamson County.	Total cost of the 2018 event was $92,000 of which $49,500 was paid for by the City.	The HHW program is funded through the City's residential solid waste base rates and by fees paid to the City by 13 other participating voucher program cities.	The City does not provide funding for this program; Drop-off is available at no cost to residents of Hays County.	Partially funded through solid waste base rates. Partially funded through other sources, including a $30,000 grant from Edwards Aquifer Authority and Comal County provides up to $50,000 for disposal.	The program is funded through the Health Department's operating budget: approximately $150,000 annually.	The program is funded through the City's wastewater utility. It is not funded by Solid Waste rates or budgets.

COMMERCIAL AND INSTITUTIONAL							
	Georgetown	**Cedar Park**	**Frisco**	**Kyle**	**New Braunfels**	**Richardson**	**Round Rock**
COMMERCIAL OVERVIEW							
Service Provider City, Private Hauler, or Open Market	Private; Exclusive franchise with Texas Disposal Systems	Private; Open franchise for commercial and multifamily landfill trash and recycling services. The City currently has eight non-exclusive	Private; Exclusive franchise with Waste Connections for commercial landfill trash service. Recycling services are open franchise.	Private; Exclusive franchise with Texas Disposal Systems for commercial landfill trash service. Recycling services are open franchise.	City provides services.	City provides commercial landfill trash service. Recycling services are open franchise.	Private; Open franchise for commercial and multifamily landfill trash and recycling services.
Commercial Rates							
Landfill trash service average monthly rate per cubic yard (including collection and disposal). Data is based on rates for 6 and 8 cubic yard front load dumpster service.	$4.40	Rates vary by hauler.	$3.41	$3.87	$2.72	$3.91	Rates vary by hauler.
Commercial Services							
MSW services provided to commercial customers:							
Landfill trash	Provided exclusively by TDS for in-City customers. Provided via an open market system for out-of-City customers.	Provided through open franchise system.	Provided exclusively by Waste Connections	Provided exclusively by TDS.	Provided by the City.	Provided by the City.	Provided through open franchise system.
Recycling	Provided exclusively by TDS for in-City customers. Provided via an open market system for out-of-City customers.	Provided through open franchise system.	Provided through open franchise system. Most customers currently contract with Waste Connections.	Provided through open franchise system.	Provided by the City.	Provided through open franchise system.	Provided through open franchise system.
Organics	Not provided in-City. Open market for out-of-City if hauler chooses to provide service.	Provided by open franchise system if the hauler chooses to provide service. A challenge to providing service may be a lack of available space for additional collection containers.	Provided by open franchise system if the hauler chooses to provide service.	Provided by open franchise system if the hauler chooses to provide service.	The City will collect brush and limbs for additional fees through a call-in collection service.	Provided by open franchise system if the hauler chooses to provide service.	Provided by open franchise system if the hauler chooses to provide service.

MULTIFAMILY							
	Georgetown	**Cedar Park**	**Frisco**	**Kyle**	**New Braunfels**	**Richardson**	**Round Rock**
MULTIFAMILY OVERVIEW							
Definition of multifamily customers:	Multifamily housing units are those having greater than four individual housing units as well as assisted living and long-term care facilities.	Multifamily housing units are those that do not charged for utilities individually (all apartment complexes), or condominiums which contract through their HOA for services, and are serviced by franchise haulers. Four-plexes with individual utility bills would be serviced by City residential services.	Generally, multifamily customers/residents are considered those that do not have individual utility bills with the City.	Buildings with multiple housing units that are on a single meter for City utilities are considered multifamily.	Buildings with five or more housing units are considered multifamily.	Multifamily customers are apartment complexes and duplexes.	Generally, properties with five or more residential units. In most cases, a multifamily property/complex pays City utilities. Individual multifamily residents do not pay utilities directly to the City.
Service Provider City, Private Hauler, or Open Market	Private; Exclusive franchise with Texas Disposal Systems	Private; Open franchise for commercial and multifamily landfill trash and recycling services. The City currently has eight non-exclusive franchise agreements.	Private; Exclusive franchise with Waste Connections for commercial and multifamily landfill trash service. Recycling services are open franchise.	Private; Exclusive franchise with Texas Disposal Systems for commercial and multifamily landfill trash service. Recycling services are open franchise.	City provides services.	City provides commercial and multifamily landfill trash service. Recycling services are open franchise.	Private; Open franchise for commercial and multifamily landfill trash and recycling services.
Multifamily Rates							
Multifamily rate structure	Multifamily customers are subject to commercial service rates.	Rates vary by hauler.	Multifamily customers are subject to commercial service rates.	Multifamily customers are subject to commercial service rates.	Most multifamily residents pay residential base rates to the City for solid waste services because apartment units are individually metered. For some properties, managers pay the City commercial rates.	Multifamily customers are subject to commercial service rates.	Rates vary by hauler.
Multifamily Services							
MSW services provided to multifamily customers:							
Landfill trash	Provided by exclusive franchise system.	Provided via an open franchise system.	Provided exclusively by Waste Connections.	Provided exclusively by TDS.	Provided by the City, primarily with commercial front load dumpsters.	Provided by the City.	Provided through open franchise system.
Recycling	Provided by exclusive franchise system.	Provided via an open franchise system.	Provided through open franchise system. Most customers currently contract with Waste Connections.	Provided through open franchise system.	Not provided by the City.	Provided through open franchise system.	Provided through open franchise system. Currently, multifamily property owners may choose whether to provide recycling service. The City is in the process of considering adopting a multifamily recycling ordinance requiring provision of recycling for multifamily residents.
Bulky Waste	Not provided	If provided, each multifamily property would contract directly with a hauler.	If provided, each multifamily property would contract directly with a hauler.	If provided, each multifamily property would contract directly with a hauler.	Management arranges for the call-in bulk collection service as needed.	If provided, each multifamily property would contract directly with a hauler.	If provided, each multifamily property would contract directly with a hauler.
Organics	Not provided	If provided, each multifamily property would contract directly with a hauler.	If provided, each multifamily property would contract directly with a hauler.	If provided, each multifamily property would contract directly with a hauler.	Not provided by the City.	If provided, each multifamily property would contract directly with a hauler.	If provided, each multifamily property would contract directly with a hauler.
HHW & Special Wastes	The City's program is available to multifamily residents.	The City's program is available to multifamily residents.	The City's program is available to multifamily residents.	Multifamily residents have access to the San Marcos' HHW program partnership with Hays County.	The City's program is available to multifamily residents.	The City's program is available to multifamily residents.	The City's program is available to multifamily residents.
Similarities or differences to single-family residential and commercial services	Multifamily services are provided in the same manner as commercial services.		Multifamily services are provided in the same manner as commercial services. Residents are eligible for the City's HHW program.	Multifamily customers are responsible for transporting their landfill trash and recycling material from their home to collection dumpsters. There are no other special services or methods.	Multifamily complexes do not receive weekly recycling service or green waste service from the City. The complexes are serviced via a frontload collection platform like commercial customers.	Single Family has the benefit of BABIC (Brush and Bulky Item Collection) and recycling provided by the City. Multifamily and commercial are similar in that the City only collects landfill trash.	Multifamily services are provided in the same manner as commercial services.
Challenges for Multifamily Sector							
Description of challenges City has experienced related to provision of services for Multifamily customers.	The City has had difficulty obtaining data specific to multifamily customers because they are currently treated and tracked in the same manner as commercial customers. Recycling participation is low for the multifamily sector.	Some residents have expressed the desire to receive the same services as single-family residents (e.g., single-stream recycling).	The City has an ordinance requiring multifamily properties to provide recycling service. This ordinance has been difficult to enforce.	None	In the older complexes there is limited space to access containers. Billing is done by New Braunfels Utilities (NBU) which is not part of the municipal government. Some of the multifamily complexes are billed as commercial paying dumpster rates and others the tenants are billed at the residential rate and serviced by dumpster. All units are individually metered.	Some multifamily would like the same services as single family (big and bulky item collection and recycling).	Some multifamily residents have requested recycling service to be provided. There have also been concerns about solid waste container screening and the space required for containers.

PUBLIC SPACES AND SPECIAL EVENTS							
	Georgetown	**Cedar Park**	**Frisco**	**Kyle**	**New Braunfels**	**Richardson**	**Round Rock**
PUBLIC SPACES OVERVIEW							
Description of landfill trash and recycling services for public spaces (e.g., public parks, trails, etc.)	City crews from the Parks and Recreation Department and Community Service and Restitution (CSR) workers provide collection of landfill trash and recycling in the City's parks and public spaces and transported directly to the transfer station. Landfill trash collection is provided in all public spaces but recycling collection is limited.	The City's hauler provides landfill trash service to all City facilities per contract, including public spaces, parks, and trails. The City recently began providing recycling in addition to landfill trash collection at City swimming pools. They are in the process of purchasing equipment to implement recycling at City parks and along trails.	Services in public spaces are provided by the City with the same carts as residential services.	The City provides basic landfill trash services in public spaces. Recycling is not provided. City crews empty cans in parks and place material into dumpsters. Dumpsters are serviced free of charge by TDS for any municipal facility by TDS.	Landfill trash services are provided in public spaces. Recycling is not provided. The downtown area has 24 decorative containers serviced by the City and parks have 55 gallon barrels and 96 gall carts. Dumpsters are provided and serviced by the City.	Services are provided by the Parks Department via	Public spaces receive daily service/collection of recycling and landfill trash receptacles in most places. The City's Parks Department crews collect material from containers and place in dumpsters on City property. The City's contractor then collects material from a single location. Per the contract, the contractor services dumpsters for City facilities. The City (Parks Department) has a dedicated employee to monitor and manage solid waste in the Downtown area.
Description of MSW services in a Downtown-type area, if different from other commercial service provision	The City does not currently have special services for Downtown customers, but is actively working to develop enhanced services for this area to alleviate challenges detailed in Section 8.0 of the CSWMP.	There is no special or Downtown service district.	The City does not have a special service district for solid waste.	The City has a historic downtown square, that is serviced in the same manner as City parks for public services. Commercial customers on square are serviced by TDS. There are no special programs or services.	The downtown has 24 decorative containers serviced by the City. There are challenges due to inadequate container capacity and having enough room in the downtown area for maneuverability.	The businesses have either 4 yard , 8 yard containers or compactors which are collected by the Solid Waste Division (not Parks) on a regular schedule.	Currently, commercial services in the Downtown area are provided in the same manner as services for other commercial customers. Providing services in the Downtown areas is challenging due to space constraints and limited capacity. The City is in the process of considering implementing a 4-block special service district to be services with compactors and carts.
MSW services for special events	For large special events, such as the Red Poppy Festival, the City works in close partnership with its MSW contractor to provide landfill trash and recycling services. For smaller permitted private events held in parks, there are no MSW requirements. Event holders typically use existing landfill trash containers at parks and pavilions. If they wish to recycle at their event, they typically must haul material on their own.	For large City-sponsored events (such as 4th of July fireworks display) the City's contractor provides additional landfill trash and recycling bins, per contract. The City may also provide extra landfill trash and recycling containers per request if possible, such as at National Night Out neighborhood parties.	Event sponsors are required to obtain a special event permit. The special event permit process includes a calculation of how many landfill trash and recycling containers must be provided, based on the anticipated number of attendees and whether food will be served at the event. Special events are required to provide both landfill trash and recycling.	Services for special events are provided by TDS per contract. They usually try to provide recycling containers in addition to landfill trash containers. In the next contract, the City would like to include more participation by the contractor for special events.	For City sponsored events the solid waste department provides dumpsters, carts and recycling containers which are all of that is picked up during the event by City staff and removed by solid waste. Private events are similar but the organizers must coordinate in advance to ensure availability and they are charged using the City's temporary container rates. There is not a requirement to for recycling at special events but it is encouraged. The biggest challenge is getting the event organizers engaged early enough to work out logistics.	The Solid Waste Division works together with other city departments and either places open tops or 8yd containers for special events for the City. Private events are paid for by the event representative.	Per the City's contract, the contractor provides additional collection containers for City events.
Mobile generators (e.g., food trucks)	Permanent food trucks within the City contract for services in the same manner as other commercial customers. For special events, food truck operators contract directly with the City's MSW services contractor.	Not reported.	The City has one location where food trucks are permitted and solid waste services are provided to this area by the City's hauler.	The City has an ordinance requiring mobile generators them to be in proximity to restroom and waste facilities, but there are not many mobile generators. There are no challenges.	Typically, there is an agreement between the mobile generator and the property owner that they will use the property owners solid waste containers. The solid waste department is not always aware when a mobile generator is issued a permit for operation.	Richardson has one Food Truck Park serviced by 8yd front load containers which are collected by the City.	Not applicable
Ordinances or permit requirements related to solid waste and recycling in public spaces	Not currently. The City plans to work to incorporate solid waste planning into the event permitting process. The City has established the annual Red Poppy Festival as a zero waste event, achieving about 70 percent MSW diversion.	None	Special events are required to provide both landfill trash and recycling. There are no ordinances in place for day to day MSW management. However, it is a priority to the City to make sure both landfill trash and recycling are provided.	None	Haulers must be permitted by the City (Code of Ordinances, Sec. 110-12)	None	None
Challenges for MSW services in public spaces	Container overflow and windblown litter are continuous issues in parks and other public spaces. The primary objective is to educate visitors and residents to place material inside a container. City crews have difficulty distinguishing landfill trash from recycling bags after collection from containers because the same type/color of bag is used for both.	None	The largest challenge is getting the public to recycle properly when in public spaces. Improper recycling has led to very high contamination of public recycling.	No	The primary challenge has been a lack of adequate capacity to handle the volume of material generated.	None	

ORDINANCES AND INITIATIVES							
	Georgetown	**Cedar Park**	**Frisco**	**Kyle**	**New Braunfels**	**Richardson**	**Round Rock**
ORDINANCES & INITIATIVES							
Ordinances or initiatives the City has related to:							
Established waste diversion, reduction, or recycling goals (percentage-based or other)	The City has set goals to prioritize identifying and implementing alternatives to landfill disposal, and develop MSW management methods consistent with the waste management hierarchy. The City will develop specific goals for each sector after baseline data is established.	The City is currently developing a Residential Waste Diversion Master Plan which will include setting goals.	The City does not have specific goals. Waste reduction has increased annually through current services provided.	Not applicable	The City is currently developing a 20 year CSWMP to address these issues.	Not applicable	None
Other waste diversion, reduction and/or recycling related ordinances or initiative, or city-wide sustainability efforts		See above response regarding plan development.	None	The City provides recycling in all City office buildings and work spaces. The City has unofficial initiatives to move toward energy efficiency (lights, appliances, etc.).	After the CSWMP is adopted there will be an effort to initiate a multifamily and commercial recycling requirement.	The City works to increase recycling tonnage and participation while reducing contamination.	The City makes efforts toward sustainability but does not have any established goals or policies.

ORDINANCES AND INITIATIVES							
	Georgetown	**Cedar Park**	**Frisco**	**Kyle**	**New Braunfels**	**Richardson**	**Round Rock**
ORDINANCES & INITIATIVES							
Planning review process for solid waste and recycling infrastructure	The City does not currently have a formal planning review process for solid waste and recycling infrastructure. As addressed in Section 12.0, City-Wide Strategies, the City will develop standards for MSW infrastructure and space allocations for each sector.	Space for landfill trash and recycling containers is reviewed during the site plan review process. It is part of the City's building code and planning process.	All commercial properties constructed are required to build a double enclosure for solid waste, including space for landfill trash and recycling collection containers. They are not required to provide recycling collection, but the space allocated for recycling cannot be used for another purpose. Additionally, the City has an ordinance requiring all wood and brick from non-residential construction projects to be recycled. The City provides information and resources to projects during the building permit process.	Solid waste infrastructure planning is not a standard part of the building permit or planning process.	The Solid Waste Manager reviews all commercial and sub-division permits to ensure accessibility and compliance with current ordinances/requirements.	The City has ordinances describing minimum requirements for solid waste and recycling front-load dumpster and roll-off enclosures. Containers must be on concrete pad, minimum of six feet in height, container screened from view, and allow for adequate space for vehicle maneuvering [Ch. 19, Art. II, Sec. 19-30].	Current criteria require certain amount of space for landfill trash containers and for container screening. The City is considering a new ordinance that would also require incorporation of space for recycling containers.
Annual funding dedicated to MSW public education and outreach	Some outreach is included in contract terms and covered under cost of contract, and additional education and outreach is provided by City staff as needed or planned.	Not reported.	Approximately $250,000 annually.	Education and outreach is meant to be accomplished through the City's contractor (TDS) per the service contract, but contract requirements are not robust. The contractor does some education work in schools and at festivals and market days. The City works with the contractor on an as-needed basis when communications are needed. There is not a specific budget item for education and outreach.	$10,000 to $16,000 annually.	Not reported.	City employees conduct most public education and outreach, including maintaining the City's solid waste website, and heavy use of social media resources. The main cost is staff time. Per contract, minimal public education and outreach is required from the contractor.
Overview of MSW-related organizational structure and staffing levels	The City has one full time employee in the Environmental Services Department. The ESD collaborates with and receives support from other City departments as needed. MSW services are provided by the City's MSW contractor.	All services are provided by private haulers. Residential services are provided by contract and commercial and multifamily services are provided through franchise agreements.	Collection is provided through Waste Connections and other haulers. City employees include those in roles dedicated to education, customer service, and crews conducting the HHW program, delivery of carts, and collecting missed items.	There is no dedicated solid waste and recycling staff. TDS provides services per the contract and City utility billing handles customer questions. The City bills residential customers for service and TDS bills all other customers directly.	Public Works Director reports to the Assistant City Manager and Solid Waste Manager reports to Public Works Director. Solid Waste has six sub-divisions with a total of 55 employees: Admin - 5, Residential - 12, Recycle/Green Waste - 15, Commercial - 13, Container Maintenance - 2, and Fleet services - 8.	Director, Assistant Director, Superintendent, 4 Supervisors, Coordinator, and 63 operational employees.	Approximate equivalent of four full time employees perform solid waste responsibilities: 1 FTE in parks for Downtown monitoring; 2.5 FTEs for the recycling drop off center, monthly HHW collection, and some public space and City facility recycling; 0.5 FTE from the Environmental Department provides additional support for solid waste.

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