BURNS McDONNELL

Waste Minimization Evaluation

City of Weatherford, Texas

This study was funded through a solid waste management grant provided by the Texas Commission on Environmental Quality through the North Central Texas Council of Governments. This funding does not necessarily indicate endorsement of the study's findings and recommendations.

June 2019

Waste Minimization Evaluation

prepared for

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prepared by

Burns & McDonnell Engineering Company, Inc.
Enter City, State of Office Location

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1.0 EXECUTIVE SUMMARY

Project Background

The City of Weatherford, nearby communities, and Parker County are facing key challenges that will impact municipal solid waste (MSW) management in the coming decades. The North Central Texas Council of Governments (NCTCOG) demographic forecasting projects that Parker County will grow by 45 percent from 2010 to 2040, increasing waste generation significantly. Impacts of the projected growth are compounded by limited landfill capacity. Weatherford and other entities in the region rely on the Weatherford Landfill for disposal; however, the landfill has only approximately three years of remaining capacity. The increased waste generation in the region accelerates the depletion of the limited remaining capacity at the landfill.

Given the projected growth and the limited landfill capacity in the area, the stakeholders of the solid waste management system in Parker County have taken the initiative to review current solid waste management and recycling practices in an effort to increase waste minimization going forward. The City of Weatherford requested a grant to support this effort on a regional basis, in cooperation with stakeholders including Parker County, the City of Aledo, the City of Hudson Oaks, Weatherford College, Weatherford Downtown Business Alliance (DBA), and others in the region. This study was funded through a solid waste management grant provided by the Texas Commission on Environmental Quality (TCEQ) through the NCTCOG. This funding does not necessarily indicate endorsement of the study's findings and recommendations.

Overview of Plan Sections

Section 2.0: Overview of Regional Characteristics

Section 2.0 describes current and projected population and potential distribution patterns over the next 20 years, through 2040. It also presents available data regarding current MSW generation quantities, composition data, and current and potential recycling quantities for the City and County. Additionally, this section provides an overview of existing MSW processing facilities and infrastructure in the region, including landfills, transfer stations, materials recovery facilities (MRFs), organics processing, Citizens' Collection Stations (CCS), and household hazardous waste (HHW) collection facilities.

Section 3.0: Summary of Current MSW Programs and Services

Section 3.0 summarizes the research and outreach conducted by Burns & McDonnell among the stakeholders of the solid waste system in Parker County. This section provides an overview of the solid

waste and recycling activities that currently occur within Parker County, based on available information gathered through online research and in contacting representatives from various entities.

Section 4.0: Stakeholder Workshop Summary

The City of Weatherford and Burns & McDonnell hosted a stakeholder workshop at the Weatherford City Hall on April 9, 2019. Section 4.0 reviews preliminary recycling and waste minimization options identified by the workshop participants that have been considered for further evaluation and potential implementation as part of this report. The slides presented in the workshop can be found in Appendix A. The next section of this Executive Summary describes the evaluated waste minimization options.

Section 5.0: Regional Options

Section 5.0 provides description of the waste minimization program options identified as priorities during the workshop including program descriptions, implementation considerations, and key findings and recommendations. A brief overview of each waste minimization program and select recommendations follow.

Commercial waste reduction and recycling. This type of program would support and incentivize recycling by commercial establishments within Parker County with a focus on high traffic areas such as the Downtown Weatherford Historic District and other areas where large volumes of recyclable material are generated by commercial establishments. Key recommendations for this option include developing a business recognition program and a Waste Reduction Assistance Program (WRAP), exploring the possibility of expanding existing collection programs to include recycling for commercial entities, and developing a commercial waste generation study.

Citizens' Collection Station (CCS). A CCS is a conveniently located facility within a community where residents can drop off their refuse and recycling materials during regular weekly or daily service hours. A CCS within Parker County could be constructed and made available to residents in incorporated and unincorporated areas of Parker County. Key recommendations for this option include developing a CCS in a convenient location for residents with limited access to recycling and exploring grant opportunities to through NCTCOG to financially support its development.

Brush and yard trimmings processing. A brush and yard trimmings processing program would coordinate processing capacity for materials generated by residents of Parker County and would market the products (e.g., mulch and/or compost) to end-users. Brush and yard trimmings present a significant opportunity for the City and County to increase waste diversion from landfills and could be relatively less expensive to implement than other types of diversion strategies. Key recommendations for this option

include co-locating a processing operation with the CCS, coordinating education and outreach efforts to minimize contamination, and considering procuring a private-sector operator to support the development and/or operations of a facility.

Household Hazardous Waste (HHW). The purpose of an HHW program is to provide residents with access to safe and proper disposal options for household materials and chemicals that are not suitable for disposal in landfills or for collection with other curbside services due to the potential for environmental and human health risks. All Weatherford and Parker County residents currently have access to drop off their HHW materials at the Fort Worth Environmental Collection Center (ECC). However, access to the ECC may not be very convenient for many residents in Parker County. Key recommendations include exploring options to provide more local or convenient access to HHW disposal, pursue intergovernmental collaboration for mobile collection of HHW with the City of Arlington, and explore opportunities for contracted at-your-door HHW collection. One or more of these options may be financially supported by requesting a grant through NCTCOG.

Regional collaboration. Collaborative waste reduction and management programs are designed and operated as an integrated system of personnel and equipment, an integrated approach to communication with service recipients and the general public, and appropriate use of both public and private sector resources. Key recommendations for this option include participating in the NCTCOG Regional Recycling Survey and Campaign and considering several long-term strategic relationships among municipal entities within Parker County.

Additionally, Section 5.0 presents financing strategies and funding sources for the development of the options and recommendations presented including public, private and grant funding. Please refer to this section for further information about the NCTCOG grant opportunity that was previously discussed (see the Regional Solid Waste Grants Program portion of Section 5.0).

Section 6.0: Implementation Plan

Section 6.0 provides a description of the criteria associated with the implementation of recommendations presented in Section 5.0. Burns & McDonnell compiled the strategies and key implementation components of each recommendation into a high-level implementation plan to provide guidance regarding, timing, estimated financial impact, and waste diversion/minimization impact. An electronic copy of the Implementation Plan has been provided to the City of Weatherford and provides the ability to prioritize strategies and track progress.

2.0 OVERVIEW OF REGIONAL CHARACTERISTICS

As with any municipal planning effort, identifying needs and planning for future municipal solid waste (MSW) services and programs requires an understanding of current and projected demographic characteristics on a local and regional level. The level of population growth and the geographic distribution of that growth will impact the MSW service options the City of Weatherford and Parker County ultimately choose to provide. This section describes current and projected population and potential distribution patterns over the next 20 years, through 2040. It also presents available data regarding current MSW generation quantities, composition data, and current and potential recycling quantities for the City and County This section concludes with an overview of existing MSW processing facilities and infrastructure in the region, including landfills, transfer stations, materials recovery facilities (MRFs), organics processing, Citizens' Collection Stations (CCS), and household hazardous waste (HHW) collection facilities.

2.1 Demographics

Population growth. The populations of the larger North Central Texas Council of Governments (NCTCOG) region and of Parker County and the City of Weatherford are anticipated to grow steadily over the next 20 years. The NCTCOG may see a 41 percent growth during that time while both the County and City may expect even higher total growth. Table 2-1 presents historic, current and projected populations for each entity along with annual and total growth rates (2019-2040) to provide a complete picture of regional and local demographic trends.

Table 2-1: Historical, Current, and Future Regional Populations with Projected Growth Rates

	Total Population[1,2,3]				Growth Rates (2019-2040)[4]	
	2010	2019	2030	2040	Annual	Total
NCTCOG[2]	6,540,000	7,548,400	9,051,800	10,676,800	1.7%	41%
Parker County[2]	116,900	134,600	163,600	195,300	1.8%	45%
Weatherford[4]	25,300	28,100	36,000	43,000	2.0%	53%

[1] 2010 and 2019 population data for all entities (NCTCOG, Parker County, and Weatherford) is based on the 2019 NCTCOG Population Estimates Publication available from the NCTCOG Regional Data Center Demographics Database: http://data-nctcoggis.opendata.arcgis.com/search?tags=Demographics.

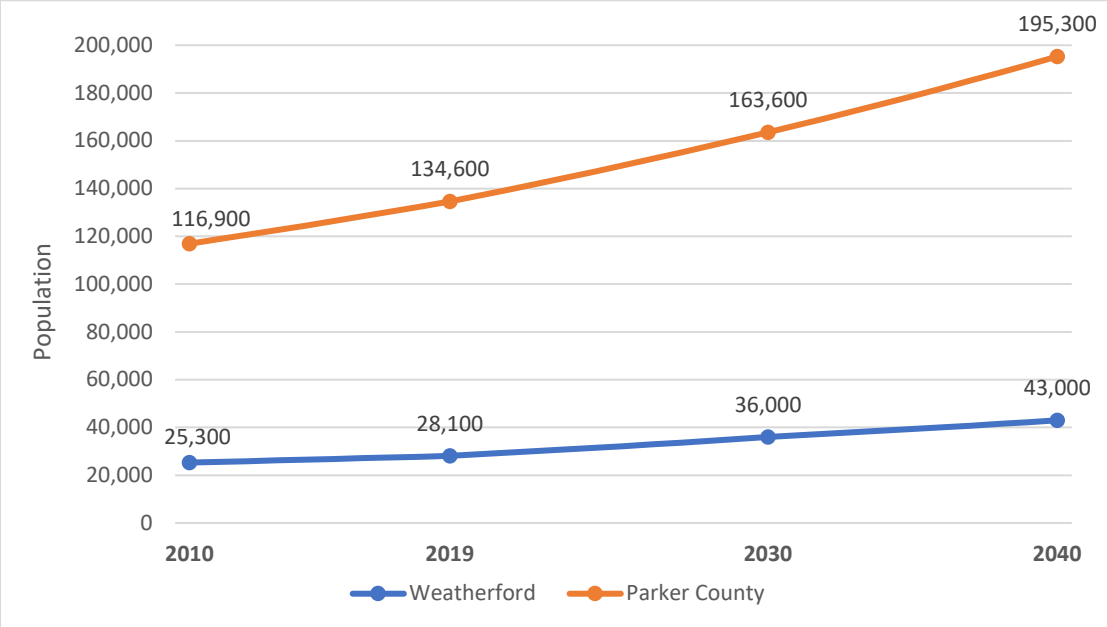
[2] Population projections for the NCTCOG and Parker County are based on the 2040 NCTCOG Demographic Forecast, also available from the NCTCOG Regional Data Center Demographics Database.

[3] Population projections for the City of Weatherford are based on population estimates utilized in the City's 2018 General Plan, Land Use and Development Element (Chapter 4), available online: http://weatherfordtx.gov/1807/General-Plan

[4] Growth rate figures reflect rates calculated using 2019 as the base (beginning) year and 2040 as the end year, to show anticipated growth moving forward. They do not incorporate historical (2010) population data.

It is important to understand that significant population growth is anticipated in the larger NCTCOG planning region; however, the decisions about programs and strategies to implement within the City and County should be based largely on population projections and distribution patterns specific to these entities to best serve residents and promote landfill diversion. Figure 2-1 provides a graphical representation of projected population growth for Parker County and the City utilizing the data presented in Table 2-1.

Figure 2-1: Historical and Projected Population of Weatherford and Parker County



The City currently comprises just over 20 percent of the total County population and this proportion is projected to remain steady over the next 20 years. Weatherford is the largest municipality within the County, but majority of the County's population (nearly 80 percent) will be outside the City's boundaries, highlighting the need to develop collaborative regional relationships.

Population distribution. Population distribution within the County is not uniform. This is important to understand because it will impact the types of programs that are feasible and cost effective to provide in different areas of the County. Please refer to the maps provided in Figures 2-2, 2-3, and 2-4 for depictions of population densities, incorporated and unincorporated areas, and subdivided communities within Parker County. The most densely populated areas of the County are the central (centered on the City of Weatherford) and the northeastern portions, which will likely continue to see the highest population growth and densities. The more densely populated areas include a majority of the incorporated areas within the County, but there are also some densely populated areas that are not with in a city's jurisdiction. However, about 60 percent of the total County population (79,600 residents) live in unincorporated areas and a large portion of the County's total land area is rural. About 60 percent of the total population resides in only 20 percent of the land area. Traditional curbside MSW services are more viable in densely populated areas and are typically provided by a city or a homeowner's association (HOA). Alternative programs may need to be implemented to provide adequate service opportunities to residents in rural and unincorporated areas. Often, residents in rural and unincorporated areas contract directly with a service provider to receive regular MSW services, often at a higher cost.

Figure 2-2: Parker County Populated Areas

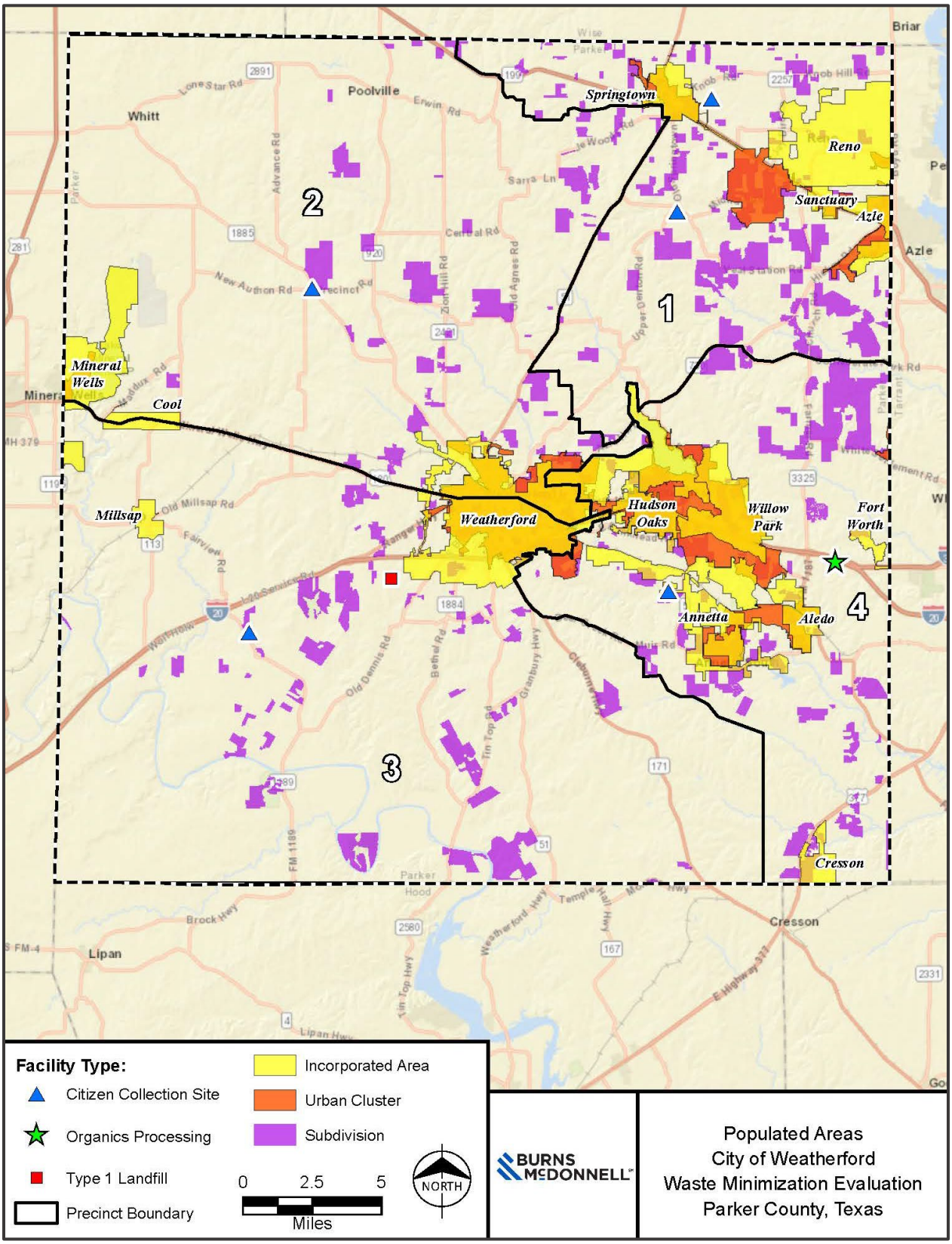


Figure 2-3: Parker County Population Density by Census Block Group

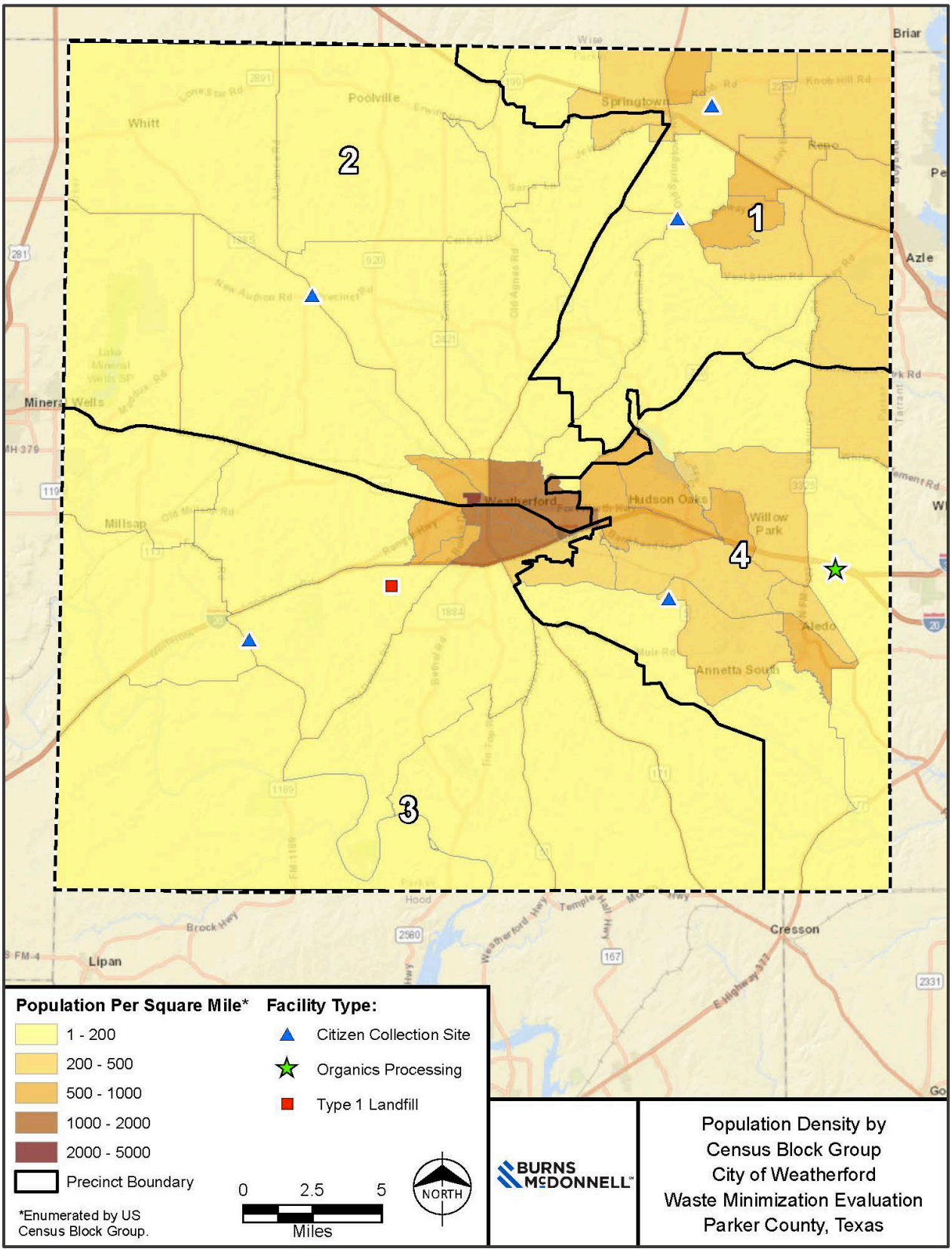
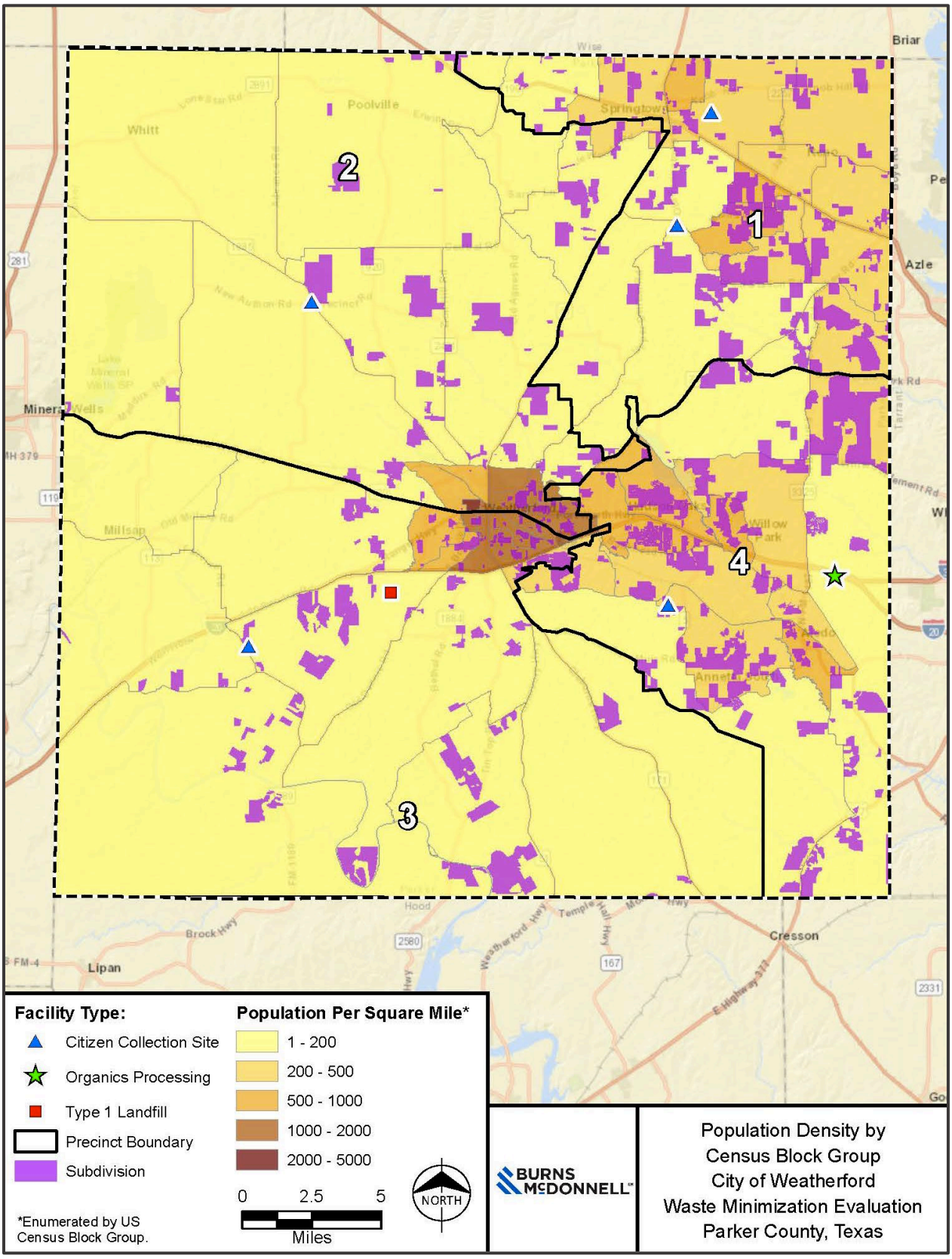


Figure 2-4: Parker County Population Density by Census Block Group with Subdivisions



2.2 MSW Generation, Diversion, and Disposal

This section provides definitions for terminology used in describing MSW quantities and management options:

Generation. MSW generation is the total quantity of material produced through normal residential activities and commercial, institutional, and municipal operations. It is the total quantity of material that the region must manage through various disposal, recycling, and diversion programs and services.

Diversion. For purposes of this study, MSW diversion is defined as the proportion of MSW that has value as a commodity or as an input into other products or processes. Diverted material is collected and processed through traditional recyclables programs or composting and mulching activities.

Disposal. Disposal refers to all remaining MSW placed in landfills that has not been recycled, composted, or otherwise diverted. Disposed materials include some quantities of materials that have the potential to be diverted (recycling, composting, or mulching) but were not recovered prior to disposal. Some of the material that ends up in landfills could potentially be recovered and diverted through improvement or expansion of programs, infrastructure, or public education.

2.2.1 Regional Landfill Trends and Capacity

This section describes two of the primary reasons it is increasingly important for the City and County to prioritize diversion and develop MSW management alternatives to landfill disposal.

Landfill trends. Permitting new landfills is becoming increasingly difficult as regulatory requirements become more stringent, which limits the new landfill capacity that will be available as existing landfills fill up. In response, existing landfills are seeking vertical and horizontal expansion, improving operations, and/or implementing additional technologies to prolong their useful life. Additionally, average landfill tipping fees (cost per ton) are increasing nationwide. The national average per-ton tipping fee increased 14 percent from 2016-2018, while the Texas state-wide average increased by 35 percent during that time (refer to Table 2-2). Increasing disposal costs will make alternatives to landfill disposal even more important for municipalities in order to provide residents with affordable MSW services.

Landfill capacity. As population growth continues (refer to Section 2.1) quantities of MSW generated will increase and the City and County will need to be able to handle these increased quantities. Disposal options (landfills) in the western portion of the NCTCOG region are more limited than elsewhere in the region. Limited disposal options combined with future growth projections enhances the importance of

evaluating recycling, diversion, and waste minimization options for current and future MSW management needs.

Landfill tipping fees. Since 2016, the Environmental Research and Education Fund (EREF) has conducted annual studies 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 2018, the average landfill tipping fees in Texas remained below the national average but were slightly higher than the regional average. In the past two years from 2016 to 2018, The average tipping fees in Texas increased at a much higher rate than national average, while regional averages fell by 4.2 percent. [1] This state-level 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 lower.

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

	January 2016	April 2018	2016-2018 Difference	Percent Change
Texas	$28.00	$37.78	$9.78	34.9%
South Central Region	$36.34	$34.80	-$1.54	-4.2%
United States	$48.27	$55.11	$6.84	14.2%

2.2.2 Composition of MSW Disposed in Landfills

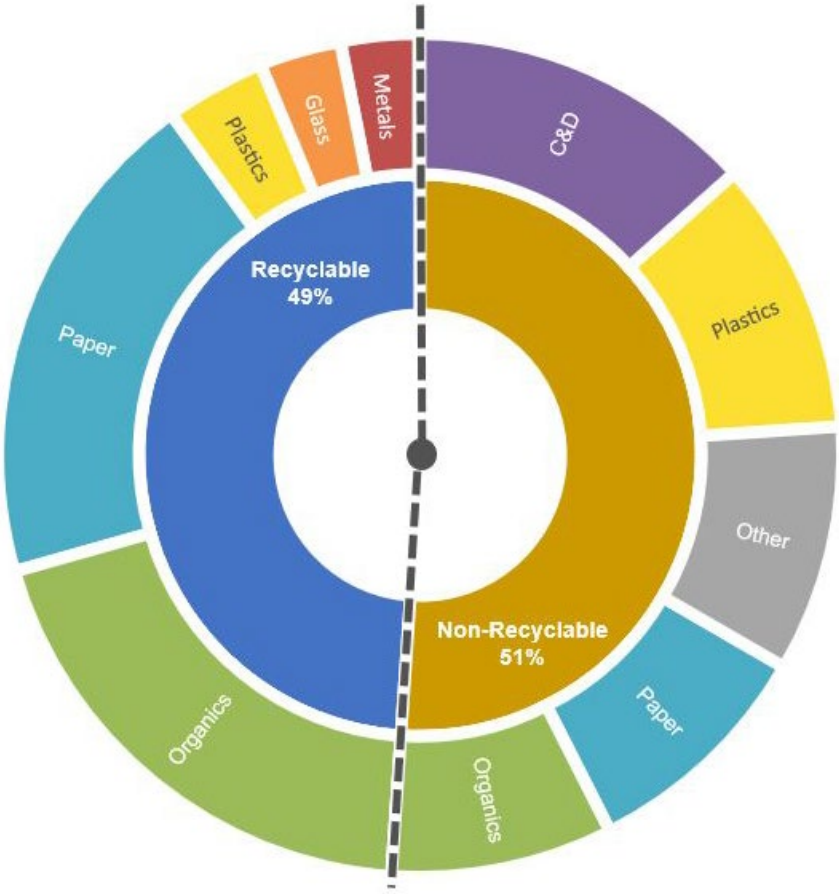
MSW composition varies from region to region based on various factors such as the relative proportions of residential versus commercial sectors, convenient access to recycling programs, and vegetative growth. Analysis of the composition of MSW that is disposed in landfills, both at the state and local level, shows that there is opportunity to divert significant additional amounts of material from landfill disposal. Based on a study conducted by the Texas Commission on Environmental Quality (TCEQ), nearly half of all material disposed in Texas landfills in 2015 was material that had the potential to be recycled or diverted.[2] Figure 2-5 presents the estimated composition of MSW disposed in Texas landfills and

[1] Environmental Research & Education Foundation (EREF). January 2016 and April 2018. "Analysis of MSW Landfill Tipping Fees. https://erefdn.org/bibliography/datapolicy-projects/

[2] 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.

whether it was recyclable or non-recyclable. Recyclable and non-recyclable materials are further broken down by material categories.

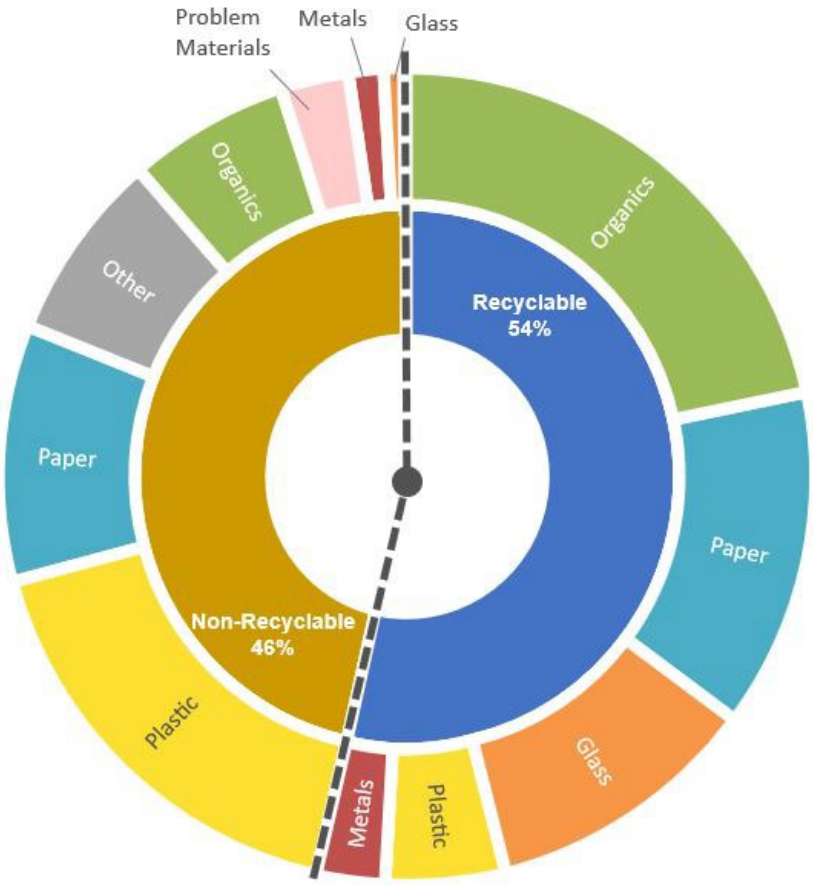
Figure 2-5: State of Texas Composition of Landfilled Material (2015)



Estimated landfill composition data for MSW generated by City of Weatherford residents is presented in Figure 2-6 and based on results from a residential waste characterization audit conducted by the NCTCOG in 2018.[3] An estimated 54 percent of all landfill disposal quantities generated by the City has the potential to be diverted with appropriate programs for the varied material types. Approximately 32 percent of the City's landfilled MSW could be recycled utilizing the City's currently provided services (single-stream recycling and brush diversion). Another 20 percent (food scraps, which are a large component of organic MSW) has the potential to be diverted through the provision of a composting program.

[3] Composition data specific to the City of Weatherford present an estimate of landfill composition based on a small sample size.

Figure 2-6: City of Weatherford Composition of Landfilled Material (2018)



2.2.3 Current MSW Generation

The total amount of MSW generated includes all material disposed and all material diverted through recycling, composting, or other methods. Total MSW generation quantities are not available for Parker County as a whole due to the many various services provided by numerous entities and individual customers who contract directly with service providers.

The City of Weatherford's Sanitation Division provides refuse, single-stream recycling, brush and yard trimmings, and bulk item collection services to residential customers and a small number of commercial customers. Through these services, refuse and bulk items are disposed in the landfill and comprise about 91 percent of all residential MSW collected with City services. Single-stream recyclables and brush material are diverted from landfill disposal and together comprise about nine percent of total residential MSW generation within the City. Table 2-3 presents the total 2017 MSW quantities collected through Weatherford's residential solid waste and recycling programs. The City's current services are described in further detail in Section 3.0.

Table 2-3: 2017 City of Weatherford MSW Generation by Material Type (Tons)

	Tons Generated	Percent Total Generation
Disposal		
Refuse	10,242	74%
Bulk	2,330	17%
Diversion		
Recycling	409	3%
Brush[1]	813	6%
Total Generation	13,793	

[1] Approximately 6,500 cubic yards of brush was collected by the City in 2017. Brush tonnage was estimated by applying a standard U.S. Environmental Protection Agency (EPA) conversion factor for Uncompacted Mixed Yard Waste of one cubic yard = 250 pounds.

2.2.4 Current and Potential Single Stream Recycling Rates

This section takes a closer look at the City's current single stream recycling rate and material quantities and potential recycling quantities that could be recovered by the City and the County in the future.

City of Weatherford current recycling program. The City offers a cart-based subscription recycling service to residential customers for once per week collection. To receive service, residents opt-into the program and pay an additional $2.50 per month above the monthly base rate. In 2017, about 15 percent of residential households were subscribed to the program (1,496 subscribers of 9,748 total in-City households).

A total of 409 tons of recyclable materials (three percent of total MSW generation, as shown in Table 2-3) was collected through this subscription service in 2017, equivalent to an average of 547 pounds of material per subscriber per year. However, on a per-household basis, the City's average recycling rate is lower, at 84 pounds per household.[4] A 2016 study by The Recycling Partnership of cities nationwide estimated that the national average single-stream recycling program collected 364 pounds of material per household per year.[5] When compared to the national average, Weatherford currently has a strong recycling rate on a per-subscriber basis, but a low overall per-household rate.

[4] Per-subscriber annual recyclables quantity of 547 pounds was calculated based on 409 tons distributed among 1,496 subscribers. Per-household annual recyclables quantity of 84 pounds was calculated based on 409 tons distributed among 9,748 in-City households.

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

City and County potential recycling quantities. The City is considering providing a City-wide curbside recycling program to residential customers, in which all customers would be provided regular cart-based recycling collection and without the requirement to opt in to the service. City-wide programs generally have higher participation rates and per-household annual recycling quantities than subscription-based programs. This section presents potential current and future recycling quantities the City could achieve if it were to provide a City-wide recycling program. Two scenarios (high and low) are also presented for potential recycling quantities that could be collected from Parker County as a whole. These projections are based on an assumption of the national average of 364 pounds of recyclable material collected per household per year and the population projections presented in Section 2.1

Figure 2-7 compares the City's projected total recycling tonnage if the current annual collection of 84 pounds per household remained constant (subscription recycling service) to potential quantities if the City were to achieve the national average of 364 pounds per household per year (City-wide recycling service).

Figure 2-7: City of Weatherford Potential Recycling Quantities (Tons)

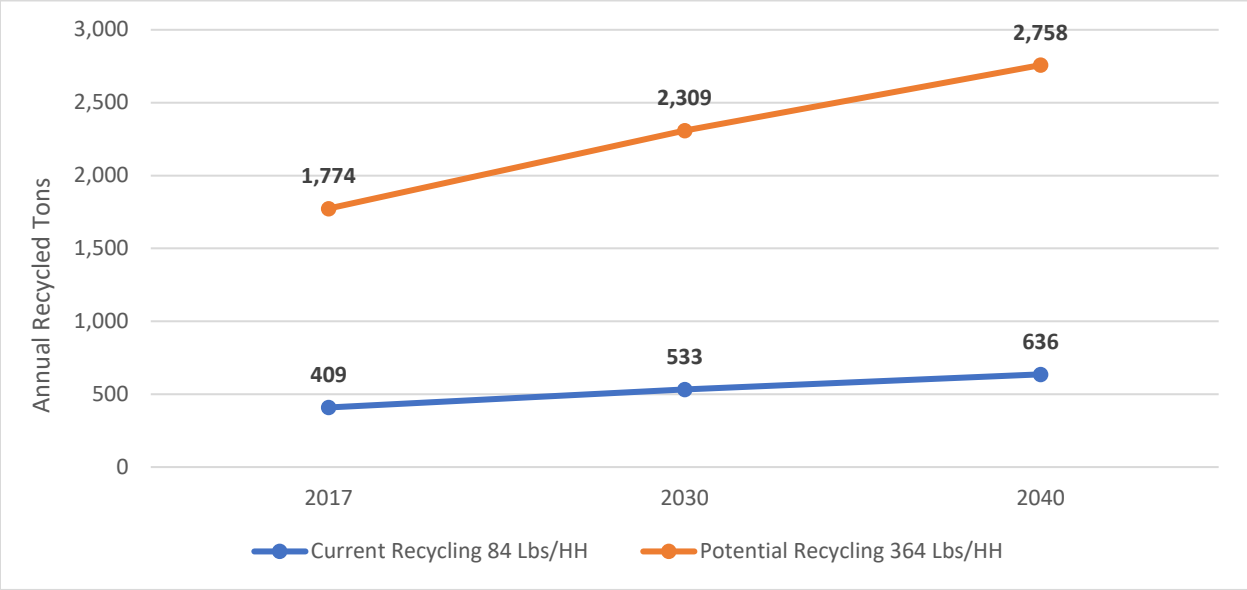
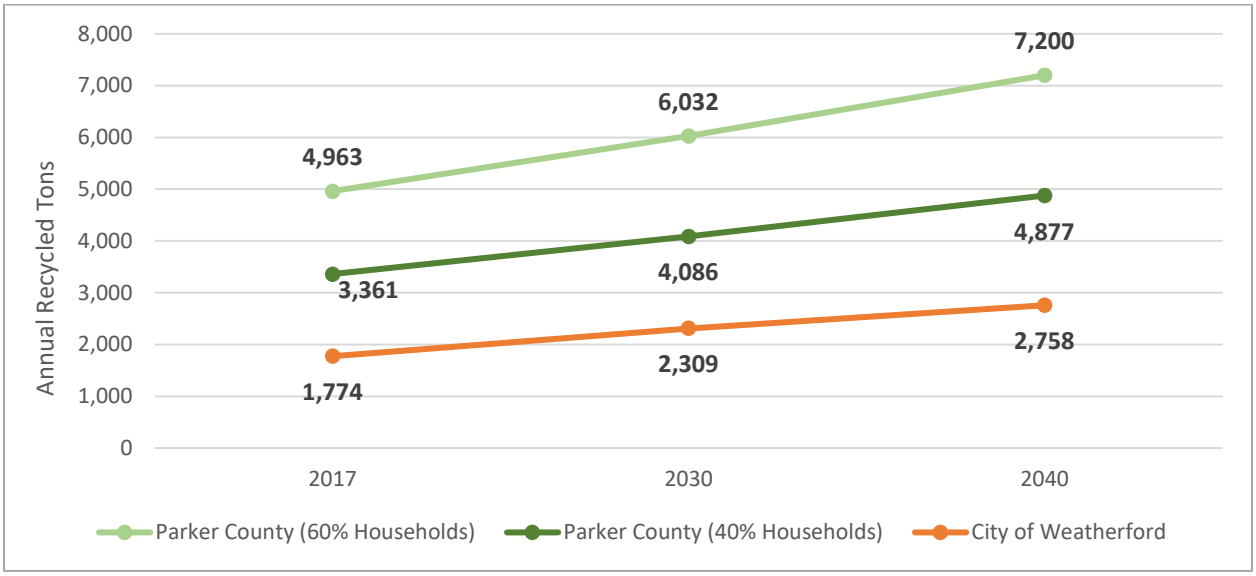


Figure 2-8 presents potential recycling quantities for the City and for Parker County as a whole, with the assumption that 364 pounds of recyclables would be recovered per household per year through curbside recycling programs. There are areas of Parker County in which it would not be feasible or cost-effective to provide curbside recycling services, such as rural and unincorporated areas. Therefore, it was assumed that only a portion of County households would contribute to the County's total recycling tonnage, and two potential scenarios are presented. The low recycling scenario assumes that recyclables would be collected from 40 percent of total households within the County, the portion within incorporated cities.

The high recycling scenario assumes that recyclables would be collected from 60 percent of total households within the County, the portion within areas of higher population density.

Figure 2-8: City of Weatherford and Parker County Potential Recycling Quantities (Tons)[1,2]



1 Assumes an annual amount of 364 pounds of recyclables collected per household per year.
2 Weatherford annual recycled tons would be a portion of Parker County annual recycled tons; the two values should not be added together.

Recycling processing fees. The per-ton fee paid for processing of recyclable materials collected is impacted by various factors, including 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 traditionally charged a cost per ton for processing recyclable materials and then offered a share of revenue generated through sale of the material back to municipalities (where municipalities facilitated organized recycling contracts). At the beginning of the 2008 recession, the market value of recyclable materials plummeted dramatically, from record highs to record lows. MRFs were no longer able to cover the entirety of their processing costs from processing fees plus material revenue sharing, and some MRFs experienced negative cash flows. Because of the dramatically reduced market values of recovered materials, many MRFs changed their cost recovery structure, and began charging higher processing fees that would fully recover all processing costs, rather than relying on material revenues to be made whole. MRFs were then typically willing to offer municipalities a greater share of material revenues. As a result, processing fees have increased to amounts ranging from $50-$80+ per ton (up from $30-$40 per ton prior to 2008).

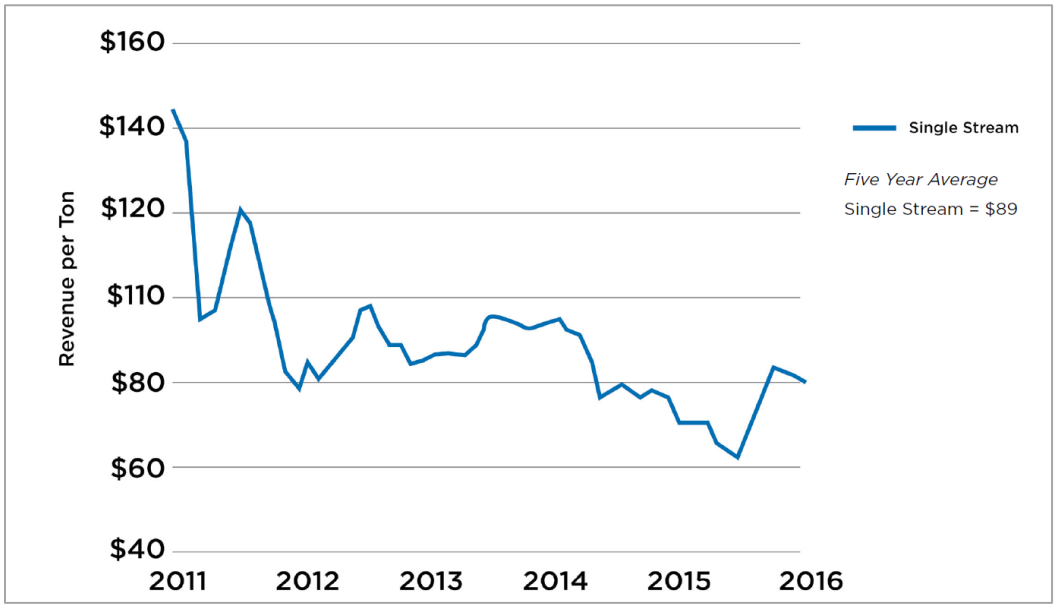
Table 2-4 compares the average single stream materials processing fees and recyclable materials revenue shares in Texas before and after the 2008 recession.

Table 2-4: 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 blended market value of processed recyclable materials collected as a single stream (paper, plastics, metal, and glass) from municipal collection programs over the five-year period from 2011 to 2016 was $89 per ton. In addition to commodity values, the value of single stream materials varies based on the composition of the materials (i.e. quantity of paper, plastics, metal, and glass) and quality of the materials. Figure 2-9 illustrates the changes in the average value of single stream materials in Texas from 2011 to 2016.[6]

Figure 2-9: Average Single Stream Material Revenue (per Ton), 2011-2016



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

[6] 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.

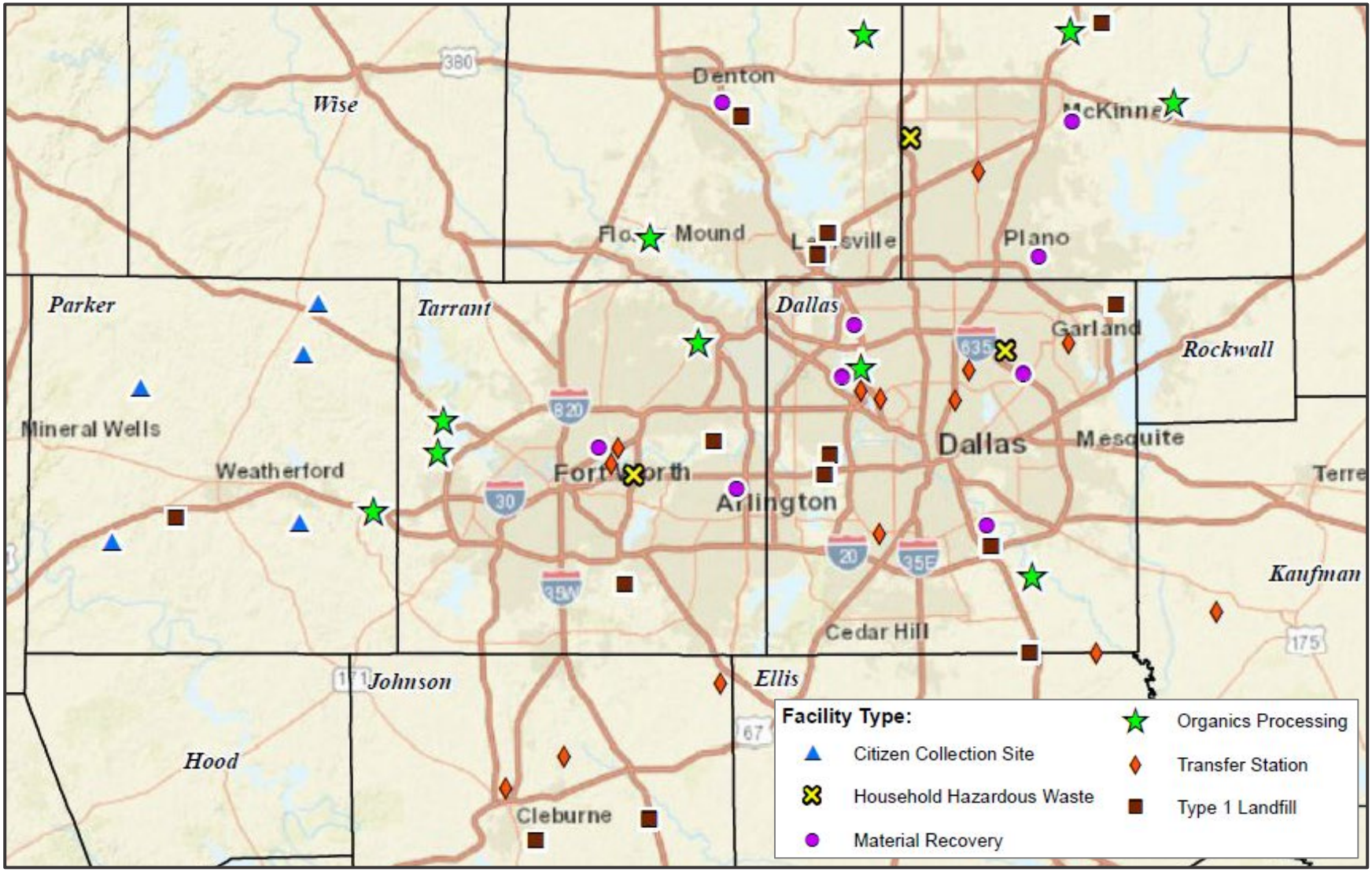
2.3 Regional MSW Facilities

Figure 2-10 shows the locations of the major MSW disposal and processing facilities located in the NCTCOG region, including landfills, transfer stations, MRFs, organics processing, CCSs, and HHW collection facilities.

There is currently only one landfill in Parker County, contributing to the limited disposal capacity readily accessible to the City and County, in addition to other contributing factors described in Section 2.2.1 A new landfill has been permitted near Jacksboro (in southeast Jack County). This landfill would be outside of the NCTCOG and adjacent to Parker County but the opening date for the facility is unknown.[7]

[7] Up-to-date records of permitted MSW facilities within the state are available from the TCEQ: https://www.tceq.texas.gov/permitting/waste_permits/msw_permits/msw-data

Figure 2-10: NCTCOG Regional MSW Facilities



3.0 SUMMARY OF CURRENT PROGRAMS AND SERVICES

To develop and evaluate options for future MSW management within the region, it is necessary to understand the management activities that are currently occurring. Burns & McDonnell researched and contacted representatives from various entities to gather information about the programs and services related to MSW management that each entity provides or participates in. These entities included municipalities and community stakeholders within the County.

Municipalities

- Parker County
- City of Weatherford
- City of Aledo
- City of Annetta
- City of Annetta North
- City of Annetta South
- City of Hudson Oaks
- City of Springtown
- City of Willow Park

Community Stakeholders

- Weatherford ISD
- Aledo ISD
- Weatherford College
- Weatherford Downtown Business Alliance
- Medical City Weatherford
- Walsh (neighborhood)

Each of these entities was contacted to request an interview to discuss solid waste and recycling activities and was also invited to participate in the stakeholder workshop summarized in Section 4.0.

For municipalities, Burns & McDonnell was able to either conduct an interview with a representative and/or gather information that was publicly available. For community stakeholders, there is generally less publicly available information and not all were able to be reached for an interview. This section provides an overview of the solid waste and recycling activities that currently occur within Parker County, based on available information.

3.1 City of Weatherford Current MSW Programs and Services

The City of Weatherford's Sanitation Division (Sanitation Division) provides solid waste and recycling services to approximately 10,300 customers, including all City residents as well as a smaller number of residential customers located outside City limits and select smaller commercial customers within the

City.[1] The City also has an open franchise system for provision of commercial solid waste and recycling services. The majority of commercial businesses within the City, including all businesses requiring service via dumpsters and/or roll-off containers, contract independently with private haulers to receive solid waste and recycling services.

The Sanitation Division provides refuse, single-stream recycling, brush and yard trimmings, and bulk item services to its customers. City services are further described in Sections 3.1.1 and 3.1.2. The City utilizes local and regional disposal and processing facilities to manage these waste streams, as appropriate. Refuse is disposed at the Weatherford Landfill (owned by the City and operated by Waste Connections) located a short distance southwest of the City limits. Single-stream recyclables are direct-hauled to the Republic MRF in Fort Worth for processing. Brush and yard trimmings materials collected through City services are diverted for mulching at the City's brush grinding site.

This section provides an overview of the residential and commercial solid waste and recycling services provided to City customers by the Sanitation Division and private haulers. It also provides a comparison of services provided for benchmarked cities within Parker County.

3.1.1 Residential Services

The Sanitation Division provided residential customers with refuse, single-stream recycling, brush and yard trimmings, and bulk item collection services. The current base service rate paid by residential customers is $17.00 per month for customers within the City and $21.25 per month for customers outside the City limits. Base monthly rates include refuse collection twice per week and all other residential services are provided for additional fees, as described following Table 3-1.

Table 3-1 presents an overview of the City's residential services and additional descriptions of each service are provided below.

[1] Customer counts provided are based on 2017 data utilized in the Solid Waste and Recycling Financial and Operational Study previously conducted by Burns & McDonnell. The Sanitation Division provides refuse services to all 9,748 households within the City. In addition, the Sanitation Division provides refuse services to 295 additional residential customers located outside the City limits and 281 City commercial customers whom subscribe for refuse services with the Sanitation Division. The Sanitation Division charges a premium rate for refuse services to City commercial customers and residential customers located outside City limits.

Table 3-1: City of Weatherford Overview of Residential Services

Service	Frequency	Description	Fees	Diversion
Refuse	Twice per week	Collection in bags, cans, or other container	In-City: $17.00 per month Out-of-City: $21.25 per month	✗
Single-stream Recycling	Once per week	Subscription service; cart-based collection	$2.50 per month	✓
Brush and Yard Trimmings	Monthly	Bundled or bagged green waste material	$10 per collection; $5 per additional cubic yard	✓
Bulk Items	Monthly	Household waste too large for refuse service	$25 per collection; $10 per additional cubic yard; $15 per appliance	Varies
HHW	Unlimited	Fort Worth's regional voucher drop-off program	$50 per voucher	Varies

Refuse. The Sanitation Division provides manual refuse collection to residents twice per week, utilizing customer-provided bags, cans, or other containers. Residents may place up to 16 garbage bags at the curb for collection each service day. Approximately 74 percent (10,242 tons) of all material collected through City services in 2017 was refuse material, which is disposed of in the Weatherford Landfill.

Single-stream recycling. The City's single-stream recycling service is a subscription-based service, provided to residents who choose to opt-in to the program for an additional $2.50 per month. Collection is provided once per week via 96-gallon roll carts. In 2017, 1,496 households within the City, or approximately 15 percent of all households participated in the recycling program. The City's recycling service diverts material collected through the program from landfill diversion and recovered approximately six percent (409 tons) of the City's total 2017 MSW generation. Refer to Section 2.2.4 for additional details regarding current and potential recycling rates.

Brush and yard trimmings. The City provides monthly collection of brush and yard trimmings materials for additional fees. The resident pays $5 per cubic yard of material collected, at a minimum cost of $10 per collection. Brush and yard trimmings collection is currently the City's primary means of

MSW diversion, diverting approximately six percent (813 tons)[2] of the City's total 2017 MSW generation. Material collected through the brush and yard trimmings program is transported to a City site where it is ground into mulch by the City.

Bulk items. The City provides monthly collection of bulk items for additional fees. Bulk item collection is intended for items that are too large to be collected with refuse service, such as furniture, lumber, and appliances. The resident pays $10 per cubic yard of material collected, at a minimum cost of $25 per collection, and $15 per large appliance collected. Material collected through the bulk item service is disposed in the landfill.

Household hazardous waste (HHW) voucher program. HHW collection and disposal services are not directly provided by the City. However, the City and Parker County both participate in the City of Fort Worth's regional HHW drop-off program through interlocal agreements. Through this program, residents may drop off their HHW material at the Fort Worth Environmental Collection Center (ECC) after requesting a voucher from the City or County at a cost of $50 to the resident per visit to the ECC. There is not a limit to the number of vouchers residents may receive. The current and potential HHW program options are further discussed in Section 5.4.

3.1.1.1 Residential Benchmarking Overview

This section provides an overview and comparison of solid waste and recycling services provided for single-family residential customers for the cities within Parker County identified in Section 3.0. Five of the benchmarked cities (Annetta, Annetta North, Annetta South, Hudson Oaks, and Willow Park) conducted joint contract negotiations with Republic services and all receive the same services and base rate under a single contract.

Table 3-2 presents an overview of services provided to residents of each of the benchmark cities, indicating the service provider (city or private hauler), the monthly base rate, and whether each service is provided with the monthly base rate, for additional fees, or not provided by the city. Additional comparison of benchmark cities' services is provided following Table 3-2.

[2] Approximately 6,500 cubic yards of brush was collected by the City in 2017. Brush tonnage was estimated by applying a standard U.S. Environmental Protection Agency (EPA) conversion factor for Uncompacted Mixed Yard Waste of one cubic yard = 250 pounds.

Table 3-2: Residential Services Benchmarking, Cities within Parker County

City	Service Provider	Monthly Base Rate	Refuse	Recycling	Bulk	Brush
Weatherford	City	$17.00	●	○	○	○
Annetta, Annetta North, Annetta South, Hudson Oaks, Willow Park	Republic Services	$14.67	●	●	●	—
Aledo	Republic Services	$13.54	●	—	●	●
Springtown	Waste Connections	$14.25	●	●	●	—
Legend	● Service provided with base rate		○ Service provided for additional fee		— Service not provided by city	

Refuse. All benchmarked cities provide refuse service at least weekly as part of service offerings included in the monthly base rate. Weatherford and each of the five joint-contract cities provide refuse collection to residents twice per week.

Single-stream recycling. Recycling is a base service for six of the eight Parker County cities benchmarked and is provided on a weekly basis. Weatherford does not offer recycling collection included in the base monthly rate but offers a subscription recycling service for an additional $2.50 per month per household for weekly service. Springtown is the only city that does not offer curbside recycling collection to residents.

Brush and yard trimmings. Most benchmarked cities do not provide separate collection of brush and yard trimmings either with base services or for an additional fee. Springtown provides brush and yard trimmings collection every other week, included in base service rates. Weatherford provides weekly collection of these materials for additional fees. For residents in Aledo and the five joint-contract cities, brush and yard trimmings materials are collected with refuse and/or bulk materials and are landfilled.

Bulk items. Bulk item collection is provided as a base service for eight of the seven benchmark cities. The five joint-contract cities provide the most frequent collection, with service opportunities twice per week with base monthly rates. Aledo and Springtown provide monthly call-in bulk collection service as a base rate. Weatherford provides monthly bulk item collection opportunities for additional fees.

3.1.2 Commercial Services

The City of Weatherford's Sanitation Division provides limited solid waste and recycling services to a small number of commercial business within the City, concentrated in the City's downtown area. Cart-based refuse and single-stream recycling services are provided to smaller commercial businesses whose volume of materials generated can be handled via carts, as the City does not currently provide dumpster and roll-off services. Commercial refuse service is provided at a premium, for a monthly rate of $36.40 for twice per week collection. The rates for more frequent service are determined by the Sanitation Division.

All other commercial solid waste and recycling services are provided by private haulers permitted to operate within the City through the City's open franchise system. Commercial customers with refuse and recycling material generation that exceed the capacity of a cart must contract with a private hauler to receive services. All additional commercial haulers are contracted independently between commercial business and private haulers that provide the needed services.

3.1.2.1 Commercial Benchmarking Overview

Generally, commercial solid waste and recycling services are provided via an open franchise system in most cities in Parker County. As discussed in Section 3.1.2, Weatherford's Sanitation Division provides limited commercial services, and most businesses within the City contact independently with private haulers. Springtown's contract with Waste Connections includes and exclusive franchise for providing both residential and commercial services within the City. All other cities provide services via open franchise systems and therefore services provided and rate schedules vary from city to city and hauler to hauler.

3.2 Parker County Current MSW Programs and Services

With 60 percent of the County's total population living in unincorporated areas, much of which is rural with low population or household density, a portion of the County's residents do not have access to curbside solid waste and recycling services provided through a city or HOA. Residents in unincorporated areas typically contract independently with a private hauler to receive regular curbside solid waste and recycling services.

The County does not provide or contract for curbside services. The County offers various year-round and annual drop-off opportunities intended to provide options for materials that are difficult to recycle or dispose and materials that may not be accepted with regular curbside services that residents receive from

their city or private haulers. Regular household refuse and single-stream recycling are not currently accepted with County-provided services.

Each of the County's four precincts individually provides a drop-off site for residents to dispose and recycle various materials year-round and also provides one annual collection event at the same locations. Solid waste and recycling services provided by the County are further described below.

- **Drop-off sites.** Residents have access to precinct drop-off sites year-round. Year-round operations are intended to provide options for recycling materials that cannot be recycled through regular curbside recycling or diversion services, and generally do not accept material that would be disposed in a landfill. Tires and used oil are accepted at all four precinct locations. Other accepted materials vary, but include materials such as large appliances, automotive fluids, batteries, brush, electronics, and scrap metal.
- **Annual Collection Day.** Each precinct holds its own Annual Collection Day event each spring. In addition to the hard-to-recycle materials accepted year-round at precinct drop-off sites, annual events are intended as an opportunity for residents to dispose of material that cannot be recycled and is not accepted with household services (e.g., large items). Annual Collection Days are well-attended events but are a significant cost to the County. In 2019, the total cost for the four one-day events (one event per precinct) was approximately $250,000.
- **Household hazardous waste (HHW).** Parker County is also a participant of Fort Worth's regional HHW drop-off program. As for Weatherford residents, County residents may request a voucher from the County at a cost of $50 and drop-off their HHW materials at the Fort Worth ECC.

3.3 Regional Community Stakeholders Current MSW Management

This section summarizes the current MSW management activities conducted by the Weatherford Downtown Business Alliance (DBA) and Weatherford College. Information for other community stakeholders was either very limited or unavailable.

Downtown Business Alliance (DBA). Weatherford's DBA support businesses and promotes economic growth in the Downtown Weatherford Historic District. The DBA services about 150 businesses in the Historic District, including helping to coordinate solid waste and recycling services. Services in the Historic District are provided with a combination of City services (Sanitation Division) and services provided by private haulers. Table 3-3 provides a summary of solid waste and recycling services currently provided to businesses in the downtown area.

Table 3-3: Overview of Downtown Solid Waste and Recycling Services

Service	Fees
Refuse	The Sanitation Division provides twice weekly curbside refuse collection to some businesses with bags and containers. Businesses with large collection needs contract with private haulers for dumpster service.
Recycling	The Sanitation Division provides weekly recycling collection via carts for 15-20 businesses that subscribe to the City's recycling service. No other commercial recycling efforts within downtown are currently known.
Organics	There are no known significant separate organics collection and diversion efforts in downtown.[1]
Roll-off	Roll-off services are provided on an as needed basis by private haulers directly contracting with businesses.
Public	The City owns and services approximately 10-20 public-use refuse receptacles three to four times per week.

[1] One business diverts food scraps to a local farm, but quantities are not tracked.

Weatherford College. Weatherford College's main campus, located within the City, serves about 3,000 students and faculty and does not have plans for additional growth in the near future. The college has a combination of public and commercial MSW management needs. Students and faculty need access to public refuse and recycling receptacles in building and on campus on a daily basis and campus operations generate material in a manner more similar to a commercial entity.

- **Refuse.** The college contracts with Waste Connections for refuse service and has two refuse dumpsters on campus. The dumpsters are used for collection of refuse from public receptacles and campus operations.
- **Recycling.** The college receives single-stream recycling service as an extension of the City's subscription recycling service. There are eight recycling carts distributed within campus facilities that have classrooms and offices. The college generates significant amounts of cardboard that could be recycled but cannot currently be handled with available cart capacity. The college's recycling goals include increasing recycling opportunities on campus at a minimum cost, evaluating purchase of a baler for cardboard material, and exploring partnerships with the City and County for recycling opportunities.

4.0 STAKEHOLDER WORKSHOP SUMMARY

The City of Weatherford and Burns & McDonnell hosted a stakeholder workshop at the Weatherford City Hall on April 9, 2019. The purpose of the workshop was to bring together regional municipalities and community stakeholders to identify and discuss the range of preliminary recycling and waste minimization options that could be considered for the Parker County region and to identify options and strategies for further evaluation and potential implementation. Workshop attendees included representatives from the following entities:[1]

- Parker County
- City of Weatherford
- City of Aledo
- City of Hudson Oaks
- Weatherford College
- Weatherford Downtown Business Alliance
- Burns & McDonnell

Workshop structure and agenda. In collaboration with the City of Weatherford, Burns & McDonnell developed the workshop presentation, presented information to workshop attendees, and facilitated discussion of current MSW management activities and potential regional MSW management options. The workshop was structured into three parts. The information presented and discussed during the workshop is included in sections throughout this report. Refer to Appendix A for the workshop presentation slides.

- **Part 1**
  - Introduction
  - Purpose of the study and workshop objectives
  - MSW management industry overview and regional context
  - Overview of current MSW programs and services within Parker County
- **Part 2**
  - Overview of preliminary recycling and waste minimization regional options and strategies

[1] Workshop invitations were also extended to Annetta, Annetta North, Annetta South, Springtown, Willow Park, Weatherford ISD, Aledo ISD, Medical City Weatherford and the neighborhood of Walsh. Representatives of these entities were not present at the workshop.

- **Part 3**
  - Facilitated discussion to identify priority regional options and strategies

Summary of priority options identified for further consideration. During Part 3 of the workshop, attendees discussed each of the preliminary regional options and strategies and identified five options as priorities for further evaluation. Each priority option is identified and briefly described below. Each option is further detailed in Section 5.0.

- **Commercial Waste Reduction and Recycling.** This type of program would support and incentivize recycling by commercial establishments within Parker County with a focus on high traffic areas such as the Downtown Weatherford Historic District and other areas where large volumes of recyclable material are generated by commercial establishments. Workshop attendees indicated that additional recycling options for commercially generated material are needed, identifying cardboard as a high priority across the commercial sector and cardboard, glass, and aluminum containers as high priority in the City's downtown area. Multiple attendees stated that some businesses currently dispose significant quantities of recyclable materials due to lack access to adequate recycling services.

- **Citizens' Collection Station (CCS).** A CCS is a conveniently located facility within a community where residents can drop off their refuse and recycling materials during regular weekly or daily service hours. A CCS within Parker County could be constructed and made available to residents in incorporated and unincorporated areas of Parker County. Workshop attendees indicated that there is a need for such a facility to provide additional collection opportunities to residents in areas of the County where existing recycling services are limited or difficult to access.

- **Brush and Yard Trimmings Processing.** A brush and yard trimmings processing program would coordinate processing capacity for materials generated by residents of Parker County and would market the products (e.g., mulch) to end-users. Brush and yard trimmings present a significant opportunity for the City and County to increase waste diversion from landfills and could be relatively less expensive to implement than other types of diversion strategies. Workshop attendees indicated that brush and yard trimmings diversion is a priority for municipalities and is often cited by residents as an important service.

- **Household Hazardous Waste (HHW).** The purpose of an HHW program is to provide residents with access to safe and proper disposal options for household materials and chemicals that are not

suitable for disposal in landfills or for collection with other curbside services, due to potential for environmental and human health risks. All Weatherford and Parker County residents currently have access to drop off their HHW materials at the Fort Worth ECC. However, transport distances are long for a large portion of the County and may therefore be inconvenient or prohibitive for many residents. Workshop attendees indicated that more convenient and/or more frequent access to HHW disposal options has been expressed as a priority by their residents.

- **Regional Collaboration.** Collaborative waste reduction and management programs are designed and operated as an integrated system of personnel and equipment, an integrated approach to communication with service recipients and the general public, and appropriate use of both public and private sector resources. Workshop attendees indicated that they are interested in collaborating to explore and potentially implement regional recycling and waste minimization options and strategies.

Additional option not selected as a priority. An additional option was discussed during the workshop but was ultimately not selected as a priority moving forward and was therefore not further evaluated for this study. This additional option and the reasons why it was not designated as a priority is discussed below.

- **Expansion of Residential Curbside Recycling Programs.** Most cities within Parker County already provide city-wide curbside residential recycling programs (refer to Section 3.1.1). A recent study of the City of Weatherford's current solid waste and recycling programs evaluated the potential operational and financial impacts if the City were to expand its subscription residential service to a City-wide curbside recycling collection program. The City is currently evaluating and had already conducted substantial analysis for this option, and it was therefore not identified as a priority for further evaluation for this study.

5.0 REGIONAL OPTIONS

This section of the report provides a description of the waste minimization program options identified as priorities during the workshop described in Section 4.0 including:

- Commercial Waste Reduction and Recycling
- Citizens' Collection Station (CCS)
- Brush and Yard Trimmings Processing
- Household Hazardous Waste (HHW)
- Regional Collaboration

For each program option, the remainder of this section addresses the following information:

- **Program description.** Details the programs identified during the Waste Minimization Workshop including a description of the key aspects associated with each such as operations, costs, and waste minimization impacts

- **Implementation considerations.** Provides discussion on the key aspects of implementing each program such as cost and/or revenue sharing, permitting, site selection, and further analysis

- **Key findings and recommendations.** Outlines the key findings and recommendations identified from each potential program (Section 6.0 is an implementation plan for recommendations included throughout Section 5.0)

The section concludes with information on both government incentives and private funding sources that can provide financial benefits for a variety of solid waste management and recycling projects.

5.1 Commercial Waste Reduction and Recycling

This section provides description and analysis regarding the development of program that would support and incentivize recycling from commercial establishments within Parker County with a focus on high traffic areas such as the Downtown Weatherford Historic District and other areas where large volumes of recyclable materials are generated by commercial establishments. As Parker County's population continues to increase, there is an expectation that commercial waste generation will increase as more business activity will occur in Parker County.

The Downtown Weatherford Historic District contains antique, boutique, specialty and shopping stores; dining, museums, farmers markets, and the Parker County Courthouse as shown in Figure 5-1.

Figure 5-1: Parker County Courthouse

Additionally, there are events held in the Downtown Weatherford Historic District on a regular basis. The Downtown Weatherford Historic district represents a location within Parker County that is considered a high traffic area.

5.1.1 Commercial Waste Reduction and Recycling Program Description

This program would incentivize the development of waste reduction and recycling efforts by commercial establishments within Parker County. This section provides description of key components of the program including commercial recycling options and waste minimization impacts.

5.1.1.1 Commercial Recycling Options

There are several commercial recycling options that could be pursued by local governments in Parker County to support the effective diversion of reusable or recyclable material generated by commercial establishments. Table 5-1 lists and briefly describes the commercial recycling options identified as part of the Waste Minimization Workshop detailed in Section 4.0. The options are presented from most voluntary to least voluntary, from the perspective of the commercial generators. More detailed descriptions of each option are described following Table 5-1.

Table 5-1: Commercial Recycling Options Description

Option	Description
Business Recognition Program	A business recognition program would provide certifications based on a series of waste reduction and recycling best practices like proper signage, green purchasing policies, and regular recycling training.
Waste Reduction Assistance Program	A Waste Reduction Assistance Program (WRAP) would provide local businesses with technical assistance in assessing its potentially recyclable waste stream (pre and post-consumer material), handling and collection infrastructure, and other issues related to waste reduction and environmentally preferable purchasing.
Increase Access to Public Space Recycling	Increasing access to public space recycling would provide additional capacity and signage for disposing post-consumer materials to increase diversion in high traffic areas.
Expand Existing Recycling Collection	Various entities within Parker County have existing recycling programs as detailed in Section 3.0. This option would expand existing recycling collection to support the recycling of source separated materials from commercial establishments.
Commercial Recycling Ordinance	A commercial recycling ordinance would mandate recycling from commercial generators. To construct an ordinance, the County would need to determine the criteria for inclusion of businesses, develop the minimum requirements of the program, set penalties for non-compliance, and provide technical assistance to local businesses.

Business recognition program. Local governments would provide an application for businesses to identify a series of waste reduction and recycling best practices that they choose to incorporate in their operations. These best practices could include, but are not limited to, proper signage, green purchasing policies, donation programs, business-to-business material swap, or regular recycling training. Each practice implemented would earn the participant points and the more points earned, the higher the tier certification achieved.

As a reference, the City of San Antonio recently implemented a Commercial Recycling Recognition program in February 2018. This program includes 27 practices for a variety of different types of commercial establishments to choose from. More information about San Antonio's program can be found here: https://www.reworkssa.org/. The City of Plano has also had a similar program in place since 1999, and information is available here: https://www.plano.gov/711/Commercial-Waste-Recycling.

Waste reduction assistance program. Local governments would dedicate resources to provide businesses with technical assistance to assess their potentially recyclable materials and develop individual waste reduction and recycling strategies. These strategies might include identifying a location for the

placement of a shared roll-off or compaction unit for dedicated material, development of partnerships to coordinate recycling efforts (i.e. working with local big-box retailers' existing backhauling/baling operations), or outreach to local re-manufacturing operations (e.g. The Box Factory).

Public space recycling. Local governments would provide an established standard type of refuse and recycling container for public spaces, especially in high traffic areas. 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 County. This option would require coordination among multiple local governmental entities within the County to decide on a standard container type.

Expand existing recycling collection. This option would seek to expand the services of current residential refuse and recycling providers to include commercial or downtown areas. Currently, there are public and private sector haulers servicing commercial customers in Parker County. The current system provides some businesses with options to select their own service provider but results in services being provided in multiple ways and by multiple service providers. This can lead to aesthetic issues (unsightly set-out and/or dumpsters), multiple vehicles serving the area and the potential for some businesses to use services that they are not paying for. Pursuing this option may include performing cost of service studies for public-sector collection operations and/or soliciting bid prices for private haulers to provide this service.

Commercial recycling ordinance. Local governments would research, develop, and recommend policies and ordinances that incentivize or compel commercial and institutional customers to implement recycling and/or other diversion activities (e.g. organics processing). Key criteria for the design of this policy approach would include the criteria for inclusion (i.e. specific types of businesses, or minimum waste generation thresholds), penalties for non-compliance, availability of technical assistance, stakeholder engagement, and any challenges associated with existing or pending local or state legislation. The NCTCOG Recycling Ordinances and Building Design Guidelines describes multiple options for the development of commercial recycling ordinances.[1]

5.1.1.2 Waste Minimization Impacts

Pursuing a coordinated effort to minimize waste and increase recycling from commercial generators would provide long term benefit to Parker County due to the anticipated population growth detailed in

[1] This document is available from the NCTCOG at https://www.nctcog.org/nctcg/media/Environment-and-Development/Documents/Materials%20Management/Final_Report-Ordinances_Guidelines_August_2009.pdf

Section 2.0. The number and type of commercial generators may increase in response to this population growth. Since the cost of solid waste disposal is expected to increase, developing alternatives to landfill may help to reduce the long-term cost of solid waste management in the future for businesses and commercial establishments in Parker County. For more discussion on local disposal capacity, see Section 2.0.

5.1.2 Implementation Considerations

This section provides descriptions of key considerations for the implementation of local materials management policy and infrastructure options in Parker County. Burns & McDonnell has developed an implementation matrix of the five options shown in order of most voluntary to least voluntary from the perspective of the commercial generator. Additionally, this section includes a description of a typical commercial waste generation study that would provide a more detailed data gathering and analysis to support the implementation of several of the options described.

5.1.2.1 Commercial Options Implementation Matrix

The commercial options implementation matrix in Table 5-2 provides a side-by-side comparison of the considerations associated with implementing the options. Burns & McDonnell evaluated each option based on the following criteria:

- **Actions required.** This criteria provides the key actions required to implement each option effectively. Parties to carry out these actions could be taken on by one or several of the located in Parker County.

- **Impact on stakeholders.** This criteria describes the effect on the stakeholders of Parker County's solid waste system including commercial generators, municipalities, haulers, and processing/disposal facility operators.

- **Level of complexity.** This criteria provides an evaluation of the level of complexity to implement each option marking each as either low, medium, or high. This evaluation is provided by Burns & McDonnell based on experience working in Parker County and takes into account factors such as the initial difficulty to develop, number of responsible parties, level of effort, timeframe and political will to implement each option.

Table 5-2: Commercial Waste Reduction and Recycling Options Implementation Matrix

Option	Actions Required	Impact on Stakeholders[2]	Level of Complexity
Business Recognition Program	• Develop practices for recognition and package of awards • Develop program submission webpage and digital resources	• **Generator:** Promotes sustainable practices among local businesses and provides businesses ability to market as sustainability-conscious • **Municipality:** Requires public-sector staff time to develop and manage program	Low
Waste Reduction Assistance Program	• Devote a staff member to provide support to businesses • Identify location for placement of shared roll-off or compaction unit (including fencing and other site improvements) • Identify company that would be able to service shared roll-off or compaction unit • Seek grant to mitigate capital cost of unit and/or site improvements	• **Generator:** Provided resources to implement sustainability-conscious business practices • **Municipality:** Requires public-sector staff time to respond to requests and provide technical assistance • **Facility:** Local re-manufacturers provided with additional source-separated recyclable material inputs	Medium
Increasing Access to Public Space Recycling	• Develop County-wide standards for refuse and recycling containers and signage • Identify high traffic public space/event spaces where uniform containers and signage will have most impact • Contract with public space/events collection service provider • Seek grant funding to support equipment purchase and other costs • Consider including organics diversion in the future	• **Generator:** Provides recycling access to public for post-consumer recycling material among high traffic areas • **Municipality:** Supports consistent signage for recycling during events recycling • **Facility:** May cause increased contamination if container and signage unclear	Medium

[2] There are four key stakeholders among the commercial recycling options: generator, municipality, hauler, and facility. If one or more of these stakeholders does not appear, those stakeholders would be largely unaffected by the implementation of the option.

Option	Actions Required	Impact on Stakeholders[2]	Level of Complexity
Expanding Existing Recycling Collection	• Request pricing for commercial collection during next procurement or contract negotiations with private-sector hauler • Expand current public sector collection services to include commercial customers • Work with commercial generators and current service providers to identify best way forward	• **Generator:** Provides commercial establishments access to increased recycling collection. Businesses would only participate if there is significant time burden to segregating and storing recyclables. Public sector • **Municipality:** Increase in number of customers, and potentially cost, of municipal service or contracted service • **Hauler:** Private sector collection providers operating in open market may see effort as to potential loss of customers or market share	High
Commercial Recycling Ordinance	• Identify entity(ies) that has authority to develop policy • Develop minimum requirements of policy (i.e. target generators, penalties, timeframe, technical assistance support)	• **Generator:** May disproportionally burden small generators and large volume generators may require significant operational changes or capital improvements to comply (i.e. purchase of compaction unit). May impact existing contracts. • **Municipality:** Requires public-sector staff time to implement policy and any associated administrative needs or enforcement mechanisms. Allowing subscription to recycling service from any available hauler may cause inefficient collection vehicle traffic. • **Hauler:** While this could be an additional business line, haulers would incur capital and operational costs to provide the service.	High

5.1.2.2 Commercial Waste Generation Study

Implementing the options identified above as having a medium or high level of complexity may require additional data gathering and analysis on the existing commercial waste management practices of establishments in Parker County. This type of waste-shed study would seek to analyze the various types of existing and planned commercial establishments, the estimated waste generation, and the current hauling and disposal practices of each type of commercial generators in Parker County.

The businesses generate waste in different ways. For example, restaurants and banks generate different types of materials. A business' waste generation pattern, its waste management practices, and the prevalence of that business type in Parker County impact the effectiveness of any effort to reduce commercial waste and increase access to recycling. Some industries have standard practices for recycling material and others do not. For example, wholesale retail establishments may already have a high diversion rate outside of normal curbside collection program through backhauling pallets for reuse, directly selling baled cardboard, or self-hauling composable materials to organics processors.

Based on discussion during the Waste Minimization Workshop, the two materials that have the most recycling potential among the businesses of Parker County are corrugated cardboard and glass bottles. However, it may become apparent that other high quantity recyclable materials (e.g. organics, plastics, metal) are being generated from commercial establishments could be effectively diverted if a wider group of stakeholders are engaged directly as part of a Commercial Waste Generation Study.

5.1.3 Key Findings and Recommendations

The following presents key findings and recommendations for commercial recycling options. Recommendations include information about the timing, financial impact, and waste diversion/minimization impact. These criteria and are described further in Section 6.0.

1. **Develop business recognition program and WRAP.** Due to the anticipated population growth detailed in Section 2.0 the number and type of commercial generators may increase in response to this population growth. Since the cost of solid waste disposal is expected to increase, developing alternatives to landfill may help to reduce the long-term cost of solid waste management in the future for businesses and commercial establishments in Parker County. Developing a business recognition and a County-wide Waste Reduction Assistance Program (WRAP) are implementable programs with low and medium levels of complexity that would support commercial waste minimization and increase access to recycling. [**Timing:** Near-term; **Financial Impact:** Low – requires staff to manage program with little or capital cost; **Diversion/Minimization Impact:**

Moderate – will provide incentives and resources to divert material generated by commercial establishments but does not mandate diversion]

2. **Explore expansion of existing collection programs.** For cities with existing solid waste and recycling contracts that are at next procurement, contract renewal or negotiations, Burns & McDonnell recommends requesting pricing information for commercial recycling collection service. Identifying the cost of expanding services would allow municipalities to assess the feasibility of expanding recycling services to their respective business and commercial entities. Additionally, public sector collection programs should assess expansion to commercial recycling options, potentially through the use of 90- to 300-gallon roll-off carts that could be serviced by residential collection vehicles. [**Timing:** Mid-term; **Financial Impact:** Low – requires staff to request pricing for commercial collection service; **Diversion/Minimization Impact:** Moderate – will provide information to assess expand services, but no guarantee services will expand]

3. **Develop a commercial waste generation study.** This type of waste-shed study would seek to analyze the various types of existing and planned commercial establishments, the estimated waste generation, and the current hauling and disposal practices of each type of commercial generators in Parker County. [**Timing:** Mid-term; **Financial Impact:** Moderate – requires staff time or cost of contractor do develop report; **Diversion/Minimization Impact:** Low – will provide information to assess implementation of future commercial waste minimization]

5.2 Citizens' Collection Station

This section provides description and analysis regarding the development of a CCS that would be made available to residents of Parker County (including residents living in unincorporated areas of the County and in cities).[3] Figure 5-2 shows the CCS developed in Hood County, Texas with support from a grant provided by the NCTCOG.

Figure 5-2: Hood County CCS

At its most basic level, a CCS is a conveniently located facility where residents can drop-off their waste and recycling materials at certain times of the day on certain days of the week. These facilities are established for the convenience and exclusive use of residents (not commercial or industrial users or collection vehicles). They typically feature one or more moveable trailers, dumpsters or roll-off bins to temporarily store and then transport material for diversion or disposal. Residents are often charged a small fee for each bag or item disposed. A CCS can serve as an effective collection method for rural communities where it is difficult to provide curbside collection service. In fact, many rural communities

[3] Portions of this section provide information sourced from the "How to Plan, Design and Finance Small Transfer Stations and Citizens' Collection Stations" presentation provided to NCTCOG. Slides from this workshop have been separately transmitted to the City of Weatherford and Parker County.

in Texas and in other parts of the United States employ CCSs as their primary means of providing convenient and affordable diversion and disposal services to their residents.

5.2.1 Citizens' Collection Station Program Description

This program would seek to develop a CCS to provide locally available materials management infrastructure to support the waste minimization efforts within Parker County. Burns &McDonnell has developed information to describe the operations, costs, and waste minimization impacts of developing a CCS.

5.2.1.1 Operations

Based on the discussion during the Waste Minimization Workshop described in Section 4.0, Burns & McDonnell has provided information about the development of a CCS constructed as a fixed station. This permanent facility would be located on a parcel of land and would likely require improvements to prepare the site for cost-effective operations.

A permanent CCS would typically include improvements such as fencing around the site, grading, lighting to discourage illegal dumping at night, a driveway, and possibly an attendant shed. A permanent collection station can be a relatively low-cost operation with roll-off waste collection equipment.

Based on the discussion from the Waste Minimization Workshop, the CCS would be staffed, and materials collected could include refuse and source separated single stream recyclables. Additionally, the CCS could be expanded to support the collection and diversion of HHW, yard trimming and brush, source separated cardboard, and bulk waste. It is important to note, however, that as collection, diversion and disposal options are expanded, the cost to operate the facility would also increase.

The CCS could contract with a private entity to provide hauling and processing or disposal of the collected materials. Private contracting for residential waste collection and disposal is very common. Currently there are multiple private companies that have contracts with local governmental entities and subdivisions or who contract directly with residents to provide services within Parker County.

5.2.1.2 Costs

Developing a CCS would have costs including construction and operations. Based on the Waste Minimization Workshop, no one entity stated that they would be able to accept the full cost burden of the facility; however, there was discussion that they could be agreeable to regional collaboration to share costs as appropriate to build and operate a permanent CCS.

The capital costs required to develop a CCS include, but are not limited to the following:

- **Land acquisition.** Many public entities acquire property in locations where land and other capital improvement costs can be minimized (e.g., existing publicly owned land or along existing highway right-of-way). However, if this option is not available, property must be purchased. The exact quantity of land necessary for the facility would be dependent upon the number of materials that the CCS would accept.

- **Site development.** If land needs to be purchased to implement the CCS, it may require site development to accommodate the anticipated traffic through the site. A general layout will have an approach ramp, a drop-off area designed to service a specified number of vehicles, a retaining wall (on one or both sides of the drop-off area) to accommodate the collection box (or boxes), and an exit ramp as shown in Figure 5-3.

Figure 5-3: Drop-off Area

- **Attendant building.** An attendant building is important to protect the attendant from weather conditions as the site would be staffed during normal business hours. The building should be approximately 10’ x 10’ in size and have the necessary utilities for effective operations (e.g. water, sanitary sewer, electric and phone).

- **Fencing.** The CCS site should be fenced for security, and to help control any windblown materials. Fencing of different materials and heights can be used, depending on the material that would be collected at the CCS.

- **Signs.** Some type of notification signage is required at the approach gate to the CCS. Posting signs to the entrance of the facility can help notify people concerning the hours of operation and materials accepted. Signs can also be used to notify people that if they illegally dispose of material outside of the facility, they can be prosecuted. Signage within the CCS is optional.

- **Utilities.** Including electricity, water, sanitary sewer and telephone, accessibility is important for lighting, site maintenance and attendant needs. In cases where water services cannot be provided, providing water via other methods is an option.

Besides constructing the CCS, there would be operational needs and costs. These needs and costs can be divided into five major categories including:

- **Labor.** The only labor required to operate CCS is an attendant during the hours the facility is open to monitor material entering the facility. The collection station must be open during hours that are convenient to residents in the area, but not to the extent that increased labor costs reduce the affordability of the CCS. To strike a balance between convenience to residents and labor costs, a CCS could be open a three days per week, four hours each day.

- **Processing and disposal.** Processing and disposal needs are included the costs required to handle and transport material received at the CCS. Transfer costs will vary based on several factors such as the distance to a processing or disposal facility, the quantity of material disposed and method of transferring the waste. Transfer costs can be minimized based on the collection method at CCS. For example, collecting household refuse in compacting roll-off containers will typically reduce transfer costs. In many cases the additional purchase cost for a compactor will be offset by the savings in transfer costs. Parker County may need to contract with one or more private sector haulers or processers to provide processing and disposal services, depending on the material accepted at the CCS.

Figure 5-4: Roll-off Open Top Container (Left) and Compaction Unit (Right)

- **Utilities.** The major utility expense required to operate a CCS is electricity, which is used to provide lighting or to run other equipment such as compactors or cameras.

- **Administrative costs.** Administrative costs include any miscellaneous office products that may be required at the CCS to track activity.

- **Material handling.** If containers (roll-offs or compactors) are not provided by a private hauler that would service the CCS, there would be a need to purchase roll-off containers and/or compactors. The cost for an open-top roll-off container or compactor will depend on several factors such as size, compaction ratio and durability (e.g. steel thickness).

Hood County costs and operations. As a point of reference, the Hood County CCS operations cost approximately $200,000 per year, per the director of Environmental Health and it could be expected that the total cost for developing a facility in Parker County could range between $200,000 to more than $1,000,000 depending on the span of the operation and number of materials accepted.

Hood County is in the planning stages of expanding its convenience center, which is open to residents four hours per day and four days per week. There are two attendants there during operating hours and the facility contains four bays with 40-yard containers, each for a designated material. The site also contains a compactor unit for paper and plastic recyclable material. In addition, the facility accepts hard to recycle material (e.g. oil, antifreeze, etc.) and tire recycling that services the facility once per month. Hood County subsidizes this facility 50 percent and provides a voucher for residents to dispose of HHW material at Tarrant County's facility.

5.2.1.3 Waste Minimization Impacts

The CCS would provide more collection and processing or disposal options for residents within Parker County that do not have access to curbside refuse, recycling or convenient disposal options for other materials.

The CCS would provide Parker County and its constituent localities with the opportunity to make the highest and best use of source separated single stream recyclables, HHW, yard trimmings and bulk waste. The CCS would provide residents without curbside collection services greater access to recycling post-consumer material, divert hard-to-recycle materials from disposal, reduce illegal dumping, and provide for processing of yard waste and brush materials.

The estimated tonnage range of each material that could be expected to be collected will depend on the availability of the CCS to the public (i.e. how many days per week the CCS is open) and the monthly usage by the residents.

5.2.2 Implementation Considerations

This section provides descriptions of key considerations for implementing a CCS in Parker County including cost sharing, permitting and site selection.

5.2.2.1 Cost/Revenue Sharing

Determining the development, capital and operational costs, and the entity or entities that would fund these expenses is a key considerations for implementing a CCS in Parker County. Projects can be financed solely by the public sector or private sector, or a combination of the two.

Publicly owned facilities can often take advantage of lower costs of capital. If Parker County determines it is in the best interest of the residents and takes responsibility for infrastructure costs, there are options to provide for the development and capital costs including pay-as-you-go financing, debt financing, and grant funding. Potential options to fund the operations for a CCS includes user fees, monthly utility charges, general ad-valorem tax levy**,** and recycling revenues. See Section 5.6.1 for further detail on these financing and funding options.

Partnering with the private sector can take advantage of industry expertise to share the financial burden and potentially increase the efficiency of operations. Public-private partnership opportunities for the development of a CCS include contracting with a private sector entity to service the CCS roll off boxes and operate any other equipment on the site.

5.2.2.2 Permitting

The time required to site and permit a CCS can vary considerably depending on the site location and the number of materials that are anticipated to be accepted. While it is not required to apply for an operating permit, the CCS would need to be developed consistent with key solid waste rules and regulations such as providing official notification of its operation. The notification process is detailed in Texas Administrative Code Chapter 330, Subchapter A[4]. CCS facilities are not required by the TCEQ to apply for an operating permit.

In an effort to mitigate "sham recycling," where local material processors are able to avoid disposing of material at designated facilities by using a CCS, the regulations define a CCS as a facility for exclusive use of residents. If a CCS is owned and/or operated by a public sector organization, Burns & McDonnell recommends discussing with TCEQ the possibility of requesting an exception for cases where individuals are bringing material from commercial generators to provide additional access to recycling for local businesses (i.e. generators of large volumes of cardboard).

[4]This document is available from the Texas Office of the Secretary of State at https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=5&ti=30&pt=1&ch=330&sch=A&rl=Y

5.2.2.3 Site Selection

A site should be selected that is able to accommodate the number of expected residents that will use the site and is in a location having a high concentration of the population to be served (i.e. households located in unincorporated areas of Parker County that do not have convenient access to recycling infrastructure). A typical permanent CCS can generally be constructed on less than an acre of land. However, the space needed varies depending on the services that are being provided to citizens.

Additionally, the site should be located adjacent to a road that is commonly traveled by the citizens to be served. The placement should ideally allow residents to drop off their material as they travel. If possible, the County should use existing public land for the locations of the collection stations so as to eliminate the cost of land from the capital costs associated with the facilities.

5.2.3 Key Findings and Recommendations

The following presents key findings and recommendations regarding the development of a CCS. Recommendations include information about the timing, financial impact, and waste diversion/minimization impact. These criteria are described further in Section 6.0.

1. **There are areas of Parker County with limited access to recycling options.** Residents in rural areas of Parker County may not have a convenient single stream recyclables, yard trimmings, or HHW diversion options. Providing a CCS may mitigate illegal dumping activities by providing a relatively affordable disposal alternative to would-be illegal dumpers.
2. **Develop a CCS.** Parker County currently spends approximately $250,000 per year in a one-day collection event for hard to recycle materials. Developing a CCS may be convenient, enhance opportunity for diversion, and be more cost-effective than the one-day collection events. [**Timing:** Mid-term; **Financial Impact:** High – requires capital and operating costs to develop and manage facility; **Diversion/Minimization Impact:** High – will provide access to recycling that residents in rural areas do not currently receive]
3. **Site CCS in a convenient location.** Siting the CCS in a convenient location for the residents that do not currently have access to recycling will be critical to ensure that the facility is fully utilized. Additionally, Burns & McDonnell recommends the CCS be sited in a location that has the potential expansion to other materials as appropriate (i.e. brush and yard trimmings, HHW).
4. **Expanding accepted material will increase costs.** Material beyond refuse and single stream recycling that is accepted at the CCS would increase the capital and operational cost of the facility. Co-locating brush and yard trimmings or HHW drop off at the facility will require

additional equipment and staffing that will increase the annual cost. However, expanding to collect these materials may realize cost-savings in other areas of the solid waste system.

5. **Explore grant funding opportunities through NCTCOG.** Parker County and cities within the County should consider submitting a grand funding application (potentially a joint application) to the NCTCOG in the upcoming FY 2020 grant cycle and in subsequent years to fund or partially fund the development of a CCS. [**Timing:** Near-term; **Financial Impact:** Moderate – would reduce the cost burden of developing a CCS; **Diversion/Minimization Impact:** N/A]

5.3 Brush and Yard Trimmings Processing

This section provides description and analysis regarding the development of program that would coordinate processing capacity for brush and yard trimmings generated by residents of Parker County. Additionally, this program would market the products generated (e.g., mulch) to end-users.

5.3.1 Brush and Yard Trimmings Program Description

This program would provide brush and yard trimmings processing capacity to residents that have no convenient access to a processing facility and currently co-mingle this material with refuse. Based on discussion in the Waste Minimization Workshop, current active brush and yard trimming operations in Parker County include self-hauled material processed in the County's tub grinder and the third-party contractor hired by the City of Weatherford on an as-needed basis.

The product generated by the County does not meet the needs of the local market, and they have experienced challenges providing this material to end-users. As a result, the County has a stockpile of processed brush and yard trimming material. Based on discussion in the Waste Minimization Workshop, this material would need to be further screened to become more attractive to the local market.

The City of Weatherford collects brush and hires a third-party processing and marketing company to process its collected material on an as-needed basis. The following provides description of key components of the program including processing operations, processing costs, and waste minimization impact.

5.3.1.1 Processing Operations

The inputs of an organics processing facility would include brush and yard trimmings, as these materials require the least amount of resources to handle and process. However, the wood chip and mulch product generated from these inputs are not high value.

For the purposes of Parker County, it is likely that the material inputs would be limited to dry green waste including brush and yard trimmings processed by a tub grinder and additional screening equipment. Additional screening equipment would be critical to remove contaminants such as plastics, stones, or metal material that will impact the quality of the output product. Figure 5-5 shows an example of a tub grinder.

Figure 5-5: Tub Grinder

To minimize contamination in the green waste, providing coordinated and uniform education and outreach will be critical for each entity that provides material generated by residents. With a contaminant-free inbound stream, the product could be made available to local end-markets such as master gardener classes, landscapers, and golf courses.

To effectively operate a brush and yard trimmings processing operation, the facility would require front-end loaders or other heavy equipment to handle the inbound material and load processed material into vehicles for transportation. Depending on the quantity of inbound material, this operation would require one or more equipment operators.

Co-locating the operation with a potential CCS would allow the facility operations to be manage most effectively. Residents that self-haul material could travel to the same site to drop of refuse, recycling and organic materials.

5.3.1.2 Processing Costs

Developing a coordinated brush and yard trimmings processing operation would have costs including site development, equipment procurement and operations. Based on the Waste Minimization Workshop, there is no entity interested in taking on the full cost burden of the facility; however, most would be agreeable to regional collaboration to share costs as appropriate to develop and operate a coordinated brush and yard trimmings processing facility.

In the case that an existing site or equipment could be re-purposed for the development of a processing operation, the costs to develop the facility would be minimal. From an operational perspective, the costs would include the fuel for equipment usage, the salary costs for equipment operators, and transportation/marketing costs of the finished product.

If the facility is operated by a private sector contractor, it may be possible to source organic waste material from other generators. Attracting private sector material will allow the facility to become more cost effective to operate.

5.3.1.3 Waste Minimization Impacts

A brush and yard trimmings operation would provide a centralized location for the ongoing brush and yard trimmings operations among various entities in the County. Having a central facility will increase the capacity of organic material able to be processed and marketed to local end-users. If a coordinated brush and yard trimmings processing operation is co-located with the CCS, it is likely that more organic waste material will be diverted based on its convenient location.

5.3.2 Implementation Considerations

This section provides descriptions of key considerations for implementing a coordinated brush and yard trimming processing facility in Parker County including cost/revenue sharing, permitting and site selection.

5.3.2.1 Cost/Revenue Sharing

The cost of equipment and personnel could be shared among entities within Parker County to start a facility (i.e. providing existing equipment for the operation). As products are generated from the processing operation, working together to market this material to end-users in Parker County will become important to ensure effective operations. An important part of generating a quality product would be to reduce contamination of inbound material. Entities would need to work together to provide coordinated education and outreach to minimize contaminants in the inbound waste stream.

While the County could consider building a new composting facility, the material generated by the County and City of Weatherford alone will not likely have sufficient quantities 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 would make the operation more cost effective. Based on conversation with a representative of a private contractor that operates brush and yard trimmings processing facilities, there would be interest in locating a processing facility in Parker County. The private contractor would expect to provide the capital outlay to develop the facility.

Including other organic materials beyond brush and yard trimmings may create a more valuable product (i.e. mulch vs. compost). However, increasing the type of inbound organic material would require additional capital and operating costs, as well as more stringent permitting.

5.3.2.2 Permitting

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.

If an organics processing facility could be expanded in the future to include other types of organic wastes such as sewage sludge, manure, or food scraps, the product would be higher value, but the capital and operating cost requirements of the facility would increase as well.

5.3.2.3 Site Selection

The site selection of a brush and yard trimmings processing operation would be best co-located with a potential CCS so it could be strategically located in a convenient place for residents to access and there would be minimal development work required to prepare the site mobilize equipment to begin operations. If a site is selected separate from the CCS, there may be additional start-up costs and increased operational cost because it would not be able to be supported in part by the CCS.

If a private sector operator develops a site in the County, it could be strategically located to attract other brush and yard trimming streams to make the operations more cost effective. Additionally, with a new site it may be possible in the future to expand the operations to take in other organics streams such as sewage sludge or food waste to create a higher value product.

5.3.3 Key Findings and Recommendations

The following presents key findings and recommendations regarding brush and yard trimming processing facility. Recommendations include information about the timing, financial impact, and waste diversion/minimization impact. These criteria are described further in Section 6.0.

1. **Co-locate brush and yard trimmings facility with CCS.** Developing a brush and yard trimmings facility that is co-located with the CCS would provide the opportunity to collaboratively support the permitting, staffing, management of each facility. Compared to two facilities operating independently of each other, sharing resources in this way would reduce the costs of each facility. [**Timing:** Mid-term; **Financial Impact:** Low – requires siting of facility

adjacent to potential CCS facility; **Diversion/Minimization Impact:** Moderate – will provide access to brush diversion residents in rural areas do not currently have access to]

2. **Coordinate education and outreach efforts.** A key aspect of operating a successful brush and yard trimmings facility is to ensure that there are minimal contaminated materials delivered to the facility. Often, residents will add inert materials (i.e. rocks, bricks, etc.) or other waste considered contamination to green waste streams. Coordinating education and outreach to users of the facility would provide more effective communication about what is acceptable among several green waste collection operations. [**Timing:** Mid-term; **Financial Impact:** Moderate – requires coordination and development of education and outreach materials to inform residents of set out procedures; **Diversion/Minimization Impact:** Moderate – effective education and outreach will be essential to running an efficient brush and yard trimmings operation]

3. **Consider procuring a private-sector operator.** Based on conversations with a representative of a private composting operation, there is an interest for private operators to develop a new facility located in Parker County. Developing a public-private partnership to develop a privately-operated facility would provide for the sourcing of private green waste streams that could allow the facility to capture economies of scale. A larger facility would likely be more cost effective and result in a lower cost to municipalities to deliver material to the facility. [**Timing:** Mid-term; **Financial Impact:** Low – private operator will site, permit, and take responsibility for capital costs required to develop facility; **Diversion/Minimization Impact:** Moderate – private operator will be able to source commercially generated material to increase throughput of facility]

5.4 Household Hazardous Waste

Currently, as described in Section 3.0, Parker County participates in the City of Fort Worth's regional HHW drop-off program, in which all County residents may drop off their HHW materials at the Fort Worth ECC for $50 per visit. This section provides descriptions of alternative options the City and/or County may consider in providing residents with local and convenient options for the safe disposal of HHW materials.

5.4.1 Program Description

The purpose of an HHW program is to provide residents with access to safe and proper disposal options for household materials and chemicals that are not suitable for disposal in a landfill or for collection with other residential MSW management services (such as recycling, yard trimmings, or bulk waste collection). Local provision of convenient HHW disposal options is important because it decreases the potential for improper disposal with other MSW or illegal dumping (e.g., into stormwater systems) of environmentally harmful materials. Generally, HHW programs accept material of residential origin and material generated by home businesses, small businesses, and commercial or industrial entities are not accepted.

Typical material categories accepted by HHW drop-or collection programs, including Fort Worth's ECC, are listed below:

- Automotive fluids
- Batteries
- Household cleaners
- Other household chemicals
- Cooking oil
- Lawn, garden, and pool chemicals
- Paint and painting supplies
- Light bulbs

5.4.1.1 Household Hazardous Waste Program Options

There are many options that local governments can consider when evaluating how to provide HHW services to their residents and many factors that affect the option that is most suitable for a particular community. These factors include, but are not limited to total population, population distribution and density, size of geographic area, exiting local processing facilities, existing regional programs, available funding, and the relative importance of convenience and cost of service to customers and the municipality. The primary HHW program options utilized by municipalities in Texas include:

- **Periodic collection events.** Events are held periodically (e.g., annual, bi-annual, quarterly) within a city or county and residents bring materials to the event location. Materials are then transported to a facility for processing and disposal.
- **Regional drop-off or voucher program.** A municipality may enter into an interlocal agreement with another nearby municipality that has a permanent collection facility and the agreement allows for residents to drop-off HHW materials at the facility. This is the type of program Parker County currently participates in with the Fort Worth ECC voucher program.
- **Permanent collection facility.** A municipality may own a permanent facility where residents drop off their HHW materials during regular operational hours. This allows for more frequent disposal opportunities for residents but is a capital-intensive option.
- **Mobile collection.** A municipality may utilize a mobile trailer equipped for collection and transport of HHW materials to provide residents with regular, smaller collection events at various locations and transport collected material to a nearby disposal facility.
- **At-your-door service.** A municipality may contract with a service provider that collects material directly from residents' homes, often included as a component of the municipality's solid waste and recycling collection contract.

During the workshop summarized in Section 4.0, the City, County, and stakeholders identified mobile collection and at-your-door service as potentially viable options for the Parker County region. Summaries of these selected options are provided in Table 5-3 and further detailed in the following sections.

Table 5-3: Selected HHW Service Options for Parker County

Option	Description
Mobile Collection	A mobile HHW collection program for Parker County could be provided through a few different program configurations as described below. Each option assumes the Fort Worth ECC would be utilized for material disposal.
Interlocal agreement with City of Arlington	The City of Arlington owns and operates a mobile collection trailer to provide monthly collection events at rotating locations within the Arlington. Parker County and/or Weatherford should explore the option of entering into an interlocal agreement with Arlington for use of the mobile collection trailer to host events in Parker County and its communities.
Fort Worth ECC's mobile collection program	The Fort Worth ECC offers mobile collection event services to local communities. The County could expand its agreement with the ECC to provide collection events at selected locations within the County.
City/County purchase a mobile collection unit	The City or County could purchase a mobile collection unit, potentially for joint ownership, and develop a mobile collection program modeled after Arlington's successful and long-running program.
At-your-door collection service	At-your-door HHW collection service would be provided through an individual or joint contracts with a private service provider

Mobile collection events. One important aspect of a mobile collection event, in contrast to larger periodic collection events, is that mobile events are not intended to serve all residents within the community during a single event. Mobile events target smaller areas for each event, and are provided more frequently at varying locations, providing convenient access to HHW services for all residents over a given time period. Mobile collection trailers typically have smaller capacity than a large periodic event or a permanent facility, and if the events attract a large number of residents, attendees must be turned away once the trailer reaches capacity so that material may be transported to the disposal facility.

The following paragraphs describe the general configuration of a potential mobile collection program. For each of the specific options (interlocal agreement with Arlington, use of Fort Worth ECC mobile trailers, or purchase of a mobile collection trailer), the considerations and operations are highly similar. The primary differences between the options would be the entity responsible for each component, and the level of capital cost and staffing that the County may need to provide itself. The general costs and operational requirements of a mobile collection program are described below. Table 5-4 in Section 5.4.2 provides a comparison of the implementation considerations for fulfilling these requirements for the three different mobile collection program options. Some specific program aspects, such as staffing

requirements, health and safety considerations, costs, and funding options are further described in Section 5.4.2.

- **Event operations.** Mobile collection events are typically two to three hours long. They would be held at a frequency determined by Parker County to adequately serve its residents and would be impacted by availability of a mobile collection trailer if the County utilized an interlocal agreement with Arlington or the Fort Worth ECC. Because Arlington owns its mobile collection trailer, it is able to host events on a monthly basis. Communities that partner with Fort Worth for use of a mobile collection trailer typically host collection events one to two times per year. Events may be held at any suitable location within the County such as local parks, County Precinct barns, or a future CCS location.
- **Equipment.** The primary equipment requirements are a mobile collection trailer and a vehicle to pull the trailer. The cost of purchasing a mobile collection trailer may be approximately $40,000. Depending on the program option chosen, this cost could be incurred by Parker County or by the entity with which the County has an agreement for the program. A vehicle for transporting the trailer could likely be utilized from an existing fleet since need for the vehicle is relatively infrequent. Other equipment and supply requirements are minimal because material processing would be conducted at the Fort Worth ECC.
- **Personnel time.** Half-day events of the size provided by a mobile collection trailer typically require five to seven personnel per event for material handling, traffic flow management, and documentation requirements. Two to three personnel must meet appropriate training requirements for handling and transporting HHW materials (refer to Section 5.4.2.1).
- **Personnel training.** Personnel training costs will be dependent on the mobile collection option chosen and whether Parker County must provide all staff, or if agreements may include staffing (or partial staffing) of event held within the County. Currently, Arlington staffs mobile collection events utilizing fire department staff that are already trained and qualified to handle HHW equipment, minimizing additional personnel costs for the program. If the County partners with the Fort Worth ECC, the ECC provides 2-3 appropriately trained staff per event, and the host city provides additional staff as needed. If Parker County were to operate its own mobile collection program, there may be additional personnel costs associated with initial training and ongoing training.
- **Disposal.** The cost to properly dispose of collected HHW material is typically the largest and most variable cost for any HHW collection program. Under the three mobile collection options described here, material would be transported to and disposed of at the Fort Worth ECC.

Currently, the ECC charges municipalities $50 per event participant, which covers all disposal costs.

- **Regulatory compliance.** The two primary regulatory compliance requirements for mobile HHW collection programs are ensuring staff are properly trained and submitting required plans and documentation to the TCEQ before and after collection events. Parker County will need to coordinate with the TCEQ and any partner entities (City of Arlington and/or the ECC) to determine its role in regulatory compliance and which will be the reporting entity to the TCEQ for the program (refer to Section 5.4.2.1).
- **Administration and planning.** With a mobile collection program, each event should be targeted to serve the households in a specific area of the County and direct mailers should be sent to target households prior to the event. One event is not intended to serve the entire County's population. The County would need to plan and determine appropriate target areas and event frequencies to provide convenient opportunities to its residents. For example, the City of Arlington holds mobile events in a different area each month (excluding February) with a target service area of approximately 3,500 households per event. Each event typically receives 50-70 participants. Additionally, site plans (including dates, locations, emergency procedures, traffic flow, etc.) must be submitted and approved by the TCEQ in advance. For each event participant, a form is completed including types and quantities of materials delivered and forms are submitted to the TCEQ after each event.

At-your-door collection service. As with other curbside MSW collection services, at-your-door collection service would be most feasible in incorporated areas of the County or areas with higher population densities. If a municipality chooses to provide at-your-door HHW collection service, it is often included as a component of the larger MSW services contract but may also be provided through a separate contract. Specific service terms are negotiated between the private hauler and the contracting municipality. Service frequencies typically vary from once per month to unlimited service requests and may be provided on set service days or via a call-in program.

In Parker County, several cities have existing MSW services contracts with private haulers to which at-your-door HHW collection services could be added. For cities with existing MSW services contracts with private haulers (refer to Section 2.0), a request for pricing of at-your-door HHW services could be included in the next contract renewal or request for proposal (RFP) process. These cities would then be able to further evaluate this service option based on pricing and potential customer participation.

Weatherford currently provides MSW collection to residents via City services rather than through a private hauler. If the City chose to further evaluate an at-your-door HHW service option, there are two options to consider. Cities with existing MSW services contracts could inquire whether service and pricing could be extended to the City of Weatherford, or Weatherford could issue an individual RFP for at-your-door HHW services to City residents and enter into a contract independently if pricing is favorable.

5.4.1.2 Waste Minimization Impacts

With any HHW service option, the City and County should encourage waste minimization for HHW materials. Including and promoting the use of a Reuse Store as part of an HHW service is an effective way to reduce the volume of material that must be disposed, thereby decreasing disposal costs. A Reuse Store offers unused or leftover HHW materials suitable for consumption to residents at no charge. In addition to encouraging waste minimization, a Reuse Store offers a financial benefit to residents and municipalities. The Fort Worth ECC has a Reuse Store and the City or County could incorporate a reuse component if it chooses to provide a mobile collection program.

Reduction of potential environmental and human health risks is also a primary purpose of providing residents with proper HHW disposal options. If improperly disposed, HHW materials have the potential to contaminate stormwater, groundwater, and drinking water. Access to local and convenient HHW services is important for the continued health of both residents and the physical environment.

5.4.2 Implementation Considerations

This section provides additional details of key considerations for implementing a mobile HHW collection program and for providing at-your-door collection service to residents.

5.4.2.1 Mobile Collection Program

Table 5-4 provides a summary comparison of the implementation considerations for each of the three mobile collection program options.

Table 5-4: Mobile Collection Program Options

	Interlocal Agreement with Arlington	Fort Worth ECC Mobile Events	Operation of a Mobile Program
Event Operations	Frequency: per agreement	Frequency: 1-2 per year	Frequency: as desired
Equipment	Minimal cost; trailer owned by Arlington	Minimal cost; trailer owned by Fort Worth	Approximately $40,000 for purchase of trailer
Personnel Time (per 2-3 hour event)	Per agreement, 2-3 trained staff could be supplied by Arlington; 3-4 additional City/County staff required	2-3 trained staff would be supplied by the ECC; 3-4 additional City/County staff required	All staff would be supplied by City/County; 2-3 require appropriate training
Personnel Training	Cost would be determined based on staffing agreement with Arlington	No training cost	Cost for initial and ongoing training of 2-3 staff
Disposal	Primary cost; ECC disposal costs are $50 per household or event participant. Total disposal costs are dependent on event participation.		
Regulatory Compliance	Fort Worth ECC would be the reporting entity to the TCEQ; level of involvement by City/County would need to be determined		
Administration and Planning	Determination of event target area; direct-mail event announcements; Develop and submit site plans to TCEQ prior to events; submit tracking forms to TCEQ after each event		
Key Cost Summary	Mobile trailer: none Staff time: variable Staff training: variable Disposal: $50/household	Mobile trailer: none Staff time: variable Staff training: none Disposal: $50/household"	Mobile trailer: $40,000 Staff time: variable Staff training: variable Disposal: $50/household

Regulatory compliance and personnel trainings. In Texas, HHW collection and disposal is regulated by the TCEQ. Collection and reporting requirements vary based on the specific program, but all HHW events and operators must comply with requirements included in the Texas Administrative Code (30 TAC §335 Subchapter N).[5] If the County chooses to provide a mobile collection service that transports material to the Fort Worth ECC for material disposal, the ECC would be the entity responsible for reporting and compliance with TCEQ regulations, and the County would coordinate with the ECC as needed.

Personnel responsible for handling and/or transporting HHW materials are required to have specialized trainings to comply with state and federal regulations. Training for event personnel should include, but may not be limited to, 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER)

[5] Regulatory requirements for HHW programs and operators in Texas are available online at https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=5&ti=30&pt=1&ch=335&sch=N&rl=Y

Site Worker training course. Personnel responsible for transportation of material would also be subject to additional training as required by the U.S. Department of Transportation (DOT).[6]

Additional program and event planning and regulatory compliance guidance resources are available from the TCEQ.[7]

Costs. Costs of a mobile collection program would vary depending on the specific option the City and/or County chooses. For any of the three options described in Table 5-4, the cost of transport and disposal would be the largest annual cost, at $50 per event participant. Disposal costs would be paid to the ECC and would be variable and dependent on event participation. Other key program costs may include the costs listed below, but would be variable depending on the program option chosen:

- Staff time
- Miscellaneous supplies
- Public outreach and event notifications
- Capital costs (applicable only if the County chooses to purchase a mobile collection trailer)

Funding options. There are multiple potential funding options for a mobile HHW collection program for both initial capital costs (if applicable) and ongoing program operations. See Section 5.6.1 for discussion on various financing and funding options. The three funding options that would best support an HHW collection program are described below:

- **Grant funding.** Parker County and/or municipalities within the County could apply to the NCTCOG to receive a grant to fund or partially fund the purchase of a mobile collection trailer or ongoing regional mobile collection program operational costs.[8]
- **User fees.** The County or municipalities could extend the current voucher pricing ($50 per household per visit) to customers for a mobile collection program to fund disposal costs that

[6] Training requirements for personnel conducting HHW handling or transport activities in Texas are available online at https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=335&rl=407

[7] TCEQ, Local Assistance: Household Hazard Waste Program webpage, available online at https://www.tceq.texas.gov/p2/hhw/howto.html

[8] Additional information on the NCTCOG's grant program is available online at https://www.nctcog.org/envir/materials-management/grants

would be charged by the Fort Worth ECC to support the cost of material disposal, which are typically the largest annual operation expense of HHW collection programs.

- **Other budgetary funding.** HHW programs support a compliance with TCEQ's municipal stormwater regulations and therefore some municipalities choose to fund HHW programs through their stormwater department budget.[9] This option would require further planning among Parker County and municipalities that may be included in a mobile collection program.

5.4.2.2 At-your-door Collection Service

The primary consideration for an at-your-door HHW collection service is the monthly cost impact to residents. Typically, costs for this type of service are assessed on a per household per month basis and included as a components of a resident's monthly solid waste and recycling services bill. Based on recent research conducted by Burns & McDonnell and interviews with haulers providing services in central Texas, a cost of $1.00 per household per month is an appropriate planning-level cost for an at-your-door HHW collection services (once per month to unlimited collection frequency) in the current market.

To understand what actual program costs would be and fully evaluate whether at-your-door HHW collection is a cost-effective option for communities in Parker County, cities would need to issue individual or joint RFPs to obtain pricing proposals and would also need to better understand potential program participation by residents.

5.4.3 Key Findings and Recommendations

The following presents key findings and recommendations for provision of HHW services in the Parker County region. Recommendations include information about the timing, financial impact, and waste diversion/minimization impact. These criteria are described further in Section 6.0.

1. **Continue existing voucher program with the Fort Worth ECC.** Parker County's current agreement with the Fort Worth ECC in which residents may directly drop off HHW materials at the ECC for a cost $50 per visit (paid by the resident) should be continued. This program ensures that all County residents have access to an HHW disposal option and requires investment by the County because ECC transport and disposal costs are paid by the resident when they choose to utilize the service. [**Timing:** Near-term; **Financial Impact:** Low – residents will continue to pay for vouchers on an as-needed basis; **Diversion/Minimization Impact:** Moderate – it is important

[9] For example, the City of Arlington's Crud Cruiser (mobile collection) program is primarily funded by the City's Stormwater Department and the program is available at no cost to residents.

to have a base-level disposal option, but longer transport distances may be prohibitive to some residents]

2. **Consider program options to increase local, convenient access to HHW services.** While the Fort Worth ECC voucher program provides a base level of HHW service to all Parker County residents, it may be inconvenient or prohibitive for some due to the long self-haul distances required. The HHW service options in this section should be further evaluated to determine feasible and cost-effective options for providing more local and convenient access to disposal options within the County. During evaluations, the County should identify alternative options that maximize the relationship between convenience and affordability. [**Timing:** Near-term; **Financial Impact:** Variable – will be dependent on the program option chosen and further evaluation is needed; **Diversion/Minimization Impact:** Moderate to high – local disposal options may increase resident participation, but will largely be dependent on convenience and cost to residents]

3. **Explore opportunities for intergovernmental collaboration for mobile collection.** The County should coordinate with the City of Arlington to explore interest in and potential options for entering into an interlocal agreement for use of Arlington's mobile collection trailer to provide collection events within Parker County. The County should also coordinate with the Fort Worth ECC to better understand the potential for the ECC to provide mobile collection events within the County. If an interlocal agreement is not a viable option, the County should consider conducing further evaluation of purchasing a mobile collection trailer to create its own mobile collection program. [**Timing:** Near-term; **Financial Impact:** Variable – initial collaboration between municipalities is low-cost and ongoing cost of collaboration is dependent on the type of program chosen; **Diversion/Minimization Impact:** Moderate to high]

4. **Explore opportunities for contracted at-your-door service options.** Cities within the County should plan to include a request for pricing of at-your-door HHW collection services at their next MSW services contract renewals, respectively, and including the option to extend services to the City of Weatherford (HHW services only). In addition, Weatherford should consider issuing an RFP for a stand-alone at-your-door HHW collection program. Program costs and benefits should be compared to those of providing a mobile collection program. [**Timing:** Near-term; **Financial Impact:** High – at-your-door programs are very convenient for residents but are among the most expensive HHW program options on a per-household basis; **Diversion/Minimization Impact:** Moderate to high]

5. **Explore grant funding opportunities through NCTCOG.** Parker County and cities within the County should consider submitting a grand funding application (potentially a joint application) to the NCTCOG in the upcoming FY 2020 grant cycle and in subsequent years to fund or partially fund a regional HHW service solution. [**Timing:** Near-term and ongoing; **Financial Impact:** Moderate – could provide financial benefits to municipalities and residents.; **Diversion/Minimization Impact:** N/A]

5.5 Regional Collaboration

Collaborative waste reduction and management programs are designed and operated as an integrated system entailing sharing of personnel and equipment, an integrated approach to communication with service recipients and the general public, and appropriate use of both public and private sector resources.

5.5.1 Program Description

Regional collaboration supports the development of a sustainable materials management approach that supports waste minimization and diversion. Regional collaboration would provide the organization to plan, develop, and manage integrated assets and programs in Parker County to minimize waste and provide increased access to recycling.

5.5.1.1 Collaborative Contracting

Regional collaboration would allow for entities in Parker County to continue and/or expand the current model of collaborative contracting. Collaborative contracting and collective contract negotiations provide the opportunity to secure long-term contracts at more favorable pricing for private sector services.

Several entities in Parker County have collaboratively contracted for solid waste collection services. The City of Hudson Oaks has entered into an agreement with Republic Service that other local municipalities in the County have "piggybacked" on to leverage negotiated service levels and pricing. Given the existing collaborative contracting in Parker County, a more formal regional collaboration efforts would provide the framework to expand the collaborative contracting practice in terms of services or participating entities.

5.5.1.2 Long-term Strategic Relationships and Sub-Regional Authorities

This section describes long-term strategic relationship that other Texas communities have developed to better coordinate solid waste management efforts between communities and provide the opportunity to work together.

The NCTCOG Rural and Underserved Area Disposal Needs Study[10] details several options for the long-term strategic relationships and management considerations supporting regional collaborations including:

- Interlocal Agreements for Joint Ownership and Operation
- Contracted County Operation

[10] This document is available from the NCTCOG at https://www.nctcog.org/nctcg/media/Environment-and-Development/Committee%20Documents/RCC/FY2019/Rural-Study-Final-Full-Version.pdf

- Establishment of Special Solid Waste Authorities or Districts as a Non-profit Corporation
- Existing River Authorities or Waste Districts with Solid Waste Authority
- Establishments of Solid Waste Cooperatives
- Single Community Ownership and Operations through Interlocal Agreement

The level of interest of the entities within Parker County to pursue various waste minimization programs will determine the appropriate relationships to develop. On one hand, if it is decided to move forward with the development of long term assets utilized by residents or commercial entities among several of the municipalities in the County, it could make sense to develop a more formal relationship (i.e. establishment of special solid waste authority) so that there is streamlined administrative and management capabilities. On the other hand, if it is decided among the entities in Parker County to continue operating by contracting with third party service providers, a less formal relationship may be appropriate.

5.5.2 Implementation Considerations

This section provides descriptions of key considerations for implementing regional collaboration among the solid waste and recycling system in Parker County including participating in the ongoing regional recycling campaign, the consideration of formalizing relationships among Parker County entities through interlocal agreements or other mechanisms.

5.5.2.1 Participate in NCTCOG's Regional Recycling Campaign

NCTCOG is completing the development of a regional recycling campaign in an effort to develop and deploy educational material that will decrease contamination and increase recycling tons in the region from single family households. A waste and recycling composition profile was generated based on a week-long waste characterization effort and data analysis of recycling audit information to calculate the capture rate of recyclables in the region.

The study has been developed to gain a better understand the effectiveness of the current system on a regional basis and support the development of education and outreach materials deploy and for localities to utilize to educate their residents. The campaign will be geared toward localities with existing education and outreach programs to have the opportunity to incorporate the content into their own programs as well as localities with limited resources to educate their residents effectively. A successful campaign will promote messaging that is coordinated among localities, and within localities at the places where residents work, live, and play (e.g. same messaging provided at a child's school and a parent's place of work).

Education and outreach materials developed include:

- Online quizzes
- Video shorts/public service announcements
- Customizable outreach postcards

Localities have been asked to contribute to the regional education effort by amplifying the messaging distributed by NCTCOG and considering the campaign assets for their own use to establish a region-wide look and feel at the conclusion of the campaign in Fall 2019.

5.5.2.2 Interlocal Agreement

If there is a single entity that owns or operates solid waste facilities in the region it is typical that the smaller adjacent entities would simplify the organizational structure by allowing entities to make use of existing facility or contract through interlocal agreements.

5.5.3 Key Findings and Recommendations

The following presents key findings and recommendations regarding regional collaboration. Recommendations include information about the timing, financial impact, and waste diversion/minimization impact. These criteria are described further in Section 6.0.

1. **Continue collaborative contracting.** Collaborative contracting and collective contract negotiations provide the opportunity to secure long-term contracts at more favorable pricing for private sector services. Continuing this practice going forward will provide competitive pricing for residential solid waste collection services for the most entities. [**Timing:** Near-term; **Financial Impact:** Low – continuing current practice of group contracting; **Diversion/Minimization Impact:** Low]

2. **Participate in NCTCOG Regional Recycling Survey and Campaign.** The campaign will be geared toward localities with existing education and outreach programs to have the opportunity to streamline education and outreach where residents work, live and play. Parker County is encouraged to participate in the campaign by supporting the digital and social marketing campaign being rolled out starting June 2019. During the initial three months of the campaign, municipalities are being asked to engage with the material produced and distributed by NCTCOG, and after August 2019 to make use of the resources they provide to integrate the content into their own public education and outreach efforts. [**Timing:** Near-term; **Financial Impact:** Low – leverage existing campaign material developed by NCTCOG;

Diversion/Minimization Impact: Moderate – effective education and outreach across areas where residents work, live and play will decrease contamination and increase recycling quantity]

3. **Consider long-term strategic relationships among municipal entities.** Burns & McDonnell recommends considering the potential long-term strategic relationships among municipal entities that would allow development of the most effective waste minimization programs going forward. The level of interest of the entities within Parker County to pursue various waste minimization programs will determine the appropriate relationships to consider. If it is decided to develop long term assets utilized by residents or commercial entities among several of the municipalities, it would make sense to develop a more formal relationship Whereas if it is decided to continue operating by contracting with third party service providers, a less formal relationship may be appropriate. [**Timing:** Long-term; **Financial Impact:** Low – requires coordination and development of formal municipal relationships; **Diversion/Minimization Impact:** Moderate – provides management structure to incorporate more waste minimization programs across the County]

5.6 Funding Sources and Strategies

This section provides information on financing strategies, government incentives, and private funding sources to support a variety of solid waste management and recycling projects.

5.6.1 Financing Strategies

There are several ways to support solid waste management and recycling projects financially. These common potential funding strategies will vary based on the needs of the program and are described in Table 5-5.

Table 5-5: Financing Strategies

Strategy	Description
Capital Financing	
Pay-as-you-go financing	Financing capital projects not with borrowed money or new revenues, but by saving or freeing up money from existing budgetary sources
Debt financing	Financing capital projects through bonds
Revenue Generation	
User Fees	Fees charged to users of facilities or services provided. Fees are determined based on the financial needs of the program and expected usage. Often, user fees are a primary or exclusive source for program operational costs including processing, disposal and management costs
Monthly utility charge	Service fees collected directly from residents on a monthly or bi-monthly utility bill.
Other Revenues	Revenue obtained by the operations of a facility or program that is used to support program operating costs.
Taxes	
General ad-valorum tax levy	A fee assessed that appears on residents' property tax bill. An alternative to this approach would be to fund the facility via the general fund, and to not include an itemized tax levy.
Other budgetary funding	Programs can be funded through various departmental budgets, as appropriate.

Note that the options presented above are not mutually exclusive. Multiple options could be utilized. For example, user fees could pay for a portion of the operation, with the remainder of funding coming from the general fund.

5.6.2 Grants and Private Funding Sources

Grants and other private funding sources are often provided on a competitive basis. If a project can secure additional funding, it will typically allow for a reduction in the capital or operating costs. Some of these

funding sources may offset the start-up infrastructure costs for smaller projects, especially those in smaller, more rural communities. These grant and other funding sources were based on information included in the Study on the Economic Impacts of Recycling.[11]

1. **Regional Solid Waste Grants Program.** In Texas, grant funds are awarded to regional and local governments for MSW management projects through the state's Regional Solid Waste Grants Program. Funding is allocated to Texas' 24 Councils of Government (COGs) based on a formula that takes into account population, area, solid waste fee generation, and public health needs. NCTCOG is the regional council for Parker County. Grant funds can be used for illegal dumping cleanup, source reduction and recycling projects, developing or updating local solid waste management plans, HHW management, educational and training projects, and other MSW projects.

   For more information:
   https://www.tceq.texas.gov/permitting/waste_permits/waste_planning/wp_grants.html

2. **Composting refund for MSW facilities through TCEQ.** In Texas, the operator of a publicly or privately owned MSW facility may be eligible for a refund of up to 20 percent of the solid waste fees collected by the facility. MSW facility permit holders may apply for the compost refund are those with on- or off-site composting operations who demonstrate that the refunds are used to lease or purchase and operate equipment necessary to compost yard waste; that compost operations are actually performed; and that the finished compost material produced by the facility is returned to beneficial use.
   For more information:
   https://www.tceq.texas.gov/permitting/waste_permits/msw_permits/msw_compost_credit.html

3. **The Foundation Center.** This resource manages an online database comprised of more than 140,000 granters and private funders for nonprofit organizations.

   For more information:
   http://www.foundationcenter.org

4. **The Recycling Partnership.** The Recycling Partnership (Partnership), formerly the Curbside Value Partnership, is an industry-funded national recycling nonprofit with the goal of improving curbside

[11] Refer to Section 7.0 of the Study on the Economic Impacts of Recycling report for information regarding funding sources. This document is available from the TCEQ at https://www.tceq.texas.gov/assets/public/assistance/P2Recycle/study/TheStudyontheEconomicImpactsofRecycling.pdf

residential recycling in the U.S. The Partnership provides resources for communities (4,000 or more households) starting programs with recycling carts or switching from bins to carts. To accelerate the local level adoption of recycling best management practices, the Partnership uses highly leveraged grants coupled with technical assistance.

For more information
http://recyclingpartnership.org/

5. **The Closed Loop Fund (CLF).** The Closed Loop Fund (CLF) was created to increase recycling rates and is funded by consumer goods companies and retailers. The CLF provides zero interest loans to municipalities and low interest loans to private companies.

   For more information
   http://www.closedloopfund.com/

6.0 IMPLEMENTATION PLAN

This section of the report provides a description of the criteria associated with the implementation of recommendations presented in Section 5.0. Burns & McDonnell compiled the strategies and key implementation components of each recommendation into a high-level implementation plan to provide guidance. The components of the implementation plan that have been evaluated for each strategy, including priority timing, estimated financial impact, and waste diversion/minimization impact, are described below:

- **Priority.** The priority indicates the urgency with which the entities would implement each strategy. Burns & McDonnell has not evaluated the priority of each option, as these decisions should be determined by the collective group after reviewing the findings presented in Section 5.0.
- **Timing.** Timing gives a general indication of when the proposed strategy should be implemented. Each strategy has a timing of near-, mid-, and long-term. For purposes of this project, near-term is defined as 0-2 years, mid-term is 2-5 years, and long-term is more than five years into the future.
- **Estimated financial impacts.** For each strategy there may be associated costs and/or financial benefits. This indicator is meant to provide the high-level understanding of the cost effectiveness of implementing each strategy. It is not meant to provide a detailed cost/benefit analysis. Further evaluation prior to implementation would need to be conducted to detail the costs and benefits for each strategy.
- **Estimated waste diversion and/or minimization impacts.** Each strategy is meant to increase waste diversion and/or minimization in Parker County. This indicator identifies how each strategy would likely increase the diversion or minimization of waste generated in Parker County. It is not meant to provide a detailed tonnage estimate of waste that would be diverted or reduced for each strategy.

The Implementation Plan is provided in Table 6-1.

Table 6-1: Implementation Plan

Strategy Target	Strategy ID	Strategy	Timeline	Estimated Financial Impact	Waste Diversion/ Minimization Impact
Commercial Waste Reduction and Recycling	**1-1**	Develop business recognition program and WRAP	Near-term	Low	Moderate
	2-1	Explore expansion of existing collection programs	Mid-term	Low	Moderate
	3-1	Develop commercial waste generation study	Mid-term	Moderate	Low
Citizens' Collection Station	**1-2**	Develop a CCS	Mid-term	High	High
	2-2	Explore grant funding through NCTCOG	Near-term	Moderate	N/A
Brush and Yard Trimmings Processing	**1-3**	Co-locate brush and yard trimmings facility with CCS	Mid-term	Low	Moderate
	2-3	Coordinate education and outreach efforts	Mid-term	Moderate	Moderate
	3-3	Procure private-sector operator	Mid-term	Low	Moderate
Household Hazardous Waste	**1-4**	Continue existing voucher program with the Fort Worth ECC	Near-term	Low	Moderate
	2-4	Consider program options to increase local, convenient access to HHW service	Near-term	Variable	Moderate/High
	3-4	Explore opportunities for intergovernmental collaboration for mobile collection	Near-term	Variable	Moderate/High
	4-4	Explore opportunities for contracted at-your-door service options	Near-term	High	Moderate/High
	5-4	Explore grant funding through NCTCOG	Near-term/Ongoing	Moderate	N/A
Regional Collaboration	**1-5**	Continue collaborative contracting	Near-term	Low	Low
	2-5	Participate in NCTCOG Regional Recycling Survey and Campaign	Near-term	Low	Moderate
	3-5	Consider long-term strategic relationships among municipal entities	Long-term	Low	Moderate

An electronic copy of the Implementation Plan has been provided to the entities in Parker County and includes columns for the priority and current progress. The priority column can be used to indicate the urgency with which the entities among Parker County would implement each strategy. Burns & McDonnell has not evaluated the priority of each option, as these decisions should be determined by the collective group after reviewing the findings presented in Section 5.0. The current progress column will allow the progress status of each to be tracked and updated over time.

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Burns & McDonnell
8911 N. Capital of Texas Hwy, Suite 3100
Austin, TX 78759
O 512-872-7130
F 512-872-7127
www.burnsmcd.com

Regional Recycling and Waste Minimization Workshop

City of Weatherford
April 9, 2019
1:00-3:30 PM

Agenda

- Part 1 (45 minutes)
  - Introduction
  - Purpose of study & workshop objectives
  - Industry overview and regional context
  - Overview of current programs in Parker County region
- Part 2 (45 minutes)
  - Overview of regional program options
- Part 3 (30 minutes)
  - Facilitated discussion

Introduction

Burns & McDonnell Overview

- Solid Waste & Resource Recovery practice founded in 1970
- Provide a full suite of Financial, Operational, and Engineering Consulting services

FORTUNE 100 BEST COMPANIES TO WORK FOR® 2017

Our project team knows…

Weatherford & NCTCOG

Building on recent studies by Burns & McDonnell

You

Team members partnered with the City in 2017

Recycling

We've developed plans for other Texas and US cities

Purpose of Study

- Evaluate interest in and feasibility of future regional recycling, diversion, and waste minimization options, focused within Parker County

Workshop Objectives

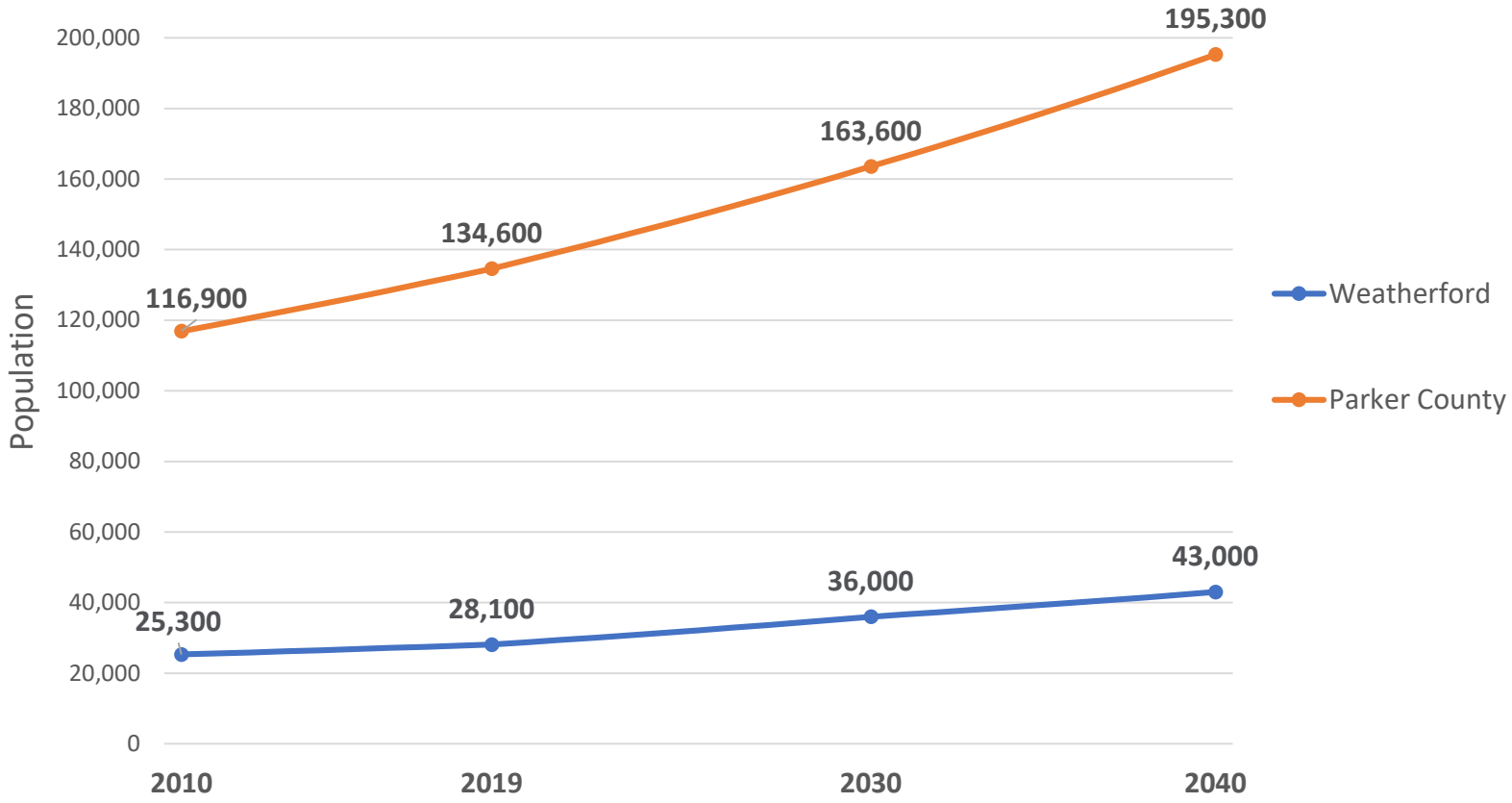
- Bring regional stakeholders together to obtain input regarding potential program options through facilitated discussion

Background & Industry Overview

Population Growth – Regional & Local

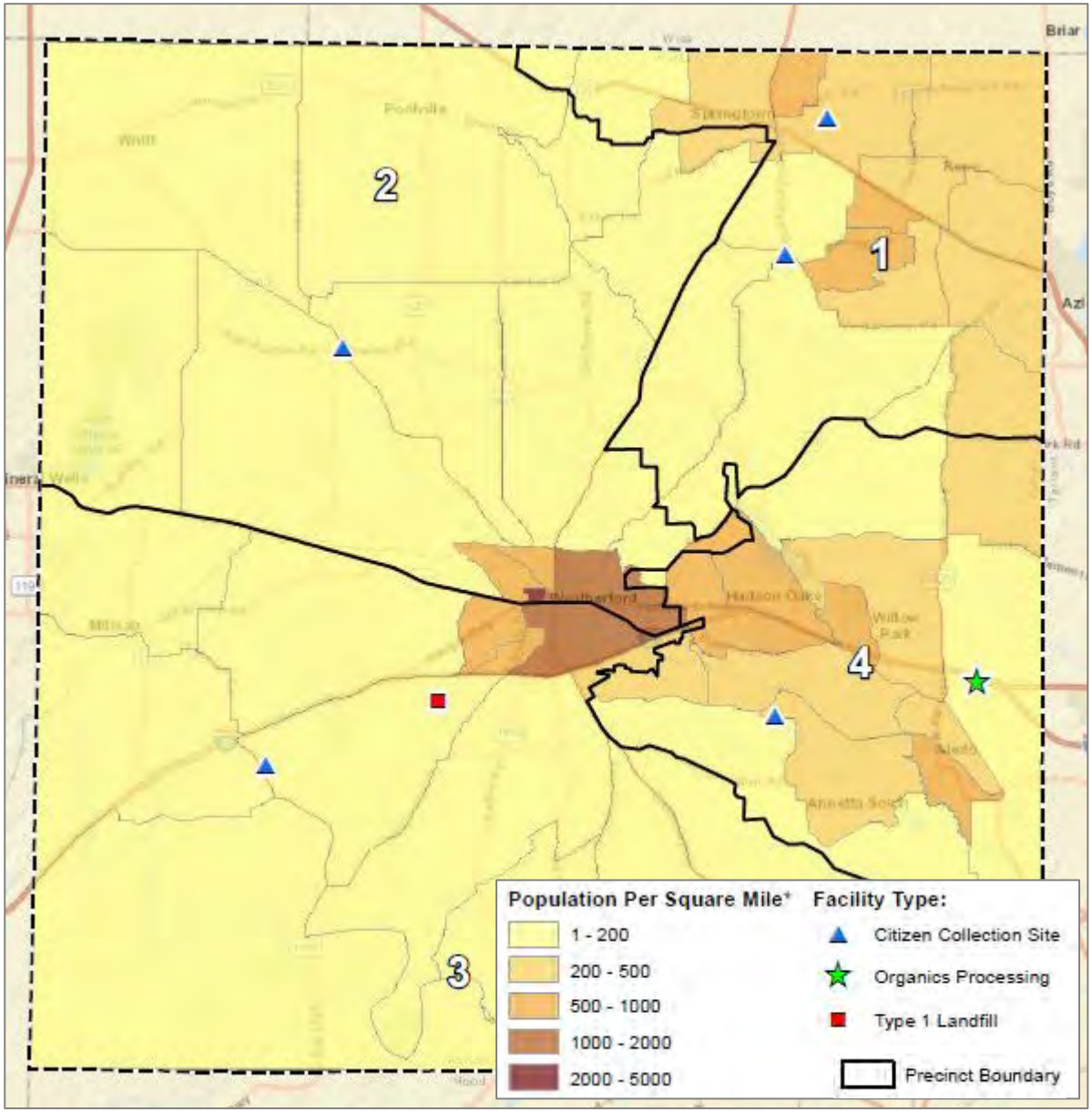
	Population				Growth 2018-2040	
	2010	2019	2030	2040	Annual	Total
NCTCOG	6,540,000	7,548,400	9,051,800	10,676,800	**1.7%**	**41%**
Parker County	116,900	134,600	163,600	195,300	**1.8%**	**45%**
Weatherford	25,300	28,100	36,000	43,000	**2.0%**	**53%**

Population Growth – Weatherford & Parker County



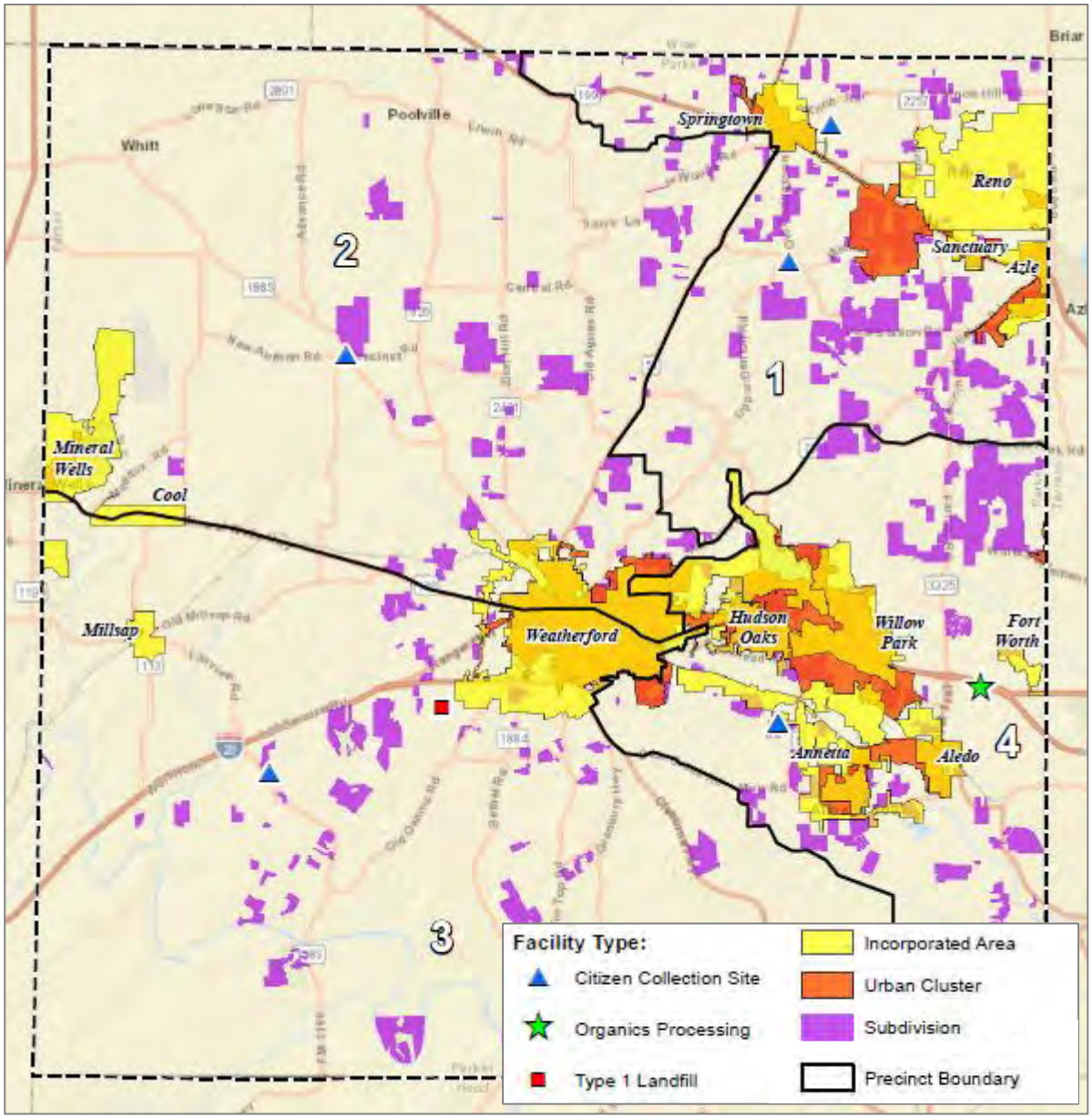
- Projected future growth patterns highlight the need for developing regional collaborative relationships

Sources: U.S. Census Bureau Population Estimates & Texas Water Development Board 2016 Regional Water Plan County and City Population Projections for 2020-2070



Population Density by Census Block Group

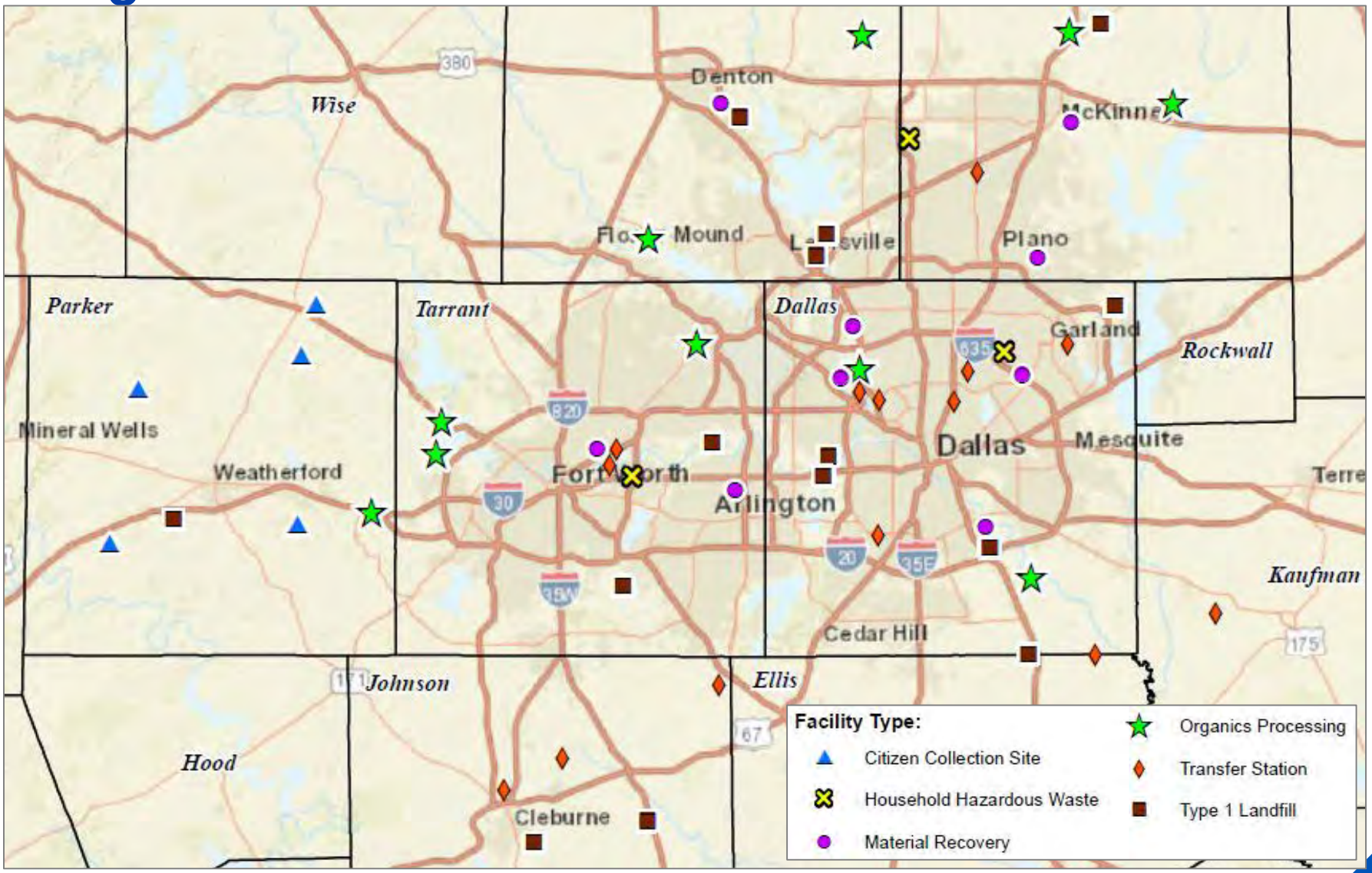
- The two more densely populated areas represent:
  - 20% of land area
  - 60% of total population
  - 75,000 residents (2015)
- Curbside programs more viable in densely populated areas



Populated Areas

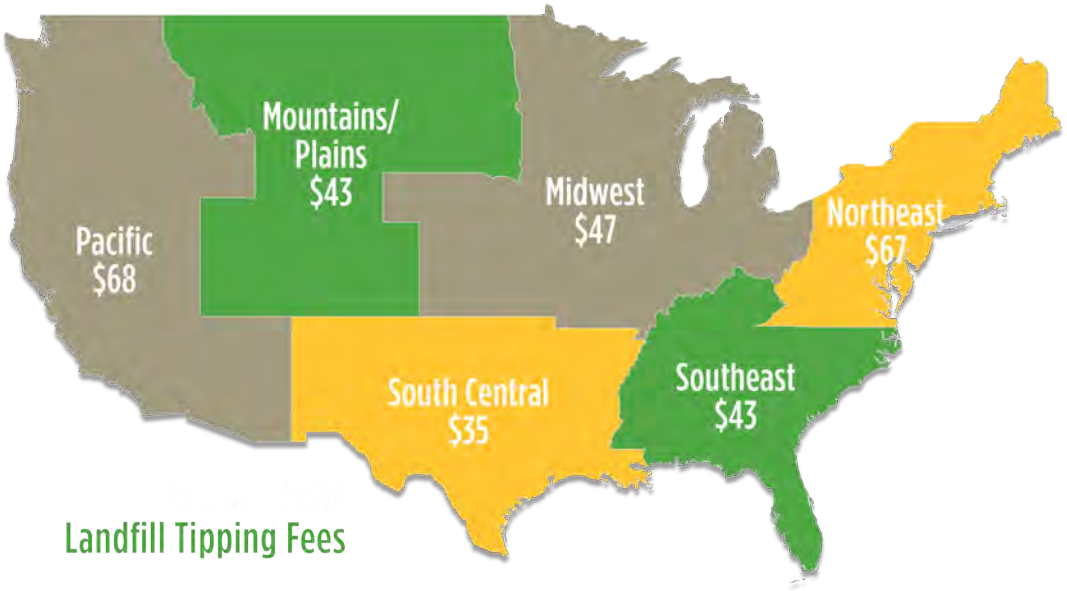
- There are some densely populated areas in unincorporated areas
- Urban clusters = greater than 2,500 people per sq. mi.
- Weatherford & northeast Parker County will likely see highest population growth
- Some subdivided areas have low population densities not ideal for provision of curbside services

Regional MSW Facilities



Landfill Trends

- Challenging to obtain permits for new landfills
- In response, existing landfill facilities are expanding
- Landfill average tipping fees are increasing nationwide
- Graphic shows current average gate rates for landfill disposal by region



Regional Landfill Capacity

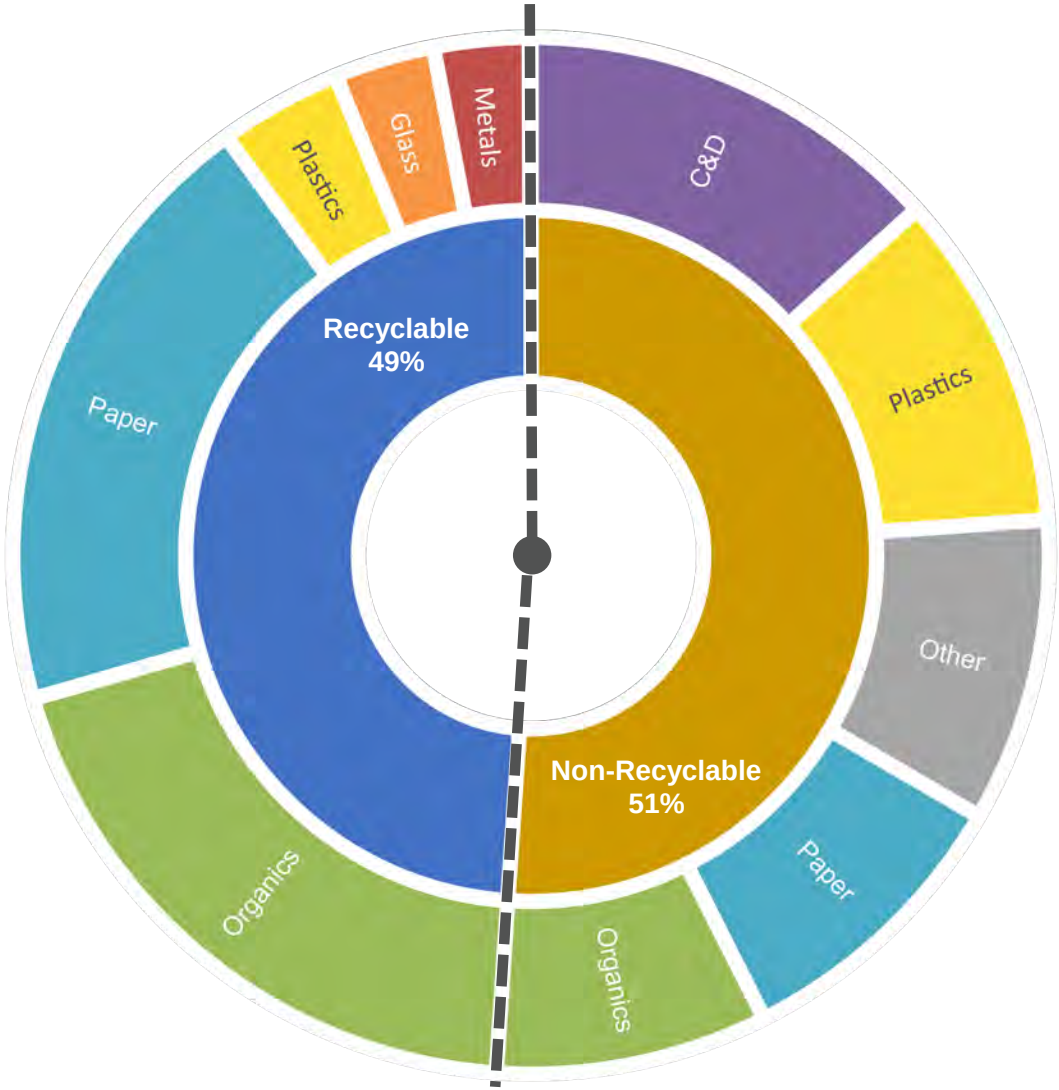
- As population growth continues, quantities of municipal solid waste generated will increase
- Disposal options (landfill facilities) on the in the western portion of the NCTCOG region are more limited than elsewhere in the region
- Enhanced importance of evaluating recycling, diversion, and waste minimization options currently and for the future
- New landfill permitted near Jacksboro (southeast Jack County) is outside NCTCOG but adjacent to Parker County (opening date is unknown)

Achieve Reduction, Reuse, and Diversion

Develop affordable waste management methods consistent with the waste management hierarchy to achieve as much reduction, reuse and diversion from disposal as feasible

- Waste management hierarchy developed by the U.S. EPA
- Tool to implement a Sustainable Materials Management (SMM) approach
  - Recognizes that no single waste management approach is suitable for all materials and waste streams in all circumstances.
  - The hierarchy ranks the various management strategies from most to least environmentally preferred.
  - It places emphasis on reducing, reusing, and recycling
  - Local providers are not typically in the source reduction or reuse part of the hierarchy

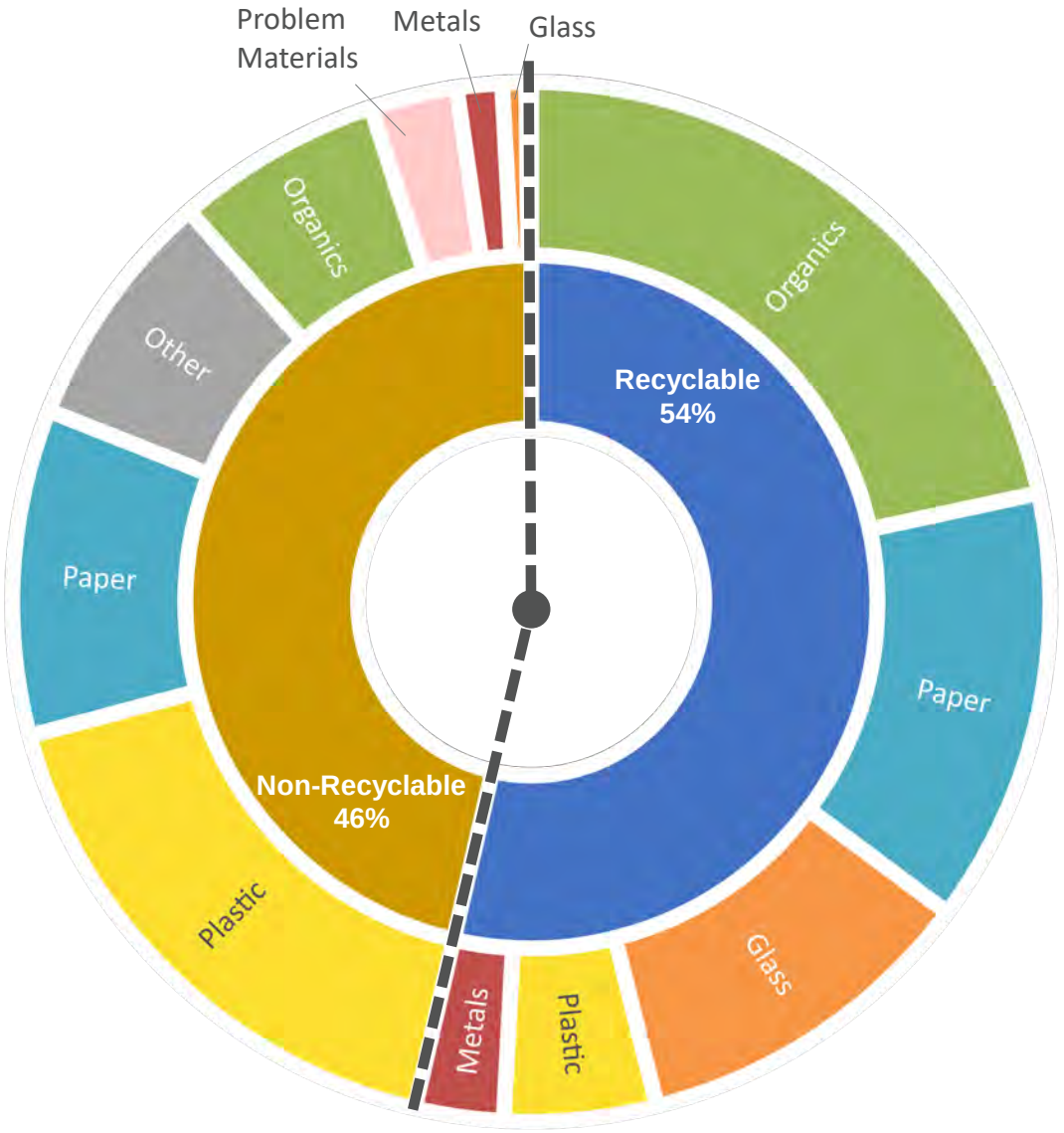
Composition of Landfilled Material in Texas



- Nearly half of material landfilled in Texas has the potential to be recycled
  - 49% Recyclable (including organics)
  - 51% Non-Recyclable

Source: Study on the Economic Impacts of Recycling, Texas Commission on Environmental Quality (TCEQ), 2017.

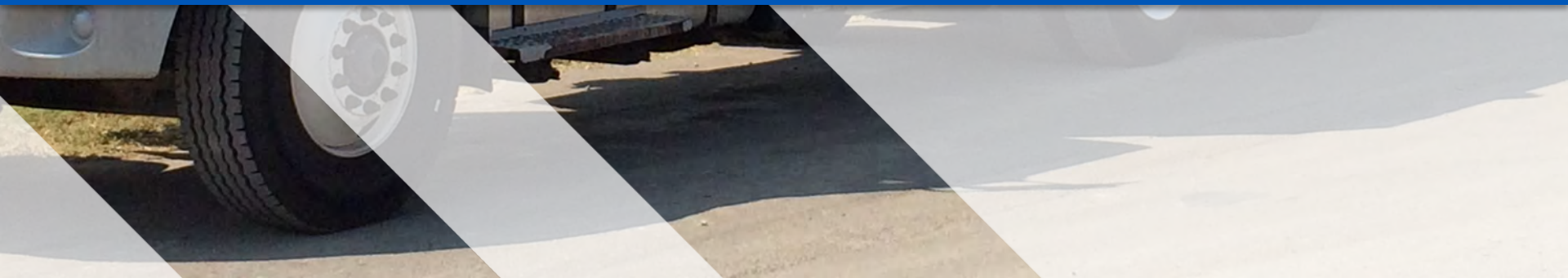
Weatherford Composition Audit (NCTCOG)



- Estimated results based on small sample
- 54% of the City's landfilled material has the potential to be diverted
  - 32% could be recycled with current City solid waste & recycling services
  - Food scraps account for another 20% of the City's landfilled waste

Source: 2018 NCTCOG Residential Waste Characterization Audit, City of Weatherford material samples

Overview of Current Programs



Regional Cities & Community Stakeholders

CITIES

- Weatherford
- Aledo
- Annetta
- Annetta North
- Annetta South
- Hudson Oaks
- Springtown
- Willow Park

COMMUNITY STAKEHOLDERS

- Weatherford ISD
- Aledo ISD
- Weatherford College
- Weatherford Downtown Business Alliance
- Medical City Weatherford
- Walsh (neighborhood)

Weatherford: Overview of Residential Services

- **10,000** households (residential customers)
- **280** commercial customers (cart-based service)
- Disposal & processing facilities:
  - Landfill: City of Weatherford/Waste Connections
  - MRF: Republic (Fort Worth)
  - City brush grinding site

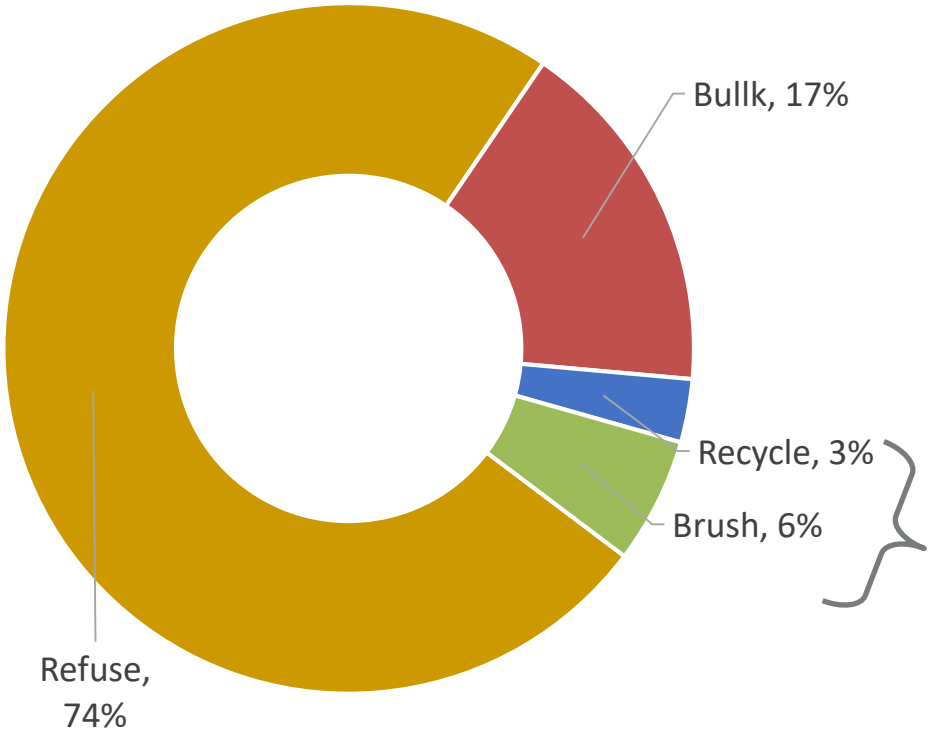
Weatherford: Overview of Residential Services

Service	Description	Frequency	Fees	Diversion
Refuse	Collection in bags, cans, or other container	2x/week	$17.00 in-City; $21.25 out-of-City	✗
Single-Stream Recycling	Subscription; cart-based collection	1x/week	$2.50/month	✓
Brush & Yard Trimmings	Bundles, bagged material	Monthly	$10/collection; $5/additional CY	✓
Bulk Items	Household waste too large for refuse service	Monthly	$25/collection; $10/additional CY; $15/appliance	Varies
HHW (sponsored by County)	Fort Worth's regional voucher drop-off program	Unlimited	$50/voucher	Varies

Weatherford: Overview of Commercial Service

- City Services
  - Refuse service available to smaller commercial customers
    - Twice per week standard service; more frequent service for higher rate
  - Cart-based single-stream recycling is available to downtown commercial customers as an extension of the City's residential recycling service
- Private Services
  - Commercial customers with higher collection needs (dumpster, roll-off) contract directly with a private service provider
  - All additional services (single-stream recycling, organics, etc.) must be contracted independently

Weatherford: MSW Generation & Diversion (2017)



Total Generation	13,794 tons
Disposed	12,572 tons
Diverted	1,222 tons

Total Diverted	9%
Recycling	3%
Brush	6%

Current Recycling Quantities

- Subscription (opt-in) cart-based, weekly residential recycling collection
- 15% participation (1,496 of 9,748 in-City Households)
- City total of 409 tons annually
- Per-household average annual recycling quantities:

Weatherford		National Household Average[1]
Per-Subscriber	Per Household	
547 lbs	84 lbs	364 lbs

- Strong rate per recycling subscriber; low overall household rate in comparison to national

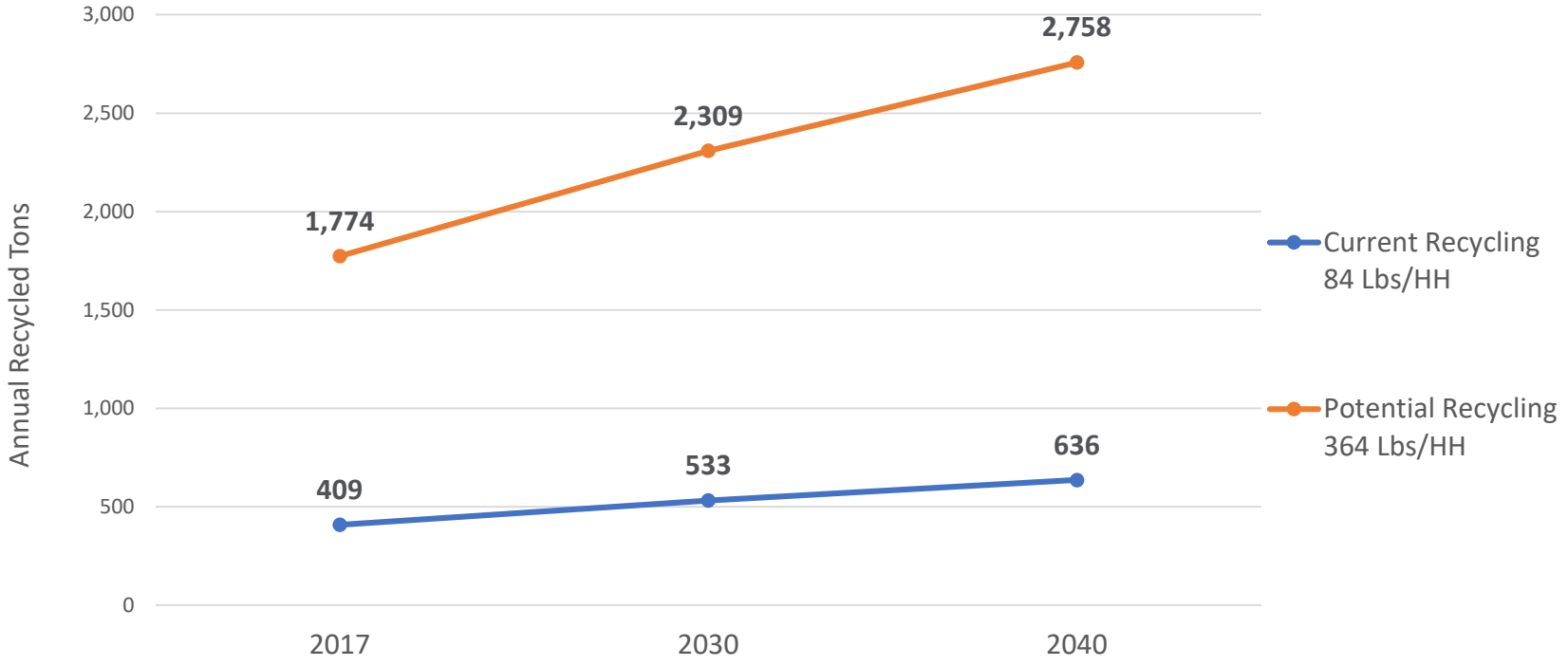
[1] The Recycling Partnership. January 31, 2017. "The 2016 State of Curbside Report." Available online: https://recyclingpartnership.org/state-of-curbside-report/

Potential Recycling Projections

- The following projections reflect potential recycling quantities if **curbside recycling service** were provided to:
  - The City of Weatherford as a **City-wide program**
  - Parker County
    - Low Potential: 41% of total County population contained in **incorporated cities**
    - High Potential: 60% of total County population contained in **areas of higher population density**

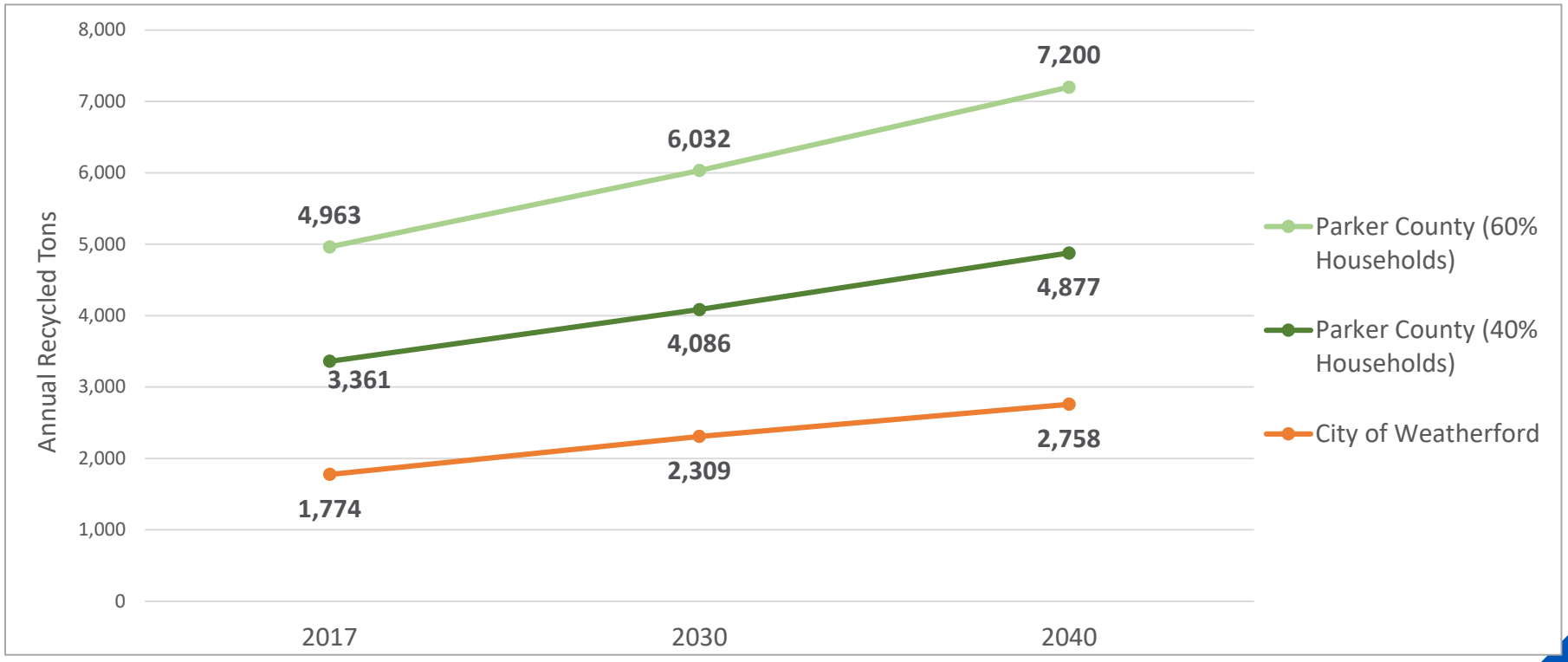
City of Weatherford Projected Recycling Quantities

- Based on population/household projections through 2040
- Current: 84 Lbs/Household Potential: 364 Lbs/Household



Parker County & Weatherford Potential Recycling Quantities

- Based on population/household projections through 2040
- Potential annual recycling rate: 364 Lbs/Household
- Comparison emphasizes importance of County-wide planning & collaboration



Note: Parker County total potential recycling quantities include City of Weatherford total potential recycling quantities.

Residential Benchmarking Overview

- **REFUSE**: Base service for all cities
- **RECYCLING**: Base service for six of eight cities
  - Weatherford has subscription recycling service for additional monthly fee
  - Springtown does not provide residential recycling service
- **BULK**: Base service for seven of eight cities
  - Joint contract cities have twice per week bulk collection (base service)
  - Aledo & Springtown have monthly, call-ahead bulk collection (base service)
  - Weatherford has monthly bulk item collection for additional fees
- **BRUSH/YARD TRIMMINGS**: Most cities do not provide separate collection of brush and yard trimmings
  - Weatherford & Springtown provide separate collection service
  - Joint contract cities and Aledo collect brush and yard trimming material with bulk waste

Residential Benchmarking Overview

City	Monthly Base Rate	Refuse	Recycling	Bulk	Brush
Weatherford	$17.00	●	○	○	○
Annetta, Annetta North, Annetta South, Hudson Oaks, Willow Park	$14.67	●	●	●	–
Springtown	$14.25	●	–	●	●
Aledo	$13.54	●	●	●	–

● Service provided with base rate

○ Service provided for additional fee

– Service not provided by City

Commercial Benchmarking Overview

- Generally, commercial solid waste and recycling services are provided via an open franchise system in most cities in Parker County
  - **Weatherford:**
    - City services include commercial refuse collection
    - Dumpster refuse service and additional services are provided privately
    - City provides cart-based recycling to commercial customers in downtown
  - **Springtown:**
    - Waste Connections has an exclusive franchise for both residential and commercial services
- Commercial customers typically contract directly with the hauler of their choice franchised within their city

Parker County: Overview of Current Programs

- 59% of the County's total population lives in unincorporated areas
  - Incorporated Cities: 53,000 residents
  - Unincorporated Areas: 78,000 residents
- Residents in unincorporated areas typically must contract independently with a service provider for regular services
- The County does not provide regular (curbside) MSW services
- County services are intended to provide options of difficult-to-dispose or recycle materials (i.e., material not accepted with regular hauler services)
  - Regular household trash and single-stream recycling is not accepted
- Various year-round and annual drop-off opportunities (detailed on following slide)

Parker County: Overview of Current Programs

- Drop-off Sites (year-round)[1]
  - County Precincts each provide varying levels of material drop-off opportunities for County residents

Materials	Precinct 1	Precinct 2	Precinct 3	Precinct 4
Appliances	x			x
Automotive fluids				x
Batteries	x		x	x
Brush	x		x	
Electronics	x			
Scrap Metal		x		x
Tires	x	x	x	x
Used Oil	x	x	x	x

1 Based on available information provided on the Parker County Precinct webpages. Chart may be updated as appropriate.

Parker County: Overview of Current Programs

- Annual Collection Day (Spring)
  - Each precinct holds its own Annual Collection Day event
  - Intended for collection of material that is not accepted with regular curbside MSW services; regular household trash (i.e., regular bagged trash) is not accepted
- Household Hazardous Waste
  - Parker County participates in the City of Fort Worth's HHW drop-off program
  - County residents may purchase vouchers for $50 each and drop off HHW materials at Fort Worth's Environmental Collection Center

Community Stakeholders: Downtown Business Alliance

- Overview: about 150 business served in the downtown area
- Services: Combination of City and private hauler services

Service	Description
Refuse	City provides 2x/week curbside collection to some businesses; businesses with larger needs contract for dumpster service.
Recycling	City provides weekly recycling for 15-20 businesses that have opted in to the program. No other recycling efforts are known at this time.
Organics	None (a single business diverts food scraps to a local farm (not tracked).
Roll-off	Provided by contractors on an as-needed basis
Public	City owns and services 10-20 refuse receptacles 3-4 times per week

Community Stakeholders: Weatherford College

- Overview
  - Main campus serves about 3,000 students and faculty; no additional growth planned in near future
- Services (main campus):
  - **Refuse**: Dumpster service provided by Waste Connections (2 dumpsters)
  - **Recycling**: Cart-based service provided by City (8 carts)
    - Carts located in hallways of campus facilities with classrooms and offices
- Recycling goals:
  - Increase recycling opportunities on campus at a minimum cost
  - Campus currently does not have cardboard recycling; college is considering a baler for cardboard material
  - Interested in exploring partnership opportunities with City and County

Regional Opportunities

Programs for Regional Consideration

- Residential curbside recycling
- Citizens Collection Stations
- NCTCOG Recycling Education Campaign
- Yard trimmings & brush (organics)
- Household hazardous waste
- Commercial recycling
- Downtown waste diversion

Residential Curbside Recycling

- The majority of incorporated communities in Parker County provide curbside recycling service
- Weatherford:
  - Currently has subscription program with 15% participation
  - Significant potential for increased recycling quantities with implementation of a City-wide (non-subscription) service

	Current	Potential
Annual Lbs/HH	84 lbs	364 lbs
Total Annual Tons	409 tons	1,774 tons
Recycling rate	3%	13%

OPTIONS: Residential Curbside Recycling

- Conduct a pilot program to further evaluate City's potential adoption rate and recycling quantities
- Develop detailed implementation plan for roll-out of a City-wide recycling service
- Utilize NCTCOG recycling education campaign tools and educational materials (detailed discussion to follow)
- All cities and HOAs: encourage inclusion of curbside recycling in future service contracts

Citizens' Collection Station

- **Definition:** a facility established for the convenience and exclusive use of residents (not commercial or industrial users or collection vehicles)
- **Purpose:** increase convenience and expand access to recycling and disposal services
- **Potential materials:** single-stream recycling, brush, household refuse, bulk items

Citizens' Collection Station (continued)

- Partnership opportunity
  - Would supplement County's drop-off sites, which are intended to provide options for difficult to recycle/dispose material and do not accept single-stream recyclables
  - Any new collection stations could be available to all County residents
- Alternative to curbside recycling
  - **City residents:** alternative option if City chooses not to implement City-wide curbside recycling program
  - **County residents:** Significant portion (59%) of County residents live in unincorporated areas and may not otherwise have convenient access to single-stream recycling collection

Citizens' Collection Station (continued)

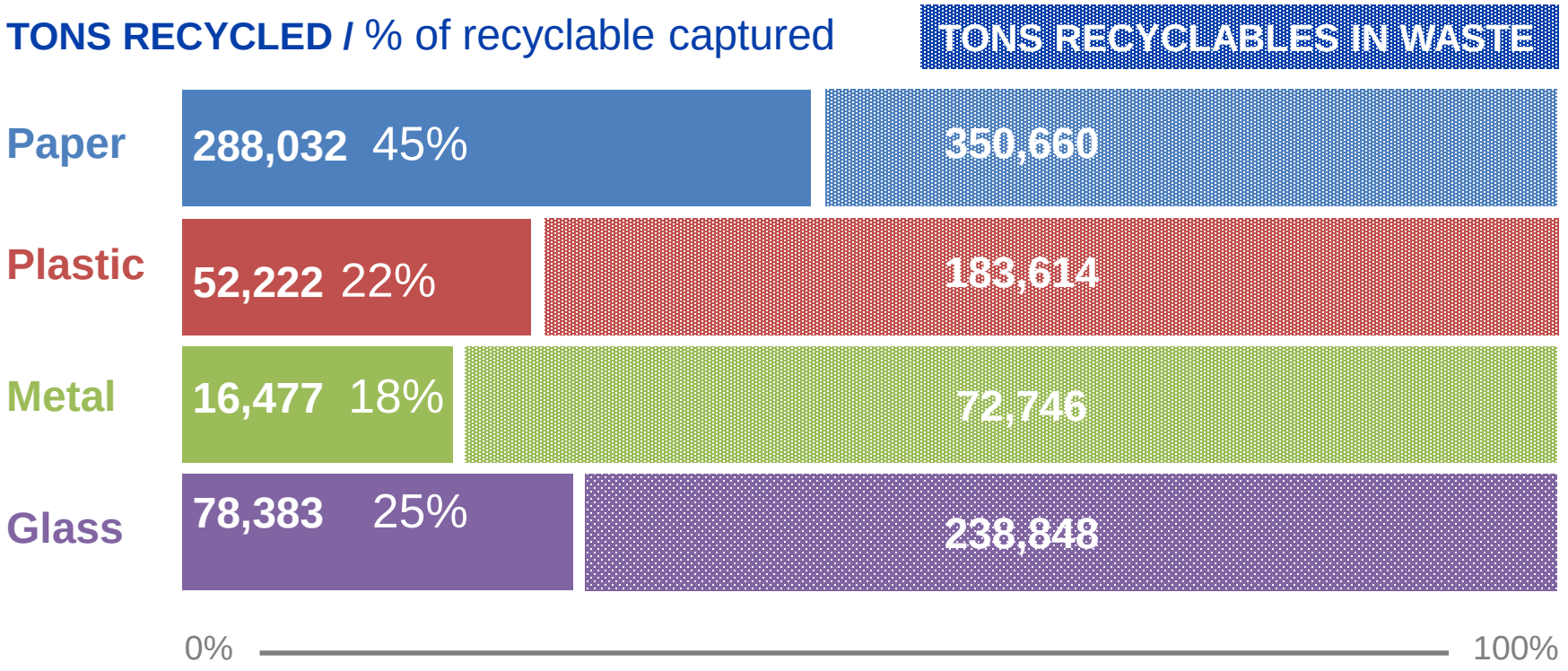
- NCTCOG previously developed workshop: "How to Plan, Design, and Finance Small Transfer Stations and Citizens' Collection Stations"
  - Includes detailed information and planning guidance that may be used as a baseline for implementation:
    - Key issues (e.g. illegal dumping)
    - Key planning steps
      - Planning
      - Permitting & site selection
      - Site & facility size
      - Equipment
      - Personnel
    - Financing approaches

Regional Recycling Survey and Campaign

- North Central Texas Council of Governments developing resources improve single-family recycling
  - Increase tons of most valuable material
  - Decrease contamination sent to MRFs
- Developed baseline regional capture rate of materials
  - Conducted waste characterization study
  - Reviewed recycling audit studies

Overall Capture Rate Results

What percent of available materials are captured?



Participate to Increase Regional Capture Rates

- Incorporate regional education and outreach material to educate Weatherford/Parker County residents
  - Customizable mailers – gives the region's outreach consistent look and feel
  - www.TimeToRecycle.com – centralized resource for quality recycling information
- "Boost" social media content to expand reach of campaign
  - Online quizzes
  - Video shorts and PSAs
- Attend the Campaign Kick-off Workshop May 20th
  - Learn about all the available opportunities to support the region

Yard Trimmings & Brush

- Current diversion
  - City: 6,500 cubic yards annually
  - Parker County Precincts: over 10,000 cubic yards annually
- Diversion of yard trimmings and brush is less resource-intensive than single-stream recycling
- Important to maintain minimal contamination (clean material) for public and private processing

OPTIONS: Yard Trimmings & Brush

- City has an existing brush-grinding site
  - How and to what extent could this facility be expanded to allow processing of increased volume and access to additional customers?
- Explore options to haul material to local private composting and mulching facilities
  - Currently three large organics processing facilities within 25 miles of City
- Explore potential for public-private partnership opportunities to establish a regional composting operation in Parker County
- Wastewater Treatment Plant – is there opportunity for co-processing of brush and biosolids? This would increase material quantities and expand processing options.

Household Hazardous Waste

- **Purpose:** To provide residents with access to **safe** disposal options for household chemicals and materials that are not safe for landfill disposal or for collection with other curbside services
- General HHW material types:
  - Automotive fluids
  - Used motor oil and filters
  - Paint
  - Lighter fluid, solvents, varnish and acids
  - Household cleaners
  - Lawn and garden chemicals (herbicides and pesticides)
  - Pool chemicals
  - Other household chemicals with caution, warning, or poison labels

Household Hazardous Waste (continued)

- Parker County participates in the City of Fort Worth's HHW voucher program
  - Available to all County residents
  - $50 per voucher for HHW drop-off at the Fort Worth Environmental Collection Center (ECC)
  - The ECC is located on the east side of Fort Worth
    - 35 miles from Weatherford; 21 miles from County line

OPTIONS: Household Hazardous Waste

- Regional & intergovernmental collaboration is a common approach for developing cost effective and convenient options
  - Allows services to reach a greater number of residents
  - Cost-sharing makes service more financially viable
- Regional options:

Program Type	Description
Periodic collection events	Collection events are held at designated intervals (annual, biannual, quarterly); a location is selected and licensed contractor is hired for processing and disposal of material
Mobile collection	A mobile vehicle or trailer may be owned by a municipality or jointly owned, and staffed by trained personnel; flexibility in collection locations, more frequent collection opportunities, lower cost compared to a permanent facility
Permanent facility	A permanent facility provides regular (monthly to multiple times per week) drop-off opportunities; ideally centrally located in a service area

OPTIONS: Household Hazardous Waste

Program Type	 Periodic Collection Events	 Mobile Collection	 Permanent Facility
Pros	• Lower annual costs • Less resource intensive (e.g., minimal capital costs, no regular staffing commitments	• More frequent collection opportunities than periodic events • Flexibility in collection locations, providing added convenience for residents	• Highest potential frequency of collection options
Cons	• Infrequent collection opportunities • Potentially long material storage times for residents	• Would require a capital and operation expenditures to manage (less than permanent facility)	• Would require a capital and operation expenditures to manage

OPTIONS: Commercial Recycling

- Weatherford:
  - Potential to expand residential cart-based recycling service to be available to commercial customers
    - Contingent upon City implementing City-wide recycling
- Cities with existing residential recycling service
  - Consider including cart-based commercial services in future contracts as an expansion of current residential services

Downtown Business Alliance

- **Current service**: Combination of City-provided concierge service and private hauler services
- Is there demand for additional recycling options in downtown?
  - Commercial
  - Public
- A focus on sustainable practices may help position the City's downtown as a regional destination for dining and entertainment
  - Near-term: focus on single-stream recyclables
  - Mid- to Long-term: consider separate collection of food scraps, with consideration of demand and local processing options

OPTIONS: Downtown Business Alliance

- Continue current concierge service
- Shared recycling compactor
  - One or multiple centralized locations on City-owned property
  - Customers transport recyclable material short distances
  - Controlled access for downtown commercial customers only
- Business recognition program
  - Develop a program to publicly recognize and promote businesses that voluntarily adopt practices that support recycling, diversion, and waste minimization

OPTIONS: Community Stakeholders

- Are current recycling services provided sufficient to meet needs?
- Based on options discussed previously, is there interest in extending these options for community stakeholder entities?

DISCUSSION: Programs for Regional Consideration

- Residential curbside recycling
- Citizens Collection Stations
- NCTCOG Recycling Education Campaign
- Yard trimmings & brush (organics)
- Household hazardous waste
- Commercial recycling
- Downtown waste diversion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