



## Background Document

# Long-Term Solid Waste Management Strategic Plan

Presented to:

City of Kansas City, Missouri

In Association With



MCE Services, LLC



Public Works Department  
Solid Waste Division  
23rd Floor, City Hall  
414 East 12<sup>th</sup> Street  
Kansas City, Missouri 64106

Presented by:

**SCS ENGINEERS**  
10975 El Monte, Suite 100  
Overland Park, Kansas 66211  
(913) 451-7510

February 11, 2008  
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Offices Nationwide  
[www.scsengineers.com](http://www.scsengineers.com)



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**Presented By:**

**SCS ENGINEERS**  
10975 El Monte, Suite 100  
Overland Park, KS 66211  
(913) 451-7510

**In Association With:**

**Franklin Associates**  
A Division of ERG  
4121 W. 83rd Street, Suite 108  
Prairie Village, KS 66208  
(913) 649-2225

**Mustardseed Cultural and  
Environmental Services**  
606 East 66th Street  
Kansas City, Missouri 64131  
(816) 333-2480

**Timlis Arketekcher, Inc.**  
4609 Paseo Boulevard, Suite 100  
Kansas City, MO, 64110  
(816) 861-4900

**Valdés & Moreno, Inc.**  
1600 Genesee, Suite 630  
Kansas City, MO, 64102  
(816) 221-6700

**Jane Mobley Associates**  
4116 West 3rd Street, Suite 102  
Kansas City, MO, 64105  
(816) 472-1930

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## 1 INTRODUCTION

Kansas City residents generate more than one million pounds of trash per day. Landfilling has been the traditional disposal option for the Kansas City region. However, permitted landfill capacity in the area is decreasing. In the past, Kansas City has relied on three available landfills: Forest View, Courtney Ridge and Johnson County. Forest View closed in 2006, three years earlier than was expected. The closing of a landfill creates a domino effect. In this case:

- The trash that was going to Forest View started going to Johnson County and Courtney Ridge.
- When a landfill in nearby Lee's Summit closes (as early as 2014), that trash will likely go to Courtney Ridge.
- When the Johnson County Landfill closes, some of that trash will go to Courtney Ridge and some will go to Hamm Quarry in Kansas.

Courtney Ridge has been projected to remain open until 2026, but with the increase in new trash coming in, it may close sooner.

Typically, it takes 10-15 years to site and build a new landfill. Currently no new local landfills are planned in the region. The next two closest landfills are privately owned – Show Me Regional in Warrensburg, Missouri, and Hamm Quarry located outside Lawrence, Kansas.

When local landfills close, Kansas City will have to ship its trash farther away, which means more money is spent on fuel, driver salaries, and general truck maintenance. As a result, the City estimates trash collection costs could increase anywhere from 45 percent to 73 percent. This could lead to the elimination of programs and services as well as to additional disposal fees for area residents and businesses.

Long-range planning is essential for achieving a cost-effective solid waste management system.

The purpose of this background document is to set the stage for the planning process and the evaluation of alternative solid waste management methods. This document will provide City residents, businesses, and officials with an understanding of solid waste management issues. This document is organized as follows:

- Section 2 of this document characterizes the quantity of municipal solid waste generated in Kansas City and projects the amount of municipal solid waste that will require management for the next 20 years.
- Section 3 provides an overview of the Federal, State, and Local rules, regulations, statutes, codes, ordinances and policies governing how solid wastes are managed.
- Section 4 describes the existing collection, processing, transfer, and disposal infrastructure.

- Section 5 provides an overview of expenditures and revenues for the various solid waste and recyclables collection programs operated by the City. The section also projects future solid waste management costs that could be experienced by the City as landfills in the region begin to close.
- Section 6 compares the City's solid waste management programs and services to six other comparable municipalities.
- Section 7 provides an overview of the public involvement strategies that were used to gather information on public perceptions and opinions regarding current solid waste management programs and future options.

## 2 CURRENT AND FUTURE MUNICIPAL SOLID WASTE MANAGEMENT NEEDS

### INTRODUCTION

To evaluate current municipal solid waste (MSW) management needs for Kansas City, Missouri, data were collected from City staff as well as private solid waste and recyclable material haulers and processors. These data provided the basis for estimating the quantity of municipal solid waste collected for disposal and recycling from fiscal year 2001 through fiscal year 2007.<sup>1</sup> Generation of solid waste for each year was then estimated by summing disposal plus recycling and composting (solid waste collected for disposal plus recovered materials collected for processing equals generation).

Projected quantities of MSW collected for disposal and recovery through recycling and composting were forecast for the years 2010 to 2030 for the evaluation of future MSW management needs, including interim years of 2012, 2017, 2022, and 2027.

Disposal, recovery through recycling and composting, and generation are estimated separately for the residential and commercial solid waste streams.

### MUNICIPAL SOLID WASTE

The basic model development approach estimating MSW collected for disposal and recovery for the period FY 01 through FY 07 (calendar years 2000 through 2006) is summarized below. Data needed for the analysis included population and City and private industry collection data.

#### **Kansas City Population**

The Mid-America Regional Council (MARC) prepared population data based on the 2000 U.S. Census information for 2000 to 2030. The Kansas City Planning and Development Department then tailored this data to the Kansas City city boundaries based on U.S. census tracts (and partial tracts) within city boundaries. The City *total population* is shown in Table 1 for the years 2000 through 2006.

The Kansas City Planning Department also periodically prepares population data for dwelling units by collection district, thus deducting the population in apartments and other multi-family units that are not served by the solid waste city contract or city collection of solid waste. The *population served* by the solid waste city contract and the city collection program is shown in Table 1.

The population in apartments and multi-family units, also shown in Table 1, was calculated as the difference between the city total population and the population served by the solid waste city contract or the city collection program.

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<sup>1</sup> Fiscal year (FY) is May 1 to April 30. Calendar year data are for the year before the FY. For example, FY 2004 represents 2003 calendar year data. (Since a fiscal year includes eight months of the previous calendar year, the City's data for each fiscal year to represent the previous calendar year was used.)

**Table 1. Population within Kansas City, Missouri City Limits, 2000 – 2006**

	2000	2001	2002	2003	2004	2005	2006
KC Population Served by the Solid Waste City Contract or the City Collection Program	401,565	403,092	404,619	406,146	407,673	409,200	410,727
KC Population in Multi-family Dwelling Units *	39,980	39,688	38,904	37,238	36,081	35,114	36,579
<b>Total Population</b>	<b>441,545</b>	<b>442,780</b>	<b>443,523</b>	<b>443,384</b>	<b>443,754</b>	<b>444,314</b>	<b>447,306</b>

\*Population in Multi-family dwelling units serviced by private solid waste haulers. Multi-family units include those with more than six units per dwelling.

Source: U.S. Census Bureau population estimates.

The available detail allowed for the distribution of the total Kansas City population to the City collection districts (North of the Missouri River, City Core, and South Kansas City) for 2000 to 2030 including interim years of 2010, 2012, 2017, 2022, and 2027. Thus, the city population data shown in Table 2 are available in total, as well as the 3 collection districts. The available data also allowed the number of households and population served by the solid waste city contract and the city collection program within the City’s collection districts to be estimated (Table 3).

### Kansas City Population Observations

The total population of Kansas City, Missouri, is growing slowly. For example, population grew from 441,545 in 2000 to 447,306 in 2006, or 1.3 percent. Between 2006 and 2030 the total population growth is estimated to be 6.4 percent. The projected population growth in the Solid Waste Service Areas differs significantly. The total population in the Kansas City North area is projected to grow from 118,635 in 2000 to 179,259 in 2030, or 51.1 percent. By contrast, the Kansas City South area is projected to decline from 110,981 in 2000 to 102,375 in 2030, a decline of 7.8 percent. Finally, the Kansas City core area is projected to decline from 211,929 in 2000 to 194,398 in 2030, a decline of 8.3 percent. (See Table 2).

**Table 2. Total Population within the Kansas City, Missouri City Limits, 2000 - 2030**

	Population							
	2000	2010	2012	2017	2020	2022	2027	2030
KC North - Clay Co.	84,009	100,911	103,633	110,437	114,520	117,112	123,594	127,483
KC North - Platte Co.	34,626	40,981	42,097	44,888	46,562	47,605	50,212	51,777
<i>Subtotal KC North</i>	118,635	141,892	145,730	155,325	161,082	164,717	173,806	179,259
KC Core - Jackson Co.	211,929	207,240	205,940	202,689	200,739	199,471	196,300	194,398
South KC - Jackson Co.	110,877	109,110	108,385	106,572	105,485	104,845	103,247	102,288
South KC - Cass Co.	104	97	96.0	93	91	91	89	87
<i>Subtotal South KC</i>	110,981	109,208	108,482	106,666	105,576	104,936	103,336	102,375
<b>TOTALS</b>	<b>441,545</b>	<b>458,340</b>	<b>460,151</b>	<b>464,679</b>	<b>467,396</b>	<b>469,124</b>	<b>473,442</b>	<b>476,033</b>

Source: Mid-America Regional Council forecasts (2010, 2020, and 2030) adapted by the Kansas City Planning and Development Department. Interpolations by Franklin Associates, A Division of ERG for 2012, 2017, 2022, and 2027.

**Table 3. Households and Population in Occupied Housing Units within the Kansas City, Missouri City Limits Subject to City Collection Contracts, 2000 – 2030**

	Households and population in occupied housing units							
	2000	2010	2012	2017	2020	2022	2027	2030
Kansas City North								
Households	45,716	53,280	55,077	59,570	62,265	64,060	68,547	71,239
Population	107,893	129,044	132,535	141,261	146,496	149,803	158,069	163,028
Kansas City Core								
Households	92,899	82,238	82,422	82,883	83,160	83,347	83,815	84,096
Population	192,740	188,475	187,293	184,337	182,563	181,410	178,526	176,796
South Kansas City								
Households	45,398	43,730	43,739	43,762	43,775	43,785	43,810	43,825
Population	100,932	99,320	98,659	97,007	96,016	95,434	93,979	93,106
Totals								
Households	184,013	179,248	181,238	186,214	189,200	191,192	196,171	199,159
Population	401,565	416,839	418,487	422,605	425,075	426,646	430,574	432,930

Sources: U.S Census Bureau household population estimates.  
Mid-America Regional Council forecasts (2010, 2020, and 2030) adapted by the Kansas City Planning and Development Department.  
Interpolations by Franklin Associates, A Division of ERG.  
Factor of 0.9095 applied to convert total housing units to occupied units.  
U.S Census data on persons per household applied to occupied housing units to obtain population.

**Residential Municipal Solid Waste Fiscal Years 2001 through 2007 (Calendar Years 2000 through 2006)**

The residential municipal solid waste data for the solid waste model for FY 01 to FY 07 was developed as follows:

- Solid waste collection for disposal, plus bulky trash collection, and illegal dumping for the area served directly by the City were provided by the Solid Waste Division of the Public Works Department.
- Also, the solid waste collection for disposal for the north and south contract areas was provided by the Solid Waste Division based on Deffenbaugh Industries, Inc. reports to the City.
- Curbside recycling collection data and composition data was provided by Deffenbaugh Industries, Inc. to the Solid Waste Division. This data also was directly acquired from Deffenbaugh Industries, Inc.
- Solid waste collection data for homes associations and multi-family dwelling units not served by the City was calculated based on pounds per person per day waste generation for the collection areas served by the Solid Waste Division. A generation factor, instead of a discard factor, was used to estimate the quantity of solid waste collected from these generators since, for the most part, curbside recyclable materials collection is not available to these dwelling units.

- Other recycling data were based on limited data from Abitibi Recycling, Bridging the Gap, and the yard waste composting program. Estimates were made for years not available from Abitibi, Bridging the Gap, or the Solid Waste Division.

Once the basic data were in place (population, solid waste collection for disposal, recyclable materials collection, and yard waste composting), the generation of residential solid waste was calculated. (Note: generation equals collection for disposal plus recovery through recycling and composting). Generation estimates were calculated in tons per year and converted to pounds per person per day. Table 4 shows the residential portion of the solid waste stream.

### **Residential Municipal Solid Waste Projections 2006 through 2030**

Projections of residential solid waste collected for disposal, recovered through recycling and composting, and generation were carried out for 2010, 2012, 2017, 2020, 2022, 2027 and 2030.

An initial examination of the historical data in Table 4 would lead to the conclusion that solid waste collected for disposal is declining and that recyclable materials collection is continually rising. To develop projections for 2012, 2017, 2022, 2027, and 2030, the data for the first four months of FY 08 were examined and compared to the same months of FY 07. The findings were as follows:

- Curbside collection of recyclable materials remained essentially flat in FY 08 compared to FY 07 (up less than 1 percent year to year).
- By contrast, the collection of solid waste for disposal in the two Deffenbaugh collection districts was up by 5.9 percent during the same time period.
- Since generation is the sum of disposal plus recovery through recycling and composting, a larger increase in the amount of solid waste collected for disposal compared to the increase in the amount recovered through recycling indicates that total generation is growing again now that the City's curbside program has been fully established.

While the four months time frame is limited, it was concluded that future solid waste generation is most likely to increase. Thus, to be conservative, the growth rates in generation were adjusted as shown in Tables 5 and 6 and described below.

Generation estimates were projected based on population and pounds per person per day. The per capita waste generation for future years was derived from a long term trend in MSW for the U.S., using an average per capita generation rate increase of 0.68 percent per year. Note that the data were developed for City based collection and multi-family buildings that are served by commercial haulers.

**Table 4. Residential Solid Waste Collected for Disposal, Recovered for Recycling and Composting, and Generated in Kansas City, Missouri, 2000 – 2006**

Calendar Year	2000	2001	2002	2003	2004	2005	2006
City Fiscal Year	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
<b>Solid Waste Collected for Disposal (tons)</b>							
City Core - City collection	51,970	52,381	52,467	51,595	41,302	33,838	30,727
North of River - Deffenbaugh	41,740	44,015	43,759	42,742	35,790	33,031	33,979
South KC - Deffenbaugh	36,170	43,368	41,781	39,422	33,838	30,732	29,293
Bulky trash	9,342	14,110	18,062	16,775	21,030	24,944	23,141
Illegal Dumping	NA	NA	NA	1,876	3,358	2,633	2,724
Homes Associations (1)	7,665	7,665	7,665	7,665	7,540	7,540	7,540
Total City Collected and Contracted	146,887	161,539	163,734	160,075	142,858	132,718	127,404
Commercial collection - multi-family household trash (2)	16,417	16,297	15,975	15,291	14,816	14,419	15,020
Total City and Commercial Collection	163,304	177,836	179,709	175,366	157,674	147,137	142,424
<b>Solid Waste Collected for Recycling and Composting (tons)</b>							
Curbside collection - contract	0	0	0	600	11,204	17,493	18,987
Drop-off sites (3)	4,500	5,946	6,574	8,100	10,200	8,752	8,866
Yard waste collected for composting	NA	NA	NA	2,916	2,354	1,711	3,473
Total Recycling and Composting	4,500	5,946	6,574	11,616	23,758	27,956	31,326
<b>Solid Waste Generation (tons) (4)</b>							
Generation - City Service Area	151,387	167,485	170,308	171,691	166,616	160,674	158,730
Generation - Total Residential	167,804	183,782	186,283	186,982	181,432	175,093	173,750
Recycling Rate - Total Residential	2.7%	3.2%	3.5%	6.2%	13.1%	16.0%	18.0%
<b>City Service Area</b>							
Generation	151,387	167,485	170,308	171,691	166,616	160,674	158,730
Population	401,565	403,092	404,619	406,146	407,673	409,200	410,727
Generation (5) Lb/person/day	2.07	2.28	2.31	2.32	2.24	2.15	2.12
<b>Total Residential</b>							
Generation	167,804	183,782	186,283	186,982	181,432	175,093	173,750
Population	441,545	442,780	443,523	443,384	443,754	444,314	447,306
Generation (5) lb/person/day	2.08	2.27	2.30	2.31	2.24	2.16	2.13

(1) Quantity of solid waste collected for disposal calculated at 2.25 pounds per person per day.

(2) Quantity of solid waste collected for disposal calculated at 2.25 pounds per person per day. Multi-family households with six or more units per dwelling.

(3) Estimated from limited drop-off collection site data.

(4) Generation equals disposal plus recycling and composting.

(5) 365 days per year.

Note: Fiscal Year is May 1 to April 30. Calendar year data is for year before FY, e.g., FY 04 is treated as equal to 2003 calendar year data.

For future years three scenarios were applied for recycling and composting. Scenario 1 assumed the FY 07 recovery through recycling and composting rate of 18 percent for all years and Scenario 2 assumed that the tonnage of recyclable material collected curbside would increase, on a per capita basis, by 50 percent over the period 2010 to 2017. After 2017 the recovery rate then leveled out at 25.8 percent. Scenario 3 increases the recovery through recycling for years 2020 through 2030 to the level necessary to hold the quantity of solid waste collected for disposal constant at the 2017 level. The recycling rate, under Scenario 3, would need to increase to 33.6 percent by 2030.

### **Residential municipal solid waste projections: Scenario 1**

Solid waste generation is a product of population as the main driver and increased economic activity. The average annual increase is small on a per capita basis (0.68 percent per year) on a national basis. As a consequence, the growth of total solid waste generated in Kansas City, Missouri, is projected to grow by 30 percent between 2006 (FY 07) and 2030. The amount collected for disposal is projected to grow by 30 percent (see Table 5). Since the recovery rate was held steady at 18 percent, there was also an increase of 30 percent from 2006 (FY 07) to 2030 under this scenario.

### **Residential municipal solid waste projections: Scenario 2**

In Scenario 2 (Table 6) curbside collection is projected to increase, on a per capita basis, by 50 percent over the period 2010 to 2017. In this case total generation remains the same as in Scenario 1. However, collection for disposal *decreases* by 3.7 percent while recycling tonnage increases by 52.1 percent between 2010 and 2017.

### **Residential municipal solid waste projections: Scenario 3**

In Scenario 3 (Table 7), solid waste generation remains the same as Scenarios 1 and 2. However, in this scenario, the quantity of solid waste collected for disposal was held at the 2017 level for the years 2020 through 2030. As a result of holding the disposal quantities constant the recycling rate would need to increase from 25.8 percent in 2017 to 27.7 percent in 2020, and to 33.6 percent in 2030. The quantity of materials collected for recycling increases from 51,994 tons in 2017 to 75,974 tons in 2030 (a 46 percent increase).

### **Residential Municipal Solid Waste Observations**

Kansas City residential solid waste management has changed significantly since the introduction of the curbside recycling program. Initially, there has been some diversion of waste over and above the curbside recyclables collection (see Figures 1 and 2). However, the projection in FY 08 collection for disposal is now increasing over FY 07, and the trend will continue into the future.

An alternative way of presenting the data is to express the generation, recovery through recycling and composting, and disposal in tons per day (a common measurement for day-to-day operations in solid waste management). Shown in Table 8, the residential solid waste collected for disposal under Scenario 2 ranges from 390 to about 430 tons per day between 2006 and 2022.

**Table 5. Scenario 1: Projected Residential Solid Waste Collected for Disposal, Recovered for Recycling and Composting, and Generated in Kansas City, Missouri, 2006 – 2030**

	2006	2010	2012	2017	2020	2022	2027	2030
<b>Solid Waste Collected for Disposal (tons)</b>								
Total City Collected and Contracted (1)	127,404	138,540	140,990	147,290	151,180	153,820	160,580	164,780
Commercial collection - multi-family household trash (2)	15,020	17,200	17,500	18,280	18,770	19,090	19,930	20,450
Total City and Commercial Collection (3)	142,424	155,740	158,490	165,570	169,950	172,910	180,510	185,230
<b>Solid Waste Collected for Recycling and Composting (tons) (4)</b>								
Total Recycling and Composting	31,326	34,190	34,790	36,340	37,310	37,950	39,630	40,660
<b>Solid Waste Generation (tons) (5)</b>								
Generation - City Service Area	158,730	172,730	175,780	183,630	188,490	191,770	200,210	205,440
Generation - Total Residential	173,750	189,930	193,280	201,910	207,260	210,860	220,140	225,890
Recycling Rate - Total Residential	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
<b>City Service Area</b>								
Generation	158,730	172,730	175,780	183,630	188,490	191,770	200,210	205,440
Population	410,727	416,839	418,487	422,605	425,075	426,646	430,574	432,930
Generation (6) lb/person/day	2.12	2.27	2.30	2.38	2.43	2.46	2.55	2.60
<b>Total Residential</b>								
Generation	173,750	189,930	193,280	201,910	207,260	210,860	220,140	225,890
Population	447,306	458,340	460,151	464,679	467,396	469,124	473,442	476,033
Generation (6) lb/person/day	2.13	2.27	2.30	2.38	2.43	2.46	2.55	2.60

(1) Solid waste collected for disposal equals total solid waste collected for disposal minus solid waste collected from multi-family households.

(2) 2006 solid waste collected for disposal from Table 2-4. 2010 through 2030 solid waste collected for disposal based on per capita generation rate applied to population in multi-family households. Population in multi-family households equals the difference between total population projections (Table 2-2) minus population subject to city collection contracts (Table 2-3). Generation per capita factor was applied since these households do not have access to curbside collection of recyclable materials.

(3) Solid waste collected for disposal equals solid waste generation minus solid waste collected for recycling and composting.

(4) Recovery through recycling and composting held constant at the 2006 rate of 18 percent.

(5) Growth of per capita generation 2006 - 2030 at national residential projected rate of 0.68% applied to population.

(6) 365 days per year.

Note: Calendar year data for 2006 represent fiscal year (FY) 2007.

**Table 6. Scenario 2: Projected Residential Solid Waste Collected for Disposal, Recovered for Recycling and Composting, and Generated in Kansas City, Missouri, 2006 – 2030**

	2006	2010	2012	2017	2020	2022	2027	2030
<b>Solid Waste Collected for Disposal (tons)</b>								
Total City Collected and Contracted (1)	127,404	138,540	136,500	131,636	135,120	137,470	143,520	147,270
Commercial collection - multi-family household trash (2)	15,020	17,200	17,500	18,280	18,770	19,090	19,930	20,450
Total City and Commercial Collection (3)	142,424	155,740	154,000	149,916	153,890	156,560	163,450	167,720
<b>Solid Waste Collected for Recycling and Composting (tons) (4)</b>								
Total Recycling and Composting	31,326	34,190	39,280	51,994	53,370	54,300	56,690	58,170
<b>Solid Waste Generation (tons) (5)</b>								
Generation - City Service Area	158,730	172,730	175,780	183,630	188,490	191,770	200,210	205,440
Generation - Total Residential	173,750	189,930	193,280	201,910	207,260	210,860	220,140	225,890
Recycling Rate - Total Residential	18.0%	18.0%	20.3%	25.8%	25.8%	25.8%	25.8%	25.8%
<b>City Service Area</b>								
Generation	158,730	172,730	175,780	183,630	188,490	191,770	200,210	205,440
Population	410,727	416,839	418,487	422,605	425,075	426,646	430,574	432,930
Generation (6) Lb/person/day	2.12	2.27	2.30	2.38	2.43	2.46	2.55	2.60
<b>Total Residential</b>								
Generation	173,750	189,930	193,280	201,910	207,260	210,860	220,140	225,890
Population	447,306	458,340	460,151	464,679	467,396	469,124	473,442	476,033
Generation (6) lb/person/day	2.13	2.27	2.30	2.38	2.43	2.46	2.55	2.60

(1) Solid waste collected for disposal equals total solid waste collected for disposal minus solid waste collected from multi-family households.

(2) 2006 solid waste collected for disposal from Table 2-4. 2010 through 2030 solid waste collected for disposal based on per capita generation rate applied to population in multi-family households. Population in multi-family households equals the difference between total population projections (Table 2-2) minus population subject to city collection contracts (Table 2-3). Generation per capita factor was applied since these households do not have access to curbside collection of recyclable materials.

(3) Solid waste collected for disposal equals solid waste generation minus solid waste collected for recycling and composting.

(4) Recovery through recycling and composting assumed to increase by 50 percent on a per capita basis between 2010 and 2017.

(5) Growth of per capita generation 2006 - 2030 at national residential projected rate of 0.68% applied to population.

(6) 365 days per year.

Note: Calendar year data for 2006 represent fiscal year (FY) 2007.

**Table 7. Scenario 3: Projected Residential Solid Waste Collected for Disposal, Recovered for Recycling and Composting, and Generated in Kansas City, Missouri, 2006 – 2030**

	2006	2010	2012	2017	2020	2022	2027	2030
<b>Solid Waste Collected for Disposal (tons)</b>								
Total City Collected and Contracted (1)	127,404	138,540	136,500	131,636	131,636	131,636	131,636	131,636
Commercial collection - multi-family household trash (2)	15,020	17,200	17,500	18,280	18,770	19,090	19,930	20,450
Total City and Commercial Collection (3)	142,424	155,740	154,000	149,916	149,916	149,916	149,916	149,916
<b>Solid Waste Collected for Recycling and Composting (tons) (4)</b>								
Total Recycling and Composting	31,326	34,190	39,280	51,994	57,344	60,944	70,224	75,974
<b>Solid Waste Generation (tons) (5)</b>								
Generation - City Service Area	158,730	172,730	175,780	183,630	188,490	191,770	200,210	205,440
Generation - Total Residential	173,750	189,930	193,280	201,910	207,260	210,860	220,140	225,890
Recycling Rate - Total Residential	18.0%	18.0%	20.3%	25.8%	27.7%	28.9%	31.9%	33.6%
<b>City Service Area</b>								
Generation	158,730	172,730	175,780	183,630	188,490	191,770	200,210	205,440
Population	410,727	416,839	418,487	422,605	425,075	426,646	430,574	432,930
Generation (6) Lb/person/day	2.12	2.27	2.30	2.38	2.43	2.46	2.55	2.60
<b>Total Residential</b>								
Generation	173,750	189,930	193,280	201,910	207,260	210,860	220,140	225,890
Population	447,306	458,340	460,151	464,679	467,396	469,124	473,442	476,033
Generation (6) lb/person/day	2.13	2.27	2.30	2.38	2.43	2.46	2.55	2.60

(1) Solid waste collected for disposal equals total solid waste collected for disposal minus solid waste collected from multi-family households. Disposal tonnage held constant 2017 through 2030.

(2) 2006 solid waste collected for disposal from Table 2-4. 2010 through 2030 solid waste collected for disposal based on per capita generation rate applied to population in multi-family households. Population in multi-family households equals the difference between total population projections (Table 2-2) minus population subject to city collection contracts (Table 2-3). Generation per capita factor was applied since these households do not have access to curbside collection of recyclable materials.

(3) Solid waste collected for disposal equals solid waste generation minus solid waste collected for recycling and composting. Disposal tonnage held constant 2017 through 2030.

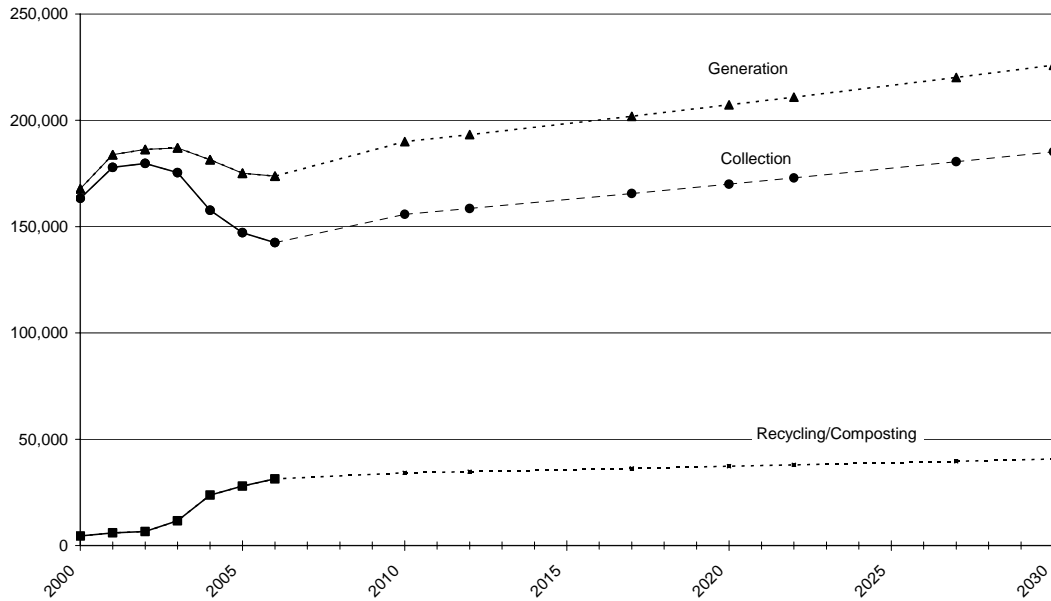
(4) Recovery through recycling and composting assumed to increase by 50 percent on a per capita basis between 2010 and 2017.

(5) Growth of per capita generation 2006 - 2030 at national residential projected rate of 0.68% applied to population.

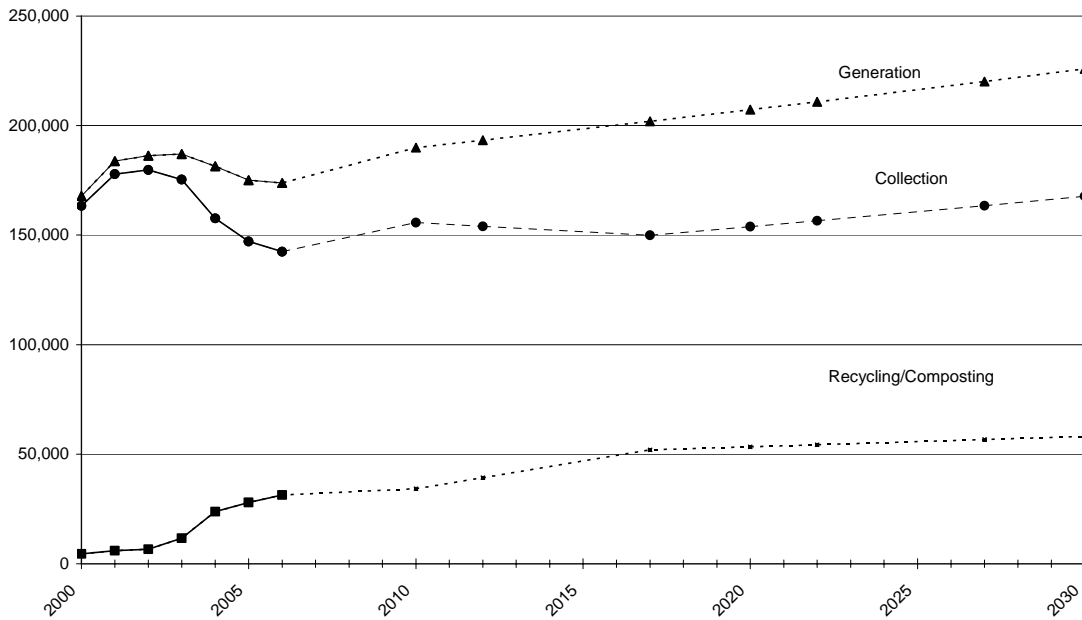
(6) 365 days per year.

Note: Calendar year data for 2006 represent fiscal year (FY) 2007.

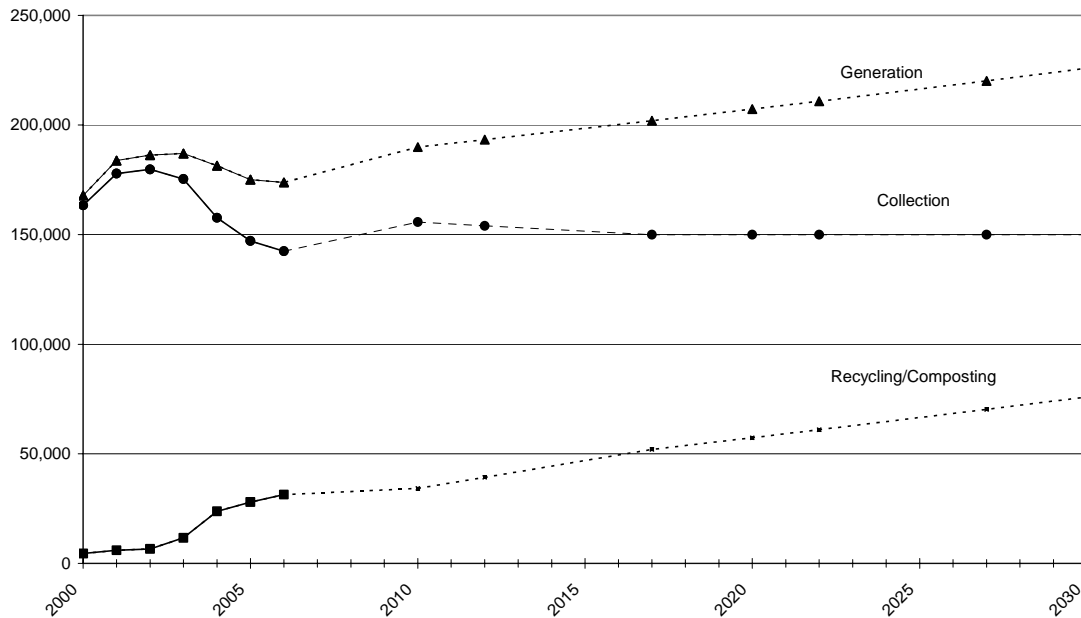
**Figure 1. Kansas City Residential Trash Management: Scenario 1  
(tons per year from 2000 to 2030)**



**Figure 2. Kansas City Residential Trash Management: Scenario 2  
(tons per year from 2000 to 2030)**



**Figure 3. Kansas City Residential Trash Management: Scenario 3 (tons per year from 2000 to 2030)**



**Table 8. Generation, Recovery, and Disposal of Residential Waste for Selected Years 2000 to 2022 (In tons per day)(1)(2)**

Residential Waste	2000	2003	2006	2012	2017	2022
Generation	460	512	476	529	553	578
Recovery	12	32	86	107	142	149
Disposal	448	480	390	422	411	429

(1) Tables 2-4 and 2-6 (Scenario 2).  
(2) Calculation based on 365 days per year.

### Commercial Solid Waste

Commercial solid waste is handled by private industry waste haulers and recycling organizations. It is virtually impossible to obtain actual data from these organizations despite efforts to do so. Therefore, the development of the commercial waste disposal, recovery through recycling, and generation estimates in Kansas City, Missouri, was based on a number of other factors.

First, it is important to note that commercial waste is waste derived from businesses, shopping centers, government buildings, schools, colleges, hospitals, retirement homes, other institutions, restaurants, office buildings, and a variety of other sources. Commercial waste has similar

characteristics to residential waste, as will be noted in the section on solid waste composition. Commercial waste does not include industrial waste, sewage sludges or a variety of other “special” wastes (e.g., hazardous wastes).

### **Commercial Municipal Solid Waste Fiscal Years 2001 through 2007 (Calendar years 2000 to 2006)**

The approach to determining commercial solid waste disposal, recovery through recycling, and generation was as follows. First, sampling studies typically show that, in urban settings, the commercial sector waste is a higher percentage of total MSW than residential waste. Kansas City, Missouri, is no exception. A review of U.S. Census data on the net increase in daily population in Kansas City, Missouri, from workers commuting into the city was over 100,000 people in 2000. This increase in population results in additional commercial MSW generation.

In the fall of 2006 and spring of 2007, the Mid-America Regional Council (MARC) and the Johnson County Environmental Department hired Engineering Solutions & Design, Inc. (ES&D) to conduct a waste composition study at three of the Johnson County solid waste facilities. During the fall study, ES&D conducted a truck survey to assess the origin of solid waste entering the Johnson County Landfill, Inc. The results of that survey estimated that 53 percent of the MSW collected in Missouri for disposal was from the commercial sector and 47 percent is from the residential sector.

These percentage factors were then applied to the quantities of residential solid waste collected for disposal in 2000 through 2003 shown in Table 4 to determine the quantity collected from the commercial sector.

In 2004, the City implemented a volume-based pay structure, which reduced the amount of residential waste collected for disposal. The volume-based pay structure would not, however, impact the commercial solid waste stream. To compensate for the reduction in residential waste, a new methodology was required to calculate the commercial sector for years 2004 through 2006. For these years, the amount of commercial solid waste was calculated using the average annual rate of change (in total tons collected) from 2000 through 2003.

It was further estimated that the commercial recycling rate in Kansas City was similar to the rate developed for Johnson County in the Johnson County SWM Plan (30.4 percent in 2005). For 2000 through 2004 and 2006, the 2005 commercial recycling rate was adjusted either upward or downward based on the rate of change in the national recycling rate for the corresponding years.

MSW generation estimates were then calculated by summing the disposal and recovery through recycling estimates.

Table 9 summarizes the commercial portion of the MSW stream.

**Table 9. Commercial Solid Waste Collected for Disposal, Recovered for Recycling, and Generated in Kansas City, Missouri, 2000 – 2006**

Calendar Year	2000	2001	2002	2003	2004	2005	2006
City Fiscal Year	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
<b>Solid Waste Collected for Disposal (tons)</b>							
Private Collection	184,151	200,540	202,652	197,752	202,620	207,609	212,720
<b>Solid Waste Collected for Recycling (tons)</b>							
Private Collection	72,154	80,976	81,785	83,160	84,704	90,680	96,969
<b>Solid Waste Generation (1) (tons)</b>							
Total Commercial	256,305	281,516	284,437	280,912	287,324	298,289	309,689
Recycling Rate - Total Commercial	28.2%	28.8%	28.8%	29.6%	29.5%	30.4%	31.3%
Population	441,545	442,780	443,523	443,384	443,754	444,314	447,306
Generation (2) lb/person/day	3.18	3.48	3.51	3.47	3.55	3.68	3.79

(1) Generation equals disposal plus recycling and composting.

(2) 365 days per year.

### Commercial Municipal Solid Waste Projections 2006 through 2030

Projections of commercial solid waste collected for disposal, recovered through recycling, and generation were carried out for 2010, 2012, 2017, 2020, 2022, 2027 and 2030.

Similar to the methodology used to estimate the quantity of commercial solid waste collected for disposal from 2000 to 2006, the method to develop commercial projections was also based on a factor developed from the residential solid waste collected for disposal.

Using the same assumptions from Scenario 1, the commercial municipal solid waste collected for disposal is projected to increase at the same rate as the residential solid waste collected for disposal (Table 5). Since Scenario 1 reflects the status quo (i.e., the recycling rate is held constant at 18 percent), the rate of increase in solid waste collected for disposal is not impacted by increased recovery efforts. This is an important consideration because future quantities of commercial solid waste collected for disposal will not be influenced by expanded residential recovery efforts.

The commercial recycling rate was held constant at the 2006 level (31.3 percent) for all years. Table 10 shows that holding the recycling rate constant results in a 30 percent increase between 2006 and 2030 in each category (commercial solid waste collected for disposal, recovered through recycling, and generated).

**Table 10. Projected Commercial Solid Waste Collected for Disposal, Recovered for Recycling, and Generated in Kansas City, Missouri, 2006 – 2030**

Calendar Year	2006	2010	2012	2017	2020	2022	2027	2030
<b>Solid Waste Collected for Disposal (tons)</b>								
Private Collection	212,720	232,608	236,715	247,290	253,832	258,253	269,604	276,653
<b>Solid Waste Collected for Recycling (tons)</b>								
Private Collection	96,969	106,036	107,908	112,728	115,711	117,726	122,900	126,114
<b>Solid Waste Generation (1) (tons)</b>								
Total Commercial	309,689	338,644	344,623	360,018	369,542	375,978	392,504	402,767
Recycling Rate - Total Commercial	31.3%	31.3%	31.3%	31.3%	31.3%	31.3%	31.3%	31.3%
Population	447,306	458,340	460,151	464,679	467,396	469,124	473,442	476,033
Generation (2) lb/person/day	3.79	4.05	4.10	4.25	4.33	4.39	4.54	4.64

(1) Generation equals disposal plus recycling and composting.  
(2) 365 days per year.

### Commercial Municipal Solid Waste Observations

The recycling rate for commercial municipal solid waste is significantly higher than it is for residential waste. The principal reason is that commercial waste is dominated by paper products such as corrugated containers (boxes), printers waste, and office paper, all of which occur in quantities that encourage generators to accumulate these materials for recycling and consequently lower their solid waste disposal quantities (and costs).

Commercial municipal solid waste collected for disposal and recycling is the primary business of many private solid waste haulers and recyclers. The private haulers and recyclers compete on the basis of cost and service. As a consequence there is more effort by organizations to be cost effective by considering the benefits of treating solid waste management and recycling as an integral part of their operations.

Commercial waste generation, recovery for recycling, and collection for disposal is displayed in tons per day in Table 11. Generation rises from 848 tons per day in 2006 to 1,030 in 2022 while recovery for recycling rises from 266 tons per day to 322 tons per day over the same time period. As a result commercial waste for disposal goes from 582 tons per day in 2006 to 208 tons per day in 2022.

**Table 11. Generation, Recovery, and Disposal of Commercial Waste for Selected Years 2000 to 2022 (In tons per day)(1)(2)**

<b>Residential Waste</b>	<b>2000</b>	<b>2003</b>	<b>2006</b>	<b>2012</b>	<b>2017</b>	<b>2022</b>
Generation	702	770	848	944	986	1,030
Recovery	198	228	266	295	309	322
Disposal	504	542	582	649	677	708

(1) Tables 2-8 and 2-9.

(2) Calculation based on 365 days per year.

### Total Municipal Solid Waste

Table 12 combines data from Tables 4 and 9 for total municipal solid waste disposal, recovery through recycling and composting, and generation.

**Table 12. Solid Waste Collected for Disposal, Recovered for Recycling and Composting, and Generated in Kansas City, Missouri, 2000 – 2006 (1)(2)**

<b>Calendar Year</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>City Fiscal Year</b>	<b>FY 01</b>	<b>FY 02</b>	<b>FY 03</b>	<b>FY 04</b>	<b>FY 05</b>	<b>FY 06</b>	<b>FY 07</b>
<b>Solid Waste Collected for Disposal (tons)</b>							
City plus Private Collection	347,455	378,377	382,362	373,117	360,295	354,746	355,144
<b>Solid Waste Collected for Recycling and Composting (tons)</b>							
City and Private Collection	76,654	86,922	88,359	91,860	106,108	116,925	124,821
<b>Solid Waste Generation (tons)</b>							
Total Residential plus Commercial	424,109	465,299	470,721	464,977	466,404	471,670	479,965
Recycling Rate – Residential plus Commercial	18.1%	18.7%	18.8%	19.8%	22.8%	24.8%	26.0%
Population	441,545	442,780	443,523	443,384	443,754	444,314	447,306
Generation lb/person/day	5.26	5.75	5.81	5.74	5.76	5.82	5.88

(1) Residential plus commercial.

(2) Tables 2-4 and 2-9.

### **Total Municipal Solid Waste Observations**

The combination of residential and commercial solid waste collected for disposal, recovery, and generation gives a total picture of MSW for Kansas City, Missouri. The results show 973 tons per day MSW collected for disposal, 342 tons per day recovery, and 1,315 tons per day generation in 2006. Generation, on a per person basis, equals 5.88 pounds per person per day.

The overall recycling rate for the residential plus commercial solid waste is estimated at 26 percent in 2006. Although the City has management control of the residential solid waste, collection of the commercial solid waste is predominantly a private sector activity.

### **Composition of Municipal Solid Waste Disposed**

One measure of the potential to increase recovery through recyclable materials collection or other means is to review the composition of the solid waste reaching a landfill. In 2006 and 2007 there were waste sorts at three landfills in the Kansas City area. These sorts covered both residential and commercial waste from Missouri cities. Table 13 displays the municipal solid waste composition as determined by these recently conducted waste sort studies.

#### **Composition of residential municipal solid waste disposed**

The residential waste sorts of Missouri waste at the Johnson County, Courtney Ridge, and Lee's Summit landfills show very similar patterns (Table 13). Paper averages about 34 percent of the total residential solid waste that is sent to landfills. Much of this paper could be recycled – especially newspapers, office paper, corrugated paper (boxes), and magazines. (The influence of the City's curbside program could not be evaluated directly, but there is certainly a significant amount of paper still available even with the curbside program in place.)

The amount of paper, plastics, glass, and metals constitutes about 60 percent of the total amount of wastes disposed.

#### **Composition of commercial municipal solid waste disposed**

The analysis of commercial solid waste loads at the Johnson County Landfill showed that Missouri commercial solid waste is nearly 50 percent paper. As expected, office paper and corrugated paper (boxes) are dominant constituents of paper. While plastics are similar to residential waste, metals and glass are significantly lower. The potential for more paper recovery is significant.

**Table 13. Municipal Solid Waste Composition as Determined by Regional Waste Sort Studies (Percent by weight of total sample)**

<b>Material Category</b>	<b>Johnson County Landfill, Inc. Missouri Commercial Waste Loads (1)</b>	<b>Johnson County Landfill, Inc. Missouri Residential Waste Loads (1)</b>	<b>Courtney Ridge Landfill (2)</b>	<b>Lee's Summit Landfill (2)</b>
Newspaper	2.80	6.13	5.60	6.20
Office Paper	12.13	2.19	8.00	5.96
Corrugated Containers	14.47	6.99	8.86	8.00
Magazines	4.65	3.35	3.07	4.23
Other Paper	15.34	16.26	8.64	9.29
<b>TOTAL PAPER PRODUCTS</b>	<b>49.39</b>	<b>34.92</b>	<b>34.17</b>	<b>33.68</b>
PET #1	2.17	2.05	2.72	2.34
HDPE #2	1.08	1.83	2.01	2.12
Film and Bags	6.04	4.83	5.13	3.55
Other Plastics	5.60	6.49	6.97	8.27
<b>TOTAL PLASTICS</b>	<b>14.89</b>	<b>15.21</b>	<b>16.83</b>	<b>16.28</b>
Steel	0.85	2.08	3.48	2.41
Aluminum	1.18	1.64	1.79	1.44
Other Metals	0.22	1.03	1.75	0.87
<b>TOTAL METALS</b>	<b>2.26</b>	<b>4.76</b>	<b>7.02</b>	<b>4.72</b>
Glass Containers	2.85	6.23	5.99	4.11
Other Glass	0.04	0.41	0.15	0.24
<b>TOTAL GLASS</b>	<b>2.89</b>	<b>6.64</b>	<b>6.14</b>	<b>4.35</b>
Diapers	2.39	3.34	7.31	5.47
Food	18.19	18.75	13.15	18.15
Textiles/Rubber/Leather	4.75	7.87	4.42	6.11
Wood	0.65	1.23	0.74	1.56
Yard Waste	4.59	7.28	*	*
<b>TOTAL ORGANICS</b>	<b>30.57</b>	<b>38.47</b>	<b>30.30</b>	<b>34.73</b>
<b>TOTAL INORGANICS</b>	**	**	<b>3.48</b>	<b>4.52</b>
<b>SPECIAL WASTES</b>	**	**	<b>2.06</b>	<b>1.70</b>
<b>TOTAL</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

\* Not reported in this sampling program.

\*\* Not reported in this sampling program.

(1) Engineering Solutions & Design, Inc. "Johnson County Solid Waste Analysis Final Report". September 15, 2007. <http://jced.jocogov.org>

(2) MSW waste sort data Fall 2006 and Spring 2007. Preliminary tables. Provided by Midwest Assistance Program. September 2007.

### Recyclable Materials Composition of the Curbside Collection Program

Deffenbaugh Industries, Inc., by agreement with Kansas City Public Works Department Solid Waste Division, began reporting the composition of the curbside collection materials in October 2005. These data are reported monthly for the following materials: newspapers, mixed paper, corrugated containers (boxes), plastic, steel, and aluminum. In discussions with Deffenbaugh, it was learned that the data reported reflect the average for the materials entering the material recovery facility (MRF). While the composition is likely close to the Kansas City actual composition, it is not based on actual samples of the Kansas City curbside collection materials. The summary shown in Table 14 is the average composition of recyclable materials collected through curbside collection programs.

**Table 14. Reported Recyclable Material Composition of the Kansas City, Missouri Curbside Collection Program (Percent by weight)**

<b>Material Category</b>	<b>Percent of Total</b>
Newspaper	65.1
Mixed Paper	18.6
Corrugated Containers (Boxes)	9.3
<i>Total Paper</i>	<i>93.0</i>
Plastic	3.5
Steel	2.5
Aluminum	1.0
Total	100

Source: Deffenbaugh Industries, Inc.

The recyclables are dominated by paper at 93 percent of the total. This is simply a reflection of the fact that paper products are also dominant in households, while packaging materials (i.e., PET, HDPE, and steel and aluminum cans) are a minor portion (by weight) that can be targeted for recovery.

A correlating observation is that the landfill composition studies conducted in 2006 and 2007 (Table 13) indicate that paper and plastics are still dominant in the discarded waste. This suggests that the curbside program could be much more successful via actions that increase paper and other recyclable material recovery.

### Municipal Solid Waste Composition Observations

The composition surveys of Missouri solid waste delivered for disposal show that a significant quantity of materials that are readily recyclable are present, especially paper – the dominant category. Although the surveys did not specify Kansas City, Missouri, it can be concluded that the existing curbside program still leaves a significant amount of solid waste that could be recycled.

## Summary

- The Kansas City population is growing slowly, projected to increase 6.4 percent between 2006 and 2030. The area north of the river is growing while the city center and south areas are in decline.
- The introduction of the curbside recycling program led to a significant decline in the residential waste collected for disposal. However, it is anticipated that residential waste collected for disposal will resume its growth pattern while the percentage of recyclables collected will stabilize.
- Residential waste generation will grow from 2.13 pounds per person per day in 2006 to 2.6 pounds per person per day in 2030.
- Waste recovered for recycling, under an accelerated curbside program, will lead to about 429 tons per day (1.8 pounds per person per day) needing to be managed for disposal in 2030.
- Commercial waste is managed by the private sector haulers and recyclers.
- Commercial waste generation, recycling, and disposal quantities exceed residential solid waste and commercial waste has significant potential for increased recycling in the future because of the paper component (e.g., corrugated containers and office papers).
- The composition of residential and commercial solid waste delivered to landfills shows that significant additional recovery for recycling is practical.

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### 3 PLANNING FRAMEWORK

The purpose of this section is to identify pertinent regulatory requirements, as well as key policy and planning issues that could affect implementation of the City’s Long-Term Solid Waste Management Strategic Plan. These include other regional solid waste management plans, federal and state laws and regulations that direct solid waste facility design and operation, and local solid waste and zoning ordinances that may relate to siting of solid waste facilities. This section also includes a summary of key contract documents that the City has executed with local haulers and processors. The section ends with an analysis of the City’s solid waste management ordinances.

#### KEY PLANS, STUDIES, AND REPORTS

The following plans and reports that are already in effect or are being developed separately may interact with the City’s Long-Term Solid Waste Management Strategic Plan. The following summarizes the more significant of these and their connection with the City’s plan.

##### Missouri State Solid Waste Management Plan

In 1989, Missouri established an integrated solid waste management hierarchy with the highest priority on waste reduction, recycling, reuse, and composting. The Missouri Solid Waste Management Act was amended in 1990 in order to implement this policy. This legislation set a goal of reducing the amount of solid waste disposed in landfills by 40 percent by 1998. This legislation also allowed counties to form regional solid waste management districts to promote waste reduction and recycling.

The State of Missouri, through the Department of Natural Resources, developed a plan for the management of solid wastes.<sup>2</sup> The purpose of the Missouri Solid Waste Management Plan is to contribute to the health, well being and quality of life for all Missourians by guiding the development of solid waste management systems which are environmentally and economically sustainable, efficient and effective.

The goals and policies expressed in the state plan establish the framework upon which solid waste systems are administered and implemented throughout the State. Local plans should be consistent with these goals and policies.

##### *Missouri Waste Management Hierarchy*

**First, Reduce** – Efforts to prevent the creation of waste should precede other waste management options that deal with the waste after it is generated, as in recycling. The underlying thought is that solid waste that is not produced does not require management.

**Second, Reuse, Recycle, Compost** – The next level includes reuse, recycling and composting. These techniques have the potential to divert large amounts of waste from disposal and turn them into valuable products. Through these techniques, waste materials can potentially go through several cycles of use, conserving raw materials and energy in the process.

**Third, Energy Recovery** – This level of the hierarchy also uses waste as a resource, but essentially the material can only be used once. The highest use becomes energy production.

**Fourth, Disposal** – After the first three levels of the hierarchy are maximized, there may be residual solid waste left to manage. This material must be disposed of in an environmentally safe manner, through incineration or landfilling at a permitted facility.

<sup>2</sup> Missouri Solid Waste Management Plan, Missouri Department of Natural Resources, November 2005.

The plan outlines core activities that stakeholders involved in development of the plan believe are necessary for effective and efficient solid waste management in Missouri. Implementation of these core activities will reflect the resources available and the most critical issues. The core activities in the Missouri solid waste management plan can be summarized as follows:

- Ensuring that the permit process for solid waste disposal and processing facilities is protective of the environment and public health, provides public participation and provides flexibility, where possible, for the regulated community.
- Providing technical guidance and assistance for the development of markets for recovered materials.
- Providing consistent, fair and thoughtful enforcement of solid waste laws and regulations.
- Eliminating illegal dumping to the greatest extent possible.
- Providing education at all levels to ensure that citizens of Missouri make sound solid waste management choices.
- Ensuring that older facilities do not cause pollution, create a public nuisance or adversely affect the public health, and that corrective action is taken when they do.
- Permitting, enforcement and market development activities to ensure that waste tires are managed in a way that protects public health and the environment, as well as conserving a valuable resource.
- Providing financial and technical assistance to increase the reduction, reuse, recycling, composting, and energy recovery of solid waste.

### **Mid-America Regional Council Solid Waste Management District (MARC SWMD)**

The Mid-America Regional Council Solid Waste Management District (MARC SWMD) is a regional solid waste planning agency for local governments in Cass, Clay, Jackson, Platte, and Ray counties in Missouri and works cooperatively with Johnson, Leavenworth, Miami, and Wyandotte counties in Kansas. The district receives funds from the Missouri Solid Waste Management Fund to reduce the amount of waste entering local landfills.

The MARC SWMD serves as the regional solid waste planning agency and is responsible for developing, adopting, and implementing a solid waste management plan that has been approved by the Missouri Department of Natural Resources. The MARC SWMD last developed a solid waste management plan in 1994. The MARC SWMD holds an annual strategic goal setting session to review current programs, discuss solid waste management objectives, and to plan future goals and priorities. At the 2007 session, the top five solid waste management programs that were identified as priorities included:

- Material recovery facility (MRF) to service the region.

- Continue and expand public/private partnerships to promote waste reduction and recycling initiatives.
- Continue and expand legislative involvement to promote solid waste management issues for the SWMD.
- Promote and expand existing comprehensive school education programs.
- Support regional yard waste composting programs.<sup>3</sup>

MARC SWMD will be soliciting consulting services for two solid waste studies in 2008. The first will provide research and analysis of alternative policies to support long-term, sustainable solid waste management in the Kansas City region. The second will be a study to investigate the feasibility of one (or more) material processing facilities to serve the region.<sup>4</sup>

The district provides direct service to the community through its Regional Household Hazardous Waste (HHW) Collection Program, its Recycling Information Line and RecycleSpot.org (a searchable database of local recyclers).<sup>5</sup> The district also encourages development of local and regional waste reduction, reuse, and recycling programs by providing grants to the public, private and non-profit sectors and conducting solid waste studies.

The Regional HHW Collection Program is coordinated by the MARC SWMD in cooperation with the city of Kansas City, Missouri and the city of Lee's Summit, Missouri. Member communities pay a per capita rate per year for their residents to safely dispose of HHW. Residents can use the permanent facility in Kansas City or Lee's Summit, and attend mobile events at no charge.

The MARC SWMD Grant Program provides grant funds to local governments, private businesses, not-for-profit organizations and individuals for implementing waste reduction, reuse and recycling projects. Any municipality, county, public institution, not-for-profit organization, private business, or individual currently operating in the District is eligible to apply.

Funds can be used for various programs including education, waste reduction, re-use, recycling, composting, collection and processing, research and development and market development for products made with diverted materials. Eleven grants totaling over \$497,000 were approved for funding for 2008. The largest 2008 grant approved (\$250,000) was to Town and Country for a materials recovery facility (MRF).

Two recent projects undertaken by MARC SWMD and MARC are highlighted below.

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<sup>3</sup> 2007 Strategic Goal Setting Session Results, September 2007

<sup>4</sup> Personal communication with Mid-America Regional Council Solid Waste Management District staff. December 2007.

<sup>5</sup> Mid-America Regional Council website. [www.MARC.org](http://www.MARC.org)

## Strategic Directions

The SWMD commissioned a solid waste status report to guide future solid waste planning and decision making and to lay the foundation for regionally integrated solid waste management plans.<sup>6</sup> The report recommends four focus areas:<sup>7</sup>

- Regional Cooperation: work together as a region on solid waste issues.
- Landfill Capacity: new disposal facilities will be needed in the very near future.
- Waste Minimization: increase the amount of waste recovered for reuse, recycling, and composting.
- Local government action: advance programs and policies to promote the sound recovery and disposal of solid waste.

### One KC Voice - Solid Waste Reduction Project

The purpose of the project, which is still in its initial phases, is to understand how and why citizens do or don't participate in waste reduction programs and to figure out how citizens' views can be incorporated into the communications and waste reduction program strategies of the SWMD. One KC Voice will convene a series of approximately 25 small group meetings with citizens to discuss their values and motivations. The outcome is expected to be a series of specific recommendations determined with the help of the public.<sup>8</sup>

Following the citizens meetings, One KC Voice will produce a report that identifies themes that citizens bring to the table. That report will be the basis for discussion guides for a series of five workshops hosted by One KC Voice. The workshops will bring together citizens and professionals to have direct interaction about how the themes from the citizen meetings could be translated into direct action and how professionals and citizens might work together to make an impact.

The results from the workshops will be consolidated into a report for the SWMD to provide guidance on future actions and programs that can have an impact on solid waste reduction.

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<sup>6</sup> *Strategic Directions and Policy Recommendations for Solid Waste Management in the Bistate Kansas City Metropolitan Region*, Franklin Associates, October 2003.

<sup>7</sup> *Solid Waste Policy Discussion Guide*, Mid-America Regional Council Solid Waste Management District.

<sup>8</sup> More information available at [http://www.onekcvoice.org/decide/solid\\_waste1.htm](http://www.onekcvoice.org/decide/solid_waste1.htm)

## **Kansas City**

The following Kansas City policies may affect the Long-Term Solid Waste Management Strategic Plan.

### **Comprehensive Urban Strategy**

FOCUS (Forging Our Comprehensive Urban Strategy) is the City's Comprehensive and Strategic Plan.<sup>9</sup> FOCUS Kansas City started in 1992. Kansas City, like other American cities, was facing a variety of issues such as urban poverty, blight, shifts in the structure of our economy and others. Recognizing that short term solutions to these problems would not provide adequate long term benefits, the Mayor and City Council embarked in a process to identify long-term strategies to address neighborhoods, jobs, education, the expenditure of public funds, and many other issues important to citizens and to the City. The result is the FOCUS Plan, a comprehensive and integrated plan to guide the future of Kansas City for the next 25 years.

The FOCUS Plan was completed in two phases. During Phase I, the Mayor, City Council and the FOCUS Steering Committee guided a citizen participation process, which resulted in a new Policy Plan for Kansas City. The Policy Plan was adopted by the City Council in 1994.

Phase II of the FOCUS Plan started in 1996. In this phase, citizens and civic leaders developed a Comprehensive and Strategic Plan with specific recommendations to implement the vision and policies outlined in Phase I. Given the breadth of issues addressed in Phase I, three types of plans were developed during Phase II: a physical environment plan, a governance plan, and a human investment plan. These plans were coordinated by the FOCUS Steering Committee with the help of citizen-led Work Teams and support from the City Planning & Development Department.

Although each of the plans was prepared independently, their recommendations are coordinated through twelve over-arching strategies, called the FOCUS Building Blocks. These twelve strategies are intended to guide the implementation of the FOCUS Plan. One of these strategies is "Investing in Critical Resources." This strategy clarifies the responsibilities of Kansas City government as an institution within the community. These fundamental responsibilities are:

- To protect the lives and property of Kansas Citians.
- To be responsible stewards of the public's capital assets.
- To safeguard the natural environment.

Phase II of the plan along with the implementation strategies were adopted by the City Council in October of 1997.

### **Land Use Plans**

Almost everywhere within the City, there is a development plan or a land use plan that has been adopted by the City Council that makes recommendations on how the land should be used in the future. The recommendations are generally made after public hearings and a review of current land use, looking at what uses would be compatible located next to each other, what kind of

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<sup>9</sup> More information available at <http://www.kcmo.org/planning.nsf/focus/home?opendocument>

access is available. The adopted land use plan is public policy that guides public decisions on zoning, rezoning, development and redevelopment of land and can affect placement of facilities recommended as part of the Long-Term Solid Waste Management Strategic Plan.<sup>10</sup>

### **Climate Protection Plan**

On August 17, 2006, the Mayor signed Resolution 060777 directing a Climate Protection Planning process for the City. In April 2007, The Climate Protection Plan Steering Committee issued a progress report and Phase I recommendations. Key recommendations of this report include:<sup>11</sup>

- Adopt a policy that makes climate protection and greenhouse gas reductions a key factor in all decisions and actions by the City.
- Adopt a goal of reducing greenhouse gas emissions from City government operations by 30% below year 2000 levels by the year 2020.
- Continue the planning process throughout 2007.

In addition to these general goals, the report makes numerous specific recommendations for greenhouse gas reductions. With respect to waste management, the report recommends developing a comprehensive solid waste management plan, increasing recycling, “green” procurement, and management of construction and demolition debris.

### **Lee’s Summit Solid Waste Management Plan**

Lee’s Summit developed a solid waste management plan in response to the anticipated closure of the City’s landfill in 2014. As part of the plan development, the city reviewed its existing waste management programs, evaluated options to reduce the amount of waste requiring disposal, and evaluated long-term strategies for disposal of waste after closure of the city’s landfill. The plan also includes a study to characterize C&D wastes disposed at the landfill and analyzed options for future management of C&D wastes. The City of Lee’s Summit currently is implementing key recommendations of the plan, including the addition of a new recycling drop-off facility and the siting of a new landfill.

### **Kansas Solid Waste Management Plans**

The State of Kansas recently updated its solid waste management plan. While the goals and policies established by this plan do not apply to the City of Kansas City, the plan recognizes waste flows originating from Missouri and discusses declining landfill capacity on the eastern part of the state. Policies established for increasing capacity could affect long-term disposal options for the City.

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<sup>10</sup> The City’s proposed land use maps can be found on the City’s website: <http://www.kcmo.org/planning.nsf/plnpres/PropLandUseMaps?opendocument> , published development plans are available at <http://www.kcmo.org/planning.nsf/plnpres/plnpubs?opendocument>

<sup>11</sup> *Progress Report on Climate Protection and Phase I Recommendations*, Kansas City, Missouri, April 2007.

## **Johnson County**

The Johnson County Solid Waste Management Plan, adopted in mid December 2007 by the Board of County Commissioners emphasizes actions to reduce the amount of solid waste flowing to the landfill. In future years, the plan calls for a volume based fee structure (pay-as-you-throw) to be placed on residential solid waste collected for disposal, improved and expanded curbside recycling and composting of yard waste, expanded commercial recycling, and the elimination of curbside collection of yard waste for disposal.

The plan recommends that the County should enter into discussions with local and regional waste haulers, processors, and disposal facility operators to better understand the private sector needs and any future private sector plans to provide additional disposal capacity. In addition, the plan recommends that the County should coordinate with other nearby county and regional partners in evaluating and implementing waste reduction strategies.

The County owns one household hazardous waste facility that collected over 700 pounds per day in 2006. The County does not own or operate any other solid waste management facilities.

The City of Olathe owns and operates a transfer station, a compost facility, and a household hazardous waste facility for its residents.

## **Wyandotte County**

The Unified Government of Wyandotte County and Kansas City, Kansas is currently working under their 2004 solid waste management plan. Under Kansas law, the plan must be comprehensively updated every five years.

The only landfill located in the County, Forest View, is a privately owned facility that closed in December 2006. The Unified Government owns and operates one recyclable materials drop-off site. This community site collected over 1,250 tons per day in fiscal year 2003. The City of Kansas City owns and operates a household hazardous waste facility that managed about 245 pounds per day during the same time period.

Kansas City and Bonner Springs have a long term contract with Deffenbaugh Industries for solid waste collection and disposal through 2013. The contract requires that Deffenbaugh Industries reserves space in the Johnson County Landfill to serve the contractual needs until 2013.

Under a different contracting mechanism, the City of Quivira also contracts with Deffenbaugh Industries for recyclable materials and solid waste collection and disposal. Residents of Edwardsville and the unincorporated areas of the county contract directly for solid waste services.

The 2004 solid waste management plan recommended that the Unified Government provide increased education on the benefits of recycling and promotion of the existing drop-off site. The plan further recommended that the Unified Government survey its residents on the public desire for curbside recycling. In 2008, Unified Government is looking into providing curbside recycling to all residents.

## FEDERAL REQUIREMENTS

Federal laws governing solid waste fall into the categories of waste management (Resource Conservation and Recovery Act), clean air (Clean Air Act), clean water (Clean Water Act), and environmental clean up (Comprehensive Environmental Response, Compensation, and Liability Act). These federal statutes authorize federal agencies, primarily the EPA, to promulgate implementing regulations. Each of these major laws and their implementing regulations are discussed below.

### **Resource Conservation and Recovery Act**

The federal government's role in solid waste management originated in 1965 with the passage of the Solid Waste Disposal Act. The federal role was expanded in 1976 with the promulgation of the Resource Conservation and Recovery Act (RCRA). RCRA set national goals for:

- Protecting human health and the environmental from the potential hazards of waste disposal.
- Conserving energy and natural resources.
- Reducing the amount of wastes generated.
- Ensuring that wastes are managed in an environmentally sound manner.

To achieve these goals, RCRA is divided into four distinct yet interrelated programs. Subtitle C (hazardous waste) and Subtitle D (solid, primarily nonhazardous waste) sets the framework for the federal government's waste management programs. RCRA also regulates underground storage tanks under Subtitle I and medical waste under Subtitle J.

With respect to solid waste management, RCRA encourages states to develop comprehensive plans to manage nonhazardous industrial solid waste and municipal solid waste, sets criteria for municipal solid waste landfills and other waste disposal facilities, and prohibits the open dumping of solid waste by requiring disposal to be in sanitary landfills. The RCRA regulations implementing the solid waste requirements of Subtitle D are contained in Title 40 of the Code of Federal Regulations (CFR) Parts 239 through 259 and are summarized below.

#### **Part 239—Requirements for State Permit Program Determination of Adequacy**

This part specifies the requirements that state permit programs must meet to be determined adequate by the EPA under RCRA and the procedures EPA will follow in determining the adequacy of state Subtitle D permit programs or other systems of prior approval and conditions required to be adopted and implemented by states under RCRA.

#### **Part 240—Guidelines for the Thermal Processing of Solid Wastes**

These guidelines are mandatory only for Federal agencies. They are recommended for State, interstate, regional, and local government agencies for use in their activities.

These guidelines are applicable to thermal processing facilities designed to process or which are processing 50 tons or more per day of municipal-type solid wastes.

The guidelines include requirements that delineate minimum levels of performance required of any solid waste thermal processing operation. They also recommend procedures to suggest preferred methods by which the objectives of the requirements can be realized. The recommended procedures are based on the practice of incineration at large facilities (50 tons per day or more) processing municipal solid waste. If techniques other than the recommended procedures are used or wastes other than municipal wastes are processed, it is the obligation of the facility's owner and operator to demonstrate to that the techniques employed will satisfy the requirements.

Thermal processing residue must be disposed of in an environmentally acceptable manner. Where a land disposal facility is employed, it must be in accordance with the Environmental Protection Agency's Guidelines for the Land Disposal of Solid Wastes for both residues from the thermal processing operation and those non-hazardous wastes which cannot be thermally processed for reasons of health, safety, or technological limitation.

#### **Part 243—Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste**

The guidelines apply to the collection of residential, commercial, and institutional solid wastes and street wastes. They are mandatory for Federal agencies and must be implemented in those situations where the Federal agency is able to exercise direct managerial control over the collection system through operation of the system or by contracting for collection service. Where non-Federal collection systems are utilized, service contracts should require conformance with the guidelines requirements unless service meeting such requirements is not reasonably available. It is left to the head of the responsible agency to decide how the requirements of the guidelines will be met. These guidelines are recommended to State, interstate, regional, and local governments for use in their activities.

#### **Part 246—Source Separation for Materials Recovery Guidelines**

These guidelines are applicable to the source separation of residential, commercial, and institutional solid wastes generated by Federal agencies. These guidelines require source separation of:

- High-grade paper generated by office facilities of over 100 office workers.
- Used newspapers at facilities in which more than 500 families reside.
- Corrugated containers at commercial establishments generating 10 or more tons of waste corrugated containers per month.

### **Part 247—Comprehensive Procurement Guidelines for Products Containing Recovered Materials**

These guidelines designate items that are or can be made with recovered materials and whose procurement by procuring agencies will carry out the objectives of section 6002 of RCRA. EPA's recommended practices with respect to the procurement of specific designated items are found in the companion Recovered Materials Advisory Notice(s).

### **Part 257—Criteria for Classification of Solid Waste Disposal Facilities and Practices**

The criteria were adopted for determining which solid waste disposal facilities and practices posed a reasonable probability of adverse effects on health or the environment. Facilities failing to satisfy the criteria were considered open dumps, which are prohibited under RCRA, and were required to close.

### **Part 258—Criteria for Municipal Solid Waste Landfills**

The purpose of this part is to establish minimum national criteria under the RCRA for the design, operation, and closure of municipal solid waste landfills. The regulations include groundwater monitoring requirements, siting restrictions, design criteria, and provisions for corrective action and post-closure maintenance. The regulations took effect in 1993 and Missouri has adopted these criteria as part of the state's solid waste management regulations.

## **Clean Water Act**

The Federal Water Pollution Control Act, as amended in 1977, became commonly known as the Clean Water Act (CWA). The CWA established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters. The CWA made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by nonpoint source pollution. The primary CWA programs affecting solid waste management include:

- National Pollutant Discharge Elimination System (NPDES) permit program that covers point sources of pollution discharging into a surface waterbody. Point sources, which include solid waste landfills and other facilities, must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). These permits set limits on the amount of various pollutants that a source can discharge in a given time.
- Section 401 of the CWA requires that before a federal agency can issue a license or permit for construction or other activity, it must have received from the state in which the affected activity would take place a written certification that the activity will not cause or contribute to a violation of relevant state water quality standards.

Downstream states whose water quality standard might be exceeded as a result of federal approval of the activity can also play a role in the 401 process.

- Section 404 that regulates the placement of dredged or fill materials into wetlands and other Waters of the United States.

## **Clean Air Act**

The Clean Air Act (CAA) is a federal law that allows EPA to set limits on certain air pollutants. The CAA also gives EPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills. Individual states or tribes may have stronger air pollution laws, but they may not have less stringent pollution limits than those set by EPA.

States have to develop State Implementation Plans (SIPs) that outline how each state will control air pollution under the CAA. A SIP is a collection of the regulations, programs and policies that a state will use to clean up and monitor polluted areas. The states must involve the public and industries through hearings and opportunities to comment on the development of each state plan.

Air pollution emissions from municipal solid waste landfills are regulated by various federal regulations promulgated to implement the CAA including:

- Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills [Title 40 CFR Part 60, Subpart Cc];
- New Source Performance Standards (NSPS) for MSW Landfills [Title 40 CFR Part 60 Subpart WWW]; and
- Rules governing the Adoption and Submittal of State plans for Designated Facilities [Title 40 CFR Part 60, Subpart B].

The NSPS apply to new landfills, whereas the Emission Guidelines pertain to existing landfills. States must develop State plans as part of the implementation process for the Emission Guidelines for existing landfills in their State.

The regulations require large landfills that emit landfill gas in excess of 50 megagrams (Mg) per year to control emissions. In general, controlling emissions involves drilling collection wells into the landfill and routing the gas to a suitable energy recovery system or combustion device. Specifically, the regulations require new and existing landfills designed to hold 2.5 million Mg of waste or more to install gas collection systems or prove that the landfill emits less than 50 Mg per year of non-methane organic compounds.

The regulations provide the owner or operator of a landfill with a tier system for determining if controls will be required. If the owner or operator initially calculates the emissions to be above the 50 Mg per year threshold by using default parameters provided in the regulation, the tier system provides the opportunity to conduct sampling and determine site specific values to prove that emissions are below the emission threshold and that controls are not required.

## **Comprehensive Environmental Response, Compensation, and Liability Act**

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA:

- Establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites (including old landfills);
- Provides for liability of persons responsible for releases of hazardous waste at these sites; and
- Establishes a trust fund to provide for cleanup when no responsible party could be identified.

## **MISSOURI REQUIREMENTS**

Similar to the Federal Government, the State of Missouri has laws and regulations that govern waste, air, and water.

### **Solid Waste Management Law**

The Missouri Solid Waste Management Law was passed in 1972. In general, this law allows the State to issue permits for solid waste processing and disposal facilities and enforce compliance with solid waste laws, promulgate necessary regulations, and implement statewide solid waste management planning. The Missouri Department of Natural Resources (MDNR) is the primary agency in charge of solid waste management within the State.

Specific regulations regarding solid waste management are found in Division 80 (Solid Waste Management) of Title 10 (Department of Natural Resources) of the Code of State Regulations (CSR) and are discussed below.

### **10 CSR 80-2.010 – General Provisions**

This regulation sets the steps required to characterize the geologic and hydrologic conditions at a proposed solid waste disposal area prior to submittal of a construction permit application. The regulations also describe the permitting requirements for solid waste disposal areas and solid waste processing facilities (e.g., material recovery facilities, transfer stations, composting facilities, incinerators) including the procedures and requirements for obtaining the appropriate permits. The construction and operation permitting requirements are summarized in Table 15.

The following types of activities, solid waste disposal areas or solid waste processing facilities are not required to obtain a permit provided that pollution, a public nuisance, or a health hazard is not created:

- Areas receiving uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, and brick for fill or reclamation;
- Facilities which processes solid waste from an individual household, single building or institution provided the facility is located on-site where the refuse originates;
- Any properly managed disposal area of 10 cubic yards or less located in a rural area that receives residential solid waste from more than one family unit as long as the contents are emptied and disposed of at a permitted solid waste facility at least once per week;
- The use of solid waste in normal farming operations;
- The use of solid waste in the processing or manufacturing of products;
- Disposal of an individual of solid waste resulting from his/her own residential activities on the property owned or lawfully occupied by him/her;
- The operation and/or closure of a waste stabilization lagoon, settling pond, or other waste or wastewater treatment facility which has a permit from the Missouri Clean Water Commission and complies with the provisions of 10CSR 80-2.030(2);
- A recycling center or drop-off collection point that accepts source-separated or commingled recyclable materials;
- The composting or co-composting of waste materials, other than municipal solid waste, generated by agricultural and domestic activities on property owned or lawfully occupied by the generator; or the composting of yard waste, wood waste, paper waste, or poultry waste as long as such activity has a permit or approval from the Missouri Clean Water Commission.

### **10 CSR 80-3.010 – Sanitary Landfill**

This rule pertains to the design and operation of a sanitary landfill. The requirements are summarized in Table 16. There are currently no operating sanitary landfills in the City.

### **10 CSR 80-4.010 – Demolition Landfill**

This rule pertains to the design and operation of a demolition landfill. The requirements are summarized in Table 17. There are no MDNR-permitted demolition landfills in the City.

### **10 CSR 80-5.010 – Processing Facility**

This rule pertains to the design and operation of solid waste processing facilities (incinerators, compost plants, transfers stations or any facility where solid wastes are salvaged). The specific regulatory requirements are summarized in Table 18. There are no MDNR-permitted compost plants, material recovery facilities, or incinerators located in the City. There are two MDNR-

permitted transfer stations: Manchester Transfer and Willey Material Recovery and Transfer Station.

### **10 CSR 80-6.010 – Local Solid Waste Management**

These regulations delineate city and county responsibilities for solid waste management plan development and implementation; details the contents of a solid waste management plan and sets standards for departmental review and approval or disapproval of plans.

### **10 CSR 80-7.010 – Infectious Waste Management**

This rule pertains to the management and treatment of infectious waste.

### **10 CSR 80-8.010 – Waste Tires**

This rule contains the requirements for managing waste tires. This rule sets forth requirements for obtaining a permit as a waste tire hauler and waste tire collection center. It also contains the requirements for obtaining a permit as a waste tire site (accumulate five hundred or more waste tires) or a waste tire processing facility (where tires are reduced in volume by shredding, cutting, or chipping to facilitate recycling, resource recovery, or disposal). Finally, the rule contains the requirements for waste tire end-user facility registrations (a site where tires are used as a fuel or fuel supplement or converted into a useable product). Currently, there is one waste tire processing facility permitted by MDNR that is located in Kansas City: ABC Tire, LLC (permit #09095003).<sup>12</sup>

On February 1, 2007, the State proposed changes to the waste tire regulations.<sup>13</sup> The primary changes are to replace the term “waste tire” with “scrap tire.” The proposed changes will also rescind the rules for waste tire sites (sites that accumulate 500 or more tires). Waste tire sites will no longer be permitted unless they are located at a permitted scrap tire processing facility or a registered scrap tire end-user facility. The proposed regulations also add closure and financial assurance requirements for scrap tire processing facilities.

### **10 CSR 80-9.010 – Solid Waste Management Fund**

This rule contains procedures and provisions for solid waste management districts to apply for planning/organizational grants from the Solid Waste Management Fund and contains procedures and provisions for solid waste management districts to qualify for grant funds from the Solid Waste Management Fund. It also sets the procedures for Waste Tire Grants and Waste Tire Cleanup Contracts. This rule also contains procedures and provisions to provide financial assistance for solid waste management projects to any district, county or city of the state or to any other person or entity involved in waste reduction or recycling.

The solid waste management district, comprised of Cass, Clay, Jackson, Platte, and Ray Counties and all cities therein, receives funds from the Missouri Solid Waste Management Fund to reduce the amount of waste entering landfills. The fund is supported a \$2.11 fee collected on each ton of

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12 Missouri Department of Natural Resources, Scrap Tire Processors in Missouri, July 31, 2007.

13 Missouri Register, Volume 32, Number 3, page 224.

solid waste disposed in Missouri landfills or transferred to out-of-state facilities. Any municipality, county, public institution, not-for-profit organization, private business or individual currently operating in the solid waste management district is eligible to apply. Funds can be used for various programs including education, waste reduction, re-use, recycling, composting, collection and processing, research and development and market development for products made with diverted materials.

### **10 CSR 80-10.010 – Statewide Solid Waste Management**

This rule describes procedures used to demonstrate that the target recycled content usage goals of newsprint are met. This rule applies to newspaper publishers with an average daily distribution on days published during the previous year of more than fifteen thousand (15,000) copies.

### **10 CSR 80-11.010 – Utility Waste Landfill**

This rule pertains to the design and operation of a utility waste landfill. Utility waste means fly ash waste, bottom ash waste, slag waste and flue gas emission waste generated primarily from the combustion of coal or other fossil fuels. The rule sets forth requirements and the method of satisfactory compliance to ensure that the design, construction and operation of utility waste landfills will protect the public health, prevent nuisances and meet applicable environmental standards. The requirement subsections contained in this rule delineate minimum levels of performance required of any utility waste landfill operation.

### **Air Conservation Law**

The Missouri Air Conservation Law created the air conservation commission. Among the commission's duties are the adoption, amendment and rescission of rules; making decisions on appeals from enforcement orders and permit conditions; beginning legal actions to compel compliance with rules; assigning duties to local air pollution control agencies; listing regions as attainment or non-attainment areas based on the national standards; and approving overall plans for meeting the national standards in listed non-attainment areas.

Missouri has developed state-wide regulations for implementing the Federal Clean Air Act requirements. The regulations for the development of a State Implementation Plan as well as New Source Performance Standards and Emissions Guidelines as they pertain to municipal solid waste landfills are contained in Rules of Department of Natural Resources, Division 10—Air Conservation Commission, Chapter 6—Air Quality Standards, Definitions, Sampling and Reference Methods and Air Pollution Control Regulations for the Entire State of Missouri.

### **Clean Water Law**

The Missouri Clean Water Law provides the State with the authority to implement the provisions of the Federal Clean Water Act. The goals of the law are to conserve the waters of the state and to protect, maintain, and improve the quality thereof for public water supplies and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses and for the propagation of wildlife, fish and aquatic life; to provide that no waste be discharged into any waters of the state without first receiving the necessary treatment or other corrective action to protect the legitimate beneficial uses of such waters; and to provide for the prevention, abatement and

control of new or existing water pollution. The regulations outlining the requirements and permit application process for construction and operating permits (National Pollutant Discharge Elimination System (NPDES) permits) can be found in Rules of Department of Natural Resources, Division 20—Clean Water Commission, Chapter 6—Permits.

**Table 15. Permitting Requirements for Solid Waste Disposal and Processing Facilities**

<b>Permitting Requirements</b>
<p><b>Solid Waste Disposal Area Permits</b></p> <p><b>Construction Permits</b></p> <p>Any person desiring to construct a solid waste disposal area or horizontally expand the acreage specifically designated for the placement of solid waste in an existing permitted solid waste disposal area must apply for a construction permit. A construction permit must be obtained prior to the beginning of any solid waste disposal area construction activities, including any clearing of vegetation, earth work, or construction of appurtenances (such as lagoons, settling basins, and monitoring wells) associated with the disposal area. This requirement does not apply to detailed site investigation activities or general site improvements.</p> <p>An applicant for a solid waste disposal area permit, as part of the application, must submit evidence of compliance with local planning and zoning requirements.</p> <p><b>Operating Permits</b></p> <p>An operating permit must be obtained prior to the receipt of waste in the initial area prepared to receive waste in the disposal area or the horizontal expansion area. Approval to accept waste in subsequent areas prepared to receive waste shall be handled in accordance with 10 CSR 80-2.020(4). If an application for an operating permit for the solid waste disposal area is not submitted to, and received by the department within sixty (60) months, the applicant, prior to submittal of an operating permit application, shall: 1) hold a public awareness and community involvement session, solicit comments and respond; 2) submit to the department for approval any necessary changes to the design and operation of the facility so as to be in compliance with currently applicable law and rules; and 3) submit to the department an updated violation history and disclosure statement.</p> <p>An applicant for solid waste disposal area permit, as part of the application, shall submit evidence of financial responsibility.</p>
<p><b>Solid Waste Processing Facility Permits</b></p> <p><b>Construction Permits</b></p> <p>Any person desiring to construct a solid waste processing facility shall apply to the department for a construction permit. A construction permit shall be obtained prior to the beginning of any solid waste processing facility construction activities, including any clearing of vegetation or earth work.</p> <p>An applicant for a solid waste processing facility construction permit, as part of the application, shall submit evidence of compliance with local planning and zoning requirements.</p> <p><b>Operating Permits</b></p> <p>An operating permit must be obtained prior to the receipt of waste at the solid waste processing facility. If an application for an operating permit for the solid waste processing facility is not submitted to, and received by the department within sixty (60) months, the applicant, prior to submittal of an operating permit application shall: 1) hold a public awareness and community involvement session, solicit comments and respond; 2) submit to the department for approval any necessary changes to the design and operation of the facility so as to be in compliance with currently applicable law and rules; and 3) submit to the department an updated violation history and disclosure statement.</p> <p>An applicant for solid waste processing facility permit, as part of the application, shall submit evidence of financial responsibility.</p>

**Table 16. Design/Operation Requirements for Sanitary Landfills**

Regulatory Requirements
<p><b>Solid Wastes Accepted</b></p> <ul style="list-style-type: none"> <li>Only municipal waste, bulky waste, demolition and construction waste, brush and wood waste, soil, rock, concrete, related inert solids relatively insoluble in water, and incinerator and air pollution control residues generated from facilities exempted under 10 CSR 80-2.020(9)(A)2 shall be accepted.</li> </ul>
<p><b>Site Selection</b></p> <ul style="list-style-type: none"> <li>Site selection and utilization shall include a study and evaluation of geological and hydrologic conditions and soils at the proposed sanitary landfill and an evaluation of the environmental effect upon the projected use of the completed sanitary landfill.</li> </ul>
<p><b>Design</b></p> <ul style="list-style-type: none"> <li>Plans, addendums, as-built drawings, or other documents which describe the design, construction, operation, or closure of a sanitary landfill or which request an operating permit modification for the sanitary landfill shall be prepared or approved by a professional engineer, stamped or sealed by the professional engineer, and submitted to the department for review and approval.</li> </ul>
<p><b>Quality Assurance/Quality Control</b></p> <ul style="list-style-type: none"> <li>The construction, operation, and closure of the sanitary landfill shall include quality assurance and quality control measures, supervised by a qualified professional, to ensure compliance with approved plans and all applicable federal, state, and local requirements.</li> </ul>
<p><b>Survey Control</b></p> <ul style="list-style-type: none"> <li>Benchmarks, horizontal controls, and boundary markers shall be established by a land surveyor to check and mark the locations and elevations of the sanitary landfill.</li> </ul>
<p><b>Water Quality</b></p> <ul style="list-style-type: none"> <li>Location, design, construction, and operation of the landfill shall minimize environmental hazards and conform to applicable ground and surface water quality standards and requirements.</li> </ul>
<p><b>Leachate Collection System</b></p> <ul style="list-style-type: none"> <li>A leachate collection system shall be designed, constructed, maintained, and operated to collect and remove leachate from the landfill.</li> </ul>
<p><b>Liner System</b></p> <ul style="list-style-type: none"> <li>A liner shall be placed on all surfaces to minimize the migration of leachate.</li> </ul>
<p><b>Groundwater Monitoring</b></p> <ul style="list-style-type: none"> <li>The owner/operator of the landfill shall implement a groundwater monitoring program capable of determining the landfill's impact on the quality of groundwater underlying the landfill.</li> </ul>
<p><b>Corrective Action</b></p> <ul style="list-style-type: none"> <li>Within ninety days of finding that any constituents have been detected at a statistically significant level exceeding the groundwater protection standards, the owner/operator shall initiate an assessment of corrective measures.</li> </ul>
<p><b>Air Quality</b></p> <ul style="list-style-type: none"> <li>The design, construction, and operation of the landfill shall minimize environmental hazards and conform to applicable ambient air quality and source control regulations.</li> </ul>
<p><b>Gas Control</b></p> <ul style="list-style-type: none"> <li>Decomposition gases generated within the landfill shall be controlled on-site</li> </ul>
<p><b>Aesthetics</b></p> <ul style="list-style-type: none"> <li>The landfill shall be designed and operated in an aesthetically acceptable manner</li> </ul>
<p><b>Cover</b></p> <ul style="list-style-type: none"> <li>Cover shall be applied</li> </ul>
<p><b>Compaction</b></p> <ul style="list-style-type: none"> <li>Cover shall be compacted to the smallest practical volume</li> </ul>
<p><b>Safety</b></p> <ul style="list-style-type: none"> <li>The landfill shall be designed, constructed, and operated to protect health and safety of personnel and others</li> </ul>
<p><b>Records</b></p> <ul style="list-style-type: none"> <li>The owner/operator shall maintain records and monitoring data as specified</li> </ul>

**Table 17. Design/Operation Requirements for Demolition Landfills**

Regulatory Requirements
<p><b>Solid Wastes Accepted</b></p> <ul style="list-style-type: none"> <li>Only demolition and construction waste, brush and wood waste, cut, chipped, or shredded tires, inert plastic, soil, rock, concrete, sand, gravel, asphaltic concrete, cinder blocks and bricks. The demolition wastes shall not contain more than a minor amount of metal.</li> </ul>
<p><b>Site Selection</b></p> <ul style="list-style-type: none"> <li>Site selection and utilization shall include a study and evaluation of geological and hydrologic conditions and soils at the proposed sanitary landfill and an evaluation of the environmental effect upon the projected use of the completed demolition landfill.</li> </ul>
<p><b>Design</b></p> <ul style="list-style-type: none"> <li>Plans, addendums, as-built drawings, or other documents which describe the design, construction, operation, or closure of a demolition landfill or which request an operating permit modification for the demolition landfill shall be prepared or approved by a professional engineer, stamped or sealed by the professional engineer, and submitted to the department for review and approval.</li> </ul>
<p><b>Quality Assurance/Quality Control</b></p> <ul style="list-style-type: none"> <li>The construction, operation, and closure of the demolition landfill shall include quality assurance and quality control measures, supervised by a qualified professional, to ensure compliance with approved plans and all applicable federal, state, and local requirements.</li> </ul>
<p><b>Survey Control</b></p> <ul style="list-style-type: none"> <li>Benchmarks, horizontal controls, and boundary markers shall be established by a land surveyor to check and mark the locations and elevations of the demolition landfill.</li> </ul>
<p><b>Water Quality</b></p> <ul style="list-style-type: none"> <li>Location, design, construction, and operation of the landfill shall minimize environmental hazards and conform to applicable ground and surface water quality standards and requirements.</li> </ul>
<p><b>Leachate Collection System</b></p> <ul style="list-style-type: none"> <li>A leachate collection system shall be designed, constructed, maintained, and operated to collect and remove leachate from the landfill.</li> </ul>
<p><b>Liner System</b></p> <ul style="list-style-type: none"> <li>A liner shall be placed on all surfaces to minimize the migration of leachate.</li> </ul>
<p><b>Groundwater Monitoring</b></p> <ul style="list-style-type: none"> <li>The owner/operator of the landfill shall implement a groundwater monitoring program capable of determining the landfill's impact on the quality of groundwater underlying the landfill.</li> </ul>
<p><b>Corrective Action</b></p> <ul style="list-style-type: none"> <li>After finding that any constituents have been detected at a statistically significant level exceeding the groundwater protection standards, the owner/operator shall initiate an assessment of corrective measures.</li> </ul>
<p><b>Air Quality</b></p> <ul style="list-style-type: none"> <li>The design, construction, and operation of the landfill shall minimize environmental hazards and conform to applicable ambient air quality and source control regulations.</li> </ul>
<p><b>Gas Control</b></p> <ul style="list-style-type: none"> <li>Decomposition gases generated within the landfill shall be controlled on-site</li> </ul>
<p><b>Vectors</b></p> <ul style="list-style-type: none"> <li>Unfavorable conditions for the harboring, feeding, and breeding behaviors of vectors shall be maintained</li> </ul>
<p><b>Aesthetics</b></p> <ul style="list-style-type: none"> <li>The landfill shall be designed and operated in an aesthetically acceptable manner</li> </ul>
<p><b>Cover</b></p> <ul style="list-style-type: none"> <li>Cover shall be applied</li> </ul>
<p><b>Compaction</b></p> <ul style="list-style-type: none"> <li>Cover shall be compacted to the smallest practical volume</li> </ul>
<p><b>Safety</b></p> <ul style="list-style-type: none"> <li>The landfill shall be designed, constructed, and operated to protect health and safety of personnel and others</li> </ul>
<p><b>Records</b></p> <ul style="list-style-type: none"> <li>The owner/operator shall maintain records and monitoring data and file appropriate documents with the county record of deeds</li> </ul>

**Table 18. Design/Operation Requirements for Processing Facilities**

Regulatory Requirements*	
Solid Waste Accepted	<ul style="list-style-type: none"> <li>• Solid wastes to be accepted and any special handling required shall be identified. Only solid wastes for which the facility has been designed and performance tested shall be accepted.</li> <li>• Plans shall identify solid wastes to be accepted, handling procedures, and storage areas. Accepted solid wastes shall be indicated on the Application for Operating Permit form.</li> <li>• Provisions for storing, handling, and removing solid wastes not to be accepted that are inadvertently left at the processing facility shall be considered in the design.</li> <li>• At the request of the department, performance tests shall be conducted to demonstrate the successful processing of certain solid wastes and the professional engineer shall submit a report to the department covering the results.</li> <li>• Storage areas shall be clearly marked</li> <li>• Personnel shall be trained in handling of acceptable and unacceptable waste received.</li> <li>• Unloading of solid waste should be supervised to exclude unacceptable wastes.</li> <li>• A list of all acceptable solid wastes shall be posted at the facility entrance.</li> </ul>
Site Selection	<ul style="list-style-type: none"> <li>• Site selection shall comply with local planning and zoning requirements.</li> <li>• Plans shall be prepared or approved by a professional engineer and include: 1) A map (scale of not less than 1"=400') showing land use and zoning within 1000 feet of the facility including residences, buildings and roads; 2) Location of utilities and the effect of the facility on such utilities including capacity, loading, etc; and 3) Identify the primary routes to the facility and the potential effects due to increased traffic volume and vehicle weights.</li> <li>• A report shall be submitted to the department evaluating the effect of noise, odors, air pollutants, and potential explosions or fires upon the surrounding land.</li> </ul>
Design	Plans for the design, construction, operation or alteration of the facility shall be prepared or approved, sealed by a professional engineer, and submitted to the department for review and approval.
Water Quality	<ul style="list-style-type: none"> <li>• All waters discharged shall be sufficiently treated to meet applicable water quality standards.</li> <li>• Plans shall clearly define the permitted area.</li> <li>• Plans shall include provisions for control of surface water runoff.</li> <li>• Plans shall provide for collection of process and wastewaters for on-site treatment, recirculation or discharge.</li> <li>• Plans shall provide for the collection and cleanup of accidental waste water spillage.</li> <li>• All applicable permits and approvals to comply with Missouri Clean Water Law shall be obtained from the department.</li> <li>• All waste transfer and processing shall take place beneath a roof.</li> <li>• Waters discharged shall be monitored to meet water quality standards</li> <li>• The department's Water Pollution Control Program shall be notified immediately of a spill.</li> <li>• Spills shall be contained and cleaned up according to plans.</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>• Emissions shall not exceed chapter 643, RSMo standards.</li> <li>• Permits and approvals should comply with Air Pollution Law requirements or shall contain copies of permits or approvals and authorizations from a local air pollution control agency operating under an exemption certificate authorized by chapter 643 RSMo.</li> <li>• Emissions shall be appropriately monitored to meet air quality standards</li> </ul>
Vectors	<ul style="list-style-type: none"> <li>• Unfavorable conditions for the harboring, feeding, and breeding of vectors shall be maintained</li> <li>• Facilities shall be designed for ease of cleaning</li> <li>• A housekeeping schedule shall be established and maintained to provide for 1) cleaning, unloading, and loading areas as spillage occurs, 2) containerization of putrescible waste at the end of each day, 3) no putrescible waste shall be stored for longer than 24-hours on site, and 4) routinely cleaning the remainder of the facility.</li> <li>• Vector control contingency programs shall be implemented when necessary to prevent or rectify problems.</li> </ul>
Aesthetics	<ul style="list-style-type: none"> <li>• Facility shall be designed and operated in an aesthetically acceptable manner</li> <li>• Design should screen unloading, storage, and processing from public view</li> </ul>

Regulatory Requirements*	
	<ul style="list-style-type: none"> <li>• Routine housekeeping and litter removal schedule shall be established and implemented. All litter must be picked up daily.</li> <li>• Non-putrescible waste shall be removed at least weekly</li> <li>• Immediate action should be taken to eliminate odors, dust, or excess noise</li> <li>• Solid waste shall not be accepted if the available storage capacity is full or expected to be out of operation for more than 24 hours.</li> </ul>
Residue and Processed Solid Waste	<ul style="list-style-type: none"> <li>• Residue or processed waste shall be disposed of in an environmentally acceptable manner</li> <li>• Design shall allow removal of waste in a manner that protects the environment</li> <li>• Waste not to be recycled shall be disposed of in an area that has a permit to accept the waste</li> <li>• Recycling materials shall be stored to prevent vector or aesthetic problems</li> <li>• Transportation shall be conducted in order to prevent sifting, falling, leaking, or blowing from vehicle</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• Facility should be designed, operated, and maintained to protect health and safety of personnel</li> <li>• Safety devices should be used to protect operators and vehicles</li> <li>• Dust should be controlled when applicable</li> <li>• Fire extinguishing facilities and methods shall be provided</li> <li>• Personal safety devices shall be utilized where needed, and maintained or replaced as needed</li> <li>• Salvaging shall be prohibited unless adequate provision for the activities is included in the design</li> <li>• Facility access shall be controlled by fencing or other suitable means to limit accessibility</li> <li>• A fire extinguisher shall be provided on solid waste handling equipment</li> <li>• Provisions shall be made to extinguish any fires in wastes being delivered to the facility</li> </ul>
Records	<ul style="list-style-type: none"> <li>• Owner/operator shall maintain records and monitoring data.</li> <li>• Plans shall prescribe the records and methods of monitoring the facility for proper and efficient operation</li> <li>• Records shall cover the actual/estimated quantity of waste received each day; major operational problems, complaints, or difficulties; and vector, dust and litter control efforts.</li> </ul>

\*If techniques other than those listed as satisfactory compliance in design or operation are used, procedures for the techniques must be submitted to the department in writing and approved by the department in writing prior to being employed.

## KANSAS CITY, MISSOURI REQUIREMENTS

In addition to the solid waste ordinances that are discussed later in this document, the City has other ordinances that affect the siting of solid waste management facilities. The most pertinent of these are the City’s zoning ordinances. Zoning is the basic means of land use control employed by local governments in the United States. Zoning divides the community into districts (zones) and imposes different land use controls on each district, specifying the allowed uses of land and buildings, intensity or density of such uses and the bulk of buildings on the land. Traditionally, use regulations have separated land uses into four basic categories: residential, commercial, industrial and agricultural.

A summary of the City’s zoning ordinances, as they relate to solid waste management facilities, is provided in Table 19.

**Table 19. Solid Waste Management Facility Zoning Requirements**

Zoning District	Requirements
<b>M-1: Light Industry</b>	<p>Material or waste processing facilities: must be conducted entirely within a building completely enclosed with walls and roof with an eight-foot solid fence erected along all property lines adjacent to properties zoned residential</p> <p><i>Height:</i> Buildings or structures shall not exceed six stories and shall not exceed 75 feet in height.</p> <p><i>Front and side yards:</i></p> <ul style="list-style-type: none"> <li>• There need be no front or side yard in this district, except when the district abuts or adjoins a district R-1, R-2, R-3, R-4, R-4-O, R-5 or R-5-O within the same block and on the same side of the street.</li> <li>• There shall be a side yard along the side line of a property in the industrial district which abuts, adjoins or is within eight feet of a boundary of a residential district, equal to eight feet measured from the residential district boundary line.</li> <li>• <i>Rear yards:</i></li> <li>• The rear yard for business and industrial buildings shall be at least three inches in least dimension for each foot of height of the building at any given level, but must be at least four feet. Where there is an alley, the rear yard shall be measured to the center of the alley. Where the rear yard abuts or adjoins a residential district, it shall be at least ten feet in depth. Within 50 feet of the nearest street, no rear yard is required where a rear line of a lot zoned for business or industry abuts or adjoins the side or rear line of a lot zoned for business or industry.</li> <li>• An accessory building shall be allowed in the rear yard referred to in this subsection, but shall be kept at least four feet from the rear and side lot lines unless there is an alley. Where there is an alley, it may extend to the property line along the alley. On a corner lot, the accessory building shall be set back at least 15 feet from any street line.</li> </ul> <p><i>Parking and loading regulations.</i> Parking and loading regulations shall be as provided for in sections 80-444 and 80-445.</p>
<b>M-3: Heavy Industry, Residual Uses</b>	<p>Incineration of garbage will be permitted only upon approval by the board of zoning adjustment after report from the fire department and health department</p> <p><i>Height:</i> There shall be no height restriction.</p> <p><i>Front yards:</i> Same as for district M-1.</p> <p><i>Side yards:</i> Same as for district M-1.</p> <p><i>Rear yards:</i> Same as for district M-1.</p> <p><i>Lot area:</i> Same as for district M-1.</p> <p><i>Parking and loading regulations:</i> Parking and loading regulations shall be as provided for in sections 80-444 and 80-445.</p>

Zoning District	Requirements
<p><b>MR: Materials Reprocessing District</b></p> <p><b>General</b></p>	<p>The purpose of district MR is to identify and appropriately locate uses which involve the recovery and reclamation of materials and the processing or reprocessing of waste and other similar uses which may affect adjoining properties.</p> <p>No activity shall occur in any district MR without an approved development plan and an approved final plan as provided below.</p> <ul style="list-style-type: none"> <li>• A development plan shall consist of a drawing, to scale, of the proposed uses, both principal and accessory, and the location of such uses on the site. A development plan shall also provide a time schedule by phases for implementation.</li> <li>• Upon approval of the development plan, the applicant shall submit a final plan to the city plan commission for its review and recommendation. Every final plan shall provide all the information required of a development plan and shall further include grading, landscaping, lighting and signage plans.</li> <li>• No use allowed under district MR shall be located within a regulatory floodplain.</li> </ul> <p>Height, yard and area regulations. In district MR, the height of buildings and minimum dimensions of lots and yards shall be as follows:                      Height. There shall be no height restriction.                      Front yards. Same as for district M-1.                      Side yards. Same as for district M-1.                      Rear yards. Same as for district M-1.</p> <p>Parking and loading regulations. Parking and loading regulations shall be as provided for in sections 80-444 and 80-445.</p> <p>Allowable uses include: demolition landfill, materials recovery facility, sanitary landfill, solid waste processing facility, and used tire facility. Requirements specific to these uses are provided below.</p>
<p><b>Demolition Landfill</b></p>	<p>Demolition landfill, being an area of land for disposing of demolition waste, construction materials, brush, wood waste, soil, rock, concrete and inert solids soluble in water; provided that there is a buffer of 100 feet between any such landfill operation and the perimeter boundaries of the property. An application to designate an area for a demolition landfill shall be accompanied by a development plan and, in addition, shall include:</p> <ul style="list-style-type: none"> <li>• Metes and bounds perimeter description and ownerships of individual parcels, with legal descriptions.</li> <li>• Plan of the property drawn to a scale of one inch equals 100 feet or larger, showing legal description, boundary of property, boundary of proposed fill, existing topography with contour intervals of five feet or less to NGVD of 1929, existing easements and utilities, access, and any watercourses or drainage systems. For horizontal control, the plan of the property and any engineering drawings and grading plans shall be based on the Missouri State Plan Coordinate (West Zone) 1983 North American Datum (NAD-1983).</li> <li>• Grading plan and cross sections to identify ultimate height above existing contours.</li> <li>• Phasing plan, identification of fill materials accepted and method of operation, including hours of operation.</li> <li>• Any other information necessary for a determination as to the suitability of the area as a demolition landfill.</li> </ul>
<p><b>Materials Recovery Facility</b></p>	<p>Provided such use is within a building and provided any such use shall be located at least 300 feet from any property zoned districts R-1, R-2, R-3, R-4, R-4-O, R-5, R-5-O, R-6, GP-6, GP-5, GP-4, GPR-1 or GPR-2.</p>
<p><b>Sanitary Landfill</b></p>	<p>Sanitary landfill, being an area of land used for disposing of solid waste. An application to designate an area for use as a sanitary landfill shall be accompanied by a development plan, and, in addition, shall include:</p> <ul style="list-style-type: none"> <li>• Metes and bounds perimeter description and ownerships of individual parcels, with legal descriptions, if applicable.</li> <li>• Plan of the property drawn to a scale of one inch equals 200 feet or larger showing legal description, boundary of property, boundary of proposed landfill, existing topography</li> </ul>

Zoning District	Requirements
	<p>with contours of five-foot intervals or less to NGVD of 1929 or city datum, existing easements and utilities, access, and watercourses or drainage systems. For horizontal control, the plan of the property and any engineering drawings and grading plans shall be based on the Missouri State Plan Coordinate System (West Zone) 1983 North American Datum (NAD-1983).</p> <ul style="list-style-type: none"> <li>• Preliminary engineering drawings and cross sections to identify excavation below existing topography to NGVD or city datum as planned and ultimate height above existing contours of proposed fill material and final cover material, location of stockpiling of dirt, location of berms, ponds and other erosion control methods to eliminate downstream siltation and control upstream drainage.</li> <li>• Phasing plan for location and description of each landfill development unit.</li> <li>• Preliminary plan for control, collection, management, treatment and final disposal and monitoring of leachate, and methods for protecting and monitoring groundwater.</li> <li>• Conceptual plan for control of methane gas, including recovery, collection, monitoring and disposal.</li> <li>• Conceptual plan for land use for all areas after closure.</li> <li>• Geological and hydrogeologic survey prepared by an independent qualified geologist as defined by RSMo 265.501, as amended, with sample core drilling as required by such geologist. Such survey or study shall be sealed by a professional engineer.</li> <li>• Map identifying existing land uses within one-half mile of the perimeter of the property.</li> <li>• Traffic study identifying truck traffic and other vehicular traffic to and from the site, streets to be used for such traffic, peak hour trips and total trips per day based on hours of operation.</li> <li>• Method of operation of landfill, including types of waste; hours of operation; type of slope liner design; type, length and width of daily cover and final cap design; and control of dust, odor, noise, rodents and birds, and control and pickup of litter and debris from both on-site and off-site areas and roadways.</li> <li>• Conceptual landscape planting plan of the buffer area.</li> <li>• Letter or other communication from the Federal Aviation Agency that no hazard will be created for any air traffic associated with any airport within the jurisdiction of such agency and evidence of distance from any airport within the jurisdiction of the Federal Aviation Agency.</li> <li>• Any other information necessary for a determination as to the suitability of the area as a sanitary landfill.</li> </ul> <p>After review by the city plan commission and prior to review of the development plan by the city council of any sanitary landfill, the matter shall be referred to the board of zoning adjustment for a recommendation on the following issues:</p> <ul style="list-style-type: none"> <li>• Adequacy of soil conditions based upon preliminary engineering drawings and cross sections to identify excavation below existing topography to NGVD or city datum as planned, and ultimate height above existing contours of proposed fill material and final cover material, location of stockpiling and disposition of any excavated soil or rock, location of stockpiling of cover material, and location of berms, ponds and other erosion control methods to eliminate downstream siltation and control upstream drainage.</li> <li>• Adequacy of control of leachate based upon preliminary plan for control, collection, management, treatment and final disposal and monitoring of leachate and methods for protecting and monitoring groundwater.</li> <li>• Adequacy of control for methane gas based on a conceptual plan for control of methane gas, including recovery, collection, monitoring and disposal.</li> <li>• Appropriateness of proposed land use after closure based on a conceptual plan identifying such land use.</li> <li>• Adequacy of geological strata based on a geologic and hydrogeologic survey prepared by an independent qualified geologist with sample core drilling as necessary to render such a survey.</li> <li>• Adequacy of transportation network based upon a traffic study identifying truck traffic</li> </ul>

Zoning District	Requirements
	<p>and other vehicular traffic to and from the site, streets to be used for such traffic, peak hour trips and total trips per day based on hours of operation.</p> <ul style="list-style-type: none"> <li>• Adequacy of planting plan for the buffer area.</li> <li>• No interference to air traffic associated with any airport.</li> </ul> <p>After recommendations made by the board of zoning adjustment, and subject to the approval of the development plan by the council, the sanitary landfill shall meet the following requirements:</p> <ul style="list-style-type: none"> <li>• Direct access to and from the landfill shall be from a major thoroughfare and on a surfaced access road. No direct turning movement shall be allowed onto the major thoroughfare except on the access road. Alternative access may be provided on a street other than a major thoroughfare if such street is improved to a width and thickness sufficient to withstand truck traffic, if such street involves a minimum of turning maneuvers, if current and future traffic volume on the street will not be adversely impacted, if present and future development along the access street will not be adversely impacted, and if traffic signalization is appropriate.</li> <li>• No hazardous waste as defined by RSMo 260.360--260.432, and under applicable federal laws, shall be allowed in any sanitary landfill.</li> <li>• Any landfill shall be buffered between the fill area and perimeter boundaries of the property. Such buffer shall be landscaped and graded to visually screen the operation of the landfill prior to the acceptance of any solid waste. Any such buffer area may be developed for accessory uses and buildings. The minimum buffer requirements shall be as follows: <ul style="list-style-type: none"> <li>- If the total fill area is 100 acres or larger, the buffer shall be 600 feet; if less than 100 acres, the buffer shall be 400 feet.</li> <li>- If the proposed height of the deepest fill area from existing grade is 75 feet or greater, the buffer shall be 600 feet; if less than 75 feet, the buffer shall be 400 feet.</li> <li>- A fill area shall be located a minimum of 1,000 feet from any property zoned districts R-1, R-2, R-3, R-4, R-4-O, R-5-O, R-6, GP-6, GP-5, GP-4, GPR-1 or GPR-2.</li> <li>- The buffer requirement above shall apply, but in no event shall the buffer be less than 400 feet.</li> <li>- The board of zoning adjustment shall have the discretion to decrease the required buffer upon the finding that, as to a sanitary landfill operating under a valid and existing conditional use permit, less than the required buffer is available between the property line and the fill area.</li> </ul> </li> <li>• No landfill shall be located within a regulatory floodplain.</li> </ul>
<p><b>Solid Waste Processing Facility</b></p>	<p>Solid waste processing facility or a solid waste separation facility. Any facility where solid wastes are salvaged, processed or transferred, including a compost facility, provided any such use is within a building, except for a compost facility, and is located a minimum of 600 feet from any property zoned districts R-1, R-2, R-3, R-4, R-4-O, R-5, R-5-O, R-6, GP-6, GP-5, GP-4, GPR-1 or GPR-2. A solid waste processing facility, including a transfer station, or solid waste separation facility may be located in a regulatory floodplain if a floodplain certificate is issued for the facility and the facility is protected to prevent damage or waste contact with the flood waters. In addition to the use of the property for a solid waste processing facility or solid waste separation facility, other uses may be permitted as part of the overall activities on the site provided that such uses are depicted on the development plan. The development plan for a solid waste processing facility or solid waste separation facility and attendant uses shall provide the following information:</p> <ul style="list-style-type: none"> <li>• Metes and bounds perimeter description and ownerships of individual parcels, with legal descriptions, if applicable.</li> <li>• Plan of the property drawn to a scale of one inch equals 200 feet or larger showing legal description, boundary of property, boundary of proposed solid waste processing facility or a solid waste separation facility, existing topography with contours of five-foot intervals or less to NGVD of 1929 or city datum, existing easements and utilities, access, 100 year floodplain and watercourses or drainage systems. For horizontal control, the plans of the property and engineering drawings and grading plans shall be based on the Missouri State Plane Coordinate System (West Zone) 1983 North American Datum (NAD-</li> </ul>

Zoning District	Requirements
	<p>1983).</p> <ul style="list-style-type: none"> <li>• Phasing plan for location and description of the solid waste processing facility or a solid waste separation facility as other related uses and parking on the site.</li> <li>• Traffic study identifying truck traffic and other vehicular traffic to and from the site, streets to be used for such traffic, peak hour trips and total trips per day based on hours of operations. Access shall be provided from a street improved to a width and thickness sufficient to withstand truck traffic, shall require a minimum of turning, maneuvers, shall not adversely impact current and future traffic volume, shall not negatively impact future development along the access street and has appropriate signalization.</li> <li>• Method of operation of solid waste processing facility or a solid waste separation facility including types of waste processed or separated; hours of operation; control of dust, odor, noise, rodents and birds, and control and pickup of litter and debris from both on-site and off-site areas and roadways; routes of collection trucks directly to the site.</li> <li>• Landscape planting plan of the area.</li> <li>• Any other information necessary for a determination as to the suitability of the areas for the use.</li> </ul>
<p><b>Used Tire Facility</b></p>	<p>Provided any such use is within a building and is located a minimum of 300 feet from any property zoned districts R-1, R-2, R-3, R-4, R-4-O, R-5, R-5-O, R-6, GP-6, GP-5, GP-4, GPR-1 or GPR-2.</p>

## CITY OF KANSAS CITY SOLID WASTE CONTRACTS

The City engages the private sector to provide services to its Solid Waste Division activities. The following contracts cover key contracted services.

- General Services Contract No SW-060701 Trash Cart Pilot – Otto Environmental Systems
- General Services Contract No EM-040710 Management of Recycling Drop-off Centers – Bridging the Gap
- General Services Contract No EM-050501 Residential Refuse Collection and Disposal Services – Deffenbaugh Industries
- Term Supply and Service Contract – Deffenbaugh Industries Landfill Disposal Services
- General Services Contract SW-060125 Neighborhood and Community Assistance Program Roll-offs – Allied Waste Services
- Contract Extension of EV0069-01 – Allied Landfill Disposal Services (Original Contract not yet provided)
- General Services Contract No EM-030413-01 Curbside Recycling – Deffenbaugh Industries
- KC-GO Contract – Contract No SW-071503 – Missouri Organic Recycling
- KC-Go Contract – Contract No SW-071503D – Damon Pursell Construction Company

Table 20 summarizes the key elements of these contracts which are recognized in financial modeling of the current system developed later in this document.

**Table 20. Solid Waste Management Contracts – Key Elements**

Contract	Terms and Conditions
General Services Contract No SW-060701 Trash Cart Pilot	<ul style="list-style-type: none"> <li>• \$400,000 total payment</li> <li>• 8,000 carts of a mixture of 68 and 35 gallon carts</li> <li>• Fully warrantee and maintenance of carts for 10 years</li> </ul>
General Services Contract No EM-040710 Management of Recycling Drop-off Centers	<ul style="list-style-type: none"> <li>• Contract period through April 30, 2005 with renewal ending April 30, 2006 and 2 one year renewals</li> <li>• 3 percent inflationary increase with each option year renewal</li> <li>• Maximum of \$375,000 from May 1, 2005 to April 30, 2000</li> </ul>
General Services Contract No EM-050501 Residential Refuse Collection and Disposal Services- Deffenbaugh Industries	<ul style="list-style-type: none"> <li>• Contract price of \$4.39 per eligible dwelling unit per month from November 1, 2005 to April 30, 2006</li> <li>• RRI adjustment May 1, 2006 and each May 1 thereafter.</li> <li>• Contract through April 30, 2010 with option to extend up to a total of four additional one year periods.</li> <li>• (Attachment VI showing RRI adjustments not provided)</li> </ul>

Contract	Terms and Conditions
Term Supply and Service Contract – Deffenbaugh Industries Landfill Disposal Services	<ul style="list-style-type: none"> <li>• Contract 7-1-05 through 6-30-06</li> <li>• Five successive year renewal options available</li> <li>• No increase greater than Kansas City C.P.I is allowed, Contract must supply written proof that increase is warranted</li> <li>• Performance bond of \$250,000</li> <li>• \$34 per ton residential waste</li> <li>• \$38 per ton bulky rubbish</li> </ul>
General Services Contract SW-060125 Neighborhood and Community Assistance Program Roll-offs	<ul style="list-style-type: none"> <li>• June 12, 2006 through April 30, 2007 with three additional renewal periods.</li> <li>• Contract not to exceed \$100,000</li> </ul>
Contract Extension of EV0069-01 – Allied Landfill Disposal Services	<ul style="list-style-type: none"> <li>• Need copy of original contract EV0069-01</li> </ul>
General Services Contract No EM-030413-01 Curbside Recycling – Deffenbaugh Industries	<ul style="list-style-type: none"> <li>• Contract period from May 1, 2004 through April 30, 2009 with renewal option up to a total of five additional one year periods.</li> <li>• \$1.33 per eligible dwelling unit per month to November 30, 2004</li> <li>• \$1.56 per eligible dwelling unit per month to April 30, 2005</li> <li>• RRI adjusted May 1</li> </ul>
KC-GO Contract – Contract No SW-071503 – Missouri Organic Recycling	<ul style="list-style-type: none"> <li>• Contract period April 1, 2007 through March 30, 2008 with the option for two additional one-year extensions.</li> <li>• Contract shall not exceed \$15,000</li> <li>• (Billing basis not shown in contract \$/cy?)</li> </ul>
KC-Go Contract – Contract No SW-071503D – Damon Pursell Construction Company	<ul style="list-style-type: none"> <li>• Contract period April 1, 2007 through March 30, 2008 with the option for two additional one-year extensions.</li> <li>• Contract shall not exceed \$15,000</li> <li>• (Billing basis not shown in contract \$/cy?)</li> </ul>

## CITY OF KANSAS CITY SOLID WASTE ORDINANCES

This section presents a review of the Kansas City Code of Ordinances. Chapter 62 addresses the management of solid waste within the City. The City code primarily addresses the following:

- Storage of refuse,
- Collection of refuse (frequency, collection vehicles, permits),
- City collection services,
- Littering,
- Sanitary landfills,
- Recycling batteries,
- Waste tires,
- Nuisances.

Chapter 62 of the City code was reviewed to address the following key issues:

- Adequacy of the scope of the various provisions.
- Similarities and differences to other similar municipal codes within the metropolitan region and across Missouri.
- Compliance with Missouri requirements.

Provided below is a review of each article of the City's code in the context of the above key issues.

### **Article 1. In General**

This article establishes the framework storage and collection of residential and commercial refuse. This article consists of 12 subsections that address duty to provide for storage, collection, and disposal of refuse; standards for storage of refuse; frequency of collection; location of containers; and standards for refuse collection containers. Over all the scope of the requirements appear reasonable. However the following changes are recommended:

- This article requires that a permit must be obtained to engage in the business of collecting or processing refuse within the City's limits. Haulers are specifically required to have liability insurance in the amount of not less than \$50,000 for each person injured or killed, \$100,000 in the event of injury or death of two or more persons in a single accident, and \$5,000 for damage to property. The hauler is required to submit an application and pay a fee of \$20 per vehicle. The licensing fee is consistent with other local municipalities in that a fee is charged for each hauling vehicle. However, the amount of the fee charged by the City is lower than most other cities in the metropolitan region. The insurance requirements are also lower than that required by other cities in the metropolitan region. A summary of the licensing requirements, fees, and insurance requirements required by other city ordinances is provided in Appendix A.

- This article also requires that all collected refuse be disposed at sanitary landfills that are operated by the city, privately operated under city permit, or other facilities (inside or outside City limits) that appropriate health authorities have approved. The City should consider changing this provision to require that collected refuse be disposed at sanitary landfills that are operating under a permit issued by a state regulating agency.
- The requirements of this article do not apply to the removal, hauling or dumping of debris produced by the construction, repair, or demolition of real property, except that it must be transported in tight vehicles or containers. The City may wish to revise this article to require that debris be disposed at a landfill that is permitted by the appropriate state regulating agency to accept this material.

**Article II. Collection by City**

This article provides the City with the authority to provide for the collection of garbage. This article consists of 15 subsections that identify establishments that are not eligible for City-provided collection, establishes the homes association and apartment rebate program, prohibits placement of trash in another person’s container, prohibits removal of source-separated recyclables from containers, and establishes the curbside collection program for recyclables.

This article establishes terms that have not been defined in Section 62-2 of the previous article. The City may wish to add definitions for “recyclable materials,” “leaves and brush waste,” “appliances,” and “bulky waste items.”

This article also establishes fees that may be charged by the City for certain services. There appears to be a conflict, however, regarding charges for recycling services. Section 62-54(c) requires that a fee be imposed for dwellings receiving curbside recycling. Section 62-55(c) requires the director to provide curbside collection without a fee or charge, but may require participants to purchase a container.

This article should be revised to establish requirements for carts, if the City continues with the pilot program. St. Louis City had adopted roll-out cart language in Chapter 11.02 Part III of the St. Louis City Revised Code. Section 11.02.200 specifically addresses use of city-provided containers including required use, placement, damage, ownership, storage, and replacement. Kansas City may wish to adopt similar requirements if the cart program becomes permanent. Selected text from the St. Louis City code is provided in Table 21.

**Table 21. St. Louis City Ordinances – City Container Requirements**

<b>St. Louis City Ordinances – City Containers (Chapter 11.02 Part III)</b>
<p><b>11.02.200 City containers--Usage.</b></p> <p>The following provisions in Sections 11.02.205 to 11.02.240 in addition to the applicable provisions of Sections 11.02.140 to 11.02.190, govern the preparation and placement for collection of refuse by the Refuse Division from containers provided by the Refuse Commissioner. (Ord. 64116 § 3 (part), 1997; prior: Ord. 59121 § 7 (part), 1984.)</p>
<p><b>11.02.205 City containers--Use required when.</b></p> <p>When the Refuse Commissioner has notified residents that he has provided refuse containers for this use, the Refuse</p>

**St. Louis City Ordinances – City Containers (Chapter 11.02 Part III)**

Commissioner shall not collect such residents' refuse from any containers other than those provided by him. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (a), 1984.)

**11.02.210 City containers--Number and location.**

The Refuse Commissioner shall determine the number and location of all containers provided by him and the residents entitled to deposit refuse for collection in all such containers provided by him. He is hereby authorized to place such containers in all alleys, streets, and public rights-of-way within the City. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (b), 1984.)

**11.02.215 City containers--Use of closest required.**

Unless otherwise instructed by the Refuse Commissioner, residents shall use the container provided by the Refuse Commissioner which is closest to their dwelling unit, unless it is full, in which case they may use the next closest such container. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (c), 1984.)

**11.02.220 City containers--Moving prohibited.**

No person shall move any refuse container provided by the Refuse Commissioner from its location as determined by the Refuse Commissioner. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (d), 1984.)

**11.02.225 City containers--Authorized use.**

No person shall deposit refuse in a refuse container provided by the Refuse Commissioner, unless he has been instructed or authorized to do so by the Refuse Commissioner. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (e), 1984.)

**11.02.230 City containers--Damaging prohibited.**

No person shall damage, destroy or alter the appearance of any refuse container provided by the Refuse Commissioner. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (f), 1984.)

**11.02.235 City containers--Prohibited items--Placement.**

A. With regard to the use of such containers, the following provisions apply:

1. No person shall place in such containers any single item with a weight of more than fifty pounds or that is more than three feet in length or that prevents the lid of the container from closing;
2. Between collections, no person shall place refuse with a volume of more than one cubic yard, or a weight of more than 350 pounds; and
3. No person shall dump or deposit any item within four feet of or on top of any such container.

B. If yard waste is collected by the Refuse Division in City containers other than roll-out carts, the Refuse Division shall mark such City containers "yard waste only" for the separate storage and collection of yard waste from all other refuse. The placement of refuse which is not yard waste in any City container marked "yard waste only" by the Refuse Division is prohibited; provided, however, that the Refuse Commissioner (i) may designate by rules and regulations recyclable items that may be placed in containers marked for "yard waste only" and (ii) may authorize the placement of refuse that is not yard waste into City containers marked "yard waste only" in emergency situations. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (g, h), 1984.)

**11.02.240 City containers--Responsibility for damage to container.**

All persons whose dwelling units are located on a lot one line of which is closer to one container provided by the Refuse Commissioner than to any other such container, and who use such container are jointly and severally responsible for that container, and refuse deposited therein, being in compliance with the provisions of this chapter, and for damage to that container, except ordinary wear and tear, damage by City personnel, and damage demonstrably caused by others. (Ord. 64116 § 3 (part), 1997: prior: Ord. 59121 § 7 (i), 1984.)

**11.02.245 Roll-out cart use.**

In areas in which the Refuse Commissioner has authorized the use of roll-out carts, the following additional provisions

**St. Louis City Ordinances – City Containers (Chapter 11.02 Part III)**

apply:

A. The Refuse Commissioner shall provide one roll-out cart for each residential structure in the area. For structures containing more than one dwelling unit, he may provide such additional number of roll-out carts as he deems necessary, but not more than one per dwelling unit.

B. Roll-out carts remain City property. By accepting a cart, the property owner and occupant assume all liability for injury or damage arising in or out of the use, movement, or maintenance of such carts except such as directly results from the handling of such carts by the Refuse Division.

C. Roll-out carts shall be used only for storage and placement for collection of household refuse.

D. The loaded weight of roll-out carts shall not exceed 100 pounds.

E. Roll-out carts shall be placed for collection at or within two feet of the curb in front of the dwelling unit to which the cart is assigned, so as not to cause diversion of normal flow of pedestrian or vehicular traffic, and so that mechanical collection of the refuse from the carts can be done without interfering with vehicular traffic; provided, carts assigned to dwelling units on corner lots may be placed at or near the curb on the side street with the Refuse Commissioner's permission; provided further, carts shall at no time be placed on sidewalks, unless directed by the Refuse Commissioner.

F. Carts not placed for collection shall be stored so that they are not visible from the street and shall be kept clean at all times. No such cart shall be placed or allowed to remain on the public right-of-way before six p.m. on the day preceding the day on which the refuse is scheduled to be collected. No such cart shall be placed or allowed to remain on the public right-of-way after eleven p.m. on the day on which the refuse is collected.

G. The Refuse Commissioner may replace carts at no charge as needed not more often than every five years. More frequent replacement may be made but only if the City is reimbursed in advance for the cost to the City of the replacement cart.

H. If yard waste is collected from roll-out carts by the Refuse Division, the placement of refuse which is not yard waste in roll-out carts on days designated for yard waste storage and collection by the Refuse Division is prohibited; provided, however, that the Refuse Commissioner may designate by rules and regulations recyclable items that may be placed in the roll-out carts on days designated for yard waste storage and collection by the Refuse Division. (Ord. 64116 § 3 (part), 1997; prior: Ord. 61760 § 2, 1989; Ord. 59121 § 7 (j), 1984.)

### **Article III. Littering**

This article requires property owners to remove litter from sidewalks, curbing, and guttering; prohibits unsecured trash and rubbish on private property; and requires vehicles hauling refuse or trash to secure loads to prevent contents from being blown from the vehicle. This article also prohibits dumping of trash, litter, or rubbish and establishes penalties for violations.

As with the prior article, two new terms are used that have not been defined: “trash,” and “yard waste.”

### **Article IV. Sanitary Landfills**

This article addresses the permitting requirements for private landfills, inspection of landfills, cover requirements, trespassing, and penalties. The following provisions of this article that the City may wish to review are discussed below.

## Permitting Requirements

The City could incorporate by reference the applicable Missouri Department of Natural Resources (MDNR) regulations for construction and operation of solid waste management facilities. For example, the St. Louis City code requires a state-issued permit:

*“The maintenance or operation of any sanitary landfill or demolition landfill without a permit from the Department of Natural Resources of the State of Missouri (or any successor agency thereto) as provided by Chapter 260 of the Missouri Revised Statutes and regulations issued thereunder, or in violation of any terms of such permit, is prohibited.”*<sup>14</sup>

Should the City desire to be more restrictive and have more of a role in the permitting process, the City can expand the requirements to require submittal of additional information. For example, St. Louis County requires applicants to submit a facility plan, a copy of the MDNR site investigation report and letter of site approval, and a copy of the construction permit application submitted to MDNR. The County also requires written verification that the proposed facility complies with land use regulations. The County application fee for a sanitary landfill license ranges from \$20,000 to \$50,000 to cover the cost of reviewing the application.<sup>15</sup> Annual renewal fees range from \$6,000 to \$8,500.<sup>16</sup>

In terms of siting a landfill, the City’s zoning ordinances (Sec. 80-203. District MR) provided earlier in Table 19, establish requirements for locating solid waste management facilities (e.g., demolition landfills, sanitary landfills, solid waste processing facility) within the City and require the submittal of certain information along with development and final plans.

## Inspection

The City’s code allows private landfills to be inspected by the Public Works Department and the Health Department. Should the City desire to retain the right to enter facilities, the City could differentiate between routine inspections made during normal operational hours and entry required at any time there is a suspected threat to the health, safety, and welfare of the City. Currently, the annual permit fee of \$200.00 is insufficient to cover the costs of periodic inspections by the City and could be increased.

## Penalties

Penalties are limited with allowable fines ranging from \$1.00 to \$100.00 for violation of an ordinance. This provision could be expanded to include violation of state-issued permit conditions. Additionally, fine limits could be increased. The cap on penalties for other articles in Chapter 62 generally is \$500.

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14 St. Louis City Revised Code Chapter 11.02 Part V. Sanitary and Demolition Landfills.

15 Saint Louis County Code of Ordinances, Chapter 607, Subchapter E. Application for Initial License for Construction and Operation or Facility Expansion of a Sanitary Landfill, Demolition Landfill, Waste Processing Facility, Transfer Station, or Compost Facility.

16 Saint Louis County Code of Ordinances, Chapter 607, Subchapter G. Renewal of License for Construction and Operation or Facility Expansion of a Sanitary Landfill, Demolition Landfill, Waste Processing Facility, Transfer Station, or Compost Facility.

### **Article V. Recycling Batteries**

This article is intended to regulate the disposal of batteries within the City and to encourage the recycling of used batteries. This article requires that batteries be delivered to a collection or recycling facility or secondary lead smelter authorized by the director. The City may wish to change this provision to a “state-approved” facility.

### **Article VI. Waste Tire Code**

This article establishes the requirements for management of waste tires and implements the regulations promulgated by MDNR (10 CSR 80 – Chapter 8).

Currently, there is one scrap tire processor permitted by MDNR that is located in Kansas City: ABC Tire, LLC (permit #09095003).<sup>17</sup> There are three MDNR-permitted waste tire haulers located in the City: ABC Tire, LLC (#10095023), Beck’s Tire Service (#1009510), and Environmental Specialists, Inc. (#10095020).<sup>18</sup> However, other haulers located outside of the City may provide hauling services to waste tire collectors located in the City.

With the proposed regulation changes discussed earlier, the City will be required to amend its ordinances. The City may be able to add a definition covering the meaning of “scrap tire” to make the term synonymous with “waste tire.” The City will also need to eliminate Section 62-193 covering permits for waste tire sites if the State amends the regulations. These sites will no longer be allowed unless they are part of a processing facility and the City will no longer need to issue permits.

### **Article VII. Fees**

This article allows the City to charge \$1.00 for each scrap tire dropped off at a City facility. The City has the authority to adjust the fee to reflect the costs of service.

### **Article VIII. Nuisances**

This article requires owners of vacant properties to keep the property free of refuse, rubbish, and garbage. It also establishes the actions the City may take to abate nuisances. The requirements are reasonable; however, the allowable administrative costs (\$100) and municipal court costs (\$12) may be insufficient to cover the City’s costs for administering the abatement action.

### **Comparison to State requirements**

The Department of Natural Resources (MDNR) promulgated regulations governing the development of solid waste management plans (10 CSR 80-6.010 Local Solid Waste Management). As part of this group of regulations governing the content of plans, cities were required to officially adopt ordinance(s) that provide for the proper management of solid waste. A cursory review of the State’s minimum requirements for ordinances was conducted and the City’s ordinances were found to fulfill the requirements as shown in Table 22.

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17 Missouri Department of Natural Resources, Scrap Tire Processors in Missouri, July 31, 2007.

18 Missouri Department of Natural Resources, Missouri Permitted Scrap Tire Haulers, June 4, 2007.

**Table 22. Comparison of State Requirements and Kansas City Ordinances**

State Requirement	Kansas City Ordinance
Putrescible solid wastes be stored in closed containers or bags that restrict contact by animals, insects and weather	Sec. 62-4. Standards for Storage of Refuse Garbage shall be stored in refuse containers which are leakproof...the adequacy and sufficiency of refuse containers shall be determined with reference to their physical properties, as being capable or containing and storing refuse in a safe and sanitary manner related to their particular use...
Reusable containers shall be maintained in a clean and sanitary condition	Sec. 62-4. Standards for Storage of Refuse Refuse containers shall be continuously maintained in a clean, neat, and sanitary condition, free of structural defects
Putrescible solid waste is properly managed or disposed of at a minimum of once per week	Sec. 62-6. Frequency of Collection Residential and commercial refuse shall be collected at intervals not greater than once each week unless a lesser interval is deemed necessary.
Health and safety of the collectors of solid waste is provided for	Sec. 62-48 Authority to Prescribe Additional Rules and Regulations Weight limitations on the combined weight of refuse containers and the contents thereof...shall not exceed the weight and bulk which the director shall find can be loaded in refuse collection vehicles with safety and convenience by the collectors...
Storage, collection, processing and disposal of solid waste be managed in accordance with local and state laws and rules. All processing facilities and disposal areas utilized shall have appropriate local and state permits	Sec. 62-9 Authorized Locations for Disposal of Refuse All refuse collected under the provisions of this article shall be disposed of only at sanitary landfills operated by the city, or privately operated under a city permit, or at other lawful disposal installations, within or without the corporate limits of the city, which the appropriate health authorities shall have approved.
Vehicles used to collect and transport solid waste be kept in a clean and sanitary condition and covered to prevent littering	Sec. 62-8. Refuse Collection Vehicles All vehicles to be used in the collection of refuse shall be kept and maintained in a clean and sanitary condition and shall be so constructed, maintained and operated to prevent spillage.
Bulky waste be collected and properly disposed of at least once every year	Sec. 62-55 Collection of Residential Refuse, Leaves and Brush Waste, Bulky Waste Items, Appliances Containing Refrigerant... The director may provide for the collection from eligible dwelling units and disposal by the city of bulky waste items generated on residential property...
Burning of solid waste be in accordance with chapter 643, RSMo and rules promulgated	Sec. 8-4. Open Burning No person shall dispose of refuse by open burning or cause, allow or permit open burning of refuse.
Penalty assessment for violation of the local solid waste management ordinance be provided	Sec. 62-53. Penalty for Violation of Articles I and II Any person violating any provision of article I (General) or article II (Collection by City) of this chapter, or any lawful rule or regulation promulgated pursuant thereto, upon conviction, shall be punished by a fine of not less than \$50.00 and not more than \$500.00, or by imprisonments in the municipal correctional institution for a period not to exceed six months...

## **Summary and Recommendations**

Overall, the solid waste ordinances are relatively comprehensive for collection of refuse and specific recommendations were noted in the discussion above. However, the City's ordinances are limited with respect to solid waste management facilities. While the City code has limited requirements for private landfills; the City may also want to consider expanding the permitting and inspection requirements to include other private solid waste management facilities such as transfer stations, material recovery facilities, processing facilities, and compost facilities.

## 4 EXISTING PROGRAMS AND FACILITIES

### KANSAS CITY SOLID WASTE MANAGEMENT PROGRAMS

The following is an overview of the solid waste management programs offered by Kansas City.

#### **Refuse Collection**

The City provides weekly residential trash collection to over 140,000 residences. Collection is limited to single-family homes, duplexes, and other housing units in buildings that contain six or fewer units. City crews provide collection services to over 48,000 homes located in the central area of the city. A private hauler, under contract to the City, collects trash from the remaining eligible residences (91,000 homes) in the northern and southern areas of the City.

Currently, each eligible household is limited to pickup of two bags of trash per week. Additional bags require trash tags; at a cost of \$1 per bag. The City holds two “trash amnesty” days, when the City will provide unlimited collection.

Provisions are made for disabled persons who are incapable of placing their solid waste at the street and are unable to obtain assistance from others. In such cases, their solid waste is collected at the front of the house through special arrangements.

In March of 2007, the City began a trash cart service pilot program for selected neighborhoods using semi-automated collection and 68-gallon carts. The program is designed to test the impact of trash carts, on neighborhood cleanliness and improving safety for the City crews that handle trash collection. Six thousand households from nine neighborhoods are included in the program. The pilot program neighborhoods are:

- Boston Heights
- Center City
- Citadel
- Columbus Park
- Eastern 49/63
- Ivanhoe
- N.E. Industrial District
- Santa Fe
- Washington Wheatley.

A limited number of homeowners associations have contracted with private haulers for trash collection:

- Bannister East Homes Association
- Barrybrooke Villages Homes Association
- Crossgates Homes Association
- Foxcroft Homes Association
- Red Bridge Estates Homes Association

- River Park Townhouses
- Westchester Homes Association

These homeowners associations are eligible for a rebate of collection costs from the City.

Buildings containing seven or more units must contract with a private hauler for services. The owner or manager is reimbursed for this service based on the number of occupied units in the building or complex.

### **Recyclables Collection**

Recyclables are collected at the curb, through drop-off facilities located within the City, and at special events.

#### **Curbside Collection – KC Recycles**

The City provides weekly curbside collection of recyclables from eligible residences through a private hauler under contract to the City. Residents are provided an 22-gallon bin and recyclables are collected on the same day as trash. Materials collected at the curb include aluminum and tin cans, plastic bottles (#1 and #2), mixed paper, and cardboard. The recyclables are collected in a “single stream” and taken to a privately owned material recovery facility where they are sorted and sold.

#### **Drop-Off Facilities**

In addition to curbside recycling, four drop-off sites are located throughout the City which are operated under contract to the City:

- Environmental Campus on Deramus Avenue
- North – Metro North Mall, 400 N.W. Barry Road (northwest parking lot)
- Central - Metro Shopping Center, 1624 E. 63rd St. (Just east of The Paseo) – This site is temporarily closed.
- South - Wal-Mart Supercenter parking lot, 9051 Hillcrest Road

The staffed drop-off centers collect materials, in addition to the curbside-collected materials, such as glass, aluminum foil, electronics, compact fluorescent light bulbs, clothing, household batteries, scrap metal, Styrofoam blocks, and toner cartridges.

#### **Special Event Recycling**

Kansas City launched an event recycling program in 2007 to provide recycling services at special events and festivals. Recycling rates have averaged about 40 percent for the program’s first six events, including the Rhythm and Ribs festival, Gospel Jazz Festival, 18<sup>th</sup> Street Festival, Downs Syndrome Annual Buddy Walk, KC Charities Rally Kick-off Carnival and the Hispanic Festival. City staff attends events to educate residents about the City’s curbside recycling program.

## **Leaf and Brush Collection**

The City offers two options for collection of leaves and brush.

### **Curbside Collection**

The City collects up to 20 sacks or bundles of leaves and brush (excluding grass clippings) from residences at curbside, in the spring and fall.

### **Drop-Off Sites**

The City provides leaf and brush drop-off sites from mid-March through mid-January at two locations:

- 1815 N. Chouteau Trafficway
- 10301 Raytown Road.

The staffed sites are open on Saturdays and are free for residents of City of Kansas City, Missouri. Proof of residency such as a driver's license or water bill is required. Grandview and Raytown residents may use the sites with a voucher purchased from their respective municipalities.

Only leaves, yard waste and brush (including tree trimmings) are accepted. Grass clippings are not accepted.

A private contractor is responsible for managing the sites, chipping the material that is received, hauling material to the composting site, and marketing the organic materials.

## **Bulky Item Collection**

The bulky item collection program is for disposal of large household items that can't be handled as part of the weekly trash pickup. A bulky item is an item more than four feet long or weighing more than 40 pounds. Bulky items are collected by zone. Each zone receives service every month or every other month. Service is more frequent in areas where citizens use the service more frequently.

## **Neighborhood Cleanup Assistance Program**

The goal of this program is to assist City residents and interested parties by providing assistance in cleaning and maintaining environmentally safe and aesthetically pleasing neighborhoods. Components of this program include the dumpster program, blue bag program, and the multi-neighborhood cleanup program.

### **Dumpster Program**

Large trash containers are provided from April through October. They are provided to recognized neighborhood organizations or groups. These trash containers are available on a first come first serve basis. There are a preset number of trash containers available each weekend.

They are made available through this program to neighborhood organizations at a supplemented fee of \$50 each (each dumpster costs the City \$300; the City pays \$250 of that amount). The requesting neighborhood must reserve the trash containers at least three weeks in advance. The program is not available to individuals, companies, contractors or those involved in renovating, cleaning or remodeling personal or potential income properties.

### **Blue Bag Program**

Blue bags are provided to residents that pick up trash in organized neighborhoods as part of cleanup efforts. Participants must register. The bags are picked up on regular trash collection days and they do not count toward the two trash bag limit that residents can set out. These bags are located at area community “FOCUS Centers” throughout the city.

### **Multi-Neighborhood cleanup**

This program offers assistance with planning cleanups within specified areas. The needs and services that will be provided by the program are identified by the cleanup committee from the neighborhoods.

### **Tire Collection**

Tires are not collected with residential trash. The Solid Waste Division offers a waste tire drop-off program. Residents of the City can drop off waste tires at the Environmental Campus the first Saturday of each month from March through November. A fee of \$1.50 is collected for each rimless automobile tire. Fees are higher for tires on rims, larger tires, and for tires that are excessively muddy. Neighborhood groups conducting clean ups may bring in tires for free, with advance notice to the City.

### **Organics Collection**

Beginning March 1, 2008, the City will begin collecting food waste generated from certain City facilities, such as City Market, for composting.

### **Freon Collection**

Federal Law requires that freon be removed from appliances such as refrigerators, freezers, air conditioners, and dehumidifiers prior to disposal. The City is responsible for removing freon from appliances collected in the bulky item collection program, before they can be recycled.

### **Illegal Dumping Abatement**

The Division of Solid Waste is responsible for collecting waste from illegal dumping activities.

### **Dead Animal Collection**

The City is responsible for collecting dead animals from streets, public right-of-ways, and residences.

## AREA MUNICIPAL SOLID WASTE MANAGEMENT FACILITIES

The following is an overview of the solid waste management facilities located in the Kansas City metropolitan area.

### Missouri Area Landfills

#### Courtney Ridge Landfill

Allied Waste owns and operates this landfill in Sugar Creek, Missouri, which takes about 2,000 tons per day of solid waste and has about 27 years of capacity remaining. The company is not looking to expand landfill capacity in the near term.

In terms of diversion, the company is evaluating two options. First, because they are very close to the Lafarge Alternate Solid Fuels Facility at Sugar Creek, they are considering ways to separate high Btu non-recyclable solid waste such as plastic shrink wrap and other non-marketable waste components to supply to the Lafarge facility.

Second, they are doing a feasibility study to develop a MRF (materials recovery facility) at or near the landfill. This would be convenient as an “East side” facility to service such areas as Liberty, Lee’s Summit, Raytown, Gladstone, Kansas City, and other places where their hauling company has curbside or commercial recycling customers.

#### Lee’s Summit Landfill

The City of Lee’s Summit via its Public Works Department owns and operates a landfill. The landfill, averaging about 325 tons per day disposed, has an anticipated life span of seven to nine years (to 2014 to 2016).

Currently the City has hired a consultant to evaluate potential sites for a new regional landfill. Both Jackson and Cass Counties are being investigated as potential sites for a regional landfill of 120 to 160 acres and 750 tons per day capacity.

The City of Lee’s Summit also operates a yard waste composting facility at its landfill, a household hazardous waste site and one drop-off site at the landfill (with a second drop-off site to be added at their airport). Haulers are required to offer curbside recycling for an extra fee. Alternative solid waste processing facilities are not currently being considered by the City.

#### Show Me Regional Landfill

Allied Waste owns and operates this landfill near Harrisonville, Missouri, and takes 700 tons per day solid waste. The estimated life span is 22 years.

In addition to this location, Allied Waste has a permitted landfill site about 20 miles south of Harrisonville that is currently “mothballed.” It can be opened when there is sufficient waste to justify the extra capacity.

### **St. Joseph Landfill**

The St. Joseph, Missouri, landfill is publicly owned and operated. The landfill is currently accepting 900 tons per day, which is about 300 tons per day higher than a year ago. This increase is due to private haulers delivering solid waste to the facility from outside of the City. Although the City has accepted this additional daily tonnage, a City representative reported that the City is not looking to expand their operations much beyond what is necessary to service their own residents and to keep the landfill operations economically viable.

No future large scale solid waste management facilities in the St. Joseph area could be identified

### **Kansas Area Landfills**

#### **Johnson County Landfill**

The Johnson County Landfill (located within Johnson County) is owned and operated by Deffenbaugh Industries. This landfill is the largest in the region as well as the state of Kansas. The landfill is currently taking about 5,000 tons per day of solid waste including construction and demolition debris (C&D). The landfill is scheduled to close no later than 2027 under an agreement with the City of Shawnee.<sup>19</sup> The landfill, however, could close sooner.

The landfill not only takes most of the waste from Johnson County, it also takes waste from Wyandotte County and Missouri (including contract tonnages from Kansas City, Missouri). In fact, more than half of the solid waste delivered to the Johnson County Landfill originates outside of Johnson County.

Deffenbaugh Industries, Inc. was recently sold to private investors. As the dominant private company in the Kansas City area, the company can be expected to expand its recycling capabilities and to provide facilities such as transfer station(s) and/or other types of solid waste processing facilities in the future.

#### **Hamm Quarry Landfill**

The Hamm Quarry Landfill, located in Jefferson County, Kansas, is owned and operated by N.R. Hamm Quarry, Inc. Currently, the landfill is accepting approximately 1,500 tons per day and has an anticipated life span of over 70 years. Total site size is 570 acres and the permitted landfill footprint is 360 acres. The landfill permit does not specify a daily disposal limit.

The company also owns and operates the limestone mining operation located at the site. According to a company representative, since the mining division of the business has been operational much longer than the landfill division, the excavated landfill capacity (i.e., limestone has been mined from the ground) is approximately ten years ahead of the landfill operations. This “cushion” of capacity would allow the landfill to expand its daily intake. Even if the landfill tripled its daily intake, the mining operation would still be two to three years ahead of the landfill capacity requirements. Due to the historical limestone markets in Northeast Kansas, it would appear that the mining operation will not become a limiting factor to the landfill expansion.

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<sup>19</sup> Shawnee Planning Commission, Meeting Minutes, August 19, 2002.

The landfill is located off of Kansas Highway 24. Increased transfer trailer truck traffic could be a future concern. The Kansas Department of Transportation, however, has slated that portion of Highway 24 servicing the landfill to be improved during the 2010 to 2020 timeframe.

## **Area Municipal Solid Waste Processing Facilities**

### **Deffenbaugh Industries**

Deffenbaugh Industries, Inc. owns and operates the only large MRF (materials recovery facility) in the Kansas City region. It is located in Wyandotte County, Kansas, and is located close to the Johnson County Landfill.

This MRF is a facility that processes mixed recyclable materials collected from “single stream” curbside collection programs of which Kansas City, Missouri, is one example. Mixed materials are separated into saleable fractions (e.g., newspapers, aluminum cans, and plastic bottles) then baled and sold into the recyclable materials markets. In addition, the MRF handles a large volume of recyclable paper (e.g., corrugated containers (boxes) and office paper) from commercial accounts.

The capacity of the MRF is not available; however, when the Kansas City curbside program came online, the capacity was expanded to accommodate the materials collected from the program. As the primary hauler of residential and commercial solid waste in the region, the company has access to large quantities of recyclables materials.

Deffenbaugh can be expected to expand its recycling capabilities as this segment of solid waste management grows.

### **Lafarge Alternate Solid Fuels Facility**

In November 2007, Lafarge North America completed construction of an alternate solid fuels (ASF) facility at the organization’s Sugar Creek, Missouri, cement plant. The 22,000 square foot facility houses a primary and a secondary shredder that have the combined capacity to process up to 40,000 tons per year of solid wastes into an alternative fuel blend. At capacity the fuel will replace about 45,000 tons of coal.<sup>20</sup>

Systech Environmental Corporation, a wholly owned subsidiary of Lafarge North America, is responsible for the acquisition and processing of the waste materials. Systech is currently focusing on procuring high energy value industrial wastes such as plastics, paper, wood, rubber, and textile scrap for fuel blending. The primary target market area includes industrial clients within a 100 mile radius of Kansas City, Missouri.

It is anticipated that within the first four to five years, the facility be processing at full capacity (40,000 tons per year of industrial wastes).

Although utilizing municipal solid waste (MSW) as an ASF is not in the current plans, expanding the facility to accept non-industrial wastes (including MSW) is a possibility.

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<sup>20</sup> 50,000 metric tons.

Lafarge North America, in similar facilities located elsewhere in the U.S., has conducted a few pilot studies using the output from mixed waste processing facilities (sometimes referred to as “dirty MRFs” (material recovery facilities)) with limited success.

The main challenges in using MSW as an ASF is the segregation of non-combustible materials from the mixed MSW and products that contain chemicals that, when combusted, violate air permits. The pilot studies reported contamination from non-combustible materials (for example, food waste and metals) and permit limiting chemical constituents such as chlorine as obstacles to producing a usable ASF.

The combustible portion of MSW (e.g., non-recyclable plastics, paper, wood, textiles) needs to be separated from the recyclable and non-combustible portions (e.g., food, metals, glass). This can be accomplished by processing the mixed stream through a series of screens and other separation systems. After separation, the combustible portion would need further processing, by the shredding units, to ensure that the ASF is the proper size for use in the cement plant’s kiln.

The utilization of MSW as an ASF source would most likely require system upgrades at the new Sugar Creek processing facility and possibly modifications to the cement plant.

In addition, the cost of the additional processing may be a limiting factor in the use of MSW as ASF. In Europe, Lafarge is successfully processing and using MSW as ASF. However, the solid waste management costs are higher in Europe, which allows for the additional processing necessary to produce a usable fuel.

### **Missouri Organic Recycling Facility**

Missouri Organic Recycling (MOR) is a private composting firm located in the Northeast portion of the Kansas City region. The composting facility, located on about 1,700 acres, is the largest composting facility in the region. The active composting site is located on about 5 acres.

Operations started in 1992 with the enactment of Missouri’s yard waste landfill ban. Initially, the company composted green waste but has expanded to accept wood waste, food waste, and various other materials such as dry wall scrap, and cooking oil. Finished products, available through delivery or pick up, include enriched topsoil, compost, landscape mulch and erosion control mulches.

The company provides collection and processing services to local government, commercial, institutional, and industrial clients. Green waste only is accepted from individuals if the materials are delivered to the facility. Green waste includes grass, leaves, tree trimmings garden debris, wood chips, root balls and wood cut into five-foot sections or less. In 2007, about 70,000 cubic yards of green waste was diverted from landfill disposal.

In 2005, MOR began composting food waste. They are currently composting about 4,000 tons of food waste per year from several governmental, commercial, industrial, and institutional clients. This annual tonnage is expected to increase to 9,000 tons by 2008.

In early 2008, MOR will be collecting food waste from the City Market. Also in 2008, the company anticipates expanding their food waste collection service to local grocery stores and restaurants.

Food residual is made into Nature Wise Compost, a soil amendment used to increase soil organic matter. The compost helps to increase water-holding capacity, reduces soil erosion, holds more nutrients and creates healthier soils. The compost is also used to create mixes for rain gardens and green roofs.

### **Missouri Area Transfer Stations**

According to 2006 MARC Solid Waste Management District data, five privately owned Missouri transfer stations are located in the Kansas City Metropolitan Region.

Two transfer stations located in Kansas City, Missouri were permitted in 2006. The Manchester Transfer and Recycle Facility and Willey's Material Recovery and Transfer Station both collect MSW, recyclables and C&D debris. The C&D debris is segregated at the transfer station and hauled to C&D landfills in Johnson County, Kansas. The MSW is hauled to various landfills, and the recyclables are sent to various end-use markets. A third transfer station located in Buckner, Missouri, called the Recycle Transfer Station accepts MSW and recyclables. The MSW is hauled to a landfill in Sedalia, Missouri and the recyclables are sent to various end-use markets.

There are two transfer stations in Harrisonville, Missouri. Town and Country Disposal transfer station was permitted in January, 2006 and accepts MSW and C&D debris. The MSW is hauled to the Show-Me Landfill in Warrensburg, Missouri and the C&D debris is segregated at the transfer station and hauled to a C&D landfill in Johnson County, Kansas. The other transfer station is the Roll-Off Service which accepts MSW and recyclables (cardboard only) and hauls to various MSW landfills and end-use markets.

According to the waste flow data collected by MARC for data year 2005, the following tonnages were estimated for the five Missouri transfer stations:

- Manchester Transfer and Recycling Facility: 4,000 tons per month
- Willey's Material Recovery and Transfer Station: 4,000 tons per month
- Recycle Transfer Station: 2,500 tons per month
- Town and Country Disposal: 5,000 tons per month
- Roll-Off Service: less than 100 tons per month.

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## 5 CITY EXPENDITURES

This section provides an overview of solid waste management costs currently paid by the City. It also projects future costs that the city could expect to pay.

### HISTORICAL EXPENDITURES

Expenditures and revenues for the various solid waste and recyclables collection programs operated by the City were reviewed. A summary of the City's net expenditures since Fiscal Year 2005 is provided in Table 23. Between 2005 and 2006, the City's expenditures increased by 22 percent due to the implementation of curbside recycling (KC Recycles). There was an 8 percent increase between 2006 and 2007 that can be attributed to the addition of semi-automated trash collection services (trash cart program) and the addition of the public facility collection program. Between the years 2007 and 2008, the City experienced a 4 percent increase in expenditures.

**Table 23. Solid Waste Division Expenditures**

Description	Solid Waste Division Expenditures - Net Annual Costs			
	Fiscal Year			Projected
	2005	2006	2007	2008
<b>Residential Refuse Collection</b>				
City Collection Services	\$3,545,052	\$3,690,690	\$3,226,710	\$2,811,310
Contracted Collection (rear load)	\$4,215,647	\$6,040,996	\$4,685,475	\$4,709,567
Contracted Collection (trash carts)	\$0	\$0	\$321,627	\$78,880
<b>Total Annual Costs</b>	<b>\$7,760,699</b>	<b>\$9,731,686</b>	<b>\$8,233,812</b>	<b>\$7,599,757</b>
<b>Rebate Programs</b>				
Home Association Rebate	\$371,899	\$109,528	\$89,123	\$65,628
Apartment Rebate	\$1,328,713	\$1,344,756	\$1,182,423	\$1,328,896
<b>Total Annual Costs</b>	<b>\$1,700,611</b>	<b>\$1,454,284</b>	<b>\$1,271,547</b>	<b>\$1,394,524</b>
<b>Recycling Programs</b>				
KC Recycles	(\$88,135)	\$1,686,636	\$3,581,720	\$3,824,424
Recycling Centers	(\$2,539)	\$377,955	\$384,448	\$167,918
<b>Total Annual Costs</b>	<b>(\$90,674)</b>	<b>\$2,064,591</b>	<b>\$3,966,168</b>	<b>\$3,992,342</b>
<b>Leaf and Brush Programs</b>				
Leaf and Brush Collection	\$254,174	\$260,899	\$298,211	\$291,700
Leaf and Brush Drop-Off	\$426,950	\$178,200	\$427,437	\$650,995
<b>Total Annual Costs</b>	<b>\$681,124</b>	<b>\$439,099</b>	<b>\$725,647</b>	<b>\$942,695</b>
<b>Bulky Item Collection</b>	<b>\$1,688,057</b>	<b>\$1,239,352</b>	<b>\$2,064,325</b>	<b>\$2,718,566</b>
<b>Neighborhood Cleanup</b>	<b>\$73,541</b>	<b>\$65,862</b>	<b>\$174,001</b>	<b>\$185,981</b>
<b>Freon Appliance</b>	<b>\$51,746</b>	<b>\$100,000</b>	<b>\$15,360</b>	<b>\$49,000</b>
<b>Public Facility Collection</b>	<b>\$0</b>	<b>\$0</b>	<b>\$95,430</b>	<b>\$89,000</b>
<b>Illegal Dumping</b>	<b>\$0</b>	<b>\$507,747</b>	<b>\$448,361</b>	<b>\$721,798</b>
<b>Dead Animal Removal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,224</b>	<b>\$57,196</b>
<b>Administration</b>	<b>\$1,075,571</b>	<b>\$577,572</b>	<b>\$544,770</b>	<b>\$460,349</b>
<b>Revenues (Sponsor Contributions)</b>	<b>(\$18,500)</b>	<b>(\$6,000)</b>	<b>(\$6,000)</b>	<b>(\$6,000)</b>
<b>Total Annual Costs for all Programs</b>	<b>\$12,922,174</b>	<b>\$16,174,193</b>	<b>\$17,537,645</b>	<b>\$18,205,208</b>

A full summary of the City's expenditures is provided in Appendix B.

A summary of the costs for solid waste management programs on a per-household basis and per-ton basis are provided in Table 24. The City has projected that in fiscal year 2008 it will spend \$10.82 per month per household, or \$129.82 annually, to manage all trash and recyclables.

**Table 24. Solid Waste Division Expenditures – Unit Costs**

Description	Solid Waste Division Expenditures			
	Fiscal Year			
	2005	2006	2007	Projected 2008
<b>Cost per house</b>				
Housecount	137,200	138,600	140,000	140,235
\$/house (annual)	\$94.18	\$116.70	\$125.27	\$129.82
\$/house (month)	\$7.85	\$9.72	\$10.44	\$10.82
<b>Cost per ton</b>				
<b>All Waste</b>				
City collected tonnage	41,302	33,838	30,727	33,775
Contractor collected tonnage	69,628	63,763	63,272	63,644
Bulky	21,030	24,944	23,141	24,897
Illegal Dumping	3,358	2,633	2,724	2,628
Homeowners	7,540	7,540	7,540	7,526
Apartment	14,816	14,419	15,020	14,392
Total Tons	157,674	147,137	142,424	146,863
\$/ton (annual)	\$69.66	\$87.68	\$86.30	\$86.55
\$/house (annual)	\$80.06	\$93.08	\$87.79	\$90.64
<b>Residential Solid Waste</b>				
Tons collected	133,286	119,560	116,559	119,337
\$/ton (annual)	\$72.15	\$97.71	\$86.11	\$80.73
\$/house (annual)	\$70.09	\$84.29	\$71.69	\$68.70
<b>Bulky</b>				
Tons collected	21,030	24,944	23,141	24,897
\$/ton (annual)	\$80.27	\$49.69	\$89.21	\$109.19
\$/house (annual)	\$12.30	\$8.94	\$14.75	\$19.39
<b>Illegal Dumping</b>				
Tons collected	3,358	2,633	2,724	2,628
\$/ton (annual)	\$0.00	\$192.84	\$164.60	\$274.65
\$/house (annual)	\$0.00	\$3.66	\$3.20	\$5.15
<b>Recyclables</b>				
Tons collected	13,868	20,423	22,210	25,382
\$/ton (annual)	(\$6.54)	\$101.09	\$178.57	\$157.29
\$/house (annual)	(\$0.66)	\$14.90	\$28.33	\$28.47
<b>Leaf/Brush</b>				
Tons collected	2,354	1,711	3,473	3,137
\$/ton (annual)	\$289.35	\$256.63	\$208.94	\$300.50
\$/house (annual)	\$4.96	\$3.17	\$5.18	\$6.72
<b>All Programs</b>				
Tons managed	173,896	166,341	164,884	172,245
\$/ton (annual)	\$74.31	\$97.24	\$106.36	\$105.69
\$/house (annual)	\$94.18	\$116.70	\$125.27	\$129.82

## PROJECTED EXPENDITURES

The annual expenditures expected to maintain current City programs through the year 2027 were forecasted, using projected Fiscal Year 2008 expenditures as a baseline. Projections of how costs would change over this period of time due to factors such as inflation, salary increases, tipping fee increases due to landfill closures, population increases, and projections for waste generation (from Section 2) were made. The assumptions used to develop this forecast include the following:

- Administrative staff account for 36 percent of total refuse collection salaries and benefits.
- General inflation: 4 percent annual increase.
- 2007 Housecount: 48,732-City/91,503-Deffenbaugh. (North: 46,550, Central: 48,732, South: 44,953)
- Housecount: just over 1/2 percent annual increase (0.55%). Geographic changes by 2027: North will grow 51.1 percent, South will decline 7.8 percent, and Central core will decline by 8.3 percent.
- The City's current collection contract with Deffenbaugh industries has an RRI annual adjustment of 4 percent.
- City collection contracts are renegotiated with Deffenbaugh Industries in 2011. As a result, tip fees paid in 2012 will increase to \$30 per ton, collection costs increase 4 percent.
- Disposal fees increase to \$30 per ton in 2012 because of new disposal contracts negotiated in 2011.
- Lee's Summit Landfill closes in 2014.
- City renegotiates disposal and collection contracts again in 2016. Tip fee increases of 30 percent are experienced, increasing to \$33 per ton in 2017. Collection costs increase 4 percent.
- Johnson County Landfill closes in 2023. This estimated closure date is based on the landfill's current permitted capacity. This estimated closure date also assumes that the landfill continues to accept the same amount of waste annually that it has historically taken (approximately 1.7 to 1.8 million tons). The landfill owners will likely seek a permit for additional capacity; however, under an agreement with the City of Shawnee, Kansas, the landfill will close no later than 2027.
- City's waste is sent to Hamm Quarry beginning 2023; costs to ship waste increase collection costs by 45 percent. Tip fees decrease to \$30 per ton.

Table 25 identifies the funding requirements to the year 2027 based on the adjustments and assumptions discussed above. A detailed breakout of these costs is provided in Appendix C. Based on the forecasted data, the City’s funding requirements increase by an average of 3.98 percent annually, except for the year 2023. It is expected that landfills used by Kansas City will be closed, or closing, at this time and the City will be required to haul trash a significantly longer distance, resulting in an increase of more than 17 percent in total annual costs across all programs.

This forecast quantifies the major cost factors of the City’s solid waste system, including collection, recycling, and disposal. The cost estimate and analyses presented in this forecast provide reasonable and sound information for decision-making purposes. Actual costs may vary from those indicated, but the overall impact of such variations should not significantly alter the relative comparisons.

Financing and interest expenses are included in this analysis; however, there may be alternative approaches to funding the various capital expenditures in the analysis through City reserves or other financial mechanisms.

Unknown changes in solid waste generation, disposal, or management practices in the City or the region can affect the operational and capital cost requirements for the City’s solid waste system. The results of the cost analyses presented in this plan should be carefully reviewed in light of the assumptions presented.

**Table 25. Expenditure Forecast**

Total Projected Expenditures							
Year	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Total Annual Costs	\$19,413,118	\$20,142,763	\$20,872,358	\$22,201,137	\$23,002,960	\$23,835,870	\$24,703,297
\$/ton (annual)	\$108.33	\$108.20	\$111.13	\$117.19	\$120.34	\$123.61	\$126.99
\$/house (annual)	\$137.68	\$142.07	\$146.41	\$154.88	\$159.59	\$164.47	\$169.52
Year	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Total Annual Costs	\$25,690,847	\$26,811,569	\$29,041,806	\$30,481,343	\$31,603,043	\$32,768,361	\$33,979,162
\$/ton (annual)	\$130.93	\$135.47	\$145.46	\$151.36	\$155.56	\$159.91	\$164.40
\$/house (annual)	\$175.33	\$181.98	\$196.04	\$204.63	\$211.00	\$217.59	\$224.39
Year	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>		
Total Annual Costs	\$40,310,241	\$41,826,741	\$43,402,792	\$45,040,766	\$46,743,131		
\$/ton (annual)	\$193.33	\$198.87	\$204.59	\$210.51	\$216.62		
\$/house (annual)	\$264.75	\$273.20	\$281.95	\$290.99	\$300.33		

## 6 BENCHMARKING SURVEY

The purpose of this section is to compare the City's solid waste management programs and services to other comparable municipalities. For this task six communities were benchmarked that are reasonably comparable to the City in order to compare the services offered by those cities to services offered by Kansas City. The cities chosen had a 2006 estimated population between 300,000 and 700,000 residents. The selected cities also provide solid waste services using monies allocated from the city's general fund. The cities include:

- Washington, DC
- Denver, Colorado
- Louisville, Kentucky
- Nashville, Tennessee
- Omaha, Nebraska
- Raleigh, North Carolina

A list of all cities initially considered for this analysis is provided in Appendix D.

Although the Solid Waste Division is responsible for services such as illegal dumping and dead animal removal, this benchmarking analysis is limited to:

- Residential single-family refuse collection
- Residential multi-family refuse collection
- Residential recycling collection
- Residential yard waste collection for diversion
- Residential bulky item collection
- Commercial collection and recycling services

The results of the benchmarking analysis are provided in Tables 26 through 31. A brief summary of the services provided by the cities is provided below.

### WASHINGTON, D.C.

The city and the district are located on the banks of the Potomac River and bordered by the states of Virginia (to the west) and Maryland (to the north, east and south). According to the Census Bureau, the District's has a resident population of 581,530. However, the influx of more than 410,000 workers into Washington on a normal business day boosts the population by 72 percent. The city's daytime population is estimated at 982,853. Much of the property in the District (an estimated 41 percent) is owned by the Federal government, foreign governments, or tax-exempt organizations.

The city provides refuse collection service to approximately 110,000 households. This includes all single-family households and residential buildings with up to three units. Services include the collection of garbage, recyclables, and bulky items. Collection is provided by City crews. Most of the households are provided a 96-gallon cart and receive weekly collection. Some of the older areas of the city are provided a smaller cart and receive collection twice weekly.

Curbside recycling (single stream) is provided weekly and recyclables are sent to a privately-owned material recovery facility. Yard waste is collected along with the regular trash; it is not collected separately for diversion purposes.

The city operates a transfer station, and waste is sent to a privately-owned and operated waste-to-energy facility for disposal.

The city provides services using funds allocated from the city's general fund. The District's annual solid waste budget averages more than \$64 million per year. Of that amount, residential trash and recyclables collection and disposal accounts for approximately \$34 million per year. The city spends approximately \$317 annually per household.

## DENVER, COLORADO

The City of Denver is the capital and the most populous city of Colorado. Denver is located just east of the Front Range of the Southern Rocky Mountains. The city's population for 2006 was estimated at 566,974.

The city collects trash on a weekly basis from just over 164,000 households from buildings with fewer than seven units. Recyclables are collected every other week from 65,000 volunteer households using 65-gallon carts. The city operates its own transfer station and uses two private transfer stations. The city also direct hauls to its own landfill. The recyclables are sent to a privately contracted processing facility.

The agency is allocated operating funds from the city's general fund on an annual basis. The trash and recycling operating budgets are valued at \$19,500,000 in 2007. The city spends approximately \$134 per household annually.

## LOUISVILLE, KENTUCKY

Louisville is situated in north-central Kentucky on the Kentucky-Indiana border. Louisville is the county seat of Jefferson County. In 2003, Louisville and Jefferson County merged into a consolidated city-county government named Louisville-Jefferson County Metro Government (official long form) and Louisville Metro (official short form). The U.S. Census Bureau gives two different population figures for Louisville: for the consolidated Louisville-Jefferson County it lists the 2006 estimated population as 701,500 (17th largest in the nation and equal to that of Jefferson County); for the Louisville-Jefferson County balance it lists the population as 554,496. The "balance" is a designation created by the Census Bureau to describe the portion of Louisville-Jefferson County that does not include any of the semi-independent separately incorporated places located within Louisville Metro (such as Anchorage, Middletown or Jeffersontown).

The city provides weekly collection of trash within the Urban Services District (former city of Louisville) to approximately 93,000 homes. Eligible households (eight or fewer units) also receive weekly collection of recyclables using a two-sort system.

Louisville Metro has a ban on yard waste in landfills. The city provides weekly, unlimited collection of yard waste.

Metro Solid Waste collects trash from commercial establishments in the Central Business District using a semi-automated collection system. Each business receives two 95-gallon carts. Businesses in the downtown area are provided the opportunity to recycled mixed office paper at no charge. Collection is weekly using specially-marked 68-gallon or 35-gallon roll carts.

In 2007, the city appropriated funds of \$23,666,800 for both residential and commercial waste and recyclables collection. The city spends approximately \$222 per household annually.

## NASHVILLE, TENNESSEE

Nashville is the capital of Tennessee. It is the second most populous city in the state after Memphis. It is located on the Cumberland River in Davidson County, in the north-central part of the state. Nashville has a consolidated city-county government which includes seven smaller municipalities in a two-tier system. The population of Nashville-Davidson County stood at 552,120 in 2006 according to Census Bureau estimates.

The city provides automated weekly collection of trash within the Urban Services District to approximately 123,000 homes. Eligible households receive a 96-gallon cart. Households also receive monthly single-stream recyclables collection using 96-gallon carts. Recycling dumpster services are provided to apartments.

The city also provides commercial collection. The number of containers and the frequency of collection vary depending upon the location of the business.

In 2006, the city spent approximately \$102 per household for trash and recycling.

## OMAHA, NEBRASKA

Omaha is the largest city in Nebraska and is located along the Missouri River on the eastern side of the state. The city serves as the county seat of Douglas County. Omaha is the anchor of the Omaha-Council Bluffs metropolitan area. According to Census Bureau 2006 estimates, the city had a population of 419,545.

The city provides contracted (Deffenbaugh Industries) weekly trash collection services to approximately 122,000 single-family households (four or fewer units). Residents may use trash cans up to 32 gallons or clear plastic bags. Homes are limited to five containers per week.

Weekly curbside collection also is provided to eligible homes under contract with Deffenbaugh Industries.

The city's contract with Deffenbaugh began January 1, 2006. The city pays \$5.14 per household, per month for garbage and recycling collection; and \$2.85 per household, per month (for nine months) for yard waste collection. The contract is adjusted annually for inflation

(based on KC Consumer Price Index). The contract is in place for 10 years, with an option to extend an additional five years.

In addition, the city pays the disposal fee at the Douglas County Landfill (\$21.79 per ton) and the yard waste composting facility (\$19.52 per ton up to 26,500 tons and \$10.74 for all additional tons).

The annual cost per home is \$110 for trash, recycling, and yard waste.

## RALEIGH, NORTH CAROLINA

Raleigh is the capital of North Carolina and the county seat of Wake County. Raleigh falls in the northeast central region of the state. The city had an estimated 2006 population of approximately 356,321, making it the second most populous in North Carolina, after Charlotte. Raleigh, Durham and Chapel Hill make up the three primary cities of The Research Triangle metropolitan region.

The city provides weekly collection from 103,000 single-family homes and contracts collection for 40,000 multi-family units. Single-family homes and townhouses are provided automated collection using 96-gallon carts.

Weekly, curbsorted collection of recyclables is provided using an 18-gallon bin. Weekly curbside collection of yard waste is provided from 162,200 service points (single-family and multi-family dwellings).

The city also provides commercial collection (downtown area) and disposal six days a week in the central business district for a monthly fee of \$30. The city also provides curbside recycling to establishments in the central business district.

The city has a budget of \$22,801,850 from the general fund. Annual trash and recycling costs are approximately \$135 per household.

**Table 26. Benchmarking Analysis: Washington, D.C.**

City:	Washington, D.C.
<b>Demographics</b>	2006 Population: 581,530 Land Area (square miles): 61.4 Population per Square Mile: 9,471
<b>Residential Solid Waste Collection</b>	
Service	City crews provide trash collection for single-family homes and multi-family homes with fewer than three units. Most of the residences (75%) receive weekly service. Some households in the older sections of the city with narrow alley receive service twice weekly.
House Count	110,000 single-family homes
Collection Method	For weekly collection areas a 96-gallon containers is used. Smaller containers are used for areas receiving twice weekly service. Residents are allowed to use more than one container.
Tonnage	128,000 tons (2006) (an average of 1.16 tons per household).
Facilities	The city operates the Fort Totton Transfer Station.
Disposal	Waste is sent to a privately owned and operated waste-to-energy facility for disposal (located in Fairfax County, Virginia).
Self Haul	Residents may self haul to the transfer station. Proof of residency is required.
<b>Residential Bulky Item Collection</b>	
Service	Bulky item collection by appointment. Residents are limited to 7 items per pickup.
Tonnage	4,610 tons (2006)
<b>Residential Yard Waste Collection</b>	
Service	Yard waste is collected weekly, along with regular trash. Residents are limited to 7 bags or bundles per week.  City provides separate curbside leaf collection (bags or vacuum trucks for loose piles) November through January.  Curbside collection of Christmas trees during the first two weeks of January.
Tonnage	9,588 tons of leaves collected from fall leaf collection (2006).
Facility	
<b>Residential Recycling</b>	
Service	City provided curbside recycling (single stream) for single-family homes and apartment buildings with 3 units or less.  Because 70% of the city's waste is generated by commercial buildings, the District has a mandatory source separation program for all commercial and residential establishments. These include office buildings, churches, retailers, warehouses, apartment buildings, cooperatives, condominiums, bars and restaurants, as well as museums, associations, non-profit organizations, schools, universities and single-family homes.  The office encourages recycling through education, technical assistance

**Table 26. Benchmarking Analysis: Washington, D.C.**

City:	Washington, D.C.
	and enforcement. To enforce compliance with recycling laws, approximately 3,000 inspections are performed each year.
Materials Collected	#1 and #2 plastic bottles, glass, mixed paper, cardboard, steel/tin cans, and aluminum cans and pie plates.  Electronic items are collected at least twice per year.
Tonnage	24,000 tons (estimate)
Facility	Uses a privately-owned material recovery facility (Waste Management).
Revenues	
Recycling Rate	19.99% (2006)
Mandated Recycling Goal	The recycling goal of the District is 45 percent.
<b>Commercial Services</b>	
Services Offered	None provided by the District. Multi-family (>3 units) and commercial buildings are served by private disposal haulers.
Rates	N/A
<b>Budget</b>	
Fund Type	General fund
Source of Revenue	
Appropriated Funding Levels	<p>The District's solid waste budget is \$64,233,000:</p> <ul style="list-style-type: none"> <li>• Collection (trash/recyclables): \$19,594,000</li> <li>• Disposal: \$14,814,000</li> <li>• Enforcement: \$5,158,000</li> <li>• Public Space Cleaning: \$24,667,000</li> </ul> <p>Additional funding of \$565,000 for recycling policy development. The District pays: \$61.07/ton for disposal The District pays \$30.54/ton for recyclables processing</p> <p><u>Annual Costs</u> Trash collection cost per household: \$148.93 Recycling collection cost per household: \$53.98 Disposal cost per household: \$134.67 Recycling policy development cost per household: \$5.14 Trash/recycling costs per household: \$317.94 Total program costs per household (minus public space cleaning): \$359.69</p>
Personnel	Solid waste: 757.1 FTE Recycling policy: 6 FTE

**Table 27. Benchmarking Analysis: Denver, Colorado**

City:	Denver, Colorado
<b>Demographics</b>	2006 Population: 566,974 Land Area (square miles): 153.4 Population per Square Mile: 3,696
<b>Residential Solid Waste Collection</b>	
Service	Provided by city crews, weekly trash collection, 67 trash routes
House Count	164,350 homes (residential units less than seven)
Collection Method	Three collection methods are used: manual rear load operation (45,850 households), automated barrel (17 routes serving 54,300 households), and dumpster side loading (24 routes with 17,000 dumpsters serving 64,200 households).
Tonnage	234,059 tons in 2006 (an average of 1.42 tons per household).
Facilities	City operates a transfer station, uses two private transfer stations, as well as direct hauls to its own landfill
Disposal	A regional landfill owned by the city and county and operated by Waste Management under contract with the city.
Self Haul	Residents may take trash to transfer stations or landfill for a fee.
<b>Residential Bulky Item Collection</b>	
Service	An average of 10 rotations (every 5 weeks). Separate, scheduled, appliance collection.
Tonnage	Approximately 6,400 tons of bulky waste was collected in 2006
<b>Residential Yard Waste Collection</b>	
Service	No separate collection.  The city offers seasonal collection programs for Christmas trees and leaves.
Tonnage	N/A
Facility	N/A
<b>Residential Recycling</b>	
Service	Every other week collection, single stream, from 65,000 volunteer homes using 65 gallon carts (eleven routes).
Materials Collected	City collects corrugated cardboard, mixed office paper, junk mail, magazines and catalogs, paperboard, phone books, brown paper bags, newspapers, plastic bottles, glass bottles and jars, aluminum and steel cans, aluminum foil and pie tins, and empty aerosol cans.
Tonnage	21,761 tons in 2006
Facility	Collected material is transferred to a privately contracted processing facility.
Revenues	Revenues of \$686,374 in 2006
Recycling Rate	Estimated 8.1% of waste stream
Mandated Recycling Goal	No recycling laws, however governor issued a challenge for citizens to divert 50% of the waste by 2000.
<b>Commercial Services</b>	
Services Offered	None offered by the city.
Rates	N/A

**Table 27. Benchmarking Analysis: Denver, Colorado**

City:	Denver, Colorado
<b>Budget</b>	
Fund Type	Operating funds come from the City's general fund.
Source of Revenue	Recycling revenue: \$686,374.
Appropriated Funding Levels	<p>2007 appropriated funds:</p> <ul style="list-style-type: none"> <li>• Administration: \$1,746,994</li> <li>• Trash Collection: \$15,667,847</li> <li>• Bulky: \$1,682,422</li> <li>• Recycling: \$2,093,332</li> </ul> <p>\$2.7 million spent on tip fees Average cost for disposal: \$12.29 per ton in 2006/\$13.71 per ton estimated for 2007</p> <p><u>Annual Costs</u> Trash collection cost per household: \$64.66 Trash disposal cost per household: \$17.50 (based on 2006 cost per ton) Trash collection and disposal cost per household: \$111.62 Bulky waste collection and disposal cost per household: \$10.24 Recycling cost per household: \$12.74 (based on all households) Trash/bulky/recycling costs per household: \$134.60 Trash/bulky/recycling costs per household: \$130.42 (net recycling revenues)</p>
Personnel	Agency uses 225 employees based out of four work stations

**Table 28. Benchmarking Analysis: Louisville, Kentucky**

City:	Louisville, Kentucky
<b>Demographics</b>	2006 Population: 554,496 Land Area (square miles): 62.1 Population per Square Mile: 8,929
<b>Residential Solid Waste Collection</b>	
Service	Weekly collection of trash within the Urban Services District (former City of Louisville).
House Count	93,000 homes
Collection Method	Automated collection. Residents are provided on 95-gallon cart. Only trash inside cart is collected. Residents may purchase an additional 95-gallon or 68-gallon cart.
Tonnage	70,135 tons (2006) (an average of .754 tons per household)
Facilities	The city operates the Waste Reduction Center, a bulk waste disposal alternative.
Disposal	Waste is sent to a privately-owned landfill.
Self Haul	Residents may take waste to the Louisville Metro Waste Reduction Center. A fee is charged according to the size of the vehicle and volume of material.
<b>Residential Bulky Item Collection</b>	
Service	Metro solid waste provides quarterly bulk collection. Residents may also use the Metro Waste Reduction Center, for a fee. The city also operates a twice-a-year junk and bulk drop-off program on a weekend in April and October (usually held at the Outer Loop landfill).
Tonnage	54,195 tons collected in 2006 from all three bulk programs.
<b>Residential Yard Waste Collection</b>	
Service	Louisville Metro has a ban on yard waste in landfills. Weekly, unlimited collection of yard waste is provided.
Tonnage	19,484 tons of yard waste were collected and composted in 2006. Additionally, 11,280 pounds of Christmas trees were collected and mulched.
Facility	Waste Management Outer Loop Landfill.
<b>Residential Recycling</b>	
Service	Weekly collection (contracted) from households (eight or fewer units) using 18-gallon bins. The city uses a two sort system; fiber (paper items) must be separate from commingled glass, plastic, tin and steel, and aluminum.  Condominium complexes are serviced once per week using 90-gallon totes.
Materials Collected	Louisville Metro Solid Waste has five staffed and 13 unstaffed recycling drop-off locations.  The city operates a year-round electronics recycling center. Residents may take up to three items (per visit) to the waste reduction center.
Tonnage	Curbside and drop-off facilities take mixed paper, glass, metal and aluminum, and plastic bottles (#1 through #7). The staffed drop-off facilities also accept household batteries and toner cartridges.

**Table 28. Benchmarking Analysis: Louisville, Kentucky**

City:	Louisville, Kentucky
Facility	21,311 tons of material were collected in 2006 from curbside and drop-off centers.  229 tons of e-waste were collected.
Revenues	\$739,000
Recycling Rate	Estimated at 25% of the waste stream (including yard waste).
Mandated Recycling Goal	1991 bill, SB2, set a policy to reduce waste and set a goal of 25% by 1997. The state did not meet the 1997 goal. 2002 bill, HB 174, amended parts of the waste reduction policy, but failed to set a new goal. Counties are required to provide access to recycling for their residents. Each county sets its own waste reduction goal and finds ways to finance its own programs.
<b>Commercial Services</b>	
Services Offered	<p>Metro Solid Waste collects trash from commercial establishments in the Central Business District using a semi-automated collection system. Each business receives two 95-gallon carts.</p> <p>The city provides free, onsite technical assistance to businesses interested in waste reduction.</p> <p>Businesses in the downtown area are provided the opportunity to recycled mixed office paper at no charge. Collection is weekly using specially-marked 68-gallon or 35-gallon roll carts. Approximately 375 tons of paper were collected in 2006, which generated revenues of \$8,195 (revenues are earmarked for tree planting projects.).</p> <p>Businesses also may take electronic equipment to the waste reduction center for recycling, for a fee.</p>
Rates	None.
<b>Budget</b>	
Fund Type	General fund
Source of Revenue	Waste Reduction Center charges: \$530,000 Recycling revenue: \$739,000 Enforcement/licenses: \$116,200
Appropriated Funding Levels	<p>2007 appropriated funds of \$23,666,800:</p> <ul style="list-style-type: none"> <li>• Waste Collection: \$10,711,200</li> <li>• Bulk Waste Collection: \$4,014,000</li> <li>• Bulk Waste support: \$1,537,400</li> <li>• Recycling: \$2,666,700</li> <li>• Central Business District: \$970,500</li> <li>• Waste reduction center: \$1,736,100</li> <li>• Administration: \$835,500</li> <li>• Enforcement/Compliance: \$268,500</li> <li>• Other functions (street sweeping): \$926,500</li> </ul>

**Table 28. Benchmarking Analysis: Louisville, Kentucky**

City:	Louisville, Kentucky
	<p><u>Annual Costs</u>                      Trash and yard waste collection and disposal cost per household: \$115.17                      Bulky waste/reduction center cost per household: \$78.36                      Recycling costs per household: \$28.67                      Trash/bulky/recycling costs per household: \$222.20                      Total annual costs per household: \$244.52</p>
Personnel	240 FTE

**Table 29. Benchmarking Analysis: Nashville, Tennessee**

City:	Nashville, Tennessee
<b>Demographics</b>	2006 Population: 552,120 Land Area (square miles): 473.3 Population per Square Mile: 1,167
<b>Residential Solid Waste Collection</b>	
Service	Trash collection to single-family homes in the Urban Services District (169 sq mi). Approximately 1/3 is collected by city forces and 2/3 is contracted.  The city provides weekly dumpster service to all apartments and public housing using 8-cubic-yard dumpsters.
House Count	122,743 homes
Collection Method	Automated collection. Households are provided (1) 96-gallon cart. Additional carts are available for \$45.00. All trash must be placed inside a cart to be collected.
Tonnage	July 2006 – June 2007: 152,464 tons (an average of 1.24 tons per household).
Facilities	City uses a privately-owned transfer station.
Disposal	Waste is sent to a privately-owned landfill.
Self Haul	The city operates three waste convenience centers that residents may use for disposal of trash exceeding the volume of the cart. The city collects an additional 13,475 tons at these facilities.. There is no charge for fewer than three items. A fee schedule applies for larger loads. No commercial waste is accepted.
<b>Residential Bulky Item Collection</b>	
Service	Scheduled bulk item collection at no cost (collection within 1-5 business days). Up to six items per address. As discussed above, residents may take up to three bulk items for free per day to the convenience centers.
Tonnage	Not available. Included with curbside collection tonnage.
<b>Residential Yard Waste Collection</b>	
Service	Brush and yard waste is collected five times per year in the Urban Services District and the General Services District. Some collection is contracted. Residents also may take brush and leaves directly to the Bordeaux Mulch Facility for a fee. Mulch and compost are available for purchase.
Tonnage	30,269 tons
Facility	Bordeaux Mulch Facility. Chipping and composting operations are contracted.
<b>Residential Recycling</b>	
Service	Monthly, single-stream recyclables collection from single-family homes using 96-gallon carts. Recycling dumpster services provided to apartments. Services are subcontracted.  The city operates 10 drop-off centers. Recyclables also are accepted at the convenience centers.
Materials Collected	Materials accepted included mixed paper, aluminum and metal cans, plastic bottles and containers (#1-7). Glass, plastic bags, and clamshell

**Table 29. Benchmarking Analysis: Nashville, Tennessee**

City:	Nashville, Tennessee
	containers are not accepted.
Tonnage	Mixed curbside recyclables: 12,621 Dumpsters/Govt. buildings: 558 tons
Facility	The recyclables go to a private, local processor under a contract with the city.
Revenues	\$458,196 for mixed recyclables.
Recycling Rate	The city has calculated a curbside recycling participation rate (setouts) at 37%. The public sector recycling rate is 29%. The combined public and private sector recycling rate is estimated to be 28%.
Mandated Recycling Goal	The state's solid waste management act mandates a 25% reduction rate of solid waste. Solid waste management regions are required to submit a plan for management of their solid wastes for 10 years in the future. Each year, the regions are required to submit a progress report on their solid waste plan. The state reviews the plans to determine if progress is being made to meet the state's 25% diversion goal.
<b>Commercial Services</b>	
Services Offered	Commercial collection is provided by the city, the number of containers and the frequency of collection vary depending upon the location of the business:  Weekly trash collection is available to business in the Urban Service District. Generally, businesses may set up to four 30-gallon containers out each week. Businesses requiring more volume or more frequent service must contract with a private hauler.  Metro collects trash six nights a week from the downtown area. 96 gallon containers. Up to six carts with the first two provided for free and each thereafter to cost \$40.
Rates	None
<b>Budget</b>	
Fund Type	Operating funds come from the City's general fund and are transferred to a special revenue fund, the Waste Management Fund, which totals \$22,756,300. Approximately \$19 million is transferred to the Waste Management Fund from the general fund. The remainder of the Waste Management Fund comes from charges and fees.
Source of Revenue	Recycling/mulch sales revenue: \$470,119 Service fees: <ul style="list-style-type: none"> <li>• Front loader – housing complexes: \$202,500</li> <li>• Convenience center tip fees (\$5 - \$10: small load/\$11/cy: large load: \$362,021</li> <li>• Compost facility tip fee: (\$.01/lb: yard waste/\$15/ton: ground wood) \$180,014</li> <li>• Inspection fees: \$5,950</li> <li>• MSW surcharge/Waste Generation Fee (\$6/ton): \$2,623,650</li> <li>• C&amp;D Surcharge/Waste Generation Fee (\$.50/cubic yard):</li> </ul>

**Table 29. Benchmarking Analysis: Nashville, Tennessee**

City:	Nashville, Tennessee
	<p>\$441,297</p> <p>Total service fees: \$3,815,432</p>
<p>Appropriated Funding Levels</p>	<p>2006 costs:</p> <p>Residential trash collection: \$7,936,747 (contracted: \$6,895,474, city: \$1,041,273)</p> <p>Commercial trash collection: \$485,941</p> <p>Convenience centers: \$1,026,912</p> <p>Transfer and disposal costs: \$3,781,475</p> <p>Curbside recycling: \$878,399</p> <p>Drop-off centers: \$217,237</p> <p>Administrative: \$3,578,661</p> <p>Education: \$94,174</p> <p>Customer service: \$262,769</p> <p><u>Annual Costs</u></p> <p>Collection cost per household: \$64.66</p> <p>Collection and disposal cost per household: \$95.47</p> <p>Trash/recycling costs per household: \$102.63</p> <p>Total cost per household: \$144.83</p>
<p>Personnel</p>	<p>94 budgeted positions</p>

**Table 30. Benchmarking Analysis: Omaha, Nebraska**

City:	Omaha, Nebraska
<b>Demographics</b>	2006 Population: 419,545 Land Area (square miles): 115.7 Population per Square Mile: 3,626
<b>Residential Solid Waste Collection</b>	
Service	The city provides contracted (Deffenbaugh Industries) weekly trash collection services to single-family households (four or fewer units).
House Count	122,000 (2006)
Collection Method	Trash cans up to 32 gallons or clear plastic bags. Homes are limited to 5 containers per week.
Tonnage	150,069 tons (2006) (an average of 1.23 tons per household).
Facilities	Privately owned and operated by Waste Connections; solid waste is transferred to a landfill in David City. Some private haulers collecting commercial solid waste use the facility. No residential waste, except bulky waste, passes through the facility.
Disposal	The city uses the Douglas County landfill, which is owned and operated by the county.
Self Haul	Residents may self-haul bulky items to the transfer station up to 4 times annually.
<b>Residential Bulky Item Collection</b>	
Service	Residents may self-haul bulky items to the transfer station up to 4 times annually. Residents pay the following fees: one time administrative fee of \$7.00 (collected at the first visit) in exchange receives four vouchers. Cars are charged one voucher, pickup trucks are two vouchers, loads exceeding this amount pay an additional fee. This cost is subsidized by the City (up to four loads).
Tonnage	Included above.
<b>Residential Yard Waste Collection</b>	
Service	Weekly curbside collection for nine months of the year under contract with Deffenbaugh Industries (April through November). Residents may set out unlimited quantities. The city also operates a Christmas tree drop-off site.
Tonnage	36,000 tons managed at compost facility (2006)
Facility	The city operates a composting facility for processing the yard waste collected. The compost is used on city parks and facilities and is sold either in bulk or in 40 pound bags through local retailers and from the facility under the name "OmaGrow."
<b>Residential Recycling</b>	
Service	Weekly curbside collection under contract with Deffenbaugh Industries.
Materials Collected	Mixed paper, cardboard, aluminum and steel cans, PETE and HDPE bottles
Tonnage	15,084 tons (2006)
Facility	The city has a contract with Firstar Fiber, which operates a material recovery facility.
Revenues	The city does not pay for processing, but instead receives revenues of \$39.29 per ton.
Recycling Rate	25%, including yard waste.

**Table 30. Benchmarking Analysis: Omaha, Nebraska**

City:	Omaha, Nebraska
Mandated Recycling Goal	1992 law, LB1257, sets 25% waste reduction goal by 1996, 40% by 1999, 50% by 2002. State met 1996 goal. Some counties probably met 40% goal in 1999, but most probably did not. The goals are not mandated, and there are no waste reduction tracking or reporting requirements.
<b>Commercial Services</b>	
Services Offered	None.
Rates	N/A
<b>Budget</b>	
Fund Type	General Fund, supported by general sales and property taxes.
Source of Revenue	The city receives \$39.29 per ton of recyclables from its processing contractor. The revenue rate is adjusted monthly and is based on the recycling industries published standard, The Official Board Markets.
Appropriated Funding Levels	<p>The general fund has appropriated \$14 million for: residential garbage, recycling, and yard waste collection; recycling drop-off sites; neighborhood spring clean up; Christmas tree drop-off sites; and bulky material drop-off site subsidy.</p> <p>The city's contract with Deffenbaugh began January 1, 2006. The city pays \$5.14 per household, per month for garbage and recycling collection; and \$2.85 per household, per month (for nine months) for yard waste collection. The contract is adjusted annually for inflation (based on KC Consumer Price Index). The contract is in place for 10 years, with an option to extend an additional five years.</p> <p>In addition, the city pays the disposal fee at the Douglas County Landfill (\$21.79 per ton) and the yard waste composting facility (\$19.52 per ton up to 26,500 tons and \$10.74 for all additional tons).</p> <p>The city's compost facility is operated on an enterprise fund. This fund receives payments from the general fund based on the tonnages managed. This fund has a budget of \$810,475.</p> <p><u>Annual Costs</u>                      Trash/recycling collection cost per household: \$61.68                      Yard waste collection cost per household: \$25.65                      Trash disposal cost per household: \$17.68                      Yard waste processing cost per household: \$5.08                      Recycling revenue per household: \$5.16                      Avoided landfill expense due to recycling: \$2.86                      Trash/recycling/yardwaste cost per household (2006): \$102.06 (net recycling revenue and avoided landfill cost).</p>
Personnel	None allocated for solid waste collection. Five FTE allocated for composting facility.

**Table 31. Benchmarking Analysis: Raleigh, North Carolina**

City:	Raleigh, North Carolina
<b>Demographics</b>	2006 Population: 356,321 Land Area (square miles): 114.6 Population per Square Mile: 3,109
<b>Residential Solid Waste Collection</b>	
Service	Weekly collection. Contracted collection from multifamily complexes.
House Count	103,500 single-family homes 40,652 multi-family units
Collection Method	Automated collection. Single-family homes and townhouses are provided 96-gallon carts. All waste must fit inside the container. One additional cart may be purchased.
Tonnage	83,000 tons (0.58 tons per household).
Facilities	The city operates a transfer station.
Disposal	The city uses the North Wake Sanitary Landfill, which is owned and operated by the county (Wake County).
Self Haul	City residents may haul directly to the county-operated landfill, the county transfer station, or county convenience centers. There is no charge to county residents.
<b>Residential Bulky Item Collection</b>	
Service	Scheduled bulky item collection. Free collection of up to 4 cubic yards at a single address (excess garbage bags are not picked up). Loads in excess of 4 cubic yards or large appliances are considered “special loads” and are collected for a fee of \$50.
Tonnage	
<b>Residential Yard Waste Collection</b>	
Service	Yard waste is banned from disposal by the state. Weekly curbside collection of yard waste is provided.  Seasonal leaf collection is provided using vacuum trucks.
Tonnage	
Facility	The city operates the Yard Waste Center to recycle yard waste into wood chips, mulch, and compost. The facility charges \$25/ton for loads. Wood chips, mulch, and compost are available for sale to the general public.
<b>Residential Recycling</b>	
Service	162,200 service points (single-family and multi-family dwellings)  Crews sort paper from commingled recyclables at the curb. Residents are provided an 18-gallon bin.  Multi-family complexes are provided with recycling containers at no charge.  The city also operates 6 drop-off centers.  The city also operates a swap shop at the yard waste center. Residents

**Table 31. Benchmarking Analysis: Raleigh, North Carolina**

City:	Raleigh, North Carolina
	<p>may drop off useable items. There is no charge to drop off and all items are free.</p> <p>The city has placed recycling bins in city parks.</p> <p>The city also offers scheduled curbside collection of computer equipment.</p>
Materials Collected	<p>The following items are collected curbside:</p> <ul style="list-style-type: none"> <li>• Glass food and beverage containers</li> <li>• Food and beverage cans</li> <li>• Aluminum foil and trays</li> <li>• Plastic bottles</li> <li>• Plastic beverage rings</li> <li>• Gable top cartons</li> <li>• Aseptic drink boxes</li> <li>• Newspaper</li> <li>• Mixed papers</li> <li>• Cardboard</li> <li>• Paperboard</li> </ul>
Tonnage	18,559 tons (FY07)
Facility	The city has a contract with Paper Stock for dual stream recyclables.
Revenues	\$580,000
Recycling Rate	N/A
Mandated Recycling Goal	1989 Solid Waste Management Act established a 25% waste reduction goal by June 30, 1993. State did not meet the 1993 goal. 1991 amendment added a 40% waste reduction goal by June 30, 2001. The statewide goal was not met, although several counties achieved the state's waste reduction goal. By June 1, 2001, each local government must have submitted a plan that includes a goal for the reduction of municipal solid waste and a further goal of continued reduction by 2006.
<b>Commercial Services</b>	
Services Offered	<p>Downtown commercial collection and disposal is provided six days a week in the central business district for a monthly fee of \$30.</p> <p>The city also provides curbside recycling to establishments in the central business district.</p>
Rates	\$30/month.
<b>Budget</b>	
Fund Type	General fund.
Source of Revenue	<p>Solid waste revenues of \$17,280,218:</p> <ul style="list-style-type: none"> <li>• Residential solid waste fees: \$15,628,600 (The current solid waste fee is \$10.30 per month: \$9.00 for trash collection/disposal and recycling fee of \$1.30. Residents pay as part of bi-monthly utility bill.)</li> </ul>

**Table 31. Benchmarking Analysis: Raleigh, North Carolina**

City:	Raleigh, North Carolina
	<ul style="list-style-type: none"> <li>• Recycling revenues: \$580,000</li> <li>• Transfer station tipping fee: \$448,098 (\$10/ton)</li> <li>• Yard waste tip fees: \$265,220</li> <li>• Yard waste sales: \$105,000</li> <li>• Additional container fees: \$51,500</li> <li>• Landfill gas recovery: \$150,000</li> <li>• Other misc. fees: \$51,800</li> </ul>
Appropriated Funding Levels	<p>Budget of \$22,801,850:</p> <ul style="list-style-type: none"> <li>• Administration: \$1,527,507</li> <li>• Recycling: \$5,189,701</li> <li>• Residential Collection: \$11,116,978</li> <li>• Transfer Station: \$3,216,788</li> <li>• Yard Waste Center: \$1,750,876</li> </ul> <p>\$71/ton for residential garbage collection</p> <p><u>Annual Costs</u>            Collection cost per household: \$77.12            Annual collection and disposal cost per household: \$99.44            Recycling cost per household: \$32.00            Trash/recycling costs per household: \$135.44            Total cost per household: \$158.18</p>
Personnel	<p>Administration: 16            Recycling: 78            Residential Collection: 137            Transfer Station: 3            Yard Waste Center: 6</p>



## 7 PUBLIC PARTICIPATION

Input from Kansas City residents and businesses was fundamental in the development of this plan. Public involvement targeted all residents of Kansas City. The City's strategy was to help residents understand the need for the plan and inform them on how to get involved in its development. This section describes the public involvement strategies that were used.

### NEWSLETTER

An initial newsletter, "*Talkin' Trash*," was developed and distributed at community centers, libraries, community meetings, and events. The text of the newsletter provided background information on the need for the strategic plan and informed residents on how they could participate in the planning process. A copy of the newsletter is provided in Appendix E.

### COMMUNITY PRESENTATIONS

A short Powerpoint® presentation providing background information on the need for the strategic plan was developed and presented at a number of community meetings. The presentation focused on providing residents with information on the amount of trash currently generated, the future of landfills in the region, the need to begin a planning process to manage future costs, and how to participate in the development of the plan. A copy of the presentation is provided in Appendix F.

### FOCUS GROUP MEETINGS

Throughout the development of this plan, residents were provided the opportunity to participate in meetings to discuss potential solid waste management alternatives, as well as complete the public opinion survey. These meetings also were used to gain an understanding of residents' opinions of the City's recycling program. Participants' input was incorporated into the development of the strategic plan. In all, more than 40 individuals participated in seven meetings that were held in various locations throughout the City as shown in Figure 4. A copy of the Powerpoint® presentation used during the meetings is provided in Appendix G. During discussions of recycling participation, most focus group meeting participants believed that additional education was necessary to continue with the success of the current recycling program. Concerns were also expressed during these meetings that recycling is not convenient for multi-family residences (e.g., apartments, condominiums) and that education efforts also need to target landlords. Participants also suggested that businesses need to be more involved with recycling options.

Time was also spent during the meetings educating participants about various solid waste management options. Most participants were supportive of the various options.

A synopsis of each meeting is provided in Appendix H.

**Figure 4. Location of Focus Group Meetings**



● Location of Focus Group Meetings

## PUBLIC OPINION SURVEY

A survey, designed to understand resident concerns and gauge support of potential solid waste management options was developed. The survey, along with background information, was available on the City's website through the end of December 2007. The survey also was provided to focus group participants. Responses to the questions were evaluated as part of the development of this plan.

The survey focused on eleven major areas of investigation:

- Current City Services: Respondents were asked to rank current City services in order of priority.
- Trash Collection: This section examined the use of and satisfaction with trash collection services offered by the City.

- **Illegal Dumping:** This section of the survey evaluated perceptions about illegal dumping in the City.
- **Landfills:** This section analyzed familiarity with use of landfills for disposal and future landfill options.
- **Recycling Services:** This section examined participation in both curbside and drop-off center recycling programs.
- **Leaf/Brush Collection:** This section analyzed use of leaf/brush collection and future options for payment for services.
- **Bulky Item Collection:** This section addressed use of the City’s bulky item collection program.
- **Potential Program Areas:** Two separate sections assessed interest in City programs for collection of organic wastes and electronics.
- **Dead Animal Collection:** This section examined future payment options for dead animal and livestock collection.
- **Management Options:** This section evaluated several options for future management of solid waste.

This section presents a brief overview of the results obtained from the survey. A copy of the survey is provided in Appendix I. A summary of responses and verbatim comments are provided in Appendix J.

### **Current City Services**

Respondents were asked to rank current City services in order of importance, with 1 being the most important and 11 being the least important. Trash collection was ranked most important. Dead animal collection was ranked the least important service by respondents. The services and the ranking developed by the respondents are provided in Table 32.

### **Trash Collection**

When asked about satisfaction with their trash collection service, 77 percent of respondents indicated that they were “satisfied.” Of those that were not satisfied, their reasons were varied, but major themes included the inability to recycle more items, lack of access to curbside recycling (mostly by apartment or condominium residents), missed collections, and delays for bulky item collection.

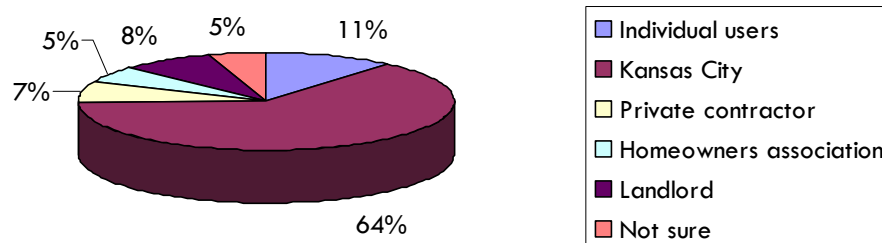
The survey also asked who should be responsible for arranging for trash collection services. The majority of the respondents (84 percent) indicated that the responsibility for trash collection should remain with the City. Figure 5 provides the remaining responses to this question.

**Table 32. Respondent Ranking of City Services**

City Service	Rank
Weekly trash collection	1.56
KC Recycles	2.67
Bulky item collection	4.17
Leaf and brush collection	5.35
Illegal dumping	5.94
Drop-off recycling centers	5.96
Neighborhood cleanup assistance	6.43
Trash carts	6.45
Leaf and brush drop-off centers	7.00
Tire drop-off site	7.60
Dead animal collection	8.50

**Figure 5. Responsibility for Trash Collection**

by percentage of respondents



Respondents also were asked if they would be willing to pay to maintain or expand trash collection services. Over 61 percent of the respondents were willing to pay a fee, 26 percent were not willing to pay a fee, and the remaining 13 percent were not sure. Those willing to pay a fee were asked how they would prefer to pay for services. Approximately 47 percent preferred to pay the fee through the purchase of bag/tag fees, 43 percent preferred to be billed monthly, and the remaining 18 percent preferred an annual bill.

Respondents also were asked if the City should consider use of trash carts city wide. Over 48 percent indicated yes, 21 percent indicated no, and the remaining 29 percent were not sure.

### Illegal Dumping

Respondents were asked if the City had a problem with illegal dumping. Over 86 percent of the respondents believe that there is a problem. When asked if the City was doing enough to prevent and/or clean up illegally dumped materials, over 56 percent of respondents responded “no.” Respondents also were asked what the City should do to prevent/decrease illegal dumping violations. Thirty-seven written responses were received. Most indicated that more enforcement and prosecution of illegal dumpers was required along with increased fines. Others indicated the need for more education and monitoring of illegal dumping sites.

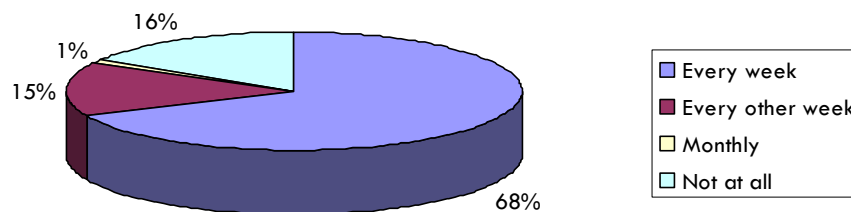
### Recycling Services

Respondents were asked if they were aware that the City operated drop-off recycling centers. Eighty-eight percent were aware of the centers. Over 32 percent of the respondents had used a recycling center within the past year. Approximately 27 percent used drop-off centers occasionally (1 to 4 times during the past year). The remainder of the respondents used a center 5 to 8 times (14 percent), 9 to 12 times (10 percent), or more than 12 times (14 percent) during the past year. Most respondents indicated that they are primarily taking paperboard and cardboard, followed by glass, to drop-off centers.

When asked if they were participating in curbside recycling, 68 percent of respondents indicated that they were using the service weekly. Fewer than 15 percent are using the service every other week, 1 percent are participating monthly, and 16 percent are not participating at all (see Figure 6). Of those indicating that they were not participating, most responded that it was because it was not available to them because they lived in multi-family housing complexes.

**Figure 6. Curbside Recycling Participation**

by percentage of respondents

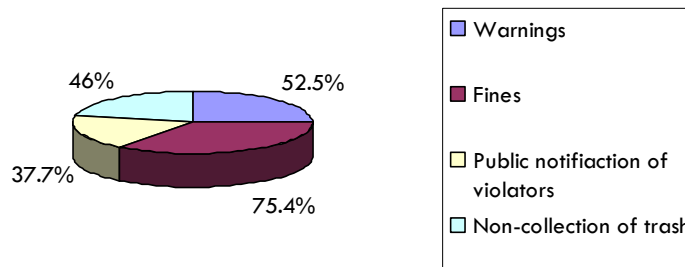


Respondents were asked if they would be willing to pay a fee to maintain or expand the City’s recycling services. Sixty-five percent indicated that they would and preferred that the fee be paid through a monthly bill (36 percent). Taxes and container purchase fees each received a response rate of 29 percent, while the remaining option of an annual bill received a 17 percent response.

Lastly, respondents were asked if recycling should become mandatory within the City. Seventy-seven percent indicated “yes.” Those responding yes were then asked how such an ordinance should be enforced. As shown in Figure 7, seventy-five percent indicated that fines should be used, 52 percent favored use of written warnings, 46 percent indicated that trash containing recyclables should not be collected, and the remaining 37 percent indicated that there should be public notification of violators.

**Figure 7. Enforcement of Mandatory Recycling**

by percentage of respondents



### Leaf and Brush Collection

Respondents were asked if they would use a fee-based drop-off facility for the collection of leaves and brush. More than 51 percent indicated that they would. Thirty-six percent indicated that they would not and the remaining 12 percent were not sure. They were also asked if curbside collection was offered monthly and by appointment only, would they participate. Over 58 percent indicated they would participate, 22 percent indicated that they would not, and 18 percent were not sure.

### Bulky Item Collection

Respondents were asked how frequently they used bulky item collection per year. More than 70 percent use the service 1 to 4 times per year. The remainder of the respondents use the service 5 to 8 times (8 percent), 9 to 12 times (2 percent) per year, or not at all (18 percent). When asked if they would participate in a monthly, appointment-based service, over 80 percent indicated that they would.

### Dead Animal Collection

Respondents were asked if they were satisfied with the City’s collection of dead animals. Fifty percent indicated “yes,” 19 percent indicated “no,” and the remaining 30 percent were not sure. When asked if they would be willing to pay a fee for the collection of dead animals, 55 percent said “no.” When asked if the City should consider a fee for the collection of dead livestock, 49 percent said “yes.”

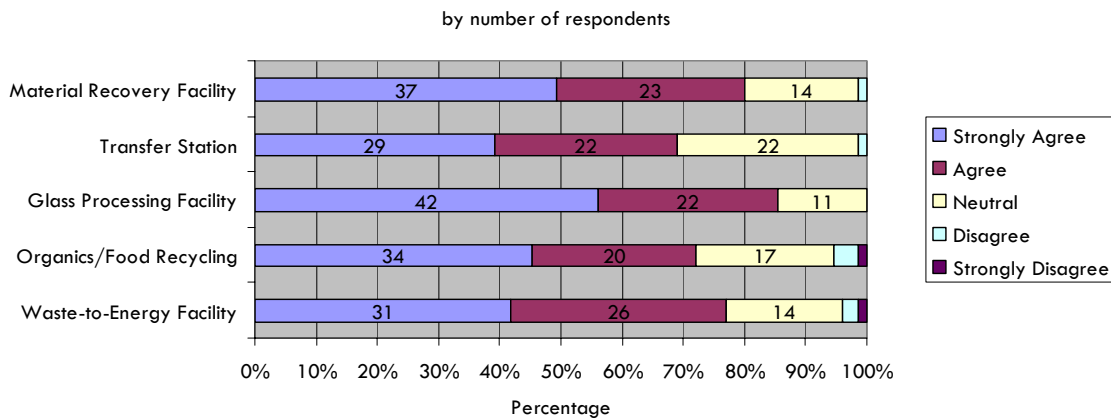
### Collection Programs

Respondents were asked if they would participate in a weekly organics curbside collection program. Forty-eight percent indicated “yes,” 21 percent indicated “no,” and the remaining 29 percent were not sure. When asked if they would participate in an electronic waste collection program, 65 percent indicated “yes,” 14 percent indicated “no,” and the remaining 21 percent were not sure.

### Waste Management Options

Several waste management options were presented and respondents were asked whether the City should consider implementing the options. The results are provided in Figure 8.

**Figure 8. Support for Solid Waste Management Options**



In a separate question, respondents were asked whether the City should build and operate its own landfill. Fifty-two percent of the respondents indicated that the City should build and operate its own landfill, 20 percent indicated that the City should not build and operate its own landfill, and the remaining 28 percent were not sure.

## OTHER OUTREACH EFFORTS

Other efforts to involve residents included:

- A news release was published by the Public Information Officer announcing the development of the strategic plan and providing background information.
- Emails were sent to community contacts encouraging participation of members in the planning process.
- Paid advertisements were placed in the Kansas City Star to promote the focus group meetings.
- An article appeared in the Kansas City Star commenting on the need for long-range planning in the region.

## APPENDIX A

### Requirements for Waste Hauler Licensing



### Comparison of Solid Waste Hauler Permitting Requirements

City	Permit Information Requirements	Fees	Insurance	Miscellaneous Provisions
<b>Missouri - Metropolitan Area</b>				
<b>Belton</b> Residents and businesses contract for their own service. Four haulers currently are licensed: <ul style="list-style-type: none"> <li>• Allied</li> <li>• BFI</li> <li>• Deffenbaugh</li> <li>• Hyden Hauling</li> <li>• Town &amp; Country</li> </ul>	Annual Must provide information: <ul style="list-style-type: none"> <li>• Nature of waste collected</li> <li>• Number of vehicles</li> <li>• Disposal/processing location</li> <li>• Collection area boundaries</li> </ul>	\$15.00 per vehicle	Not less than: <ul style="list-style-type: none"> <li>• \$100,000 per person injured or killed</li> <li>• \$300,000 for two or more persons in a single accident</li> <li>• \$50,000 property damage (allows a \$100 deductible for property damage)</li> </ul>	Permit must be displayed on vehicle Haulers must report quarterly and annually on recycling participation rates and provide copies of receipts from brokers
<b>Blue Springs</b> Residents and businesses contract for private services	Annual Must provide information: <ul style="list-style-type: none"> <li>• Nature of waste collected</li> <li>• Number of vehicles</li> <li>• Disposal/processing location</li> <li>• Collection area boundaries</li> </ul>	\$25.00 plus \$2.00 per employee working in Blue Springs	Not less than: <ul style="list-style-type: none"> <li>• \$250,000 for each person injured or killed</li> <li>• \$500,000 for one accident</li> <li>• \$1,000,000 for property damage for one accident</li> <li>• \$500,000 general liability Workers Compensation Insurance</li> </ul>	
<b>Independence</b> Residents contract for private collection services. Five haulers are currently licensed: <ul style="list-style-type: none"> <li>• AAA Disposal service</li> <li>• BFI</li> <li>• Deffenbaugh</li> <li>• Teds Trash Service</li> <li>• Compost Connection</li> </ul>		\$25.00 per vehicle	\$250,000/\$500,000/\$100,000 \$500,000 general liability Workers Compensation insurance	Certificate of Good Standing Missouri Inspection Certificate for each vehicle

City	Permit Information Requirements	Fees	Insurance	Miscellaneous Provisions
<b>Lee's Summit</b> Residents and businesses contract privately for collection services	Annual Must provide information: <ul style="list-style-type: none"> <li>Nature of waste collected</li> <li>Number of vehicles</li> <li>Disposal/processing location</li> <li>Collection area boundaries</li> </ul>	None: Requires only a city business license	Not less than: <ul style="list-style-type: none"> <li>\$500,000 combined single limit to include bodily injury and property damage (allows a \$5,000 deductible for property damage)</li> </ul>	Must provide quarterly reports on amount of trash and recyclables collected
<b>Liberty</b> City provides residential trash collection and recycling through a contract with BFI. Businesses must contract for service.	Annual Must provide information: <ul style="list-style-type: none"> <li>Nature of waste collected</li> <li>Number of vehicles</li> <li>Disposal/processing location</li> <li>Collection area boundaries</li> </ul>	\$30.00 flat fee	Not less than: <ul style="list-style-type: none"> <li>\$100,000 per person injured or killed</li> <li>\$300,000 for two or more persons per accident</li> <li>\$50,000 property damage</li> </ul>	Permit number must be displayed on vehicle
<b>Raymore</b> Residents and businesses contract for private collection services. Seven haulers are currently licensed: <ul style="list-style-type: none"> <li>Roll Off Service</li> <li>BFI</li> <li>Deffenbaugh</li> <li>Sunshine Disposal</li> <li>Compost Connection</li> <li>Town &amp; Country</li> <li>Willey Refuse Disposal</li> </ul>	Annual Must provide information: <ul style="list-style-type: none"> <li>Nature of waste collected</li> <li>Number of vehicles</li> <li>Disposal/processing location</li> <li>Collection area boundaries</li> </ul>	Not identified in ordinance – on file in the office of City Clerk	Not less than: <ul style="list-style-type: none"> <li>\$100,000 per person injured or killed</li> <li>\$300,000 for two or more persons</li> <li>\$25,000 property damage</li> </ul>	
<b>St. Joseph</b> Residents and businesses contract for private services	Annual Must provide information: <ul style="list-style-type: none"> <li>Nature of waste collected</li> <li>Number of vehicles</li> <li>Disposal/processing location</li> <li>Collection area boundaries</li> </ul>	\$100 for first collection vehicle \$25 for each additional vehicle	Not less than: <ul style="list-style-type: none"> <li>\$500,000 for each person injured or killed</li> <li>\$1,000,000 for injury or death of two of more persons</li> <li>\$50,000 for damage</li> </ul>	Commercial vehicles must be inspected Vehicles must display permit number

City	Permit Information Requirements	Fees	Insurance	Miscellaneous Provisions
<b>Kansas – Metropolitan Area</b>				
<b>Leawood</b> Residents and businesses contract for private services	Annual Information required: <ul style="list-style-type: none"> <li>Nature of permit desired (storage, collection, transportation)</li> <li>Characteristics of waste handled</li> <li>Number of vehicles</li> <li>Processing/disposal location</li> </ul>	\$25 for each collection vehicle	Not less than \$500,000 per occurrence	Must agree to indemnify the city Must provide all aspects of integrated solid waste management Must maintain an office and telephone
<b>Lenexa</b> Residents and businesses contract for private services	Annual Specific information required is provided on form on file with city clerk	Residential collection: \$50 plus \$30 per truck Commercial collection: \$125 for each service type (solid waste, recyclables, and/or compost)	Not less than \$500,000 per occurrence	Must submit documentation on recycling or composting activities on a yearly basis Must implement a public education and awareness program Must maintain an office and telephone Must provide weekly trash and recyclables collection Must file a route schedule
<b>Olathe</b> City provides residential collection services.	None specified	None specified	None specified	

City	Permit Information Requirements	Fees	Insurance	Miscellaneous Provisions
<p><b>Overland Park</b> Residents contract for private services City contracts for residential recycling and yard waste collection Businesses contract for commercial collection services</p>	<p>Annual Information required:</p> <ul style="list-style-type: none"> <li>• Agree to minimum level of service</li> <li>• Inventory of equipment to be used in the city</li> <li>• Responsibility for collection of service fees</li> <li>• Notify all new residential and commercial customers of city ordinances governing storage and placement of waste</li> <li>• Annual notification to residential and commercial customers of city ordinances</li> <li>• Processing/disposal location</li> </ul>	<p>\$25 plus \$75 per truck</p>	<p>General liability: Bodily injury and property:</p> <ul style="list-style-type: none"> <li>• \$500,000 each occurrence</li> <li>• \$500,000 aggregate</li> </ul> <p>Automobile: Bodily injury and property:</p> <ul style="list-style-type: none"> <li>• \$500,000 each occurrence</li> </ul> <p>Insurance carrier must be:</p> <ul style="list-style-type: none"> <li>• Licensed to do business in Kansas</li> <li>• Carry a Best's policyholder rating of B+ or better, and</li> <li>• Carry at least a Class VIII financial rating</li> </ul>	<p>Vehicles must display permit number Minimum levels of service: Residential:</p> <ul style="list-style-type: none"> <li>• Weekly collection</li> <li>• Optional collection service for waste placed up to 50 feet from front property line</li> </ul> <p>Commercial collection:</p> <ul style="list-style-type: none"> <li>• Bulky waste collection</li> <li>• Removal of waste as often as necessary to prevent nuisance and health conditions</li> </ul>
<p><b>Roeland Park</b> City has a contract with Town &amp; Country Disposal for residential trash, recycling, and yard waste collection Businesses must contract for collection</p>	<p>Annual Information required:</p> <ul style="list-style-type: none"> <li>• Nature of permit desired (storage, collection, transportation)</li> <li>• Characteristics of waste handled</li> <li>• Number of vehicles</li> <li>• Processing/disposal location</li> <li>• File a rate schedule</li> </ul>	<p>\$50 per vehicle</p>	<p>Not less than:</p> <ul style="list-style-type: none"> <li>• \$250,000 per person injured or killed</li> <li>• \$500,000 for two or more persons</li> <li>• \$200,000 property damage</li> </ul>	<p>Must display permit number on vehicle Must file a rate schedule with the city</p>

City	Permit Information Requirements	Fees	Insurance	Miscellaneous Provisions
<p><b>Prairie Village</b> City has a contract with Deffenbaugh Disposal for residential trash, recycling, and yard waste collection Businesses contract for commercial collection services</p>	<p>Annual Information required:</p> <ul style="list-style-type: none"> <li>• Nature of permit desired (storage, collection, transportation)</li> <li>• Characteristics of waste handled</li> <li>• Number of vehicles</li> <li>• Processing/disposal location</li> </ul>	<p>Per vehicle permit fee – on file with city clerk</p>	<p>Not less than:</p> <ul style="list-style-type: none"> <li>• \$250,000 per person injured or killed</li> <li>• \$500,000 for two or more persons</li> <li>• \$200,000 property damage</li> </ul>	<p>Vehicles must display permit number Additional recyclables collection requirements:</p> <ul style="list-style-type: none"> <li>• Weekly curbside collection</li> <li>• Provide containers</li> <li>• Collect designated recyclables</li> <li>• Identify potential markets</li> <li>• Quarterly reports including buyer receipts and participation rates</li> </ul> <p>Additional compostables collection requirements:</p> <ul style="list-style-type: none"> <li>• Weekly collection</li> <li>• Transport to a composting facility</li> <li>• Quarterly reports covering tonnages, buyers receipts, and participation rates</li> </ul>
<p><b>Shawnee</b> Residents contract for private services City contracts for residential recycling collection Businesses contract for collection services Three haulers are licensed:</p> <ul style="list-style-type: none"> <li>• Deffenbaugh</li> <li>• A-1 Disposal</li> <li>• Superior Disposal Service Inc.</li> </ul>	<p>Information required:</p> <ul style="list-style-type: none"> <li>• Nature of permit desired (storage, collection, transportation)</li> <li>• Characteristics of waste handled</li> <li>• Collection boundaries</li> <li>• Number of vehicles</li> <li>• Agree to minimum level of service</li> <li>• Responsibility for collection of fees</li> </ul>	<p>\$50 plus \$20 per vehicle</p>	<p>Not less than:</p> <ul style="list-style-type: none"> <li>• \$250,000 per person injured or killed</li> <li>• \$500,000 for two or more persons</li> <li>• \$2,000 property damage</li> </ul>	<p>License does not grant exclusive right to any one contractor Minimum levels of service: Residential:</p> <ul style="list-style-type: none"> <li>• Weekly collection</li> <li>• Bulky waste collection twice per year</li> </ul> <p>Commercial collection:</p> <ul style="list-style-type: none"> <li>• Weekly collection or more frequently if necessary to prevent nuisance and health conditions</li> <li>• Semi-annual collection of bulky waste</li> </ul>

City	Permit Information Requirements	Fees	Insurance	Miscellaneous Provisions
<b>Missouri – Other Cities</b>				
<b>Columbia</b> City provides residential and commercial collection	Annual General information required for a business license	\$10 for first vehicle and \$5 for each additional vehicle	Not less than: <ul style="list-style-type: none"> <li>• \$500,000 combined single limit for any on occurrence</li> <li>• \$150,000 per individual and property damage</li> </ul>	City inspects vehicle Vehicle must display permit number
<b>Jefferson City</b> City provides residential trash, recyclables, and yard waste collection through contracts	Annual Information required: <ul style="list-style-type: none"> <li>• Nature of permit desired (storage, collection, transportation)</li> <li>• Characteristics of waste handled</li> <li>• Number of vehicles</li> <li>• Location of processing/disposal facilities</li> </ul>	\$25	Public liability insurance not less than: <ul style="list-style-type: none"> <li>• \$100,000 per individual</li> <li>• \$800,000 per occurrence</li> </ul>	
<b>Rolla</b> City provides residential and commercial collection	Commercial hauler license issued only if determined as necessary by the city. No requirements outlined in ordinances.	Not specified	Not specified	
<b>St. Louis</b> The city provides residential service	Annual Permit requirements not specified in city ordinance	Permit fee: Not specified Vehicle Inspection fee: \$12	Not specified	Vehicles must be inspected by Department of Streets Vehicle must display permit

City	Permit Information Requirements	Fees	Insurance	Miscellaneous Provisions
<p><b>Springfield</b> Collection provided by private companies</p>	<p>Annual Application form available through business license division</p>	<p>Not specified in ordinance</p>	<p>Not less than: Public liability:  <ul style="list-style-type: none"> <li>• \$100,000 for each occurrence</li> <li>• \$300,000 aggregate</li> </ul>                     Auto liability:  <ul style="list-style-type: none"> <li>• \$100,000 for bodily injury per person</li> <li>• \$300,000 per accident</li> <li>• \$50,000 property damage</li> </ul>                     Workers Compensation Insurance</p>	<p>As a condition of permit issuance:</p> <ul style="list-style-type: none"> <li>• Vehicle must display state safety check certificate</li> <li>• Vehicle must be in good repair and clean and sanitary</li> <li>• Vehicle must have watertight body that is constructed of metal</li> <li>• Business must not be operated in a residential zone</li> <li>• Must provide curbside recycling</li> <li>• Must deliver waste to the city's sanitary landfill</li> <li>• Must send annual information to customers on waste reduction, recycling, and disposal information</li> <li>• Exclude unacceptable waste from collection and assist in enforcement to identify origin of unacceptable waste</li> <li>• Annual vehicle inspection</li> <li>• Employee training in unacceptable waste procedures</li> <li>• Annual employee training approved by the city</li> <li>• Maintain vehicles</li> <li>• Instruct drivers to obey directions of city representatives</li> <li>• Must file a listing of prevailing charges</li> </ul>



## APPENDIX B

### City Expenditures for Solid Waste Management Fiscal Years 2005 through 2008



## APPENDIX C

### Projected Annual Expenditures for Solid Waste Management Fiscal Years 2009 through 2027



## APPENDIX D

### Candidate List of Cities Benchmarking Analysis



**Candidate List of Cities for Benchmarking Analysis**

<b>City</b>	<b>Demographic Information</b>	<b>Solid Waste Collection</b>
<b>Jacksonville, Florida</b>	2006 Population: 794,555 Land Area (square miles): 757.7 Population per Square Mile: 1,049	The city provides collection services to the core city area, while the majority of the city receives collection services from contracted waste haulers. The city also provides waste collection to small commercial entities for a fee. Weekly yard waste and recyclables collection also is provided to residents. The city owns and operates its own landfill. The city's operations are funded both by the general fund and an enterprise fund. Revenues to the general fund (\$29 million) are from a host fee from the landfill (\$4.44 per ton) and franchise fees charged to haulers of commercial waste (17% of the haulers monthly gross revenues). These funds are transferred to an enterprise fund with a budget of \$67 million.
<b>Memphis, Tennessee</b>	2006 Population: 670,902 Land Area (square miles): 279.3 Population per Square Mile: 2,402	City provides solid waste collection and curbside recycling/yard waste services. Some residences receive automated collection. Homeowners/businesses are charged a monthly fee on utility bill. City uses a Solid Waste Management Fund (a special revenue fund to budget for specific revenue sources that are legally restricted to expenditures for specific purposes) for revenues and expenses (approximately \$49 million).
<b>Fort Worth, Texas</b>	2006 Population: 653,320 Land Area (square miles): 292.6 Population per Square Mile: 2,233	The city provides weekly collection for trash, recyclables, and yard waste using a three cart system. The city uses an enterprise fund and residents are charged fees, based on the cart size chosen. Bags for additional trash are available for purchase. Residents may purchase a cart for yard waste for \$75, weekly collection is free. Bulky waste in excess of 10 cubic yards is charged a fee based on the amount of overage.
<b>Baltimore, Maryland</b>	2006 Population: 631,366 Land Area (square miles): 80.8 Population per Square Mile: 7,814	The city provides biweekly trash collection, weekly curbside recycling, weekly seasonal leaf collection, and monthly bulk collection. Currently, the city disposes the majority of the solid waste it collects at BRESKO (a privately-owned waste-to-energy facility) pursuant to a contract with the Northeast Maryland Waste Disposal Authority. In turn, this facility has contracted with the city to dispose of their ash residue at a landfill owned and operated by the city. Programs are supported by the city's general fund with expenditures of over \$72 million (\$30 million for special services, \$21 million for solid waste collection, and \$21 million for environmental services).
<b>Charlotte, North Carolina</b>	2006 Population: 630,478 Land Area (square miles): 242.3 Population per Square Mile: 2,602	The city provides weekly collection for trash, recyclables, and yard waste. The city provides collection services (fewer than 30 units) through general fund expenditures. However, all residences in the City of Charlotte and Mecklenburg County are assessed a solid waste fee (as part of tax bill) to offset the cost of waste disposal and waste reduction services and facilities. The city receives \$45 from single-family residences and \$27 from multi-family residences. The county receives \$12.
<b>El Paso, Texas</b>	2006 Population: 609,415 Land Area (square miles): 249.1 Population per Square Mile: 2,446	Environmental Services provides weekly residential garbage collection, disposal services, recycling opportunities and the operation of Citizen Collections Stations for the disposal of Household Hazardous Waste and bulky items. The city uses an enterprise fund and residents are charged \$15 per month for services. The city also operates a landfill.

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

City	Demographic Information	Solid Waste Collection
<b>Boston, Massachusetts</b>	2006 Population: 590,763 Land Area (square miles): 48.4 Population per Square Mile: 12,206	The city provides collection services through a collection contract to 299,700 households. The city's general fund budget is approximately \$44 million for collection and disposal and \$782,700 for recycling.
<b>Seattle, Washington</b>	2006 Population: 582,454 Land Area (square miles): 83.9 Population per Square Mile: 6,942	The city provides weekly trash, yard waste, and recyclables collection. Residents are charged a monthly fee for trash and yard waste depending on several available cart options. The city operates on a subfund with revenue sources coming from residential utility charges.
<b>Washington, D.C.</b>	2006 Population: 581,530 Land Area (square miles): 61.4 Population per Square Mile: 9,471	The Department of Public Works provides weekly trash and recycling collection services to approximately 110,000 single-family homes and small residential buildings with up to three living units. Bulk trash collection is by appointment. The city allocates funds from the general fund to cover operating costs (\$19.5 million for collection, \$14.8 million for disposal, and \$565,000 for recycling).
<b>Milwaukee, Wisconsin</b>	2006 Population: 573,358 Land Area (square miles): 96.1 Population per Square Mile: 5,966	The city provides trash and recycling services to over 190,000 residential dwelling units. The city's budget is \$34 million per year allocated from the general fund. Residents are charged \$33 per quarter to offset collection costs (revenues of \$25 million). The remaining costs are financed through the city property tax
<b>Denver, Colorado</b>	2006 Population: 566,974 Land Area (square miles): 153.4 Population per Square Mile: 3,696	City provides weekly trash collection and every-other week recycling collection. The city allocates funds from the general fund. Trash and recycling budgets are valued at \$19 million. The city operates a transfer station.
<b>Louisville, Kentucky</b>	2006 Population: 554,496 Land Area (square miles): 62.1 Population per Square Mile: 8,929	Household garbage within the Urban Services District is collected utilizing an automated garbage collection system. One roll-out cart is provided at no charge. Yard waste is picked up separately from household garbage once a week. All households within the Urban Services District in residential buildings with eight or fewer units are eligible for curbside recycling. An 18-gallon plastic container provided to the property owner at no charge. Recyclables are picked up weekly. For residents living in the Urban Services District, Solid Waste provides quarterly junk pickup. Solid waste services are provided through the city's general fund and expenditures are approximately \$22.7 million.

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

City	Demographic Information	Solid Waste Collection
<b>Las Vegas, Nevada</b>	2006 Population: 552,539 Land Area (square miles): 113.3 Population per Square Mile: 4,877	Services are provided by a franchised, private hauler; customers are billed directly.
<b>Nashville, Tennessee</b>	2006 Population: 552,120 Land Area (square miles): 473.3 Population per Square Mile: 1,167	The Division of Waste Management provides automated trash collection to single-family residences in the Urban Services District (some of which is contracted). Trash collection is available to businesses in the Urban Service District and the Downtown Business District. Curbside recycling is offered monthly. The city uses the Waste Management Fund (a special purpose fund) to provide collection and disposal services. Revenues to this fund are approximately \$3.8 million primarily from a waste generation fee. Additional money is transferred in from the general fund in the amount of \$18.9 million.
<b>Oklahoma City, Oklahoma</b>	2006 Population: 537,734 Land Area (square miles): 607.0 Population per Square Mile: 886	Automated collection provided by city (1/3) and contract crews (2/3 split). Weekly curbside collection of recyclables. Enterprise fund with operating revenues of \$30 million from which the city's receives approximately \$9.5 for its operations.
<b>Portland, Oregon</b>	2006 Population: 537,081 Land Area (square miles): 134.3 Population per Square Mile: 3,999	Collection and recycling services are provided by franchised haulers. Haulers bill homeowners directly for services.
<b>Tucson, Arizona</b>	2006 Population: 518,956 Land Area (square miles): 194.7 Population per Square Mile: 2,665	The city provides weekly, automated trash and recycling service. Residents are provided brush and bulky collection twice each year (up to 10 cubic yards--in excess of this amount or special collection charged a fee). The city also provides fee-based collection and recycling services for commercial customers. The city operates a landfill. The city operations are funded through an enterprise fund (since 2004). Residences are charged \$14 per month on their utility bill. The fund totals \$42 million of which \$18 million is for collection services, \$9 million is for landfill operations, \$3 million goes toward customer service and planning, \$1.5 million for administration, and \$4.5 million for capital expenses.
<b>Albuquerque, New Mexico</b>	2006 Population: 504,949 Land Area (square miles): 180.7 Population per Square Mile: 2,794	The city provides weekly, automated collection of trash. Weekly curbside recycling also is offered and yard waste is collected twice per year. Homeowners are charged a monthly fee (approximately \$11). The city also offers commercial collection. The city operates its own material recovery facility and landfill. Operations are funded by an enterprise fund totaling approximately \$56 million.

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

City	Demographic Information	Solid Waste Collection
<b>Atlanta, Georgia</b>	2006 Population: 486,411 Land Area (square miles): 131.8 Population per Square Mile: 3,691	City provides weekly trash collection. It appears that a private contractor provides weekly recyclables collection. Yard waste collected twice a month. Residents pay a yearly fee of approximately \$340. City funds operations through an enterprise fund totaling approximately \$47 million.
<b>Long Beach, California</b>	2006 Population: 472,494 Land Area (square miles): 50.4 Population per Square Mile: 9,375	The city provides weekly automated collection for trash, recyclables, and yard waste using a three cart system. The city uses an enterprise fund and residents are charged fees, based on the cart size chosen and the number of carts. Recycling collection is provided through a contract with Waste Management. The city uses a waste-to-energy facility for disposal.
<b>Fresno, California</b>	2006 Population: 466,714 Land Area (square miles): 104.4 Population per Square Mile: 4,470	The city provides weekly collection for trash, recyclables, and yard waste using a three cart system. The city uses an enterprise fund and residents are charged fees, based on the cart size chosen. The city also provides collection services for commercial and multi-family residences.
<b>Sacramento, California</b>	2006 Population: 453,781 Land Area (square miles): 97.2 Population per Square Mile: 4,669	The city provides weekly collection for trash, recyclables, and yard waste to 124,000 homes. The city uses an enterprise fund and residents are charged fees for all services, based on the level of service. The city also provides collection services for commercial and multi-family residences.
<b>Mesa City, Arizona</b>	2006 Population: 447,541 Land Area (square miles): 125.0 Population per Square Mile: 3,580	The city provides weekly collection for trash, recyclables, and yard waste using a three barrel system. The city uses an enterprise fund and residents are charged fees, based on the barrel size chosen (\$20.22 to \$22.66 per month). Yard waste collection is optional, and residents are charged an additional fee. The city also provides commercial collection and recycling services.
<b>Kansas City, Missouri</b>	2006 Population: 447,306 Land Area (square miles): 313.6 Population per Square Mile: 1,426	

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

City	Demographic Information	Solid Waste Collection
<b>Cleveland, Ohio</b>	2006 Population: 444,313 Land Area (square miles): 77.6 Population per Square Mile: 5,726	The city provides weekly collection of solid waste generated by residences, as well as provides commercial collection services. The city operates drop-off centers for commingled recyclables. The city does not provide yard waste collection services. In October, the city will begin a 6-month pilot program for automated collection of trash and recyclables from 15,000 homes. The city owns and operates a transfer station. The general fund supports the city's solid waste services with a budget totaling \$28 million.
<b>Virginia Beach, Virginia</b>	2006 Population: 433,549 Land Area (square miles): 248.3 Population per Square Mile: 1,746	The city provides weekly trash collection (90 gallon container). The city also provides curbside recycling every other week and operates drop-off centers. The city also operates a transfer station and a landfill. The city's operations are funded through the general fund with budgets totaling \$10.6 million for collection and \$12.8 million for disposal operations.
<b>Omaha, Nebraska</b>	2006 Population: 419,545 Land Area (square miles): 115.7 Population per Square Mile: 3,626	City contracts with Deffenbaugh Industries for collection at a cost of \$5.14 per household, per month for garbage and recycling collection, and \$2.85 per household for yard waste collection (9 months). City also pays landfill disposal fee and composting facility fee. Costs for service are paid from city's general fund.
<b>Miami, Florida</b>	2006 Population: 404,048 Land Area (square miles): 35.7 Population per Square Mile: 11,318	The City of Miami provides collection services to more than 68,000 homes within the City (up to three units) using automated collection vehicles. The city's budget for solid waste is just over \$23 million from the general fund. Revenues to the city include franchise fees charged to haulers of commercial waste (\$5,000 permit fee and 22% of monthly gross fees).
<b>Oakland, California</b>	2006 Population: 397,067 Land Area (square miles): 56.1 Population per Square Mile: 7,078	The city has a franchise agreement with Waste Management for collection and disposal. Two contractors are used to provide recycling services. The city uses a three cart system (yard trimmings/food scraps, recycling, and trash). The resident pays the hauler directly, depending on the size of trash cart chosen. Rates range from \$19.26 to \$86.79 per month. Pre-paid bags are available for additional trash.
<b>Tulsa, Oklahoma</b>	2006 Population: 382,872 Land Area (square miles): 182.7 Population per Square Mile: 2,096	Collection provided by city (1/4) and contract crews (3/4 split). Weekly service averages \$11.37 a month (once weekly collection) to \$14.53 per month (twice weekly collection). Funding is through the Tulsa Authority for the Recovery of Energy Fund (and enterprise fund approximately \$27 million).

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

City	Demographic Information	Solid Waste Collection
<b>Minneapolis, Minnesota</b>	2006 Population: 372,833 Land Area (square miles): 54.9 Population per Square Mile: 6,791	Collection provided by city and contract crews (1/2 split). Collection and recycling services funded by charges for service (\$23/month per dwelling). Operations run out of a special Solid Waste Fund (an enterprise fund totaling \$37 million).
<b>Colorado Springs, Colorado</b>	2006 Population: 372,437 Land Area (square miles): 185.5 Population per Square Mile: 2,008	Collection by the city is prohibited by the city's code of ordinances. Residents contract with private haulers.
<b>Arlington, Texas</b>	2006 Population: 367,197 Land Area (square miles): 95.8 Population per Square Mile: 3,833	Solid waste services provided by the city's contractor (Arlington Disposal) include: twice a week garbage pickup, weekly recycling pickup, bulky waste pickup, semi-annual clean up days, and household hazardous waste collection services. The monthly rate for twice-a-week garbage collection and once-a-week recycling collection is \$10.13 including tax paid to the contractor.
<b>Wichita, Kansas</b>	2006 Population: 357,698 Land Area (square miles): 135.8 Population per Square Mile: 2,634	Residents contract directly with private haulers.
<b>Raleigh, North Carolina</b>	2006 Population: 356,321 Land Area (square miles): 114.6 Population per Square Mile: 3,109	The Solid Waste Services Department provides garbage, recycling, and yard waste collection to Raleigh residents, operates a yard waste composting facility and maintains the city's now closed landfill. All households are charged a monthly solid waste fee on their bi-monthly utility bill for their solid waste services. This fee (revenues go to general fund) is set each year with the annual budget. The fee is currently \$10.30 per month per residential unit receiving standard solid waste pickup (includes a \$2.60 fee for recycling and a \$7.70 fee for solid waste collection). The department has an annual budget of \$22,801,850 that is allocated from the general fund.
<b>St. Louis, Missouri</b>	2006 Population: 347,181 Land Area (square miles): 61.9 Population per Square Mile: 5,609	City provides trash collection services. Services are paid by general fund (approximately \$14 million). Curbside recycling is offered through a pilot program to a limited number of households at a cost of \$3.75 per month (it appears to be run by a private contractor and partially funded by a grant from the solid waste district). The city operates drop-off centers for recyclables.

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

City	Demographic Information	Solid Waste Collection
<b>Santa Ana, California</b>	2006 Population: 340,024 Land Area (square miles): 27.1 Population per Square Mile: 12,547	Refuse collection, recycling and disposal services to the city's residential, commercial and industrial segments are provided through agreements with two private contractors. The Refuse Collection Fund 69 (an enterprise fund) has a budget of \$13,013,380.
<b>Anaheim, California</b>	2006 Population: 334,425 Land Area (square miles): 48.9 Population per Square Mile: 6,839	Solid waste collection and disposal is provided for the City of Anaheim through a private contract with Anaheim Disposal, Inc. The Sanitation fund (an enterprise fund) accounts for the operation of the City's solid waste program.
<b>Tampa, Florida</b>	2006 Population: 332,888 Land Area (square miles): 112.1 Population per Square Mile: 2,970	The Department of Solid Waste provides collection, disposal and recycling services for over 80,000 residential and commercial customers. Approximately 360,000 tons of solid waste are processed annually at the McKay Bay Refuse-to-Energy Facility. The city provides solid waste services through an enterprise fund. Residents pay a solid waste charge on their monthly City of Tampa utility bill.
<b>Cincinnati, Ohio</b>	2006 Population: 332,872 Land Area (square miles): 78.0 Population per Square Mile: 4,268	City provides trash collection and recycling collection. Services are provided through the city's general fund and are approximately \$12 million for trash collection and \$3 million for recycling.
<b>Pittsburgh, Pennsylvania</b>	2006 Population: 312,819 Land Area (square miles): 55.6 Population per Square Mile: 5,626	<p>The city provides weekly refuse collection services. Recycling is mandatory for every resident, business, office and institution in the City of Pittsburgh. All residents of the City of Pittsburgh (five units or less) must separate recycle items from household trash and package them for bi-weekly recycling curbside collection or take them to a City recycling drop-off center. City residents have an opportunity to place a maximum of two bulk items at the curb for pick up every week, there is a charge for additional items (\$100 per 1/2 hour). City residents may drop off yard debris at collection centers.</p> <p>Services are provided through the city's general fund and are approximately \$9.7 million for collection and disposal and \$386,000 for recycling. The city also operates a solid waste trust fund with revenues coming from charges for bulk waste collection, recycling program revenues such as sale of recyclables and state reimbursements for funds expended. Revenues (approximately \$150,000) are used for expenses related to the City recycling program.</p>

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

City	Demographic Information	Solid Waste Collection
<b>Bakersfield, California</b>	2006 Population: 308,392 Land Area (square miles): 113.1 Population per Square Mile: 2,727	Municipal forces provide services to over 80,000 homes. Households are provided with two containers; one greenwaste cart and one tan refuse cart. Every other week recycling services charged at \$4 per month. Bulky collection is a free service to all city residents. Service is limited to 2 items per quarter. The city uses an enterprise fund with a budget of \$32 million, which is funded by charges for services. Residents are charged approximately \$170 per year.
<b>Aurora, Colorado</b>	2006 Population: 303,582 Land Area (square miles): 142.5 Population per Square Mile: 2,130	The city does not have a public trash collection system. Residents contract directly with city-registered trash haulers.

Shaded areas represent cities that appropriate money from a general fund to pay for solid waste services.

## APPENDIX E

### Project Newsletter *Talkin' Trash*



# Talkin' Trash

Fall 2007

## City Plans for Landfill Shortage

**K**ansas City's Solid Waste Division offers one of the most cost-effective trash and recycling collection services in the nation – spending \$18.35 million annually or about \$7 less per household than the national average. In addition, the City's solid waste management program offers a full range of services to its eligible residents beyond weekly curbside collections.

Program costs are expected to increase due to area landfills nearing capacity and closing sooner than originally anticipated. This could lead to the elimination of programs and services as well as to additional disposal fees for area residents and businesses. In the past, Kansas City has relied on three available landfills: Forest View, Courtney Ridge and Johnson County. Forest View closed in 2006, three years earlier than was expected. The closing of a landfill creates a domino-effect. In this case:

- The trash that was going to Forest View started going to Johnson County and Courtney Ridge.
- When a landfill in nearby Lee's Summit closes (as early as 2014), that trash will likely go to Courtney Ridge.
- When Johnson County closes (as early as 2016), some of that trash will go to Courtney Ridge and some will go to Hamm Quarry in Kansas.

Courtney Ridge has been projected to remain open until 2026, but with the increase in new trash coming in, it may close sooner.

Typically, it takes 10-15 years to site and build a new landfill. Currently no new local landfills are planned in the region. The next two closest landfills are privately-owned – Show Me Regional in Warrensburg, Mo., and Hamm Quarry located outside Lawrence, Kan.

When local landfills close, we will have to ship our trash farther away, which means more money is spent on fuel, driver salaries and general truck maintenance. As a result, the City estimates trash collection costs could increase anywhere from 45 percent to 73 percent. That's an additional \$7.5 to \$12 million more per year for the same services the Solid Waste Division currently provides.

Kansas City's Public Works Department is evaluating its current Solid Waste Management process and developing a Long-Term Solid Waste Management Plan. If we don't plan for the future now, we may soon find that Kansas City is creating trash faster than we can find space to put it.



*Forest View's closure in 2006 likely reduced the number of days before other area landfills reach capacity and are forced to close.*

### Your Role in Solid Waste Management

You can have a voice in how Kansas City will manage its solid waste in the future. As part of the long-term solid waste management planning effort, Kansas City officials will schedule opportunities for public participation. They want to learn what you value about the City's solid waste management services and what other services you prefer.

In October, the project team will conduct a series of focus groups throughout the City. Please take this opportunity to weigh-in and share your opinions related to the long-term planning of effective solid waste management.

To learn how you can take part in focus groups and other meetings visit [www.kcmo.org/trash](http://www.kcmo.org/trash) or contact Jake Potter at: 816-472-1930 or [jpotter@janemobley.com](mailto:jpotter@janemobley.com).

## Did You Know?

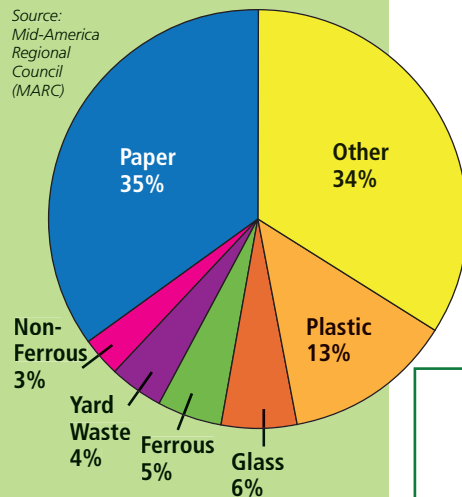
- Every person in Kansas City produces, on average, nearly 5 pounds of trash each day.
- Household trash, recyclables, garbage and other non-hazardous refuse are called "solid wastes."
- Like other municipalities in the region, Kansas City is running out of room to dispose of solid wastes.
- The City is dependent on private contractors to determine the cost of disposal and recycling revenue.
- Kansas City does not have local access to a recycled glass processor.

## Why is Waste Reduction Important?

- It reduces needs for landfill space.
- It conserves our natural resources.
- It creates habits today that will lessen costs tomorrow.
- It's the right thing to do, according to you, the public.

## What's In Our Trash?

Source:  
Mid-America  
Regional  
Council  
(MARC)



## Contact Us:

**Dennis Gagnon, Public Information Officer, Public Works Department  
City of Kansas City, Missouri  
(816) 513-2659  
www.kcmo.org/trash  
Dennis\_Gagnon@kcmo.org**

## What Does the City Want to Achieve Through Long-term Planning?

A project team working with City staff will evaluate the City's current and future solid waste needs. This evaluation will cover the collection, transportation and disposal of residential waste under the City's jurisdiction, as well as recycling contracts. From there, the project team will project solid waste management needs for the next five, 10, 15 and 20 years for Kansas City, Mo., and for the Greater Kansas City Metropolitan Area.

The evaluation will include many steps that include identifying and assessing regulations and policies at federal, state and local levels; innovative and new technologies to improve solid waste management; and potential properties (both city-owned/leased and private ownership) that might be suitable for any facilities proposed by the study.

The project team will compare other municipalities' solid waste programs to Kansas City's services, management activities and rates; the cost of staffing and services; customer billing data; capital and disposal costs; and labor and other operating expenses.

The City's goal is to identify a long-term plan of action to effectively manage solid-waste.

- **Community support** – The final plan must be acceptable to the general public, policy decision-makers, stakeholders, and other interested parties.
- **Environment** – Long-term strategy must be environmentally sound and must provide the least risk and maximum benefits to the residents and businesses of Kansas City.
- **Finances** – The recommended alternatives must be affordable to the ratepayers in both the short and long-term. Mechanisms must be in place to fund capital improvements, day-to-day waste management activities, and long-term obligations.
- **Management** – Internal and external relationships, roles and responsibilities are critical to efficiency, cost-effectiveness and overall success of a complex solid waste management system.

*Although up to 75 percent of trash in an average garbage can is recyclable, Kansas City's recycling rate is only 18% – well below the national average.*

## Tell Us What You Think

The project team is interested in your opinions about the future of solid waste management. If the City is forced to consider cutting existing programs and services, what would you be most unhappy to lose? What are you and your neighbors willing to do to help the City reduce the amount of waste Kansas City produces? Should the City consider charging residents and businesses additional fees to offset rising disposal costs?

If you are available to "talk a little trash" – please contact Jake Potter (816-472-1930, [jpotter@janemobley.com](mailto:jpotter@janemobley.com)) to schedule a time to meet with the project team at a location near you and participate in a community focus group:

- October 17 – Tony Aguirre Community Center, 2050 W. Pennway, Kansas City, Mo.
- October 18 – Line Creek Community Center, 5940 NW Waukomis Drive, Kansas City, Mo.
- October 24 – Marlborough Community Center, 8200 The Paseo, Kansas City, Mo.
- October 31 – Boy Scouts of America Scout Center, 10210 Holmes Road, Kansas City, Mo.
- November 3 – Ivanhoe Neighborhood Association, 3700 Woodland Avenue, Kansas City, Mo.
- November 5 – Sterling Acres Baptist Church, 11200 E. 47th Street, Kansas City, Mo.
- November 6 – Old Northeast Inc., 6612 Independence Avenue, Kansas City, Mo.
- November 8 – Kansas City North Community Center, 3930 N.E. Antioch Road, Kansas City, Mo.

For additional venues and project information, please visit us at: [www.kcmo.org/trash](http://www.kcmo.org/trash)

APPENDIX F  
Community Presentations



## APPENDIX G

### Focus Group Meeting Presentation



APPENDIX H  
Focus Group Meeting Summaries





**Public  
Works  
Department**  
Solid Waste Division

**Kansas City, Mo.  
Focus Group Comments/Questions  
(October 17 – Tony Aguirre Community Center)**

Attendees:

Tammy Gay (8216 Kenwood Avenue)  
Carolyn Vellar (9035 N. Hull Avenue)  
Lynda Callon (2136 Jefferson)  
Mike Messick (4031 Kenwood)

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Reasons people don't recycle

- Political bureaucracy
- Citizenry dis-engaged from planning and programming
- Scared to participate
- (City's) Lack of focus
- (City's) Mis-organization
- Basic refusal to participate
- Lack of education
- Not enough notification / ineffective mailers
- Need block-by-block outreach effort – by trusted sources of information
- Educational materials need to be visual / graphics-based for low-literacy recipients
- Educational materials need to be multi-lingual (Spanish, Vietnamese, French, Somalian, etc.)
- No motivation / incentives

Reasons why people do/will recycle

- Effective Neighborhood leadership
- Neighborhood / Peer pressure
- Educated/informed
- Make it fun
- Bonuses/incentives
- Neighborhood advocates / district representatives by council – DeAnne Gregory, Nancy Regan, Nathan Pare, Renee Nash, Colleen Lowe, and James Prim were all specifically identified as being effective in this role in the past, although each has moved on to positions with different responsibilities

### Suggested Changes

- Need a holistic system and approach (ex. manufacturer / retailer commitment to reduce waste – over-packaging)
- Find local partners (i.e. Ball's, Cosentino's grocery stores)
- More public education and awareness
- Re-usage of bags / produce less waste
- Increased vendor responsibility and accountability
- Re-emphasize importance of recycling
- Too difficult to recycle (re-location of drop-off sites)
- Bridging the Gap needs to play a more prominent role
- Need a system that encourages landlord/property-owner attentiveness to issues and solutions
- A single official representing multiple districts is a bad idea

### Leaf and Brush Pick-Up

- Attendees were familiar with Nature's Rubbish and Missouri Organic

### Bulky-Item

- Current system is not convenient. Many citizens (apartment owners, homes without garages, etc.) don't have storage space for items to wait for the next pick-up. Items get placed in yards/porches and possibly end up getting reported for codes violation.
- Building and apartments should offer space for bulky items and recyclables.
- No complaints with carriers, other than recycling containers getting tossed around
- Need a better understanding of regulations, including landlord/tenant compliance issues and awareness

### MRF

- Seems like an economical solution
- Should consider operating through a private contractor, City-operated ventures lack a proven track record
- Concerns related to odor...noise.....run-off.....groundwater.....traffic
- Would like to see examples of successful MRFs
- Schools should be required to tour MRF with hopes of changing attitudes of future waste-producers... Public education can be effective when received via students/children (ex. Smoking, seat belts, etc.).

### Organics

- Should be mandatory for restaurants
- Concern about attracting rat/rodent populations

### Electronics

- Attendees were aware of Surplus Exchange special collections
- Possibility of neighborhood-organized events / pick-ups
- Pressure on manufacturers/retailers to take-back

### Waste to Energy

- Sounds expensive
- Requires significant metropolitan commitment

### Transfer Station

- Possible waste to (light) rail opportunities

### Landfills

- Landfill re-use seems limited.
- Landfills should be considered, in addition to other solutions.
- Should consider re-use of construction and demolition materials

### Other

- Issue of Ineffective Leadership
- City Council / Mayor / politicians too afraid to upset citizenry by making tough, timely decisions
- This problem requires identification of additional funding mechanisms (i.e. raising property taxes, etc.).
- We do not have enough new revenue to supplement the City's General Fund.
- Mandatory recycling could be a very sensitive issue with many.

### Misc. Questions Asked

- How long does a landfill take to create?
- How are fuel costs related to transportation issues?
- How does trash accumulation differ now than from 10-15 years ago?
- Is there any pressure on manufacturers to simplify the packaging of products (i.e. less waste)?
- How long should the educational process take to be efficient?
- What are possible incentives to neighborhoods with regards to recycling?
- Why are there not more "self-haul" options?
- Does the cost of a MRF include employee salaries/benefits?
- What cities have successful MRFs?
- How might this project be affected by sanitary sewer projects?





**Kansas City, Mo.**  
**Focus Group Summary**  
**(October 24 –Marlborough Community Center)**

Attendees:

Kevin Anderson (7700 E 40 Highway)  
Dave Anderson (7700 E 40 Highway)  
Sarah Schillerstrom (444 W. 11<sup>th</sup> Street)  
Jenny Jones-Lacy (11421 Chestnut Avenue)

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Reasons people don't recycle

- Confusion – What is recyclable? Where can it be taken?
- Inconvenient for those without curbside service, requires special trip
- Not enough volunteers and limited hours of operations at collection centers
- Sorting and storage challenges prior to drop-off
- Need increased education / awareness

Reasons why people do/will recycle

- 70 % recycling potential – it's important
- Less trash produced when recycled/sorted at home

Suggested Changes

- Increased services for apartment complexes / renters (recycling, bulky)
- Encourage increased participation at curbsides
- Increased public education – target elementary-aged audiences
- Items should be separated at recycling centers
- Increase disposal fees, to motivate waste reduction and recycling
- Recycle grocery bags/sacks or bring your own
- Target grocery stores, manufacturers, and landlords/apartment managers as obstacles to reduced waste

Questions Asked

- How do you know what recyclables will be accepted?
- What are the different types of plastics?
- What is the cost of participating in all recycling options?
- How do you make it easier and more convenient?
- How do we get people to participate?
- Can grocery bags be recycled?

- How do other cities recycle items?
- What barriers exist for apartment complexes?
- Can you recycle pizza boxes?
- What studies have been made towards the pros and cons of organics?
- Is rodent infestation an issue with curbside organics recycling?
- How much research is being done now regarding these issues/future solutions?

### MRF

- Controlling your own waste is a good idea
- Climate control advantages
- 2 different types of MRFs = Dirty vs. Clean
- Consistent with “go green” agenda

### Organics

- Rodent control a non-issue with special containers and sealable liners
- Need to encourage landlord / apartment owner acceptance
- Contracts with restaurants/producers/schools motivated by cost-effectiveness

### Electronics

- Important, considering the number of people who use computers
- Special collections should be offered, not necessarily by City
- Need increased awareness of special collection dates and details
- E-collection better than going from dumpster to landfill

### Waste to Energy

- Possibility that facilities will cost less to construct over time
- Need to weigh costs vs. results
- Concerns with emissions / air pollution; carbon footprint trade-off

### Transfer Station

- Must do something to off-set the rising costs of increased travel

### Landfills

- The landfill message within the presentation is very meaningful/pressing.
- Expensive option, with high level of public opposition
- Must understand costs of waste production and future costs – “contaminated problem”



**Public  
Works  
Department**  
Solid Waste Division

**Kansas City, Mo.  
Focus Group Summary  
(November 3 – Ivanhoe Neighborhood Association)**

**Attendees:**

Michelle Cour (7441 Summit St.)  
Ida Dockery (3925 Euclid Ave)  
Julie Trot (5401 Brookside #308)  
George A. Graham Sr. (4133 Wayne)  
Leorn King (3714 Wayne)  
Jessie Jeffers (3700 Woodland) (Ivanhoe)  
Julius King (3715 Wayne)  
Bill King (3714 Wayne)  
Douglas L Fond (4210 Olive)  
Jim Hubbell (1920 Wyandotte #1) (MARC)

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**Reasons people don't recycle**

- People don't understand that it's important.
- People don't understand effect on future generations.
- People say they don't have enough to recycle.
- People are lazy. would rather throw things away.
- Not enough incentive to get down to one bag of trash.

**Reasons why people do/will recycle**

- Things can be reused if you recycle.
- Keep planet healthy for kids.

**Suggested Changes**

- More education is necessary. Make people aware of current problems.
- Incentive program (financial) to get people down to one bag of trash.
- Educate kids and parents. Educate about the costs of not recycling.
- Get rid of the blue bins.
- Outreach to landlords of rental property/apartments.
- City needs to give back. Maybe offer discount on water bill. Financial reward for recycling.
- More frequent pick-up.
- Enforce laws against illegal dumping.

### Questions Asked Part I

- Why aren't people thinking ahead to build a new landfill?
- Which landfills does Deffenbaugh own?
- Could trash costs be added to the water bill?
- Where does glass go after it's dropped-off?
- Why can't we recycle glass?
- What is the market for glass right now?
- Can we attract a glass manufacturer?
- What is it costing us to have glass in our landfill?
- Could the glass company reuse glass?
- Is there a special dump for glass?

### What would you like the City to know?

- Multi-family dwellings need to be added to the list.
- Deffenbaugh trucks pollute the air.
- Illegal dumping is a problem.
- Building and construction materials are a problem.
- Get rid of Deffenbaugh.

### MRF

- We need to introduce new competition. (Competition for Deffenbaugh)
- Get more people involved. Get more facilities involved. Keep things cheaper.

### Organics

- Need education from City about composting.

### Electronics

- Special pick-up should offer something.
- They should offer a place at recycling drop-off sites to leave your electronics.
- Include a hazardous waste pick-up.

### Waste to Energy

- More financial information is necessary.
- Concerns about cost. Cost seems high.

### Collection

- I love the cart system.
- Because not every residence has a driveway it would be hard to do the cart system.
- Bags look messy, carts look clean.
- Charge for different size carts for staggered pick-up.
- Easier to roll carts to end of driveway.

### Transfer Stations

- If you have to truck trash further, might as well be efficient as possible. Looks like a good option.
- On big problem is that the state does not participate.

### Landfills

- If the City wants to.
- State government must mandate a % that NEEDS to be recycled.
- City councilman (council members) need to come in and sit in on these meetings.
- Need to educate the City.

### Questions asked by attendees Part II

- If Deffenbaugh has a landfill, why can't anyone else build one?
- Why can't the City do the same as Deffenbaugh?
- What are other cities doing? Other models that work?
- Is there a place for construction and demolition disposal?
- Why does Kansas City have the reject trash trucks from other cities?
- What does the City do with old tires?
- Can you bring tires to the City?





**Public  
Works  
Department**  
Solid Waste Division

**Kansas City, Mo.  
Focus Group Summary  
(November 5 – Sterling Acres Baptist Church)**

**Attendees:**

Anne Melia	(7647 Windsor Street)
Jim Flynn	(P.O. Box 9425)
Morton Routon	(4519 West Ridge Road)
Dale Pitts	(11217 E. 51 <sup>st</sup> Street)

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Reasons people don't recycle

There is a need for incentives and refunds  
Glass, car batteries and Styrofoam recycling involve more work.  
Styrofoam can't be recycled  
Need more education about the costs of "going green"

Reasons why people do/will recycle

Newspapers and aluminum cans are easy to recycle  
Implementation of the Kansas City curbside pickup was great.  
City providing yard waste bins is helpful  
The items recycled are what the city picks up.  
Separation of items is easy and the result goes a long way.  
2-bag limit serves as an effective incentive but some people still don't participate.  
Recycling is good for the environment.

Suggested Changes

There is a need for incentives and refunds.  
They should be electronic recycling and there should be a pickup system.  
Restaurants should be targeted; organics.  
Need more recycling options.  
Need to put pressure on manufacturers and producers (i.e. packaging).

Organics

Separation processes is difficult.

Some people create their own compost pile.  
Additional recycling options would be good.

## Questions asked

Can diapers be recycled?

What kinds of pickups need to be changed?

How do they keep the cans clean with regard to food recycling?

Should the city do the education on waste energy or a partnership?

How many people does it take to run automated collection?

Are rock quarries appropriate for landfills?

Why can't you plant trees at a landfill?

How is Bridging The Gap involved?

What is City going to do regarding Courtney landfill ending in 2026?

## MRF

Multiple locations are necessary.

Market availability as driver is an issue.

Commercial Sector Volumes – participation and regulations.

Mandatory paper recycling is a good idea.

## Organics

It can be messy/smelly.

The can liners are very helpful.

Garbage disposal ban (i.e. New York City) might be an option.

## Electronics Recycling

They should be electronic recycling and there should be a pickup system.

Needs to be understandable and easy for users.

Locations throughout community would make it very convenient.

## Waste to Energy

Sounds like it is the best solution in the long run.

90% less waste

There is an air quality/pollution trade-off.

City should consider partnership / joint venture.

## Automated Collection

The cans have to be sturdy.

It is much faster and exists in many other states.

Concerns related to street parking issues and placement of cans.

### Transfer Station

Would not care if one were nearby.

### Landfill

Another landfill should be the LAST thing to consider.

Cheapest trash hauling city in U.S. is in Kansas City.

It will come to an end very soon with regard to no additional landfills in the area.

You have to approach the manufacturers regarding the packaging.

Price of trash disposal will be increasing within the next 10 years.

The MRF is the way to go but there will still be a trucking need.

San Francisco MRF is great example.





**Public  
Works  
Department**  
Solid Waste Division

**Kansas City, Mo.  
Focus Group Summary  
(November 8 –Kansas City North Community Center)**

Attendees:  
Pat Frisbie  
William Wall

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Reasons people don't recycle

They don't have a blue box.  
There is a 2-sack limit.  
They may not recycle more with only one sack.  
Lack of media exposure and education.

Reasons why people do/will recycle

City provides the recycling bins.  
There is adequate incentive.

Suggested Changes

Leaf and brush pickup was too early in the season.  
Need landlord education.  
The City responds very well to complaints.  
Recycling is a landfill saver.

Questions Asked

How much does Deffenbaugh make on this?  
Does recycling help on man-hours and "city time"?  
How do you reduce trash?  
What are more options?  
Can you request a new bin?  
Does Lees Summit and Blue Springs use the same landfills as City of KC?  
Where do tires go? Who buys them?  
What about recycling metal/gas cans?  
Does it save money for the city for a brush drop-off?  
What is the biggest money-making potential?  
Do you pick up at apartments?  
Does Deffenbaugh pay the City back?  
Do you make any money of leaf/brush pickup?

What about straw?

### MRF

Does Deffenbaugh pay the city back any \$\$?

Is the landfill done by weight or volume?

Where would a new MRF be located?

How is this based on recycling glass?

Has participation increased within the last three years?

Is a new MRF related to the public voting process?

### Organics/Food Recycling

The idea of napkins being used for compost is a good way of thinking.

City Market example was presented.

Would you outsource organic and composting?

The odor of composting is an issue.

Keeping the receptacle clean is hard without liners.

What is the status of the cart system?

### Electronics Recycling

The switch to digital television will be significant.

Does this include cell phones?

Do places like Circuit City take back old items for recycling?

There is not a high expectation for success outside of pickup events.

"Recyclespot.org" is a great idea.

### Waste to Energy

Very familiar with the ethanol/corn process.

What portion of the city's budget goes to energy?

The cost benefit is better to leave recyclables for waste to energy needs.

### Automated Collection

What happens to the old trucks?

How many would have to be purchased?

### Transfer Station

This is a very favorable option.

Can you combine a transfer station with a waste energy facility?

### Landfill

Is the landfill conducted by weight or volume?

Do they cover with dirt everyday?

How many acres does a landfill require?

Are there fees for all landfills?

How does Kansas City compare to other landfill rates?







**Public  
Works  
Department**  
Solid Waste Division

**Kansas City, Mo.  
Focus Group Summary  
(November 13 – Old Northeast, Inc.)**

**Attendees:**

Yvonne Huff	(8111 James A. Reed Rd.)
Billy Cutchlow	(801 Cypress Ave.)
Nancy Kwilas	(6612 Independence Ave.)
B. Louis Penny	(6612 Independence Ave.)
Robert Moore	(1010 Brooklyn Ave.)

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**Reasons people don't recycle**

Sorting and driving to site takes time.  
Lack of information.  
Changes in packaging interferes with process.  
Nobody knows the long-term facts.  
There are no economic incentives.  
Older people may find bins awkward.

**Reasons why people do/will recycle**

The curbside pickup is a "single stream".  
Non-sorting.  
In order to save the human species and take care of the earth.  
Some of the options can be an economic benefit.  
NY "Recycle Bucks".

**Suggested Changes**

Incorporating a sense of responsibility on children.  
Encourage school groups/districts to include school field trips.  
Use more than just the City t.v. Channel to inform.  
There needs to be mix of systems for this to work soon.  
Combining a MRF with a transfer station would work.  
We need to involve businesses with regard to recycling options.  
There needs to be a plan to engage the next generations!!!

**Questions Asked**

What items are recyclable?  
Do landfills have cockroaches?

How is Deffenbaugh involved at MRFs?  
Is there a market for glass in KC?

### MRF

School groups need to see this process.  
There is potential for some cost benefits.  
Sounds like it could save money.  
How is Deffenbaugh involved?  
Is there a market for glass in KC?  
How big of a site is needed to build a MRF?  
The process of collecting is complex.  
“Energy” it takes to encourage multi-stream collections.  
An idea would be to start multi-stream collections in schools/public.  
How to shift the cost of non-recyclable packaging/materials back to MRF.  
Should ban plastic bags.

### Organics/Food Recycling

How many carts/bags do we need?  
Approaching schools/public buildings would be a good “kick-start.”  
Are tax credits possible re: the purchasing of bins?  
Can grass clippings be included?  
Is odor an issue?  
What amount per household can be recycled?  
Branches can go if they fit in the cart.  
Other City systems can provide us with new ideas.

### Electronics Recycling

How is Surplus Exchange involved?  
Don't mind paying for the fees for Surplus Exchange.  
Bridging The Gap helps this process as well.  
Can they go with bulky items?  
What is the average amount of fee?

### Waste to Energy

Willing to consider even though it is expensive.  
Given the expense, it is likely a regional effort.  
The facility doesn't need to be big.  
Separate cost to build compared to running it.  
There is possible revenue from selling by-products.  
Complexity = # of jurisdictions, state of technology and timing.

### Automated Collection

Is MARC involved?  
Would there be loss of jobs?  
What is the truck capacity?  
Is it able to serve all locations?

### Transfer Station

As a cost saver, it may be good to pursue now.

### Landfill

What kind of site does it take for a new landfill?

Can we sell the methane?

Why are there no trees?

Use of a bioreactor might help the burning issue at a landfill.

How much waste is from businesses compared to residential.





**Public  
Works  
Department**  
Solid Waste Division

**Kansas City, Mo.  
Focus Group Summary  
(November 28 – Southtown Planning Center)**

**Attendees:**

Brandy Kean	(4455 Cherry)
Jimmy Glavin	(4957 Mercier)
Brent Southwell	(26 Janssen Place)
Susan Bailey	(8 W. 57 <sup>th</sup> Terr.)
Jim van Eman	(8 W. 57 <sup>th</sup> Terr.)
Bill Kalahurka	(214 W. Dartmouth)
Marti Lee	(6814 Troost)
Marty Schuettpeiz	(4801 NE Sherwood)
Liana Riesinger	(435 E. 80 <sup>th</sup> St.)
Keith Conner	(610 W. 56 <sup>th</sup> St.)
Andrea Babbit	(435 Westport, #23)
Mark Thompson	(600 W. 56 <sup>th</sup> St.)
Sue Fulson	(7931 Charlotte)

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**Reasons people don't recycle**

The concept is intimidating.  
No time / needs to be easier.  
Glass is not recyclable.  
The wind blows over bins and cans and/or containers get stolen.  
Missouri resources are limited.

**Reasons why people do/will recycle**

Children encouraging recycling.  
Parents recycled since the 70's.  
Can't stand to knowingly throw away recyclables, saves resources.  
The motivation offered by organization such as "Eco Team."  
Less strain on landfills.  
It is so easy to do with visible results.

**Suggested Changes**

Introduction of "Eco Team" is a great way to educate  
It has to be easy to participate.

Place fines on those who don't recycle.  
Manufactured packaging is an issue that must change.  
Bulk yard waste and organics need to be isolated into bio-gas energy options.  
Must be changes regarding landlord restrictions.  
Block-by-block, hauler AND commercial targeted education effort.  
Statewide legislation efforts.

### Questions Asked

What happens when a landfill closes?  
Where are places that recycle glass?  
How many trips to trucks make to landfills?  
What happens to larger plastic items that are not a #1 or #2?  
How much of the waste is residential compared to commercial/business?  
Why doesn't the City have "control"?

### MRF

How much is Deffenbaugh recycling?  
Do other cities have MRFs? How do those work?  
How often are the recycling pickups?  
3 to 5 million cost does not seem too high with regard to building a new MRF.  
What does Deffenbaugh's MRF look like?  
Would have concerns about the City running the MRF and turning profit.  
Need to increase what's accepted materials.  
How many communities have spoken to KC about combined effort? Regional?  
Would the MRF really be creating new jobs?

### Organics / Food Recycling

Why take grass clippings?  
Is leaf/brush different from grass clippings?  
Plastic bags are an issue.  
"Kitchen education" is necessary before the bin is taken to the curb.  
Organics are heavy.  
Organics in landfills cause odors.  
The issue is challenging if there are three separate parts.  
Where do we keep the organic containers?  
Some people can't handle them to the curb side.  
Could a bag be different color instead of bins?  
Fruit flies and mold are sometimes issues.  
Is once a week not often enough with regard to pickups?

### Electronics Recycling

How often are these special events?  
Where do they go after they are collected?  
Why do they charge and do any cities refuse any specific items?  
Is there a way for schools to take items to a landfill?  
Is mercury recovered?

Landfills should be encouraged to ban these materials.

### Waste to Energy

Once it is in a landfill, is it ok?

Anaerobic Bio is the only way to go (less capital costs).

What are the operating costs?

Gasification is too experimental.

Need to be mindful of climate protection trade-off's.

### Automated Collection

Is it cheaper than workers?

Is it safer/cleaner?

What is the rate of people's use?

Where are people expected to put the carts?

The cart system is very favorable, reduces workers' comp claims.

Too many carts to manage, need education on placement.

Carts are less unsightly than trash bags.

City offers front-door service when appropriate and requested.

### Transfer Station

Is the City looking at this option?

Can they be combined with a MRF?

Should be considered if landfills are located further away.

### Landfill

NIMBY!

There is no "away" with trash, it has to go somewhere.



APPENDIX I  
Public Opinion Survey





Public  
Works  
Department  
Solid Waste Division

## Kansas City, Mo. Solid Waste Program Survey 2

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What is your address (or neighborhood)?

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### Trash Collection

Are you currently satisfied with your trash collection service?

Yes  No

If you answered “No” to the above question, please explain why.

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Who should be responsible for collection, transportation and disposal of trash?

Individual Users  Neighborhood or Homeowner’s Association  
 KCMO  Landlord/Property Manager  
 Private Contractor  Not Sure

To maintain or expand the City’s trash collection service, would you be willing to pay a fee to dispose of household trash?

Yes  No  Not sure

If you answered “Yes” to the above question, how would you prefer to pay for expanded trash collection services?

Bill monthly  Bill annually  
 Trash bag/trash tag purchase fees

**Do you currently participate in the Trash Carts Program?**

Yes                       No                       Not aware of program

**Should the City consider a City-wide Trash Carts Program?**

Yes                       No                       Not Sure

**Do you believe a Trash Carts Program improves neighborhood cleanliness?**

Yes                       No                       Not sure

**If the City were to provide an option to “upsized” to a larger cart would you be willing to pay an additional fee?**

Yes                       No                       Not sure

## Illegal Dumping

**Do you believe the City has a problem with illegal dumping?**

Yes                       No                       Not sure

**Is the City doing enough to prevent and/or clean-up illegally dumped materials?**

Yes                       No                       Not sure

**If you answered “No”, what should the City do to prevent/decrease illegal dumping violations?**

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## Landfills

**Are you aware that your trash is transported to a landfill?**

Yes                       No

**As area landfills reach capacity and close, should KCMO build and operate its own landfill?**

Yes                       No                       Not Sure

## Recycling

**Are you aware that Kansas City operates four drop-off recycling sites?**

Yes  No

**Do you use a City-operated drop-off recycling center?**

Yes  No  What Location: \_\_\_\_\_

**How many times in the past year did you or someone from your household drop materials at a recycling site?**

Did not use in last year  9 to 12 times  
 1 to 4 times  More than 12 times  
 5 to 8 times

**What materials did you take to the recycling center? *Check all that apply.***

Cardboard  Plastic containers  
 Office paper  Steel/Tin Cans  
 Newspaper and Magazines  Aluminum  
 Paperboard (example: phonebooks, paper grocery bags, cereal boxes)

**How often do you participate in a curbside recycling program?**

Every week  Every other week  
 Monthly  Not at all

**If you answered "Not at all" to the above question, please explain why.**

---

---

**What materials do you set out for curbside recycling (i.e. KC Recycles)? Check all that apply.**

- |   |   |
|---|---|
| <input type="checkbox"/> Cardboard  | <input type="checkbox"/> Plastic containers |
| <input type="checkbox"/> Office paper   | <input type="checkbox"/> Steel/Tin Cans     |
| <input type="checkbox"/> Newspaper and Magazines  |   |
| <input type="checkbox"/> Aluminum   |   |
| <input type="checkbox"/> Paperboard (example: phonebooks, paper grocery bags, cereal boxes) |   |

**To maintain or expand the City's recycling services, are you willing to pay a fee?**

- |                              |                             |                                   |
|------------------------------|-----------------------------|-----------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Not sure |
|------------------------------|-----------------------------|-----------------------------------|

**If you answered "Yes" to the above question, how would you prefer to pay the additional fee?**

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> Bill monthly | <input type="checkbox"/> Bill annually          |
| <input type="checkbox"/> Taxes        | <input type="checkbox"/> Container purchase fee |

**If the City began recycling glass, at the curbside would you participate?**

- |                              |                             |                                   |
|------------------------------|-----------------------------|-----------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Not sure |
|------------------------------|-----------------------------|-----------------------------------|

**Should recycling become mandatory?**

- |                              |                             |                                   |
|------------------------------|-----------------------------|-----------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Not sure |
|------------------------------|-----------------------------|-----------------------------------|

**If you answered "Yes" to the above question, what penalties would you support to enforce the mandatory ordinance?**

- |                                   |   |
|-----------------------------------|---|
| <input type="checkbox"/> Warnings | <input type="checkbox"/> Public notification of violators |
| <input type="checkbox"/> Fines    | <input type="checkbox"/> Non-collection of trash          |

## Leaf/Brush Collection

**If the City offered a fee-based leaf/brush (including grass) drop-off service would you use it?**

Yes       No       How often: \_\_\_\_\_

**Should the City collect grass as part of the leaf and brush program?**

Yes       No       Not sure

**If you answered "Yes" to the above question, how much would you be willing to pay?**

\$1 a bag       \$10 per truck load  
 \$5 a bag       \$15 to 25 per truck load

**If leaf and brush curbside pick-up were offered monthly and by appointment only, would you participate?**

Yes       No       Not Sure

**If you answered "Yes" to the above question, would you be willing to pay \$1 to \$3 a bag?**

Yes       No       Not sure

## Bulky Items

**How frequently do you use bulky item pick-up services per year?**

1 to 4 times       5 to 8 times  
 9 to 12 times       Not at all

**If bulky item pick-up were offered monthly and by appointment only, would you participate?**

Yes       No       Not Sure

## Organics

**Would you participate in a weekly organic curb-side collection? (*example organics: food and fibers*)**

Yes                       No                       Not Sure

**If you answered “Yes” to the above question, how would you prefer to pay the additional fee?**

Bill monthly                       Bill annually

## Electronic Waste

**Would you participate in an electronic waste (computer equipment, TV, cell phones etc.) program monthly or by appointment only?**

Yes                       No                       Not sure

**If you answered “Yes” to the above question, how would you prefer to pay the additional fee?**

Bill monthly                       Bill annually

## Dead Animals

**Are you currently satisfied with the City’s collection of dead animals?**

Yes                       No                       Not sure

**Would you be willing to pay a fee for the collection of dead animals?**

Yes                       No                       Not sure

**Should the City consider charging additional fees for collection of dead livestock?**

Yes                       No                       Not sure

## Disposal Options

**Should the City consider building and operating a Material Recovery Facility?**

- Strongly agree       Agree  
 Neutral       Disagree       Strongly disagree

**Should the City consider building and operating a Transfer Station?**

- Strongly agree       Agree  
 Neutral       Disagree       Strongly disagree

**Should the City consider building and operating a Recycled Glass Processor?**

- Strongly agree       Agree  
 Neutral       Disagree       Strongly disagree

**Should the City consider recycling organics/food?**

- Strongly agree       Agree  
 Neutral       Disagree       Strongly disagree

**Should the City consider building and operating a Waste to Energy Facility?**

- Strongly agree       Agree  
 Neutral       Disagree       Strongly disagree

Thank you for participating!!

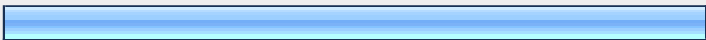



APPENDIX J  
Public Opinion Survey Responses

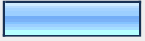
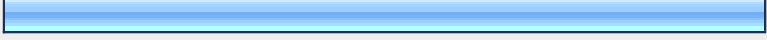


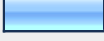

# Long-Term Solid Waste Management Survey

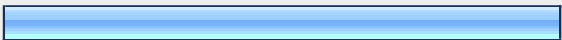


1. What is your address (or neighborhood)?		Response Count
		72
<i>answered question</i>		<b>72</b>
<i>skipped question</i>		<b>4</b>

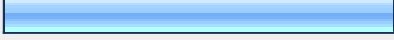

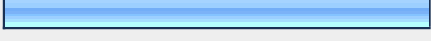
2. Please rank the following residential services 1 through 11, in order of their importance: 1 (one) being the most important and 11 (eleven) being the least important.				
		Response Average	Response Total	Response Count
Weekly Trash Collection		1.56	109	70
KC Recycles		2.67	187	70
Trash Carts		6.45	445	69
Bulky Item Pick-Up		4.17	288	69
Neighborhood Clean-up Assistance		6.43	444	69
Drop-Off Recycling		5.96	423	71
Leaf and Brush Collections		5.35	369	69
Leaf and Brush Drop-Off Sites		7.00	483	69
Tire Drop-Off Site		7.60	532	70
Illegal Dumping		5.94	410	69
<b>Dead Animal Collection</b>		<b>8.50</b>	<b>578</b>	68
		<i>answered question</i>		<b>72</b>
		<i>skipped question</i>		<b>4</b>


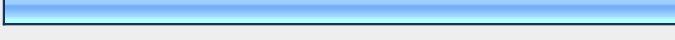
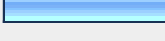
3. Are you currently satisfied with your trash collection service?				
			Response Percent	Response Count
Yes			77.6%	59
No			23.7%	18
			<b>answered question</b>	<b>76</b>
			<b>skipped question</b>	<b>0</b>

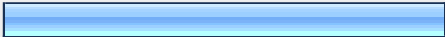
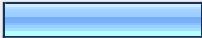
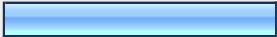
4. If you answered "No" to the above question, please explain why.			Response Count
			21
			<b>answered question</b>
			<b>21</b>
			<b>skipped question</b>
			<b>55</b>




5. Who should be responsible for collection, transportation and disposal of trash?				
			Response Percent	Response Count
Individual Users			14.7%	11
<b>KCMO</b>			<b>84.0%</b>	63
Private Contractor			9.3%	7
Neighborhood or Homeowner's Association			6.7%	5
Landlord/Property Manager			10.7%	8
Not Sure			6.7%	5
			<b>answered question</b>	<b>75</b>
			<b>skipped question</b>	<b>1</b>

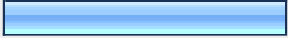


6. To maintain or expand the City's trash collection service, would you be willing to pay a fee to dispose of household trash?			Response Percent	Response Count
Yes			61.3%	46
No			26.7%	20
Not Sure			13.3%	10
			<b>answered question</b>	<b>75</b>
			<b>skipped question</b>	<b>1</b>

7. If you answered "Yes" to the above question, how would you prefer to pay for expanded trash collection services?			Response Percent	Response Count
Bill monthly			42.9%	21
Bill annually			18.4%	9
Trash bag/trash tag purchase fees			46.9%	23
			<b>answered question</b>	<b>49</b>
			<b>skipped question</b>	<b>27</b>


8. Do you currently participate in the Trash Carts program?			Response Percent	Response Count
Yes			8.1%	6
No			74.3%	55
Not aware of program			17.6%	13
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

9. Should the City consider a city-wide Trash Carts program?			Response Percent	Response Count
Yes			48.6%	36
No			21.6%	16
Not sure			29.7%	22
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

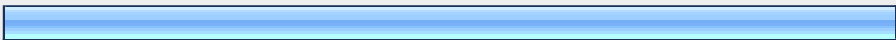

10. Do you believe a Trash Carts program improves neighborhood cleanliness?			Response Percent	Response Count
Yes			50.0%	37
No			20.3%	15
Not sure			29.7%	22
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

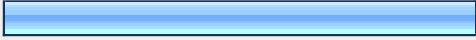
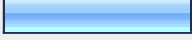

11. If the City were to provide an option to "upsized" to a larger cart, would you be willing to pay an additional fee?			Response Percent	Response Count
Yes			31.1%	23
No			33.8%	25
Not sure			35.1%	26
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

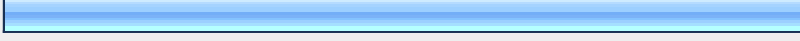
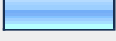
12. Do you believe the City has a problem with illegal dumping?			Response Percent	Response Count
Yes			86.5%	64
No			2.7%	2
Not sure			12.2%	9
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

13. Is the City doing enough to prevent and/or clean-up illegally dumped materials?			Response Percent	Response Count
Yes			16.2%	12
No			56.8%	42
Not sure			28.4%	21
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

14. If you answered "no," what should the City do to prevent/decrease illegal dumping violations?		Response Count
		37
<b>answered question</b>		<b>37</b>
<b>skipped question</b>		<b>39</b>

15. Are you aware that your trash is transported to a landfill?				
			Response Percent	Response Count
Yes		98.6%	73	
No		1.4%	1	
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

16. As area landfills reach capacity and close, should the City build and operate its own landfill?				
			Response Percent	Response Count
Yes		52.1%	38	
No		20.5%	15	
Not sure		28.8%	21	
			<b>answered question</b>	<b>73</b>
			<b>skipped question</b>	<b>3</b>

17. Are you aware that Kansas City operates four drop-off recycling sites?				
			Response Percent	Response Count
Yes		88.0%	66	
No		12.0%	9	
			<b>answered question</b>	<b>75</b>
			<b>skipped question</b>	<b>1</b>

**18. How many times in the past year did you, or someone from your household, drop materials at a recycling site?**

		Response Percent	Response Count
Did not use in last year		32.4%	24
1 to 4 times		27.0%	20
5 to 8 times		14.9%	11
9 to 12 times		10.8%	8
More than 12 times		14.9%	11
		<b>answered question</b>	<b>74</b>
		<b>skipped question</b>	<b>2</b>

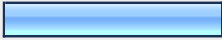
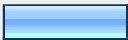
**19. What materials did you take to the recycling center (check all that apply)?**

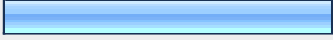
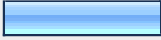
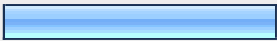
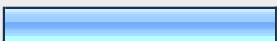
		Response Percent	Response Count
Cardboard		58.7%	27
Office paper		32.6%	15
Newspapers and magazines		47.8%	22
Plastic containers		50.0%	23
Steel/tin cans		34.8%	16
Aluminum		50.0%	23
Glass		56.5%	26
Paperboard (phonebooks, grocery sacks, cereal boxes)		65.2%	30
		<b>answered question</b>	<b>46</b>
		<b>skipped question</b>	<b>30</b>




20. How often do you participate in a curbside recycling program?			Response Percent	Response Count
Every week			68.0%	51
Every other week			14.7%	11
Monthly			1.3%	1
Not at all			16.0%	12
			<b>answered question</b>	<b>75</b>
			<b>skipped question</b>	<b>1</b>

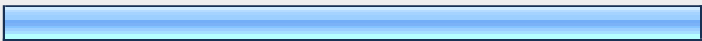


21. If you answered "Not at all" to the above question, please explain why.		Response Count
		12
		<b>answered question</b>
		<b>12</b>
		<b>skipped question</b>
		<b>64</b>

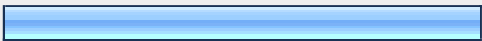

22. What materials do you set out for curbside recycling (check all that apply)?			Response Percent	Response Count
Cardboard			92.2%	59
Office paper			76.6%	49
Newspaper and magazines			85.9%	55
Aluminum			79.7%	51
Plastic containers			90.6%	58
Steel/tin cans			73.4%	47
Paperboard (phonebooks, grocery bags, cereal boxes)			90.6%	58
			<b>answered question</b>	<b>64</b>
			<b>skipped question</b>	<b>12</b>


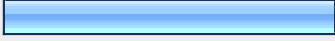
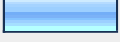
23. To maintain or expand the City's recycling services, are you willing to pay a fee?			
		Response Percent	Response Count
Yes		65.3%	49
No		24.0%	18
Not sure		13.3%	10
<i>answered question</i>			<b>75</b>
<i>skipped question</i>			<b>1</b>

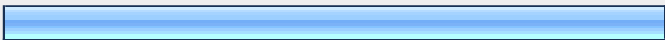



24. If you answered "Yes" to the above question, how would you prefer to pay the additional fee?			
		Response Percent	Response Count
Bill monthly		36.2%	17
Bill annually		17.0%	8
Taxes		29.8%	14
Container purchase fee		29.8%	14
<i>answered question</i>			<b>47</b>
<i>skipped question</i>			<b>29</b>

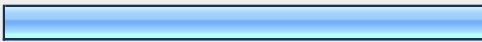
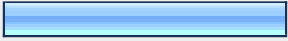

25. If the City began recycling glass at the curbside, would you participate?			
		Response Percent	Response Count
Yes		92.0%	69
No		4.0%	3
Not sure		4.0%	3
<i>answered question</i>			<b>75</b>
<i>skipped question</i>			<b>1</b>

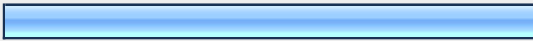

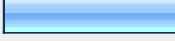
26. Should recycling become mandatory?			Response Percent	Response Count
Yes			77.0%	57
No			9.5%	7
Not sure			13.5%	10
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>



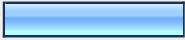
27. If you answered "Yes" to the above question, what penalties would you support to enforce a mandatory recycling ordinance?			Response Percent	Response Count
Warnings			52.5%	32
Fines			75.4%	46
Public notification of violators			37.7%	23
Non-collection of trash			45.9%	28
			<b>answered question</b>	<b>61</b>
			<b>skipped question</b>	<b>15</b>

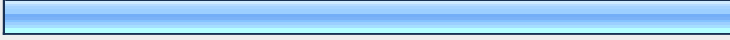

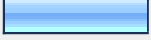
28. If the City offered a fee-based leaf/brush (including grass) drop-off service, would you use it?			Response Percent	Response Count
Yes			51.4%	38
No			36.5%	27
Not sure			12.2%	9
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

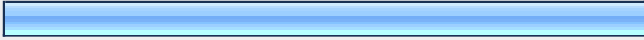


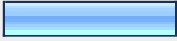
29. If you answered "Yes" to the above question, how much would you be willing to pay?			
		Response Percent	Response Count
\$1 per bag		73.0%	27
\$5 per bag		8.1%	3
\$10 per truck load		21.6%	8
\$15-25 per truck load		5.4%	2
		<b>answered question</b>	<b>37</b>
		<b>skipped question</b>	<b>39</b>

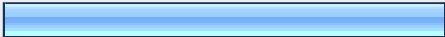
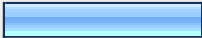
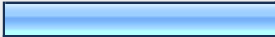
30. Should the City collect grass as part of the leaf and brush program?			
		Response Percent	Response Count
Yes		52.7%	39
No		31.1%	23
Not sure		17.6%	13
		<b>answered question</b>	<b>74</b>
		<b>skipped question</b>	<b>2</b>



31. If leaf and brush curbside pick-up were offered monthly and by appointment only, would you participate?			
		Response Percent	Response Count
Yes		58.7%	44
No		22.7%	17
Not sure		18.7%	14
		<b>answered question</b>	<b>75</b>
		<b>skipped question</b>	<b>1</b>




32. If you answered "Yes" to the above question, would you be willing to pay \$1 to \$3 per bag?				
			Response Percent	Response Count
Yes			57.1%	32
No			23.2%	13
Not sure			19.6%	11
			<b>answered question</b>	<b>56</b>
			<b>skipped question</b>	<b>20</b>

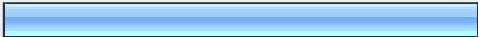
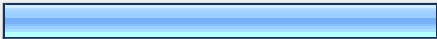
33. If bulky item pick-up were offered monthly and by appointment only, would you participate?				
			Response Percent	Response Count
Yes			80.3%	57
No			4.2%	3
Not sure			15.5%	11
			<b>answered question</b>	<b>71</b>
			<b>skipped question</b>	<b>5</b>

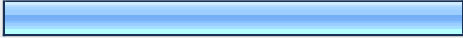


34. How frequently do you use bulky item pick-up services per year?				
			Response Percent	Response Count
1 to 4 times			70.7%	53
5 to 8 times			8.0%	6
9 to 12 times			2.7%	2
Not at all			18.7%	14
			<b>answered question</b>	<b>75</b>
			<b>skipped question</b>	<b>1</b>


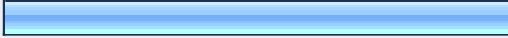

35. Would you participate in a weekly organic curbside collection? (example organics: food and fibers)			Response Percent	Response Count
Yes			48.6%	36
No			21.6%	16
Not sure			29.7%	22
			<b>answered question</b>	<b>74</b>
			<b>skipped question</b>	<b>2</b>

36. If you answered "Yes" to the above question, how would you prefer to pay the additional fee?			Response Percent	Response Count
Bill monthly			58.8%	20
Bill annually			41.2%	14
			<b>answered question</b>	<b>34</b>
			<b>skipped question</b>	<b>42</b>

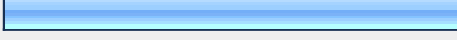
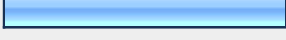


37. Would you participate in an electronic waste (computer equipment, TV, cell phones, etc.) program monthly or by appointment only?			Response Percent	Response Count
Yes			65.3%	49
No			14.7%	11
Not sure			21.3%	16
			<b>answered question</b>	<b>75</b>
			<b>skipped question</b>	<b>1</b>

38. If you answered "Yes" to the above question, how would you prefer to pay the additional fee?			Response Percent	Response Count
Bill monthly			52.4%	22
Bill annually			47.6%	20
			<b>answered question</b>	<b>42</b>
			<b>skipped question</b>	<b>34</b>

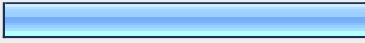
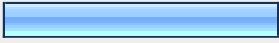


39. Are you currently satisfied with the City's collection of dead animals?			Response Percent	Response Count
Yes			50.7%	37
No			19.2%	14
Not sure			30.1%	22
			<b>answered question</b>	<b>73</b>
			<b>skipped question</b>	<b>3</b>

40. Would you be willing to pay a fee for the collection of dead animals?			Response Percent	Response Count
Yes			18.1%	13
No			55.6%	40
Not sure			26.4%	19
			<b>answered question</b>	<b>72</b>
			<b>skipped question</b>	<b>4</b>

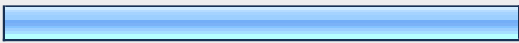
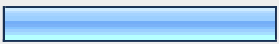
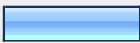
41. Should the City consider charging additional fees for collection of dead livestock?			
		Response Percent	Response Count
Yes		49.3%	36
No		16.4%	12
Not sure		34.2%	25
		<b>answered question</b>	<b>73</b>
		<b>skipped question</b>	<b>3</b>

42. Should the City consider building and operating a Material Recovery Facility?			
		Response Percent	Response Count
Strongly agree		50.0%	37
Agree		31.1%	23
Neutral		18.9%	14
Disagree		1.4%	1
Strongly disagree		0.0%	0
		<b>answered question</b>	<b>74</b>
		<b>skipped question</b>	<b>2</b>

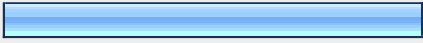
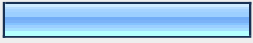



**43. Should the City consider building and operating a Transfer Station?**

		Response Percent	Response Count
Strongly agree		39.7%	29
Agree		30.1%	22
Neutral		30.1%	22
Disagree		1.4%	1
Strongly disagree		0.0%	0
		<b>answered question</b>	<b>73</b>
		<b>skipped question</b>	<b>3</b>

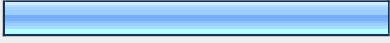
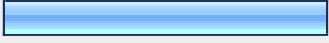
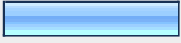


**44. Should the City consider building and operating a Recycled Glass Processor?**

		Response Percent	Response Count
Strongly agree		56.8%	42
Agree		29.7%	22
Neutral		14.9%	11
Disagree		0.0%	0
Strongly disagree		0.0%	0
		<b>answered question</b>	<b>74</b>
		<b>skipped question</b>	<b>2</b>

**45. Should the City consider recycling organics/food?**

		Response Percent	Response Count
Strongly agree		45.9%	34
Agree		27.0%	20
Neutral		23.0%	17
Disagree		4.1%	3
Strongly disagree		1.4%	1
		<b>answered question</b>	<b>74</b>
		<b>skipped question</b>	<b>2</b>

**46. Should the City consider building and operating a Waste to Energy Facility?**

		Response Percent	Response Count
Strongly agree		42.5%	31
Agree		35.6%	26
Neutral		19.2%	14
Disagree		2.7%	2
Strongly disagree		1.4%	1
		<b>answered question</b>	<b>73</b>
		<b>skipped question</b>	<b>3</b>

**47. Thank you for your interest and participation! Is there anything else you'd like the City to know related to current services/programs or future management of solid waste?**

		Response Count
		25
		<b>answered question</b>
		<b>25</b>
		<b>skipped question</b>
		<b>51</b>