

Adequacy of Waste Reduction Practices in Kansas

Prepared for the Legislature
in response to House Bill 2249

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Chapter 1

Introduction

Legislative Directive

After two years of deliberation, the Kansas Legislature passed House Bill 2249 near the end of the 2013 session in response to a yard waste landfill disposal ban implemented by Johnson County. The ban applied to a privately-owned municipal solid waste landfill that serves multiple cities and counties outside of Johnson County. In accordance with HB 2249, state law now prohibits a city or county from adopting landfill disposal restrictions that affect persons outside of the city or county unless the city or county owns the landfill. State law does allow a city or county to establish disposal restrictions that apply only to the residents of their own city or county even if the waste is disposed of in a privately-owned landfill in the city or county.

As part of the public debate on this issue, Johnson County officially commented that their yard waste disposal restrictions were adopted to conserve landfill space and because the state had failed to pass any laws or regulations requiring yard waste to be diverted from landfills to composting facilities. It is true that Kansas does not presently have any statewide yard waste disposal restrictions; however, the state has supported the development of voluntary community composting programs for more than 20 years. State efforts to expand composting have included ongoing technical training at the annual WORKS Conference, a partnership with Kansas State University to provide “hands-on” operator training, and financial assistance to help establish community composting programs in the form of KDHE grants to purchase various types of composting equipment. More information on the Kansas composting program is provided in Chapter 2.

HB 2249 also contains provisions to address the need for new or revised statewide waste reduction laws or regulations. KDHE was directed to prepare this report to the Legislature on the adequacy of waste reduction practices in Kansas considering input from interested and affected stakeholders. Nearly every person, business, and institution is a stakeholder because they all generate solid waste and need to use disposal and/or recycling services. Additionally, hundreds of local governments, private businesses, and non-profit organizations have more direct responsibilities in providing waste management services. HB 2249 directs KDHE to submit this report to the Legislature before the start of the 2014 session.

Study Purpose and Methodology

The purpose of this study is to evaluate the adequacy of waste reduction practices in Kansas and to report those findings to the Legislature. In addition, KDHE is directed to make recommendations to the Legislature for any warranted changes to the law along with some review of costs and benefits. This information can serve as a basis for possible legislative action or to conclude that existing trends and practices are adequate. It is also possible that KDHE may identify and propose additional waste reduction requirements based upon existing statutory authorities.

HB 2249 directs KDHE to gather and summarize relevant waste management data and public opinion on this issue. KDHE routinely collects a large volume of relevant data from the hundreds of businesses and local governments that manage waste and recyclable materials as part of administering the solid waste program. This information can be summarized in a variety of ways to illustrate Kansas trends and current conditions.

Truly representative public opinion on the adequacy of waste reduction practices in Kansas is difficult to assess and report. To gather such information, KDHE administered an open online public survey to which 616 people responded, held individual meetings with several interested parties, and reached out to the following waste management organizations to solicit input and comments:

- The Kansas Sunflower Chapter of the Solid Waste Management Association of North America - SWANA (primarily government-owned and operated solid waste management service providers)
- The Kansas Landfill Association (primarily privately-owned landfills with some public owner involvement)
- The National Solid Waste Management Association – NSWMA (private solid waste management and recycling service providers)
- The Kansas Organization of Recyclers – KOR (public and private parties involved in or interested in recycling)

The KDHE open online survey had excellent participation, but it is understood that the participating individuals are likely to fall into two main categories: (1) people who work in the waste management or environmental field, or (2) people with a strong interest in waste reduction/recycling. Thus, it is probable that the survey results represent a segment of the population that is more committed to waste reduction efforts than average Kansas citizens.

This report identifies three regulatory options for consideration by the Legislature and a brief assessment of some of the potential costs and benefits of each option. KDHE also provides recommendations for moving forward based upon all relevant factors.

Focus on Municipal Solid Waste

This study focuses solely on municipal solid waste (MSW). MSW is the mixed residential, commercial, and industrial waste that is collected using standard compaction trucks. It is more commonly referred to as trash or garbage. It does not include construction and demolition waste (C&D) or industrial wastes that are not generally mixed in trash dumpsters, including such materials as sludge, powders, dust, etc.

MSW contains the materials that are most commonly diverted for recycling or composting such as paper products, aluminum, glass, steel cans, and yard waste. MSW recycling rates are measured and compared nationally and typical community recycling programs handle these materials. More specialized recycling of C&D waste and industrial waste is possible and important, but such practices are not addressed in this study.

Report Organization

The remainder of this report includes the following chapters and sections:

Chapter 2 – Summary of Statewide Conditions

Introduction

Existing State Laws, Regulations, and Policies

MSW Disposal Trends and Tonnage Fee Revenue

WORKS! Conference Encourages Waste Reduction in Kansas

Trends in Businesses, Institutions, and Government Agencies

Kansas Waste Management and Recycling Associations

MSW Landfill Universe

Statewide Waste Reduction Practices

Recycling
Composting
Household Hazardous Waste Collection
Landfill Gas Collection and Use
Liquids Addition Programs at MSW Landfills
Waste-to-Energy Facilities
Summary of Current Waste Reduction Efforts in Kansas

Chapter 3 – Review of KDHE Waste Reduction Survey and Other Stakeholder Feedback

Chapter 4 – Waste Reduction Options

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Appendices

A – KDHE Waste Composition Study, 2012
B – Kansas Population Data
C – Kansas Precipitation Data
D – Public Survey Results

Chapter 2

Summary of Statewide Conditions

Introduction

The purpose of this study is to determine whether existing waste reduction practices are adequate to meet the short- and long-term solid waste management needs of Kansas. An assessment of adequacy should begin with a review of current conditions including existing state and local rules, available public and private waste services, and public participation in available waste reduction programs. This chapter summarizes the best available data and information that describe current conditions. With respect to statewide recycling data, the most recent information is for calendar year 2011. A statewide recycling survey is carried out every two years and the 2013 survey will not take place until early 2014. Considerable growth in recycling did occur in some areas after 2011, so statewide conditions are better than what is reflected by the most recent recycling rate data.

Existing State Laws, Regulations, and Policies

Existing state law clearly recognizes that good waste management practices are important with respect to the protection of the health and welfare of the citizens of Kansas, including practices to reduce the amount of solid waste that must be landfilled. K.S.A. 65-3401 establishes the following state policy related to waste reduction:

“. . . it is the policy of the state of Kansas to: . . . (e) Encourage the wise use of resources through development of strategies that reduce, reuse, and recycle materials.”

In addition, K.S.A. 65-3405 requires all counties to develop solid waste management plans that:

“(9) Establish a schedule for the reduction of waste volumes taking into consideration the following: (A) Source reduction; (B) reuse, recycling, composting; and (C) land disposal.”

The initial solid waste plans submitted to KDHE by counties and regions in the early and mid-1990s included a comprehensive description of selected solid waste management methods. Over the past 20 years, state law has required counties to perform annual plan reviews and to complete major five-year plan updates. This ongoing review and updating process demonstrates the Legislature’s intent to require local officials to maintain adequate awareness of solid waste management issues that affect all citizens and to make ongoing decisions to address changing needs.

Solid waste planning statutes clearly delegate decision-making authority to local government officials and other designated local stakeholders who are authorized to participate in the local planning process. The state planning laws recognize the diversity of the state with respect to population density, precipitation amounts, landfill capacities, distances to recycling markets, financial resources, public opinion, and other important factors. Unlike some states, the Kansas Legislature has not established a statewide quantitative recycling rate goal, landfill disposal bans for certain recyclable materials or yard waste, or mandatory curbside collection of recyclable materials.

Despite the fact that Kansas currently has no statewide statutory requirements related to waste reduction other than to select and include some type(s) of waste reduction practices in every local solid waste management plan, the Legislature did establish grant programs to stimulate waste

Table 2-1

KDHE Waste Reduction Grant History

Year	HHW		Waste Reduction		Green Schools	
	No.	Amount	No.	Amount	No.	Amount
1993	5	\$150,000	--	--	--	--
1994	8	\$150,000	--	--	--	--
1995	15	\$155,354	--	--	--	--
1996	10	\$230,331	17	\$908,590	--	--
1997	6	\$252,754	36	\$1,641,892	--	--
1998	13	\$404,767	53	\$2,019,730	--	--
1999	16	\$379,430	56	\$2,106,735	--	--
2000	12	\$295,885	21	\$1,017,068	--	--
2001	7	\$320,939	39	\$1,336,830	--	--
2002	5	\$141,222	30	\$1,268,918	--	--
2003	7	\$327,930	37	\$1,550,247	--	--
2004	2	\$133,892	25	\$1,010,169	--	--
2005	6	\$109,966	26	\$999,653	--	--
2006	3	\$25,302	19	\$1,037,274	--	--
2007	4	\$91,391	15	\$826,472	--	--
2008	2	\$278,792	8	\$1,279,945	--	--
2009	2	\$15,552	--	--	35	\$100,902
2010	4	\$169,900	--	--	20	\$229,671
2011	1	\$63,000	--	--	35	\$106,815
2012	2	\$100,748	--	--	26	\$68,702
TOTALS	130	\$3,797,155	382	\$17,003,523	116	\$506,090

reduction through recycling, composting, and household hazardous waste collection (K.S.A. 65-3415). Table 2-1 summarizes the total amount of grants awarded since program inception in 1996. These grant programs along with complementary technical training offered by KDHE and help from numerous local government and private sector partners yielded excellent results and growth in waste reduction efforts without mandates. The purpose of the grant program was to start-up local waste reduction projects which did occur; however, revenue to the program has decreased and the \$1 per ton landfill tonnage fee has been held constant since 1996. Consequently, grants have also decreased significantly in recent years. More information is presented later in this chapter and in Chapter 4 on tonnage fee revenue and statewide program expenses.

KDHE’s approach to reviewing county solid waste management plans is to allow considerable flexibility in what waste reduction practices are selected for implementation. While every county must consider waste reduction and implement some local practices to reduce waste disposal (to conform to the minimum planning requirements), the specific practices selected by a county can range from a few strategically located drop-off sites for recyclable materials to comprehensive curbside collection programs, material separation facilities, and central composting operations.

Some counties have even required their citizens to participate in certain waste reduction requirements such as curbside collection programs for recyclables and yard waste separation from other municipal solid waste.

As mentioned in Chapter 1, House Bill 2249 was passed in 2013 prohibiting any city or county from passing local rules that would restrict the disposal of certain types of recyclable solid waste in any private landfill if that waste is generated outside of the city or county. County plans may place restrictions on their own citizens, but not on citizens outside of their county unless the county (or city) owns the landfill which is being used by those out of city/county persons.

Another provision of state law (K.S.A. 65-3406(a)(16)) provides KDHE with the authority to adopt policies and regulations to reduce waste disposal:

“(a) The secretary is authorized and directed to: . . . (16) Adopt suitable measures, including rules and regulations if appropriate, to encourage recovery and recycling of solid waste for reuse whenever feasible.”

KDHE has implemented many non-mandatory education, outreach, technical training, and financial assistance programs aimed at encouraging waste reduction through increased recycling and composting, but only one waste reduction regulation has been adopted. The solid waste planning regulations contain a requirement that states that each plan shall include *“a description of options for development and implementation of recycling, composting, source reduction, and volume-based pricing in relationship to the selected SWM system.”* (K.A.R. 28-29-77(c)(5)).

MSW Disposal Trends and Tonnage Fee Revenue

The amount of solid waste landfilled in Kansas and the tonnage fee collected from 2005 until

Table 2-2

MSW Disposal and Tonnage Fee Revenue by Year

Year	KS MSW Landfilled (includes exports)	Total MSW Landfilled	Total Waste Landfilled	Tonnage Fee Collected
2005	2,786,535	3,140,703	6,236,322	\$5,182,538
2006	2,760,833	3,402,834	6,215,420	\$5,092,565
2007	2,671,298	3,187,526	5,873,642	\$4,755,195
2008	2,599,257	3,029,451	5,868,518	\$4,685,811
2009	2,428,512	2,933,973	5,499,474	\$4,277,043
2010	2,394,399	2,924,190	6,527,597	\$4,619,193
2011	2,257,219	2,779,197	6,692,393	\$4,626,516
2012	2,225,136	2,718,594	5,749,216	\$4,259,100
*2013	2,220,770	2,726,236	4,771,602	\$4,038,760

*Estimated using January through June times 2

the present is provided in Table 2-2. This trend data shows that waste disposal has steadily declined over this period due to improvements in waste reduction (recycling, composting, and source reduction efforts). The effects of the recession also contributed to the decrease in waste disposal beginning in 2009; however, that decrease appears to be most related to a drop in construction and demolition waste disposal. Some reduction in waste imports in the Kansas City area also occurred after 2010. The disposal of MSW generated in Kansas seems mostly related to the increase in recycling rather than other factors as indicated by the steady decrease which parallels a steady increase in recycling (see the subsequent section of this chapter on recycling).

The tonnage fees collected have also decreased significantly from peak levels in 2006 and 2007. The loss of about \$750,000 per year in collected revenue, which appears to be holding steady, has impacted the ability of KDHE to award significant waste reduction grants which ended in 2008. Since that time, only limited funds have been available to support a small HHW grant program and a “green schools” grant program where small grants are awarded to public and private schools to encourage the development of in-school recycling, composting programs, and reuse programs.

It is noteworthy that tonnage fee revenue is used to support all aspects of the state solid waste program including all staff salaries and operating expenses, administrative overhead, special waste collections events, illegal dump clean-up, old city dump repairs, emergency actions, public education, and grants. Shrinking revenue coupled with many years of inflation has required department decisions to prioritize spending. Grants for waste reduction and expenses related to education and outreach, mostly to encourage waste reduction practices, have been considered a lower priority than other program areas related to the administration of the permitting and compliance/enforcement program and the clean-up of solid waste sites. The grant programs which support waste reduction will continue to shrink and disappear within the next few years without enhanced revenue.

WORKS! Conference Encourages Waste Reduction in Kansas

In 1995, KDHE initiated the Composting WORKS! Conference on the Bethany College campus in partnership with the City of Lindsborg and a McPherson County Commissioner, Wes Adell, who was an enthusiastic supporter of composting and good waste management practices in general. The conference was designed to teach and encourage people to implement community composting programs and it helped that the Legislature passed a bill in 1995 that established the new waste reduction grant program. Numerous cities and counties participated and major composting and wood processing equipment demonstrations took place in that first year and in following years at the Lindsborg facility.

Within a few years the conference expanded to include recycling, then later HHW collection, and finally energy recovery from both landfill gas and the processing of organic waste to produce methane gas. The conference now rotates to different cities continuing to be the state’s primary waste reduction forum. The twentieth annual conference will take place in Topeka for the first time in 2014. The 2014 conference will also be the first year that KDHE has partnered with the Kansas Organization of Recyclers (KOR) to sponsor the conference. KOR formed several years ago as an independent recycling association to represent the recyclers and to provide services to Kansans.

It is clear that the technical training and encouragement provided to thousands of WORKS! Conference attendees and the financial incentives of the state grant programs have stimulated the development of major community recycling and composting programs (described more later in this chapter). During this time period two other major factors contributed to an increase in waste reduction practices: (1) the cost of waste disposal increased due to new state and federal landfill regulations; and (2) public awareness and appreciation for better waste disposal options and resource conservation has grown. For these reasons, most local government officials were ready

to establish programs in their communities and the state was providing the tools to help with implementation.

Trends in Businesses, Institutions, and Government Agencies

At the same time that new waste programs were being implemented in communities across Kansas, businesses, institutions, and government agencies were establishing their own internal policies to demonstrate their commitment to environmental stewardship. “Green Teams” were formed in many organizations, new corporate policies were developed, and sustainability policies and practices were adopted, all without state mandates. Regardless of the reasons for implementing improved environmental operating practices, one clear outcome of all such initiatives is improved waste reduction activities. So these organizations that do not fit easily into community recycling or composting programs were developing their own programs to ensure that they were responsibly creating waste reduction programs and minimizing the amounts of solid waste that they send to the landfill. These efforts cannot easily be quantified and it is likely that the result of some of these efforts are not be directly measured as part of the state recycling surveys. However, the net effect would affect the total amounts of waste that are landfilled in Kansas.

Kansas Waste Management and Recycling Associations

The following associations were formed in Kansas to meet the needs of private waste management companies, local governments, non-profit organizations, users of recyclables, transporters of waste and recyclers, consultants, product suppliers to the waste management industry, and other interested persons:

- The Kansas Sunflower Chapter of the Solid Waste Management Association of North America (SWANA)
- The Kansas Landfill Association (KLA)
- The National Solid Waste Management Association (NSWMA)
- The Kansas Organization of Recyclers (KOR)

These organizations and their members to varying extents are involved in waste reduction efforts in Kansas. None of these organization existed in Kansas before the late 1990s. Overall, wastes are managed better as a result of the work of these associations.

MSW Landfill Universe

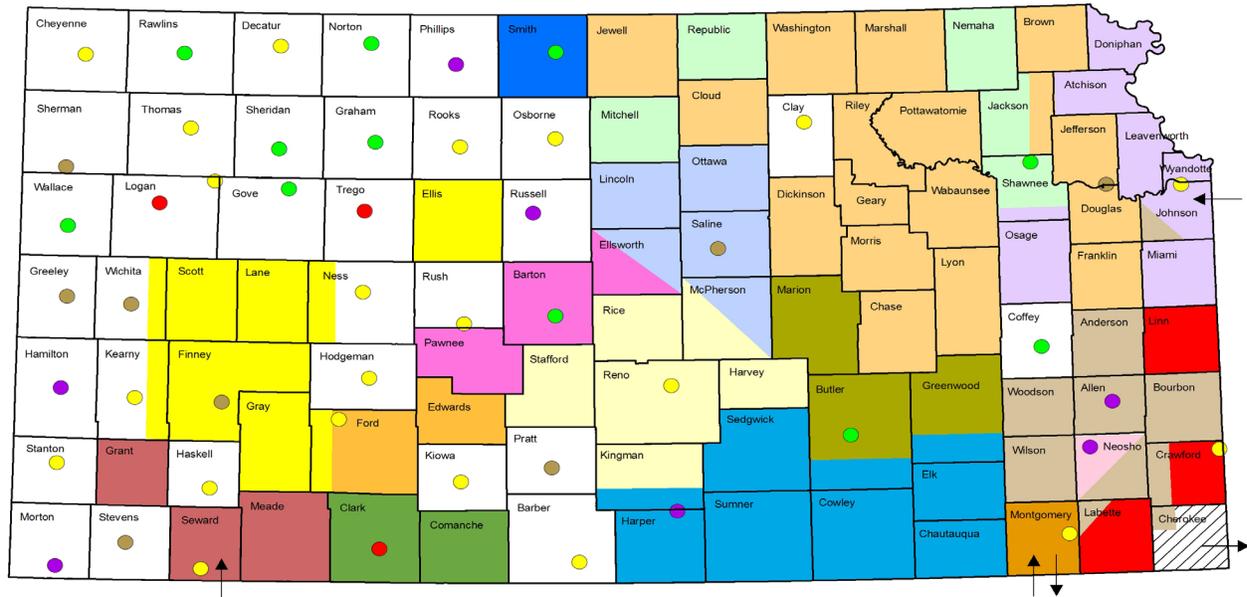
The adequacy of our waste reduction practices in Kansas to some degree relates back to our landfill universe and the capacity of those facilities to dispose of waste that is not recycled or composted. This section provides a series of tables and figures that describe our landfill universe and the transfer of MSW from county to county and across state lines.

Figure 2-1 shows the location of all MSW landfills, the counties served by each landfill if the facility provides regional service, and the estimated remaining years of permitted capacity. There are 14 regional landfills, six owned by private companies and eight owned by local governments. Table 2-3 lists each MSW landfill, designates whether it is subject to the full federal Subtitle D regulations (MSW) or subject to the state small arid landfill regulations (SAL), provides the permitted and remaining capacity of each landfill, and the calculated number of remaining years of life based upon the current disposal rate. It is noteworthy that several MSW landfills have the “potential” to increase their permitted capacity by modifying their permit.

This data indicates that Kansas has considerable landfill capacity everywhere in the state. There appears to be no need to establish or even plan for any new MSW landfills over the next decade. KDHE’s permitting oversight of the landfill universe over the next 10 years will be

Figure 2-1

Municipal Solid Waste Landfill Estimated Capacities



Remaining Life (in years)

- < 5 years
- 5 - 25 years
- 26 - 50 years
- 51 - 100 years
- > 100 years

- A circle in a county means the county has an MSW landfill. The color of the circle indicates the estimated remaining years of capacity according to the key.
- Counties with a regional MSW landfill are shaded and all counties using the landfill are shaded with the same color.
- If part of a county's MSW is going to a regional landfill, only part of the county is shaded. Some counties may send waste to more than one regional landfill.

Table 2-3

Reported Remaining Capacity of Active MSW Landfills
(as of July 2012)

Permit No.	County	Facility Name	LF Type	Permitted Capacity in Cu.Yds.	Remaining Capacity in Cu.Yds.	Remaining Capacity in Years
263	Johnson	Deffenbaugh Industries, Inc.	MSW	85,614,961	35,387,732	21.6
394	Jefferson	N.R. Hamm Quarry, Inc.	MSW	72,350,000	64,350,000	90.58
842	Harper	Plumb Thicket	MSW	43,800,000	38,709,169	55.84
144	Saline	City of Salina SWF	MSW	35,054,000	29,309,000	145
126	McPherson	McPherson County	MSW	29,800,000	29,800,000	320
342	Shawnee	Rolling Meadows Recycling and Disposal Facility	MSW	35,274,757	15,068,468	53
809	Finney	Finney Co. dba Western Plains	MSW	16,327,649	13,191,338	103
819	Crawford	Oak Grove Landfill	MSW	10,744,000	5,918,475	16
140	Seward	Seward County	MSW	8,905,705	3,787,500	23.5
282	Pratt	Pratt County	SAL	8,600,000	6,900,000	300
723	Reno	Reno County	MSW	7,700,000	3,345,840	12.2
100	Butler	Butler County	MSW	6,807,000	5,677,000	43
101	Allen	Allen County Landfill	MSW	6,573,500	5,676,955	82
103	Bartpm	Barton County	MSW	5,260,000	2,572,358	28.4
505	Montgomery	Resource Recovery, Inc. Landfill	MSW	3,200,000	1,008,200	12
748	Thomas	Thomas Co. Landfill	SAL	3,200,000	268000	50
794	Sherman	Sherman Co. Landfill	SAL	2,811,000	2,784,000	310
274	Neosho	City of Chanute Landfill	MSW	2,753,000	1,745,000	90
139	Russell	Russell Co SWF	SAL	2,517,000	1,763,000	100
718	Ford	Ford County	MSW	2,500,000	418,033	56
143	Stevens	Stevens County	SAL	2,252,616	1,429,877	127
197	Morton	Morton County	SAL	2,129,609	2,080,079	85
251	Wichita	Wichita County	SAL	961,198	692,303	215.5
181	Sheridan	Sheridan County	SAL	895,000	449,400	43
105	Trego	Trego County	SAL	825,229	460,000	88
162	Ness	Ness Co SWF	SAL	709,000	176,000	25
820	Phillips	Phillips Co. Landfill	SAL	644,000	504,000	58
253	Greeley	Greeley County	SAL	610,000	469,042	155
760	Smith	Smith Co. C&D	SAL	550,000	435,000	41
116	Graham	Graham Co. Landfill	SAL	519,000	277,672	50
138	Rooks	Rooks Co. Landfill	SAL	515,000	357,284	22
102	Barber	Barber County	SAL	480,886	124,742	14.34
297	Coffey	Coffey County	MSW	434,000	373,211	40
150	Decatur	Decatur County	SAL	430,000	308,350	25
577	Clay	Clay County SWF	MSW	422,500	226,000	25
115	Gove	Gove County	SAL	400,000	172,650	45
131	Norton	Norton Co SWF	SAL	393,000	314,000	45
254	Haskell	Haskell	SAL	340,000	157000	23
761	Osborne	Osborne Co. Landfill	SAL	300,000	203,000	22
546	Rawlins	Rawlins County	SAL	294,500	201,888	45
166	Cheyenne	Cheyenne Co. Landfill	SAL	225,000	58,000	31
782	Kiowa	Kiowa County	SAL	208,000	100,383	40
169	Rush	Rush Co SWF	SAL	197,000	36,000	15
125	Logan	Logan County	SAL	161,333	25,000	200
120	Hodgeman	Hodgeman Co. Landfill	SAL	147,000	114,000	21
167	Wallace	City of Sharon Springs	SAL	137,921	134,281	36.9
250	Stanton	Stanton County	SAL	95,000	93,000	100
221	Logan	City of Oakley	SAL	76,239	71,427	40
182	Hamilton	Hamilton County	SAL	75,272	15,000	95
121	Kearny	Kearny Co SWF	SAL	52,000	16,000	25
106	Clark	Clark County	SAL	12,695	6,228	90

primarily related to the review of final designs for new disposal areas in permitted locations, construction quality assurance oversight, and operational plan modifications.

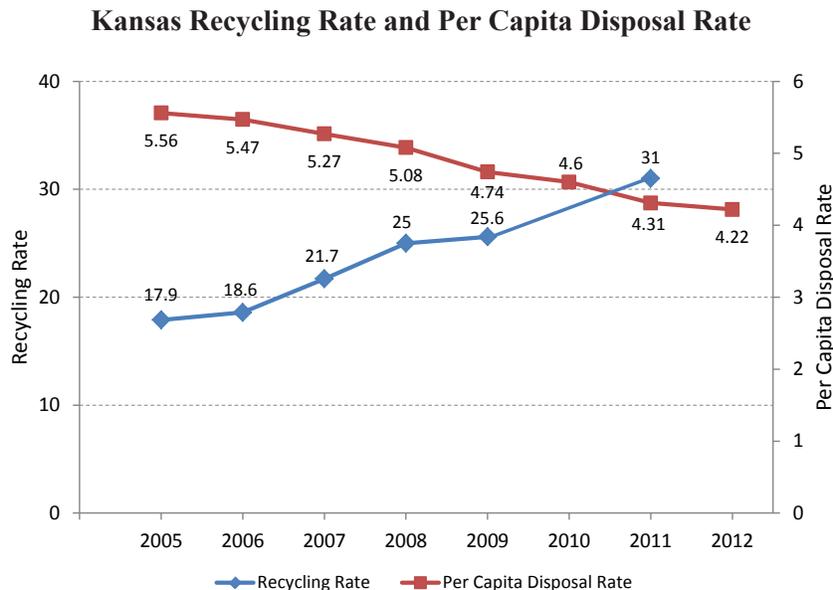
Statewide Waste Reduction Practices

This section provides a description of the current status of waste reduction practices in Kansas along with some review of trends. Waste reduction practices consist of three primary activities: recycling, composting, and household hazardous waste collection. Waste reduction practices vary considerably from place to place in Kansas because uniform practices are not required by the state.

Recycling. KDHE’s Bureau of Waste Management has been estimating the statewide recycling rate for more than a decade. The methodology was refined over a period of years yielding more and more reliable estimates. It is believed that the data and calculated recycling rates from 2005 to present accurately represent statewide conditions; however, it is probable that the actual recycling rate is somewhat higher than calculated. This is because participation in KDHE’s survey is voluntary. Even though the methodology contains steps to account for all recovered material, it is possible that some recyclables are missed, especially material that is directly marketed by generators.

Figure 2-2 shows the trend in the MSW recycling rate and per capita disposal rate from 2005 to 2012. The disposal rate information is available for 2012, but the recycling survey is performed every two years with most recent being 2011. Recycling rate is a common measurement nationwide; however, various methodologies and assumptions are used. The Kansas methodology conservatively estimates the recycling rate based upon documented material recovery; no theoretical calculations are used and no credit is given for material diversion for landfill cover or energy recovery. Per capita disposal rate was a measure developed by Kansas about ten years ago. Several states have recognized its value because disposal and population data is usually readily available and it more comprehensively captures all waste reduction activities, some of which are not accounted for when recycling rates are calculated. For example, source reduction activities such as an increased use of mulching mowers, backyard composting, or business decisions to switch to reusable containers all reduce disposal, but are not measured as recovered recyclables.

Figure 2-2



Over the six-year period from 2005 to 2011, the Kansas recycling rate went up from 17.9% to 31.0%. This major increase resulted in the diversion of 1,012,000 tons of MSW from landfills in 2011, the first year recycling had passed one million tons. While recycling data will be unavailable for 2013 until late winter of 2014, it is highly probable that the recycled tonnage and the recycling rate will again increase because several large cities implemented enhanced curbside collection programs in 2012 and 2013. The current Kansas MSW recycling rate is probably slightly lower than the national average of 34 or 35%; however, the upcoming 2013 estimate may be getting very close to the national rate. It is noteworthy that Kansas' mostly voluntary recycling practices have yielded a result similar to the national average that includes many states that have mandatory statewide recycling requirements.

Over the same six year period, the per capita disposal rate decreased from 5.56 pounds per person per day to 4.31 pounds per person per day - - a 22% reduction. This improvement will conserve landfill capacity, save on disposal costs, and minimize transportation impacts (fuel use, air emissions, etc.). The very steady decreasing trend indicates that the recently adopted waste reduction practices are likely to be sustained as compared to a more volatile disposal rate change that may be influenced more by the economy or other factors.

Recycling practices vary across Kansas with respect to the primary methods used to collect recyclables and in the intensity of the collection programs. Figure 2-3 shows the primary recycling methods used to collect recyclables in each Kansas county and if residential curbside recycling is available, it is designated as either major or minor. If a county is left blank, recycling opportunities are considered very limited based upon a detailed telephone survey of local governments performed by KDHE staff during the summer of 2013. Curbside recycling accounts for most collection of recyclable material in 23 counties with nine counties having major curbside collection activity. Most counties with curbside collection also have some drop-off recycling opportunities, especially with respect to certain materials, such as yard waste and glass. Only eight counties have very limited recycling opportunities. An additional six counties have minimal recycling opportunities or only have services in part of the county. In total about 97% of Kansans have access to recycling services with those services ranging from fair to excellent. Between 50 to 60% of Kansans have access to curbside collection service for recyclables (other than yard waste). Mandatory curbside collection of recyclables (at least mandatory pay for such service whether the resident actually recycles or not) is spreading to some larger urban areas currently covering about 20 to 30% of the population.

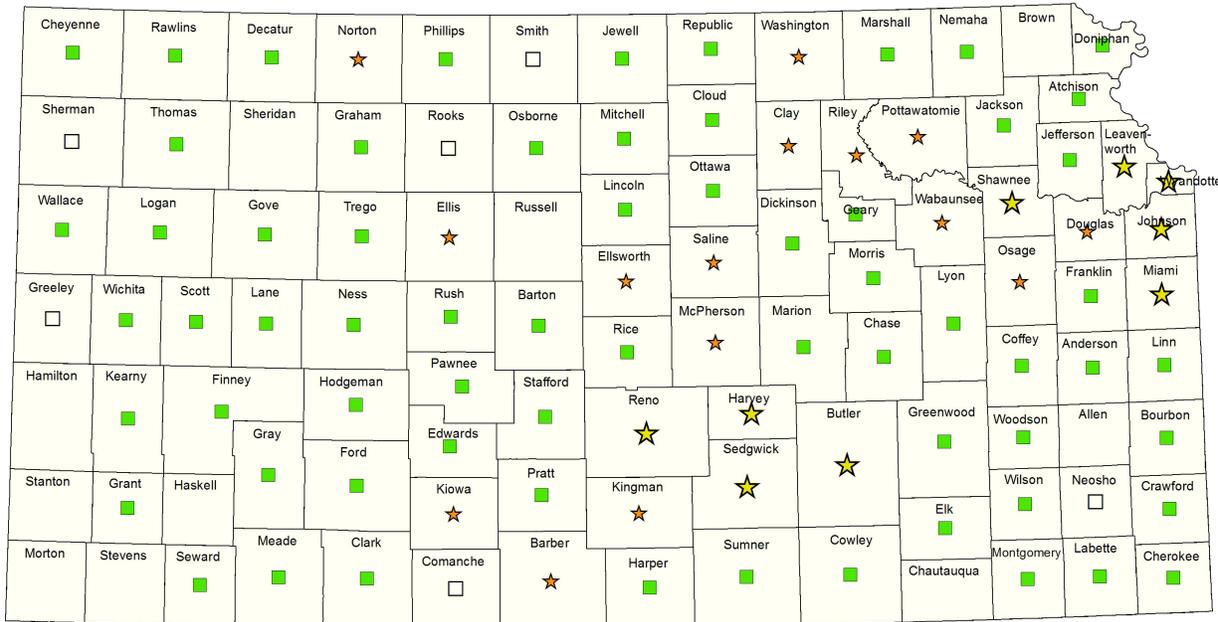
Kansas currently has three major material recovery facilities (MRFs) where comingled (or single stream) recyclables are sorted and processed. These facilities, all operated by private companies, are located in Shawnee County (Topeka), Johnson County, and Reno County. A fourth facility is planned to handle recyclables collected in the Lawrence area. As single stream curbside collection has expanded, MRFs are needed to separate the materials for marketing. There are challenges with MRF operations and some impacts on material quality due to contamination and other problems; however, the net result does seem to be improved feasibility of curbside collection programs. Table 2-4 provides information on the three existing and one planned MRF.

Another way to look at the adequacy of recycling is with respect to the estimated recycling rates for certain materials types. For example, what percentage of corrugated paper products are recovered or aluminum cans, plastic beverage containers, etc. These recycling rates can be estimated if good data is available on recycled amounts of specific materials and either total use/sales of those materials or the percentage of the waste stream which a specific material makes up. Unfortunately the data is very limited. Despite a lack of confidence in the accuracy of estimates it is reasonable to make some general observations from the data that is available.

The material which is recovered at the highest rate is clearly **ferrous metal (steel/iron)** primarily because of the widespread recovery practices of household appliances. Most landfills

Figure 2-3

Primary County Recycling Methods in Each Kansas County



Drop-off and Curbside Recycling
 ★ Major Curbside Recycling ■ Drop-off Available
 ★ Minor Curbside Recycling □ Limited Drop Off Available
 No symbol - Very Limited Recycling

and transfer stations have metal diversion piles for appliances and other ferrous metal items. It is believed that the recovery of ferrous metal from the MSW stream could be well over 80%.

Corrugated cardboard was recycled at a high rate of about 60% due to direct baling and recycling by major generators as well as many community programs with a strong emphasis on corrugated collection. The 2011 recycling survey documented that at least 271,000 tons were recycled and based upon a limited waste composition study (see Appendix A for study results) performed by KDHE in 2012 less than 200,000 tons was likely to have been disposed of statewide that year.

Paper (other than corrugated) continues to be a major part of the total waste stream (over 33%) and despite significant recycling efforts, it is likely that when corrugated is subtracted from all paper, the remainder is recycled at a rate of somewhat less than 20%. The low overall paper recycling rate is due to various factors including contamination, use as packaging, wipes, and other hard to recover items. It is likely that more than 500,000 tons of paper enter landfills each year, but much of this paper is not easily recovered for recycling.

A high percentage (greater than 50%) of **aluminum cans** are believed to be recycled but the recycling rate cannot be easily estimated due to direct sales by many collectors since the cans have relatively high scrap value.

Table 2-4

Kansas Material Recovery Facilities

Size/Cost	Capacity	Current Flow Through	Materials	Systems
Waste Management/Rolling Meadows Landfill, Topeka, KS (Robin Caudle)				
40,000 ft. sq/\$7.5 million 2012	Clean MRF 20 tons/hour 7,500 tons/month	10 tons/hour 40 tons/day 700 tons/month	Plastic bottles and tubs (no Styrofoam) • Office paper• magazines• catalogs• corrugated cardboard• junkmail• newspaper• Phone books• paper sacks• cereal boxes• aluminum cans• plastic buckets• (clean aluminum foil) sorted out with scrap metals• glass bottles and jars• tin cans• plastic water bottles	Hand sort, mechanical, pneumatic, optical, magnet, eddy current, gravity
Waste Connections/Stutzman Refuse Disposal, Hutchinson, KS (Dustin Kalp)				
Original system installed in 2008. \$2.8m expansion in 2013 doubling throughput to 10 tons/hr	Clean MRF 4000 tons/month	100 tons/shift 1 shift/day.	Aluminum & steel (tin) beverage and food containers •Plastic beverage, food and soap containers (#1 -#7) • glass (all colors of food and beverage jars and bottles) • Newspapers (with inserts) • Magazines• junk mail, • office paper• phone books & catalogs •cardboard	Hand sort, mechanical, gravity, magnet, eddy current
DLJ Merchant Banking Partners/Deffenbaugh, Kansas City, KS (Jim Murray)				
1989 \$1,000,000 1995 \$3,000,000 upgrade 2012 \$800,000 upgrade	Clean MRF 600 tons/day	Over 11,000 tons/month (2013)	Newspaper • Advertising Inserts • Office Paper • Chipboard • Telephone Books • Carrier Stock • Envelopes • Manila File Folders • Junk Mail • Magazines • Catalogs • Aluminum Cans • Corrugated Cartons • Steel (tin) Food and Beverage Cans • #1—7 Plastics (except Styrofoam) • Yogurt or Margarine Tub • Deli or Salad Bar “Clamshells” • aseptic or gable top cartons	Hand sort, mechanical, pneumatic, gravity, optical, magnet, eddy current
Hamm Industries, Lawrence, KS				
To be built by 2014	Unknown	n/a	Unk	FUTURE

As time passes, **plastics** are making up a greater percentage of the MSW waste stream. The KDHE study indicates that nearly 20% of the waste stream is plastic by weight and since plastic is so light, the volume of the waste stream occupied by plastic is significantly higher. Over 300,000 tons of plastics enter landfills each year with about one fourth being plastic beverage containers (both **HDPE** milk and juice jugs and **PET** bottles used for soft drinks, water, and other non-carbonated drinks). HDPE and PET make up the large majority of plastics recycling but most of these materials continue to be landfilled. It is likely that less than 20% of plastic beverage containers are recycled and a very low percentage of other plastics items.

Glass has gradually become a smaller percentage of the waste stream as containers have shifted to plastic. Glass recycling is also more difficult than other container types because single stream/co-mingled collection programs are problematic when it comes to glass. Some programs refuse to accept glass because the glass contaminates other materials and because the glass has a tendency to become contaminated itself by the presence of unwanted ceramics (plates, cups, etc.). Glass recycling seems to work best when kept separate from other recyclable materials as is done in the Kansas City area. Overall, glass comprises about 3% of the MSW stream and it is recycled at a rate likely to be less than 20%.

Composting. Compostable organic waste (mostly yard waste and food waste) makes up a variable part of the MSW stream depending upon season, precipitation, and location. Yard waste generally peaks in the spring and late fall while food waste makes up a more steady portion of the waste stream throughout the year. Yard waste is also greater in the eastern half of the state where average precipitation is more than double typical western Kansas amounts. Food waste generation appears to be higher in cities with a relatively high number of restaurants, hotels, and other eating establishments. Overall, yard waste comprises from 0% to over 20% of the waste stream depending upon season and location. Food waste is growing as a percent of total waste since there is so little recovery and processing of this waste stream component. It probably comprises 10 to 20% of the waste stream by weight. It is a relatively heavy material compared to other waste types. It is noteworthy that some food waste recovery has recently developed including comprehensive recovery from all Walmart stores and a limited number of other grocery stores. Food waste is recovered both as feedstock for a large anaerobic digester in Oakley which is associated with an ethanol plant and for composting.

As mentioned above, the WORKS Conference was initially started to promote and encourage communities to implement central composting operations for yard waste. Over a period of a decade, many cities, counties, and private companies started composting operations. Table 2-5 lists 165 composting facilities that are currently in operation across Kansas and the amounts of organic materials processed at each facility in 2012. Yard waste makes up most of what is composted; however a few facilities process large amounts of a paunch manure that is generated by beef packing plants in southwest Kansas (identified on the table as “source separated” material). Food waste is also included in the source separated category.

A growing number of Kansas communities have established requirements for their citizens to separate yard waste for collection and disposal/processing to conserve landfill capacity. Some communities that have separate yard waste collection include Atchison, Lawrence, El Dorado, Salina, Newton, McPherson, all Johnson County cities, and others. Three large urban areas that do not have separate curbside collection of yard waste include Wichita/Sedgwick County, Topeka/Shawnee County, and Wyandotte County; however, residents of each of these areas do have access to yard waste drop off sites.

A total of about 108,980 tons of yard waste was composted in 2012. It is difficult to estimate the percentage of generated yard waste that was diverted for composting because the percentage of yard waste in the total MSW stream changes with seasons. The limited MSW composition study performed in the early fall of 2012 indicated that yard waste only comprised 7% of the

Table 2-5

Kansas Composting Facilities and Amount of Organics Received
(Tons in 2012)

County	Facility	Permit No.	Yard Waste	Manure	Source Separated	Livestock	Total Tons
Anderson	ANCO Poultry Proces		0	0	15	15	30
Anderson	Anderson County	147	0	0	0	0	0
Barton	City of Ellinwood	821	360	0	0	0	360
Barton	City of Great Bend	808	1,482.25	0	0	0	1,482.25
Barton	City of Hoisington	767	400	0	0	0	400
Bourbon	City of Fort Scott		1,111.25	0	0	0	1,111.25
Brown	Haverkamp Brothers,		0	0	0	50	50
Butler	Butler County	100	392.52	0	85.62	0	478.14
Butler	City of Andover	701	15.6	0	0	0	15.6
Butler	City of Augusta	841	2,000.00	0	0	0	2,000.00
Butler	City of Benton		27.5	0	0	0	27.5
Butler	City of El Dorado	727	2,600.00	0	0	0	2,600.00
Cherokee	City of Baxter Spri		1	0	0	0	1
Cherokee	City of Columbus		0	0	0	0	0
Cheyenne	Spring Creek Gamebi		0	0	0	1	1
Clay	City of Clay Center	700	0	0	0	0	0
Clay	Clay County	577	5.8	0	84.5	0	90.3
Cloud	Cloud County	107	60	0	20	0	80
Coffey	City of Lebo		4	0	0	0	4
Coffey	City of New Strawn		5	0	0	0	5
Coffey	Coffey County	297	8.21	2.65	4.95	6.28	22.09
Comanche	Comanche County	108	0	0	0	0	0
Cowley	City of Winfield	774	1,964.57	0	0	0	1,964.57
Cowley	Cowley County	148	0	0	89.23	30.57	119.8
Crawford	City of Girard		2	0	0	0	2
Crawford	City of Pittsburg	875	350	0	0	0	350
Decatur	Decatur County	728	50	0	0	0	50
Dickinson	Blixt C&D Landfill,	669	25	0	242	0	267
Dickinson	City of Abilene	692	650	0	0	0	650
Doniphan	Kansas Composting,	781	0	200	0	0	200
Douglas	City of Lawrence	855	8,081.00	0	0	0	8,081.00
Douglas	Southwest Middle Sc		1	0	0	0	1
Edwards	Edwards County	112	4.5	0	0	0	4.5
Ellis	City of Hays	747	1,204.00	0	0	0	1,204.00
Ellsworth	City of Lorraine		8	0	0	0	8
Ellsworth	City of Wilson		4.5	0	0	0	4.5
Ellsworth	Ellsworth County	114	18	0	0	0	18
Ellsworth	Kanopolis State Par		3	5	0	0	8
Finney	City of Garden City	508	0	22	56	0	78
Ford	Chamness Technology	846	0	659.69	16,976.96	0	17,636.65
Ford	Ford County	718	948.12	0	0	0	948.12
Franklin	Franklin County	159	152	0	0	0	152
Geary	Earth Pals, LLC		0	5	0	0	5
Geary	Milford State Park		0	2	0	0	2
Gove	City of Grainfield		10	0	0	0	10
Grant	Grant County	668	141.28	0	45.44	0	186.72

County	Facility	Permit No.	Yard Waste	Manure	Source Separated	Livestock	Total Tons
Gray	City of Cimarron	834	50	0	0	0	50
Harper	Harper County	428	0	0	0	0	0
Harper	Zimmerman Bros		0	0	10.25	20.5	30.75
Harvey	City of Halstead	786	22	0	0	0	22
Harvey	City of Moundridge		40	0	0	0	40
Harvey	Harvey County Trans	812	655.26	526.97	133.59	0	1,315.82
Harvey	Jerry Regier		0	0	7.5	3	10.5
Jewell	City of Jewell		1.75	0	0	0	1.75
Johnon	City of Olathe	247	44,132.00	0	0	0	44,132.00
Johnson	APAC-Stanley C&D La	487	0	0	0	0	0
Johnson	Johnson County Comm		0	0	52	0	52
Johnson	Johnson County Land	263	19,527.00	0	0	0	19,527.00
Johnson	Meyers Turf Farms		25	5	0	0	30
Johnson	Signature Landscape		150	0	0	0	150
Johnson	Tiny Tales Farm		0	0	0	0	0
Kiowa	City of Greensburg	772	20	0	0	0	20
Labette	City of Oswego	703	17.75	0	0	0	17.75
Labette	City of Parsons	654	0	0	0	0	0
Labette	Scott Road Landfill	839	0	0	0	0	0
Lane	Lane County Solid W		30	0	0	0	30
Leavenworth	City of Leavenworth		37.5	0	0	0	37.5
Leavenworth	CW Lawns, LLC		5	0	0	0	5
Leavenworth	Federal Bureau of Prisons USP Leavenworth		0	0	0	0	0
Leavenworth	Leavenworth County	755	100	0	0	0	100
Lincoln	Lincoln County	124	12.86	0	0	0	12.86
Linn	Danny McElreath		0	0	0	0	0
Linn	Linn County	421	5	0	0	0	5
Lyon	City of Emporia/Lyo	145	793.21	0	0	0	793.21
Lyon	Emporia Truck Wash		0	462.5	0	0	462.5
Marion	City of Goessel		3	0	0	0	3
Marion	City of Hillsboro	909	220	0	0	0	220
McPherson	City of Inman		65	0	0	0	65
McPherson	City of Lindsborg	688	30	0	0	0	30
McPherson	City of Lindsborg	758	0	0	0	0	0
McPherson	McPherson Area Soli	779	6,271.00	4	200	1	6,476.00
Meade	City of Fowler		0	0	0	0	0
Miami	NoBull		0	1	0	0	1
Mitchell	City of Glen Elder		6	0	0	0	6
Mitchell	Mitchell County	129	750	0	0	0	750
Montgomery	City of Caney	156	0.5	0	0	0	0.5
Montgomery	City of Cherryvale		15	0	0	0	15
Montgomery	TLC Nursery & Outdo		50	0	0	0	50
Morris	Morris County Trans	130	7	0	0	0	7
Nemaha	Centralia High Scho		0	0	0	0	0
Nemaha	Rodney Strahm		0	0	0	0	0
Nemaha	VLR Trust		0	0	0	0	0
Neosho	City of Chanute	628	450	0	0	0	450
Ness	City of Bazine		15	0	0	0	15
Norton	City of Alma		8	0	0	0	8
Norton	Norton County	131	147.94	0	0	0	147.94
Osage	Kansas Trophy Outfitters, LLC	917	0	0	0	0	0

County	Facility	Permit No.	Yard Waste	Manure	Source Separated	Livestock	Total Tons
Osage	Lyndon Schools USD 421		0	0	0.1	0	0.1
Ottawa	City of Bennington		0	0	0	0	0
Ottawa	City of Delphos		2	0	0	0	2
Ottawa	City of Minneapolis	716	50	0	0	0	50
Pawnee	Pawnee County - Lar	133	94.42	0	0	0	94.42
Phillips	City of Agra		6	0	0	0	6
Phillips	City of Prairie Vie		6	0	0	0	6
Phillips	Phillips County	820	108.5	0	0	0	108.5
Pottawatomie	City of St. Marys	708	5	0	0	0	5
Pottawatomie	Master Landscape, I	911	250	510	0	0	760
Pottawatomie	Pottawatomie County	223	2	0	0	0	2
Pottawatomie	USD 320 Wamego Midd		0	0	0	0	0
Rawlins	Rawlins County	546	120	0	0	0	120
Reno	City of Hutchinson		60	3	0	0	63
Reno	Glass Springs Dairy		0	1	0	2	3
Reno	Mast Custom Processing		0	0	0	0	0
Reno	Mizell Farms, Inc.	879	20	715.3	186.7	155.3	1,077.30
Reno	Montessori Learning		0.75	0	0	0	0.75
Reno	Reno County	723	2,654.57	0	0	0	2,654.57
Republic	City of Belleville	694	200	0	0	0	200
Republic	City of Cuba		1.5	0	0	0	1.5
Rice	City of Bushton		1.2	0	0	0	1.2
Rice	City of Little Rive		2	0	0	0	2
Rice	City of Lyons	693	104.87	0	0	0	104.87
Rice	Rice County	137	536	0	0	0	536
Riley	Blueville Nursery,		150	0	0	0	150
Riley	City of Ogden	732	1	0	0	0	1
Riley	Fort Riley	680	154	51.48	0	0	205.48
Riley	Kansas State Univer	830	0	0	120	0	120
Riley	Riley County	185	781.71	0	0	0	781.71
Rooks	City of Plainville	766	380	0	0	0	380
Rooks	City of Plainville		0	0	0	0	0
Rush	City of La Crosse		4	0	0	0	4
Rush	Shelley Oelkers/Bob		0	1	8	2.77	11.77
Saline	City of Gypsum		2	0	0	0	2
Saline	C-ME Recycling, Inc	735	2,200.00	1,200.00	768	0	4,168.00
Sedgwick	City of Wichita/Bro	213	780	0	0	0	780
Sedgwick	Complete Landscape Systems, Inc.		0	0	0	0	0
Sedgwick	Evergreen Recycle,	762	345.85	156.68	5,689.73	0	6,192.26
Sedgwick	Koch Supply Company		25	0	0	0	25
Sedgwick	Singletree Stables		0	125	0	0	125
Sedgwick	Suburban Landscape		40	0	0	0	40
Sedgwick	Tanganyika Wildlife		40	250	0	0	290
Sedgwick	Wichita State Unive		46	0	15	0	61
Seward	Seward County	140	0	0	56,435.34	0	56,435.34
Shawnee	All Service		80	0	0	0	80
Shawnee	City of Topeka-Park	452	2,105.00	0	0	0	2,105.00
Shawnee	J.G. Meier & Sons		100	0	0	0	100
Sheridan	City of Selden		10	0	0	0	10
Sheridan	Sheridan County	181	342	0	0	0	342
Sherman	Archer Daniels Midl		0	0	2.5	0	2.5
Sherman	Sherman County	209	637	0	0	0	637

County	Facility	Permit No.	Yard Waste	Manure	Source Separated	Livestock	Total Tons
Smith	City of Gaylord		4	0	0	0	4
Stafford	City of Stafford	729	70	0	2	0	72
Sumner	City of Caldwell	750	16	0	0	0	16
Sumner	City of Wellington	733	74	0	0	0	74
Sumner	Conway Springs Comp	734	50	0	12.5	0	62.5
Sumner	Elkhorn Valley Pack	910	0	650	2.5	0	652.5
Sumner	Elkhorn Valley Packing		0	0	0	0	0
Thomas	Thomas County	748	510.19	0	92.15	0	602.34
Washington	City of Greenleaf		3	0	0	0	3
Washington	City of Linn		1	0	0	0	1
Washington	City of Washington	918	30	0	0	0	30
Washington	Washington County	163	0.5	0	0	0	0.5
Wilson	City of Neodesha		0	0	0	0	0
Woodson	Woodson County	662	8	0	0	0	8
Wyandotte	Planet Marris Recycling		0	0	0	0	0
Wyandotte	Woodland Lawn		12.5	0	0	0	12.5
	TOTAL TONS		108,980.43	5,559.27	81,357.56	287.42	196,184.68

waste stream; however, 2012 was very dry and the sampling activity likely missed the majority of yard waste disposed during that year. Based upon all factors, KDHE estimates that about 30 to 40% of generated yard waste (i.e., that which is collected rather than mulched and left on the lawn) was diverted from landfills in 2012 and taken to composting facilities. This percent is likely higher in 2013 because Johnson County’s program became fully operational and additional collection programs began to be implemented in Wyandotte County and other areas.

Another important yard waste issue is the increase in mulching of grass clippings and leaves rather than bagging for disposal. Fewer households collect yard waste than in the past and this trend is likely to continue as more people learn that it is not harmful to lawns to mulch leaves and grass.

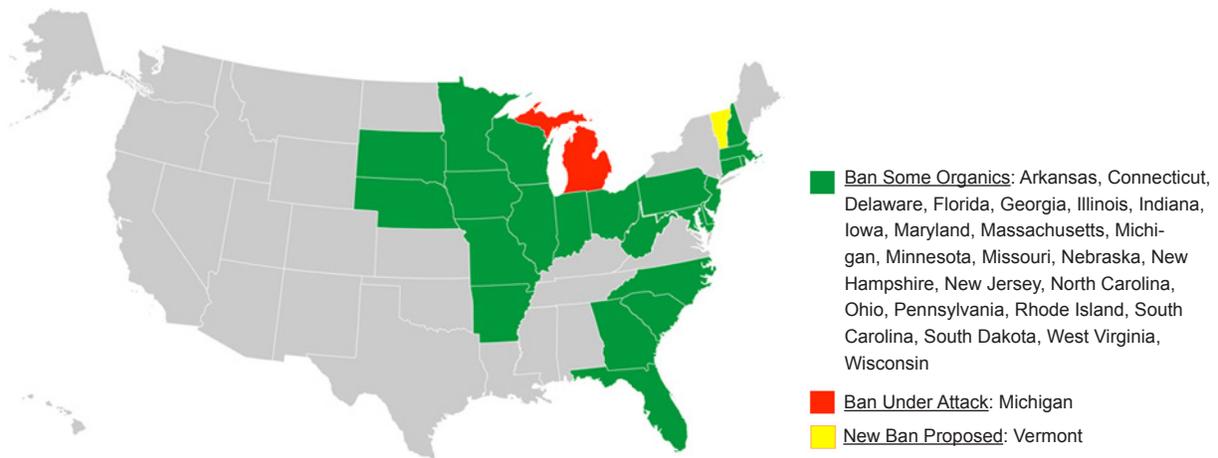
Multiple states have established landfill disposal bans for yard waste including several of our neighboring states. Figure 2-4 shows the location of states that have landfill bans. Michigan which has a yard waste disposal ban is considering revoking the legislation that implemented the ban because opponents of the law have set forth arguments that challenge the benefits of separate collection and processing and claim that there is value to dispose of yard waste in landfills that have landfill gas recovery systems since yard waste is easily degradable.

One other important point related to recycling is the value of the recyclable material that would have otherwise been disposed of in MSW landfills. The estimated revenue gained by recyclers in Kansas in 2011 is provided in Table 2-6. Market prices for recyclables vary considerably based upon world demand for these materials. Total tons recycled in 2013 should increase as more curbside collection programs are implemented; however, revenue may or may not increase as markets fluctuate.

Household Hazardous Waste (HHW) Collection. Kansas has had a model HHW program since the early 1990s when the state HHW grant program was initiated to fund the start-up of new county or regional programs. Figure 2-5 shows the location of all “permanent” permitted HHW facilities and those classified as “satellite” facilities that work together with permanent

Figure 2-4

State Landfill Bans on Organics¹



¹Source: Haaren, Themelis and Goldstein, State of Garbage in America, BioCycle Magazine, Oct 2010, updated 5-2011 and 3-2012

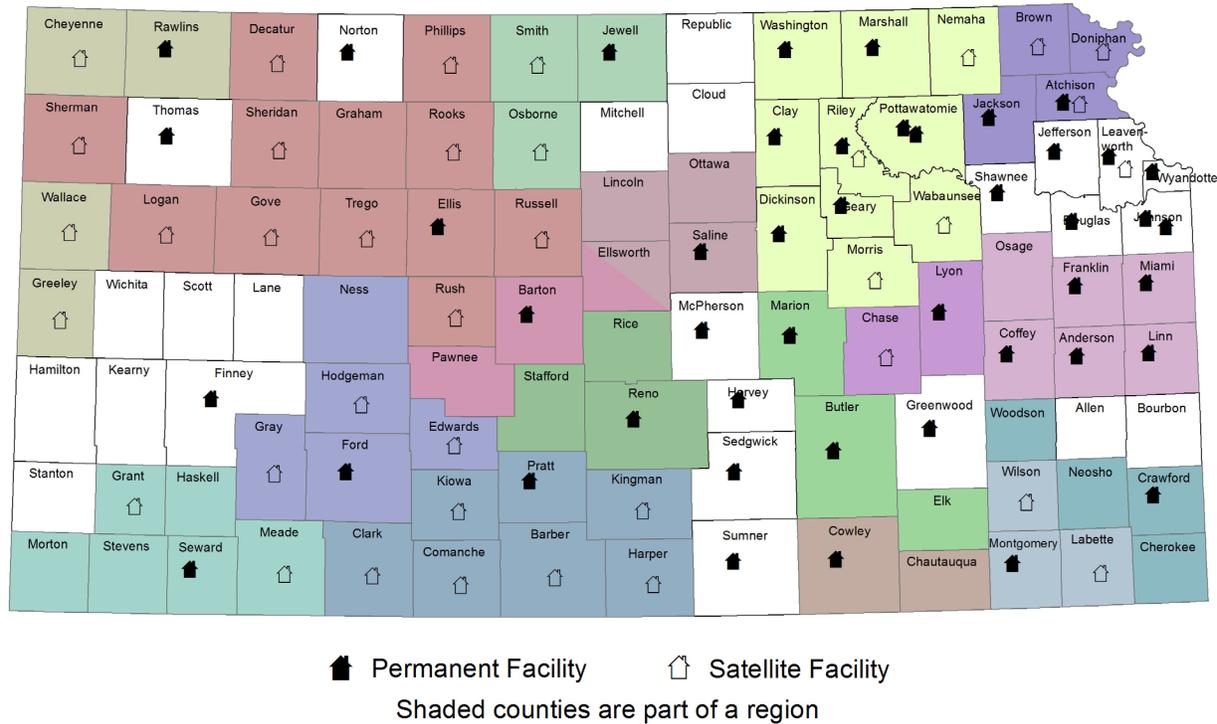
Table 2-6

Statewide Revenue from the Sale of Recyclables - 2011

Material Category	Tons	Reg. Avg. \$/Ton	Reg. Avg. Est. Value
Corrugated paper	271,591.00	\$105.00	\$28,517,055.00
Other paper	129,274.00	\$5.000	\$646,370.00
Total Paper Fibers	400,865.00		
PET #1	3,158.55	\$441.8261	\$1,395,529.79
HDPE #2	1,864.16	\$493.7971	\$920,516.80
Other plastics	12,466.29	\$21.500	\$268,025.24
Total Plastics	17,489.00		
Other ferrous metals	324,279.00	\$21.500	\$6,971,998.50
Aluminum (cans/loose)	4,757.00	\$1,172.8986	\$5,579,478.41
Other metals (non-ferrous)	57,978.00	\$115.00	\$6,667,470.00
Total Metals	387,014.00		
Glass (lowest avg pricing data)	24,428.00	\$9.50	\$232,066.00
E-waste	2,942.00		
Lead/acid batteries	2,436.00		
Other (textiles, wood, yard & food waste)	177,071.00		
MSW Recycled (est. based on recycling rate of 31%)	1,012,245.00		
Estimated Recyclable Value of Total Waste			\$51,198,509.73

Figure 2-5

Regional Household Hazardous Waste Facilities



facilities. A total of 93 counties have available disposal options for HHW ranging from year round facility operations to annual collection events sponsored by permanent facilities that also operate mobile collection services within established regions. Over 95% of the state’s population is presently served by county and regional HHW programs.

Public participation in HHW facilities is 100% voluntary. In 2012, nearly 74,000 people brought over 5 million pounds of HHW to facilities rather than mix the waste with other household trash. Over the past 10 years, the amount of collected HHW has grown by nearly 60%; however, if a larger percentage of the population did participate, this program could grow significantly. It is estimated that the 74,000 program participants likely represents about 222,000 people or only 7-8% of the Kansas population. It is clear that the majority of Kansans continue to dispose of their HHW with other trash.

Landfill Gas Collection and Use

When MSW naturally decomposes in a landfill under anaerobic conditions (without adequate oxygen) one of the decomposition products is methane, more commonly referred to as natural gas. Historically, methane generation at landfills was considered a problem for it could migrate into nearby structures causing explosive hazards or to adjacent fields killing vegetation or farm crops. The first rules regarding methane controls at landfills were all about controlling these risks to property and public health. Methane monitoring and control systems were required by the federal Subtitle D landfill standards in the early 1990s and established at many large landfills over the past 20 years. More recently, landfill methane has been viewed as an “air pollutant” by the U.S. EPA and today complex air rules now apply to landfills.

In general, landfills that exceed a certain size must collect methane for either beneficial use or destruction. Table 2-7 lists the Kansas MSW landfills that are presently collecting landfill gas, the amount of gas collected, and the energy content of the collected gas. It is likely that additional landfills will be added to this list and collected gas quantities will also increase. Over 16 million cubic feet of gas is collected per day from Kansas landfills. Most is beneficially used; however, a significant percentage is simply flared because the low current price of natural gas does not warrant the capital investment to develop beneficial use projects. All of the gas recovered for use or destruction would meet the needs of nearly 83,000 homes based upon average residential consumption.

Liquids Addition Programs at MSW Landfills

In late 2009, Kansas became authorized by the U.S. EPA to oversee a program to approve the disposal of bulk liquid wastes in MSW landfills that have composite liner systems and leachate collection systems to ensure that the depth of liquid on the liners do not exceed 12 inches. Several large Subtitle D landfills have become involved in this program which yields several types of benefits including: (1) enhanced waste decomposition and stabilization of the waste mass especially in areas of low precipitation or during dry periods; (2) increased methane generation and recovery where reuse projects have been implemented; (3) improved waste compaction and settling conserving landfill space; (4) improved disposal options for generators

Table 2-7

MSW Landfill Gas Recovery & Use

SubD Landfill	Gas Control & Treatment	cfm of LFG	cf/day	% CH4	MmBtu/day	MmBtu/year
Allen County Landfill	Infrared heat	100	144,000	33	49	17,813
Butler County Landfill	Flare	245	352,800	42	152	55,545
Cherokee County Wheatland	Flare	770	1,108,800	55	626	228,602
City of Wichita Landfill Chapin (not SubD)	Flare	100	144,000	15	22	8,097
City of Wichita Landfill Brooks (not SubD)	Flare	1350	1,944,000	50	998	364,359
Crawford County Arcadia	Landfill gas to energy	800	1,152,000	50	592	215,916
Finney County Landfill	Flare	230	331,200	18	61	22,347
ForestView Landfill	Flare	250	360,000	50	185	67,474
Harper County Plumb Thicket	Flare	750	1,080,000	60	665	242,906
Johnson County Landfill	High Btu gas processing plant	4167	6,000,480	50	3,081	1,124,655
Montgomery County Resource Recovery	Flare	208	299,520	55	169	61,752
Reno County Landfill	Blower	33	47,520	25	12	4,453
Rolling Meadows Landfill	Landfill gas to energy	2100	3,024,000	50	1,553	566,781
Seward County Landfill	Direct use National beef	70	100,800	50	52	18,893

of liquid waste streams that have high organic content; (5) recovery of energy value in liquid waste streams where landfill gas systems exist; and (6) added revenue for landfill operators. To participate in the liquids addition program, landfill owners must modify their operating plans and submit annual reports to KDHE.

The liquids addition program helps achieve some of the same benefits that result from waste reduction practices such as recycling and composting. Energy and landfill space are conserved and landfills become less of an environmental threat from a long-term perspective.

Waste-to-Energy Facilities

Kansas has no MSW waste-to-energy facilities, meaning the processing of MSW through direct combustion, pyrolysis, gasification, designed anaerobic digestion, or other technology. A multi-year pilot plant gasification project was run by a private company in Harvey County experimenting with various solid wastes including MSW, but that project was recently terminated and no full-scale projects are presently planned. Many other companies have shown an interest in developing waste-to-energy projects over the past 20 years, usually combined with some kind of MRF operations. All proposed projects have not proceeded beyond the conceptual stage due to the lack of economic feasibility. Without major grant funding or other government financial incentives, MSW waste-to-energy is impractical and non-competitive with other disposal options.

Some persons have proposed waste-to-energy projects that target specific waste components only rather than the mixed MSW stream. Companies have specifically proposed to burn/process waste tires or other high energy content wastes that can be readily separated from other less desirable wastes. While this may be feasible for waste tires, it makes little sense to separate out other high energy material, such as plastics, and then process them for their energy value, rather than recycled them for their resin value.

As mentioned above, there does seem to be some potential to divert food waste and perhaps some other organics to anaerobic digestors to produce natural gas for use in ethanol plants or for other purposes. The feasibility of anaerobic digestion projects depends upon the price of natural gas, government financial incentives (taxes, grants, etc.), proximity to markets, and other supplement organic feedstocks since the amount of recoverable organics from the MSW stream may be inadequate to support a project.

Summary of Current Waste Reduction Efforts in Kansas

Only a few years ago nearly all waste reduction efforts in Kansas were voluntary. Local governments, private companies, and non-profit organizations implemented recycling, composting, and HHW programs because they believed this was the right thing to do, to save money, or because of business opportunities. Over nearly 20 years, programs grew and matured yielding a wide variety of available services depending upon the specific needs and desires of the people. Over the past few years, more and more communities have implemented comprehensive programs including varying degrees of mandatory participation. Some communities simply require that everyone pay for recycling services whether a person chooses to participate or not; others now require separation of recyclables and even yard waste for separate pick-up.

So, the Kansas picture in 2013 is a varied mix ranging from very little waste reduction opportunities in some small rural counties to full separation of recyclables and yard waste with curbside collection. This mix of services and opportunities is consistent with the current statutory authority of local governments to plan and implement selected waste management and waste reduction systems to meet the needs and preferences of their citizens. The state requires an assessment of waste reduction in the planning process, but does not require that any specific practices be implemented.

Chapter 3

Review of KDHE Waste Reduction Survey and Other Stakeholder Feedback

Background

HB 2249 instructed KDHE to solicit input from stakeholders and interested parties as part of preparing this report. The bill specifically lists “operators of municipal solid waste landfills, haulers of solid waste, business and residential consumers of haulers of solid waste, and cities and counties,” as parties that should provide input to the report. As explained in Chapter 1, KDHE utilized an online waste reduction survey to obtain relevant feedback from anyone interested in the issues and has reached out to multiple industry groups and associations to gather additional feedback, both in writing and through meetings. Additional meetings and telephone conversations have taken place with interested citizens to gain a more thorough understanding of public opinion.

Online Waste Reduction Survey

A total of 616 people completed the survey during the open period that ran from July 18, 2013 to August 16, 2013. Appendix D provides the complete results of the online survey while this chapter summarizes and analyzes key findings. As participants completed the survey they had access to background information to help them more fully understand issues and conditions in Kansas. This information is included in Chapter 2 and the appendices of this report. Table 3-1 provides a summary of key survey results. The following sections discuss the results and provide some analysis and interpretation.

Who Participated in the Survey? The first five questions of the survey requested information about the people who participated in the survey. This information allowed for an analysis of public opinion according to the background and responsibilities of individuals. Overall, there was a good mix of people with respect to urban (59%) vs. rural (41%) and geographical location across Kansas (east, central, or west), but the percentage of respondents who worked for the government (56%) greatly exceeded the actual statewide percentage of government workers (17%). The high number of government employees completing the survey was probably due to two primary factors. First, an e-mail notice was sent to all KDHE employees that the online survey was available and anyone was welcome to complete the survey. Second, a separate e-mail notice was sent to all people within the KDHE Bureau of Waste Management’s solid waste “customer” data base which includes everyone that has a solid waste permit, has received a waste reduction grant over the past 20 years, and many others who work in the waste management field. The majority of individuals that fall into those categories work for city or county governments.

Because of the high number of government workers, KDHE sorted the survey results according to those who reported working for government and those working for private businesses to see if there was a difference in opinion between the two groups. The observed differences in answers to survey questions about the adequacy of services and the state role were non-existent to minor. The majority opinions of both groups were similar for every question. In general, the private business employees usually favored less government mandates, but only a few percentage points lower than the government workers. The majority of both groups supported new government requirements with respect to certain waste management/waste reduction practices. Because of the similarity in responses, this report does not present separate results for each group.

Table 3-1

Summary of Key Survey Results¹
(all values in percent)

Over last ten years, waste management practices have:

	<u>Improved</u>	<u>Stayed Same</u>	<u>Gotten Worse</u>
Statewide	70	26	4
In Community	77	17	6

Are you satisfied with your waste management services?

	<u>Yes</u>	<u>No</u>
Disposal	73	27
Recycling	55	45

Which do you agree with most?

- | | |
|---|----|
| • Voluntary waste reduction has achieved adequate results. No new mandates needed | 24 |
| • Kansas made such progress but <u>some</u> new requirements are appropriate | 39 |
| • Kansas can do much better and new state waste reduction requirements are needed | 37 |
-

Waste reduction decisions should continue to be made by local governments 81

Separate yard waste collection should be required:

In all of Kansas	44
If rainfall exceeds 25 inches	7
In cities with population over 5,000	13
Where required by local governments	23
Nowhere in Kansas	13

Curbside collection of recyclables should be required:

In all of Kansas	42
In cities with population over 10,000	13
In cities with population over 25,000	5
Where required by local governments	29
Nowhere in Kansas	11

¹Results of KDHE public survey conducted from July 18, 2013 to Aug 16, 2013. 616 persons completed the survey.

As explained in Chapter 1, KDHE believes that most people who completed the survey either work in the waste management business, participate in local solid waste planning, or generally have a strong interest in this subject. Consequently, the survey results may not accurately portray overall public opinion among all Kansans. It does, however, represent the opinions of an “informed” group of citizens, perhaps a group that leans toward stronger environmental protection views than the average citizen. Nearly half of survey respondents have some kind of waste management responsibility related to their job which also is likely to shift the responses to positions that are supportive of expanded waste management programs.

General Feedback on Waste Management and Reduction. A significant majority of respondents believe that solid waste management *practices and services in Kansas have improved* over the past 10 years, both in their own community (77%) and statewide (70%). Only 6% and 4% believed practices and service have *gotten worse* in their community and statewide, respectively. The remainder believed practices and service have remained the same.

A second general survey question related to whether respondents were satisfied with “disposal” and “recycling” services they were receiving. A higher percentage was satisfied with disposal service (73%) compared to recycling service (only 55%). It is interesting that the primary reason that most people were dissatisfied with disposal service was because the service was considered “*too expensive.*” The primary reason that people were dissatisfied with recycling services was because “*curbside collection of recyclables was not available.*” Most respondents want to recycle and they want it convenient. Some other areas of reported dissatisfaction include: local recycling programs do not take all recyclable materials; inadequate drop-off sites exist for recyclables and yard waste; and no central community composting facilities exist in some communities.

Most people who believe that waste management practices have improved in Kansas over the past decade are also satisfied with the services they receive; however some are not satisfied despite the improvements. To better understand overall public opinion, it is appropriate to jump to the responses to the *last question of the survey* which asks respondents to draw a conclusion regarding *the overall adequacy of waste reduction practices in Kansas*. Respondents were asked which of the following three statements best describes their opinion (the percent choosing each is provided):

1. Voluntary waste reduction efforts have achieved adequate results and no new state mandates are needed. (24%)
2. Kansas has made much progress in waste reduction over the past 20 years, but some new state requirements are appropriate to ensure continued improvements. (39%)
3. Kansas can do much better in waste reduction than current practices, especially in some locations; therefore, it is necessary to establish new state requirements. (37%)

These results combined with the earlier general opinions on observed improvements and degree of satisfaction with services seems to indicate that nearly all survey respondents acknowledge improvement in waste management practices in Kansas, but those improvements have not gone far enough to reduce waste disposal and increase recycling. Therefore, the majority of the respondents believe that some new requirements (i.e. regulations) are needed to facilitate more waste reduction and to sustain the improvements that have thus far been gained. Again, it is appropriate to emphasize that these survey respondents are mostly committed stakeholders rather than a representative sample of average Kansans.

The Role of State Government in Waste Reduction Decisions. A series of survey questions related to the state’s role in achieving adequate waste reduction practices and services in Kansas. It is interesting that a large majority of respondents believe that the existing state regulatory

system that delegates waste reduction decision-making to local governments should be maintained (81%). However, many other questions yielded inconsistent results with this preference for local control in that the majority of respondents also support more statewide requirements. For example, 64% support a new state requirement to separate yard waste from other trash either statewide or at least under certain circumstances, such as in areas of high precipitation or in cities with populations above 5,000. Similarly, about 60% believe that the state should require that curbside recycling be provided. These preferred waste reduction “requirements” are for state rules rather than locally implemented rules or codes because each question gave an option for selecting such practices only when decided by locally elected government officials. An additional 23% supported separate yard waste collection/disposal if decided by local officials rather than a statewide requirement; 29% supported a curbside recyclable collection program when decided by local officials.

For more than 20 years, solid waste planning decisions have been made by local officials within the general guidelines, laws, and regulations established by the state. It appears that the majority of survey respondents want to retain the overall flexibility currently granted to local government planners to decide the *details* of their solid waste plans including waste reduction decisions. However, it also seems that the majority of respondents would like the state to establish some additional minimal waste reduction requirements that local officials must consider as they make decisions to most appropriately address local needs, preferences, and resources. This is KDHE’s interpretation of survey results that appear inconsistent with respect to state versus local government decision-making. This inconsistency is addressed more in the following section on specific waste reduction practices.

Of the 19% of respondents who believe the state role in waste reduction should increase, nearly 60% (or 12% of overall respondents) support a state requirement to adopt local or regional recycling goals in solid waste plans. Others in this group support requirements to: (1) include certain specific waste reduction services such as curbside recycling, community composting, HHW collection in solid waste plans (10%); (2) establish a state mandatory deposit law for beverage containers (8%); (3) adopt an extended producer responsibility law that requires manufacturers or distributors of products to subsidize waste reduction efforts as related to their own particular products (7%); and (4) establish new state laws prohibiting the landfilling of certain MSW components such as yard waste or other recyclables (7%). The respondents who wanted to maintain local control did not answer this question about new state requirements; however, given their answers to other questions about new state mandates. It is likely that many would have said they also believe some of these new requirements should be implemented at the state level.

Respondents were also asked if they are supportive of new state fees or taxes to support the start-up or enhancement of waste reduction programs. Only 47% were supportive even though a much higher percentage wanted the state to support certain kinds of waste reduction programs through grants or other means. Of the group who supported new revenue generation, the most highly supported new taxes or fees were on plastic bags, pesticide containers, beverage containers, consumer electronics, fast food and packaging, and paint cans.

Even though Kansas has adequate landfill disposal capacity to last many years, 84% of survey respondents believe there should be statewide waste reduction requirements to conserve landfill space. Nearly 70% of respondents support full applicability of waste reduction requirements for locations that have demonstrated a minimum of 25 years of permitted landfill capacity for their solid waste planning area (county or region).

A much higher percentage of respondents believe the state should actively support waste reduction in non-regulatory ways as listed below:

- 89% support an active and ongoing role in providing education and outreach to encourage participation in waste reduction practices such as recycling and composting.
- 74% support the combination of state financial incentives such as grants with public education to stimulate the voluntary development or expansion rather than establish state mandates to implement programs.
- 80% support a state recognition and award program to encourage communities and businesses to implement and maintain waste reduction programs.

These results also reveal inconsistencies in responses. Even though 74% chose incentives over mandates, a significant number of this same group believes the state should establish several new requirements related to the handling of recyclables, such as required yard waste separation and curbside collection of recyclables.

Specific Waste Reduction Options. Detailed questions were asked in the survey about specific waste reduction practices including yard waste management, curbside collection of recyclables, household hazardous waste collection, and food waste management. Each area will be separately addressed in the following paragraphs. In general, there was strong support for each of these waste reduction activities.

A large majority of respondents believe that the best way to manage yard waste is to separate it from other MSW for composting (79%). Only 11% believe it is preferable to mix yard waste with trash even when the landfill has an active gas recovery system; 9% believe it is best to mix the yard waste with other trash to avoid higher waste management costs and to avoid the environmental impacts associated with separate collection and processing. As mentioned above in the discussion of the state's role in waste reduction decisions, we see that 64% of respondents believe the state should establish yard waste landfill disposal restrictions and another 23% would support disposal restrictions established by locally elected officials for their own citizens. Only 13% oppose yard waste disposal restrictions in all circumstances. The survey did not ask whether the people would be willing to pay more for separate yard waste disposal. Supplemental comments received from interested persons indicate that many people may believe that separate yard waste management is the best thing to do with this waste, but they do not want to pay more for the added service.

The survey shows similar public opinions regarding curbside collection of recyclables as for yard waste, but at a somewhat lower level of support. About 60% would like curbside collection of recyclables to be required by the state under at least some circumstances. Another 29% believe it would be acceptable for locally elected officials to require curbside collection. Only 11% believe that required curbside collection of recyclables is not warranted under any circumstances.

Nearly 80% of respondents believe that every county should be required to have a household hazardous waste facility and 81% believe the state should provide financial support to establish such programs. These results point out another inconsistency in respondent answers. They want the state to fund such programs, but the majority does not want any new taxes or fees to help fund such a grant program.

Like yard waste, food waste is nearly all organic and capable of being composted instead of disposed in landfills. Logistics of collection from households would be complex, but more practical collection options exist for large generators of food waste such as grocery stores, hospitals, schools, and large restaurants. 54% support a new requirement for large generators of food waste to separate food waste from other MSW so that it can be composted or used as a feedstock in anaerobic digestors to generate methane gas. This high percentage favoring mandatory food waste collection from large generators is an indicator of the overall strong level of commitment of the survey respondents to waste reduction programs.

Presently, consumer electronic waste (e-waste) may be disposed of in monitored MSW landfills. It has been the position of KDHE for many years that e-waste can be safely disposed of in landfills because the major contaminant is lead that is found in cathode ray tube (CRT) glass (old TVs and computer monitors). The lead is bound tightly in the glass and very unlikely to leach into the environment. Also, even if some lead did leach from the glass into water that enters into the waste mass of a landfill, that water would either be contained by the landfill leachate collection system or, under a worst case scenario, if it penetrated the synthetic landfill liner it is likely to adsorb onto the underlying clay soil particles rather than pass through into groundwater. Nevertheless, respondents were asked whether e-waste disposal in landfills should be banned. One option was a total disposal ban but other more limited disposal options were presented. The results were as follows: 15% believe e-waste generated by businesses should be banned from landfill disposal; 36% believe it should only be banned if there are recycling markets for the material; 36% it should only be banned if KDHE finds that landfill disposal presents a clear environmental threat; and 14% believe that a ban is not necessary under any scenario. It is likely that most survey respondents are unaware of marketing potential for e-waste and the actual environmental risk of landfill disposal.

Landfill Gas Collection Systems. This public survey did not ask any specific questions related to gas collection systems; however, gas collection was addressed in a minor way within a question related to the management of yard waste. Additional independent feedback was received from some landfill owners on this topic and that is addressed in the following section on “Other Stakeholder Input.”

When asked if yard waste should be mixed with trash when a landfill gas recovery system is operational, only 11% believe that option was preferable compared to a much higher percent that believes separate collection for composting is preferable (79%). The relatively small percentage supporting landfilling with gas systems was expected because it is likely that few people completing the survey have technical knowledge regarding yard waste biodegradation in landfills and the energy recovered and beneficially used when gas systems are in full operation. Even among technically informed professionals, there is disagreement as to whether yard waste and other organics (such as food waste) should be separately managed in composting programs or disposed in landfills where the waste can contribute to energy generation and recovery. The following section discusses relevant public comments on the concept of “life-cycle analysis” which is a way to examine the full environmental and natural resource impacts of competing choices.

Other Stakeholder Input

Additional input received from various persons and organizations cannot be summarized quantitatively (as with the public survey); however, it is important because it represents the opinions of people who either have major responsibilities in the waste management field or strong opinions regarding the government’s role in making waste management decisions. The comments received fall into the following general categories which will be examined separately below:

- Local versus state roles regarding waste reduction decisions
- The purpose or goal of “forced” waste reduction practices
- Applicability of life-cycle assessments to waste reduction practices
- Public education and outreach
- Material Recovery Facility (MRF) operations
- Free market role in waste reduction
- Government creation of business monopolies
- Yard waste management

Local Versus State Roles. Strong opinions were presented to KDHE confirming the survey results that Kansans (81%) believe that waste reduction decisions should be made at the local level rather than the state level. This opinion affirms support for current solid waste planning laws where local governments working with local planning committees make the detailed decisions regarding what kind of waste reduction programs should be implemented in cities, counties, and planning regions. The reasons for these strong feelings relate to variations that exist with respect to need, resource availability, and public opinion. While the survey results pointed to an enhancement of the state role in setting some new minimum requirements from which local planners can choose details that work best for themselves, this additional input did not support new mandates placed on local governments. Some of the identified state roles already exist, but input indicates a desire for the state to do more in the following areas:

- More public education and outreach regarding waste reduction activities (as explained in Chapter 2, state involvement has decreased due to less available funds)
- Sustained technical training of public and private operators of waste reduction facilities
- Financial assistance to start-up and sustain waste reduction programs (as explained in Chapter 2, grants have decreased to minimal levels due to the lack of funding)
- A low interest loan program to help establish waste reduction programs (new idea)
- Efforts to establish new markets for recyclable materials in Kansas

Purpose of “Forced” Waste Reduction Programs. Several individuals posed questions related to the purpose of forced waste reduction programs. They wonder if these program supporters have thought through the benefits to be gained compared to the associated financial and environmental costs (see life-cycle assessment section below). These individuals challenge the need for mandatory waste reduction programs as compared to the emotional connection some people have to “recycling.” People who commented in this manner are not all opposed to waste reduction/recycling, but they believe it should be a personal choice rather than a government mandate. They believe that the government role is to protect public health and the environment (such as to ensure that waste materials are not illegally dumped or managed in a manner to cause a nuisance or impact to others) but they do not believe waste reduction meets this criteria.

Life-Cycle Assessments of Waste Reduction Programs. It is beyond the scope of this study to evaluate the comparative life-cycle impacts of competing waste management practices. However, the points raised by various people, including individual citizens and waste management professionals are worthy of consideration. Several people believe that waste reduction programs may actually have greater environmental impacts if all factors are thoroughly and fairly considered. For example, several people pointed out that separate curbside collection of recyclables and yard waste can result in three trash trucks running collection routes instead of just one with all of the associated energy consumption and pollutant emissions associated with diesel combustion. Also, the processing of recyclables takes energy and consumes water. These impacts are believed to be especially significant in areas of low population density where long transportation distances may be required to move recyclable material to market. Of course, there are benefits such as the conservation of landfill space and natural resources by recycling materials. The questions posed do not deny the benefits, but they do question whether anyone has fairly assessed “net” benefits or impacts.

The life-cycle question is particularly relevant to the yard waste management options. Since such a large number of people support the separation of yard waste (and food waste from large generating facilities) for composting, it is appropriate to consider the methods of collection, processing and transportation within the context of a life-cycle analysis. A cost-benefit analysis was also recommended by several people. Again, KDHE has not attempted to perform a thorough life-cycle or cost benefit analysis, but it is clear that some selected systems to collect yard waste may have significant negative environmental implications. For example, if a yard

waste landfill disposal ban is selected and separate curbside collection is mandated year round, collection vehicles would need to run their routes including during some periods when very little material is generated and available for pick-up. Some national studies have documented that such programs have very high fuel consumption rates per ton of yard waste collected which would mean probable overall negative impacts of such programs. Curbside collection during certain high generation seasons would present less impact and more benefit.

These comments encouraging a life-cycle assessment before establishing new state mandates are important and should be considered regarding potential new state regulatory options and when local governments make their decisions regarding waste reduction programs.

Public Education and Outreach. Comments varied in this area, but most people believe the state should continue to provide objective information on waste reduction to the general public and some encouragement to participate in local programs. No specific recommendations were obtained as to how the state should carry out this responsibility. In the past, KDHE had a more intensive public education and outreach program but as available funds have decreased these efforts have been reduced to a few minor activities, primarily presented to K-12 students.

Material Recovery Facility (MRF) Operations. The trend toward more single stream curbside collection of recyclables has led to more MRF operations (see Chapter 2 for a description of MRFs in Kansas). MRFs can take in a large amount of comingled recyclables that must be processed to separate the stream into marketable components. These recyclables are exempt from the definition of solid waste; thus, MRFs do not need to obtain solid waste processing facility permits from KDHE. Some people commented that this is a problem because MRFs have the potential to create local impacts due to trash truck traffic, odor, windblown litter, and the amount of contaminated material that is generated through processing. These people think MRFs should not be exempt from the solid waste permitting requirements due to risks to public health and real or perceived nuisances. Other people who strongly support single stream collection programs oppose the permitting of MRFs because the costs and other implications of obtaining a permit could be a disincentive to recycling program expansion. KDHE's current policy is that MRFs do not need solid waste processing facility permits because the material they receive in their front door qualifies as "recyclables." However, this comingled assortment of recyclable material must be managed in a manner that does not constitute a nuisance, create litter, or impact public health or the environment in any manner to retain the exemption.

Free Market Role in Waste Reduction. Comments related to the relevance of "free market" philosophy to waste reduction are similar to comments addressed in the section above on "forced recycling." People believe that free market decisions should be the basis for the establishment of recycling or composting programs rather than government mandates. This would include giving people the choice to pay for recycling or composting services such as curbside collection. If they believe that the benefits to community, state, and country are significant enough to warrant additional expenses over simple disposal, then they can choose to pay for whatever services they wish to have performed. Another idea expressed by believers in a free market approach is that recycling and composting will be chosen by local governments, businesses, and individuals if it is economically justifiable. As explained above, these people do not generally see recycling and composting as a true public health issue, so they believe decisions to implement or participate in programs should be based upon personal preferences and economic considerations. Proponents of waste reduction activities have often resisted this way of thinking by arguing that comparative economic assessments seldom consider long-term costs which may be more favorable toward waste reduction practices than short term costs that usually favor traditional disposal of mixed trash.

Government Creation of Business Monopolies. Some individuals are concerned that government requirements for private businesses to offer curbside collection of recyclables and yard waste if trash collection service is provided will put small companies out of business because they cannot make the required investments to purchase additional trucks and hire additional employees. In some locations, multiple small businesses provide trash collection service in addition to one or two larger private businesses or even government-owned collection services. When it remains an individual choice as to whether curbside recycling or yard waste collection will be purchased, small trash collectors can continue to compete; however, this may not be true if a state or local regulation mandates that comprehensive service must be offered.

Some people have argued that it is appropriate to put rules into place that consolidate collection to a fewer number of haulers of waste or recyclables (the franchising concept) because some neighborhoods may have multiple companies operating on the same residential streets. Such situations present public safety concerns, add air pollution, and wear and tear of city streets.

Yard Waste Management. A wide variety of ideas were received on yard waste management. The “life-cycle” section above addressed some important comments related to yard waste management. In this section, the key points raised by individuals are listed below. The comments demonstrate that people have very different views on preferred yard waste management methods.

Comments generally supporting current management system:

- Yard waste degrades very easily in a landfill environment to produce methane gas which is recoverable as an energy resource. To facilitate this efficient management method, yard waste disposal in landfills with gas collection systems should be allowed. Some persons have qualified this disposal option to specify that disposal should only be allowed in paper sacks which will not impede biodegradation and gas collection in the same manner as plastic bags.
- Separate curbside collection of yard waste is inefficient and wasteful of natural resources and produces unnecessary air pollution as well as increased safety concerns and road damage in residential areas.
- Increased lawn mulching accomplished through public education and outreach is preferable to mandatory yard waste collection.
- Requirements for separate yard waste collection by all licensed trash haulers will put some small companies out of business.
- New state laws and regulations related to yard waste management are not needed.

Comments generally supporting new state laws and/or regulations:

- Yard waste makes up a large part of the solid waste stream, at least during certain seasons. It should be separately collected because it is easily segregated by homeowners and it can be composted to provide a valuable product that can be used locally.
- Separate yard waste collection should only be required during times of high generation.
- Our neighboring states have yard waste landfill bans proving it can work and save landfill space.
- In many parts of Kansas, yard waste is a very small part of the waste stream so a statewide disposal ban makes no sense and would do little good in many communities. A disposal ban makes good sense in some locations.

Despite the strong support for separate yard waste collection expressed by the people who completed the public survey, there appears to be other informed individuals who have serious concerns about implementing mandatory diversion/composting requirements.

Chapter 4

Waste Reduction Options

Introduction

Significant progress in waste reduction has occurred in Kansas over the past 20 years. Recycling and composting have increased due to the voluntary implementation of a wide variety of projects and programs prompted by several factors including those listed below:

- The cost of disposal in MSW landfills has increased to comply with new state and federal regulations related to design and operation (most changes occurred in the mid-1990s as the federal Subtitle D landfill standards were implemented).
- Many local landfills closed when new landfill standards went into effect and waste transfer became the selected solid waste management method for over 50 counties.
- The KDHE WORKS! Conference began in 1995 to encourage composting and recycling and to provide training for local government officials and private sector facility operators.
- KDHE provided financial assistance in the form of grants beginning in 1996 to stimulate the start-up and operation of ongoing recycling and composting programs.
- Local government officials were encouraged by constituents and members of county solid waste planning committees to establish ongoing recycling and composting programs.
- Private businesses and non-profit organizations recognized opportunities to provide waste reduction services.
- Local government officials recognized the benefits of recycling with respect to the conservation of landfill space.

Currently, about one-third of MSW generated in Kansas is recycled and it appears that the Kansas MSW recycling rate is continuing to grow based upon the expansion of local programs. Despite some growth in population, the amount of solid waste landfilled in 2012 was about 750,000 tons less than the peak disposal years of five to ten years earlier.

Even with this noteworthy achievement, most Kansans who responded to the public survey believe that additional improvements in waste reduction are possible; however, opinions vary regarding the preferred pathway forward. This chapter presents three approaches to improve waste reduction in Kansas based upon baseline conditions (see Chapter 2) and public opinion (see Chapter 3). The three approaches to waste reduction, or “Waste Reduction Options” are listed below:

Option 1 – Maintain current approach that combines education, training, and financial incentives to encourage public and private parties to implement and expand waste reduction programs. No additional waste reduction mandates.

Option 2 – Establish new state planning guidelines and requirements, in the form of new regulations, requiring counties to set waste reduction goals and thoroughly evaluate the feasibility of implementing enhanced waste reduction programs. Local decision-makers will continue to select new waste reduction programs based upon local needs, resources, and public opinion.

Option 3 – Establish new state laws and regulations requiring counties to develop and implement updated solid waste plans that adopt new waste reduction practices. Counties could

demonstrate that alternative waste reduction practices accomplish similar benefits to prescribed programs.

Before describing each option in more detail, a brief review of the adequacy of existing state laws and the availability of state funds is provided. Chapter 5 will compare options and make KDHE's recommendation for moving forward.

Existing State Laws

Chapter 2 provides a summary of existing state laws as they relate to both KDHE and local government responsibility and authority to plan for, implement, promote, and encourage waste reduction activities in Kansas. Existing law clearly promotes and encourages waste reduction, but it does not require any specific waste reduction practices to be either evaluated by local planners or implemented. Furthermore, the authority that KDHE has been granted by statute to adopt regulations related to waste reduction emphasizes that such regulations should "encourage" not require waste recovery "whenever feasible." Consequently, any new requirements to implement waste reduction practices, would require changes to state law (Option 3).

It appears that KDHE does have authority to adopt the new planning regulations described in Option 2 under which counties would need to set recycling goals and carry out feasibility studies to determine whether to establish additional local waste reduction programs. KDHE could expand the existing solid waste planning regulations previously adopted based upon existing statutory authorities. Counties would be "encouraged" to implement new waste reduction programs by performing appropriate feasibility studies and to establish "schedules" to implement any new programs that planners and elected officials have selected.

Existing laws also give KDHE the authority to award grants for waste reduction projects and to expend solid waste funds to carry out appropriate public education and awareness activities; however, these programs are dependent upon adequate funding (see next section).

Solid Waste Program Funding

Each year KDHE is required by statute to prepare and submit a report to the Legislature on the status of solid waste program funding including a comprehensive review of revenue obtained through the payment of fees, program expenditures, and the adequacy of projected revenue to meet all statutorily assigned program responsibilities.

Chapter 2 examined trends related to solid waste tonnage fee collection and usage. It will be re-emphasized that solid waste funds are used for many purposes including staff labor and operating expenses for all permitting, compliance & enforcement, training, outreach, emergency response, clean-up, regulations, and waste reduction efforts; illegal dump clean-up contracts; old city dump repairs; grants for waste reduction projects; regional or statewide collection projects for special wastes such as mercury, pesticides, etc.; and indirect overhead expenses.

Table 4-1 shows total solid waste program revenue and expenditures, waste reduction grants, and fund balance for the past ten years. One clear observation from this data is that the waste reduction grant program was reduced in accordance with the reduction in fee revenue. Smaller reductions in expenditures occurred over the same period for other clean-up programs and public education and outreach. Staffing levels were held nearly constant over the period and only minor inflationary increases were experienced over this ten year period.

A more detailed review of revenue and expenditures demonstrates that any new or resumed waste reduction initiatives (grants, public education, etc.) must include enhanced program funding. A return to a robust waste reduction grant program as was carried out from 1996 to 2008 would require additional fee revenue. Similarly, the current state role in public education and outreach is limited and cannot be enhanced without more revenue. Existing expenditures

Table 4-1

Solid Waste Program Revenue Expenditures and Fund Balance

Fiscal Year	Total Revenue	Total Expenditures	Waste Reduction Grants	Estimated Fund Balance Year End
2003	\$4,960,310	\$7,305,935	\$1,852,302	\$4,647,332
2004	\$4,513,986	\$5,393,676	\$1,097,673	\$3,767,642
2005	\$5,901,157	\$5,574,253	\$1,154,337	\$4,094,546
2006	\$5,123,135	\$5,375,530	\$1,037,274	\$3,842,151
2007	\$5,741,637	\$5,130,739	\$886,692	\$4,453,049
2008	\$5,480,509	\$5,839,677	\$1,630,493	\$4,093,881
2009	\$4,736,361	\$5,310,357	\$713,543	\$3,519,885
2010	\$4,598,517	\$4,492,529	\$217,889	\$3,625,873
2011	\$4,701,824	\$4,825,907	\$121,821	\$3,501,790
2012	\$4,806,069	\$4,584,139	\$177,918	\$3,723,720

for grants and public education total about \$200,000 to \$300,000 per year. These areas of expenditure have been established as a lower priority than other program responsibilities such as staff operations, dump clean-up and repair, emergency remediation, and special waste collection events.

Detailed Description of Each Waste Reduction Option

Option 1 – Maintain current approach that combines education, training, and financial incentives to encourage public and private parties to implement and expand waste reduction programs. No additional waste reduction mandates.

This option maintains the status quo with respect to state activity. It assumes that adequate waste reduction progress has occurred without government mandates and that existing trends indicate that additional improvements are likely as local planners, elected officials, and businesses make decisions to implement new or enhanced programs and projects. It maintains final decision-making authority at the local level rather than establish more state mandates.

Option 1 (as well as Options 2 and 3) can be modified to generate additional state resources to support waste reduction grant programs and/or more public education and outreach activities. An enhancement of the grant program to at least \$1,000,000 per year to add stability and support to local waste reduction programs would require an adjustment to the landfill tonnage fee that has been held at \$1 per ton since 1996 to at least \$1.30 per ton. This accounts for the diversion of 25% of new fee revenue to administrative overhead. An alternative to an increased tonnage fee could be new taxes on the sale or use of certain items which was a revenue generating approach supported by 47% of the public survey respondents. For example, a small tax on the use of plastic retailer bags would generate a huge amount of revenue. According to a variety of sources, it is estimated that about 1,000 bags are used per person per year nationwide. A tax of just one-tenth of a cent per bag would generate about \$2.8 million per year in Kansas if this could be tracked and monitored.

Option 1 can include enhanced KDHE outreach and some limited public education in areas where improvements are desired and feasible. For example, KDHE can provide training at various operator courses, at city and county conferences, and through written technical guidance documents encouraging the development of programs to improve the collection of certain waste stream components, such as food waste generated by grocery stores or large institutions.

Option 1 has no new costs. However, this and all options have the potential to raise new revenue to support the resumption of the waste reduction grant program.

Option 2 – Establish new state planning guidelines and requirements, in the form of new regulations, requiring counties to set waste reduction goals and thoroughly evaluate the feasibility of implementing enhanced waste reduction programs. Local decision-makers will continue to select new waste reduction programs based upon local needs, resources, and public opinion.

Under Option 2, no changes to existing state laws are required, but KDHE would revise and adopt new solid waste planning regulations to change what must be included as part of every five-year update to a county solid waste management plan. Counties would need to:

- Assess the current status of waste reduction practices within the county.
- Set recycling goals (quantitative or qualitative, or both)
- Evaluate the feasibility of expanding current waste reduction practices in accordance with a list of options identified by KDHE. KDHE will establish this list based upon common best management practices. Some probable ideas which will need to be considered by county planners include curbside collection programs, yard waste management programs, volume-based collection/disposal programs, food waste collection, etc.
- Develop a five-year plan for sustaining or improving waste reduction practices including a schedule for implementing any new waste reduction activities or programs

All decision-making remains at the local level under this option. The costs associated with implementing any new practices or programs will be assessed by local planners and elected officials, and funding mechanisms will be selected. Most new programs will add costs to waste management services and regardless of whether state grants are available, ongoing additional user fees are probable. For example, typical additional costs have ranged from \$2-4 per month per household for curbside collection of recyclables with similar costs for the separate curbside collection of yard waste.

Option 3 – Establish new state laws and regulations requiring counties to develop and implement updated solid waste plans that adopt new waste reduction practices. Counties could demonstrate that alternative waste reduction practices accomplish similar benefits to prescribed programs.

Option 3 assumes that significant improvements can be made in waste reduction if new requirements are established. Furthermore, this option is based upon the assumption that such improvements are necessary and worth the added costs associated with implementation of new requirements. This option requires some changes to solid waste laws and the adoption of updated solid waste planning regulations by KDHE. Two sections of law would need to be amended as follows:

K.S.A. 65-3405 – Solid Waste Planning Requirements. New provisions would be added to establish minimum statewide waste reduction practices that each county plan would need to address through the five-year update process. Counties would either need to adopt the new practices in their updated plans or propose alternative waste reduction methods for consideration by KDHE designed to achieve similar results. It may also be reasonable to include a provision

that allows counties to demonstrate that existing waste reduction practices have already accomplished major waste reduction success or that other local conditions justify receiving a variance from the minimum requirements.

K.S.A. 65-3406 – Authority to Adopt Waste Reduction Regulations. This section of law must be changed to confirm that new KDHE planning regulations can “require” that certain waste reduction practices be followed rather than “encourage” waste reduction practices whenever feasible.

Option 3 will result in higher waste management costs for many people, but that would depend on the current level of service being received and whether those services conform to the minimum standards. Implementation of new waste reduction practices would be based on the standards rather than on the results of feasibility studies and local decision-making unless demonstrations are made and approved by KDHE that alternative practices are acceptable. Local governments would be free to perform feasibility studies to fine tune program implementation or to develop their proposal to adopt alternative practices.

Proposed new requirements for incorporation into the law and the new planning regulations would be as follows:

- The status of waste reduction activities within the county should be summarized and included in each five-year plan update.
- A yard waste management plan including an implementation schedule should be developed and included in the next five year comprehensive plan update for all cities with a population of greater than 5,000 people. The specific details of this yard waste plan can vary from a complete ban on mixing yard waste with other MSW to a combination of several practices such as expanded use of mulching mowers, seasonal curbside collection, and subscription curbside collection for some generators of yard waste. Alternatively, a county plan can specify that yard waste will continue to be landfilled if the landfill has an active gas collection and reuse program; however, if this option is selected, yard waste collection must be in compostable paper bags rather than the more tradition plastic bags. This is to facilitate biodegradation of the waste and gas recovery.
- Every county must have one or more permitted or registered composting facilities for yard waste and any diverted food waste as needed to meet the needs of the entire county. The next five-year plan update should identify the need to add or expand composting services to meet needs.
- Curbside collection of recyclables must be implemented in every city with a population of greater than 5,000 people. The county plan would need to identify the need to adopt new appropriate local codes to require all trash collectors to provide this service as part of their trash service or they could establish alternate methods to provide curbside collection of recyclables from households.
- The feasibility of food waste collection from large generators must be evaluated and a plan and schedule developed to implement a collection program if warranted based upon the study. The results of the study and any implementation plan should be included in the next five-year plan update.
- Every county must have a permitted HHW facility or a satellite collection facility which is part of a regional system served by a central permitted hub facility.
- Each five-year plan update should include a waste reduction plan including a schedule of all proposed actions over the next five year period.

As with other waste reduction options, the addition of new program revenue to support the recycling and composting grant program would lessen the financial burden on local governments and individual citizens.

Chapter 5

Comparison of Waste Reduction Options and KDHE Recommendations

Introduction

The three waste reduction options described in Chapter 4 range from no changes in the existing Kansas policies and applicable requirements to a set of reasonable new laws and regulations that have the potential to stimulate an expansion of recycling and composting, especially in larger cities. Based upon the flexibility offered to local officials in how the new requirements proposed in Options 2 and 3 are implemented, it is impossible to estimate the costs of implementation or to quantitatively estimate expected benefits, such as increased tons recycled or composted. However, it is possible to examine costs and benefits in a qualitative way along with some rough estimates of the likely effect on the overall recycling activity.

Each option is examined below in this qualitative way followed by KDHE's recommended option and the basis for the recommendation. As discussed in Chapter 4, each option could potentially include the resumption of the grant program if new solid waste program revenue is established. This review of comparative costs and benefits does not consider the effects of a new and significant grant program; however, it is noteworthy that Option 1 would benefit most from the financial incentive provided by grants since it depends solely on voluntary action. Option 2 would benefit more than Option 3 if new grants became available because under that approach local officials must still choose to implement new or enhanced programs following required studies. Option 3 would require that certain minimum standards be satisfied.

Option 1 – Maintain current approach that combines education, training, and financial incentives to encourage public and private parties to implement and expand waste reduction programs. No additional waste reduction mandates.

Trend data clearly shows that Kansans have steadily reduced the amount of waste disposed and increased the amount recovered for recycling and composting over two decades. Based upon those trends and known new waste reduction projects being implemented voluntarily in several cities and counties, further improvements are expected without any new laws or regulations. The effects of the new single stream collection implemented in Topeka/Shawnee County in 2013 are not yet known nor are the enhanced curbside collection programs in Johnson County. Additional significant programs are being voluntarily implemented in Wyandotte County, Douglas County/Lawrence, and on several college and university campuses.

The increase in new voluntary waste reduction projects is likely to continue along the historical trend lines for at least the next few years. This trend has yielded an increase in the statewide recycling rate by about 2% per year. Thus, it is reasonable to assume that the Kansas MSW recycling rate should approach and surpass the national average of 34 or 35% within one or two years without new mandates. In addition, the MSW disposal rate has decreased by about 3% per year for the past six years. If this trend continues, we should see the per capita disposal rate drop to less than 4 pounds per person per day within the next few years from a high of about 5.6 pounds per person per day.

No changes in state waste reduction requirements would occur under Option 1. KDHE would continue to provide technical training, planning guidance, and some public education and

outreach. KDHE would also maintain a small “Green Schools” grant program for waste reduction projects in K-12 schools and in accordance with the public survey recommendations, KDHE would implement a new recognition/award program to encourage local public and private program maintenance and growth.

Under Option 1, local governments may adopt new codes, ordinances, and regulations, to implement enhanced program activities. Any new or expanded waste reduction projects would be funded by local governments using general tax revenue or more probably by user fees paid by the public and participating businesses. KDHE will continue to support local decision-making to implement expanded waste reduction services in accordance with the new provisions of law adopted by the passage of HB 2249.

Long-term, more cities and counties will continue to implement new waste reduction programs as they learn from their neighbors and as citizens request improvements in local recycling services. At some point, the improving trend will level off and the statewide recycling rate will hold, probably at about 40 to 45%.

The biggest question regarding Option 1 relates to improvements in yard waste diversion and composting. Even though no surveys have ever been conducted, it is believed that a large majority of Kansas households do not routinely collect their yard waste except perhaps during special spring or fall clean-up times. Grass clippings and leaves are mostly mulched and left on lawns. For those households that do collect yard waste, KDHE estimates that between 30 and 40% is currently diverted from landfills to composting operations (see Chapter 2 for more discussion of statewide composting). This rate is similar to, or perhaps even higher than, the overall recycling rate because much of the collected yard waste is by commercial lawn mowers who choose the lower disposal costs (or free) drop off at composting facilities compared to landfills.

Under Option 1, voluntary composting will continue to grow, but probably slower than overall recycling. This could change significantly if some large cities or counties choose to implement yard waste disposal restrictions or if the comparative costs of disposal and composting trend more in favor of composting. The “free market” could shift more yard waste toward the lower disposal cost of composting, especially with respect to commercial operations.

Overall residential or business waste management costs will be unaffected by any state directives under Option 1. However, local governments may adopt new requirements that will add costs for household and business waste disposal and recycling services.

Option 2 – Establish new state planning guidelines and requirements, in the form of new regulations, requiring counties to set waste reduction goals and thoroughly evaluate the feasibility of implementing enhanced waste reduction programs. Local decision-makers will continue to select new waste reduction programs based upon local needs, resources, and public opinion.

The new requirements added under Option 2 relate to the performance of planning activities and the preparation of five-year solid waste management plan updates that are already required by state law. Counties will need to assess waste reduction status, set goals, perform feasibility studies related to certain practices identified by KDHE, and develop waste reduction plans based upon established goals and studies. Final decisions regarding the implementation of new or expanded programs will remain at the local level. Therefore, the minimum cost to adopt Option 2 would be the cost of the studies that must accompany the five year planning updates. The required studies could be performed by in-house staff if qualified, but in most cases, counties would likely hire consultants to do this work. The cost of this work would probably range from \$10,000 to \$50,000 per county plan. If new or expanded programs are subsequently implemented by local officials, such programs would have associated costs that are likely to be passed on to users of waste management services.

If local goals are set and required feasibility studies are performed, it is likely that more waste reduction projects will be implemented, even if implementation is voluntary. The additional growth in recycling as compared to what would occur under Option 1 is uncertain. It is reasonable to assume that recycling rates will grow somewhat faster immediately following the completion of studies and level off at a couple to a few percentage points higher than if no studies were performed. If we assume that Option 2 will ultimately result in recycling rate that is 2 to 3% higher than under Option 1, a benefit can be estimated, but the cost to achieve the benefit cannot. Each percent of MSW recycled reduces landfill disposal in all of Kansas by about 32,000 tons, so this improvement would divert an additional 64,000 to 96,000 tons from landfills each year. The cost for the planning-related studies would likely be about \$2,000,000 overall; however, additional costs resulting from local actions could be much higher.

The feasibility studies required by these new rules would be performed every five years, but not until the next five-year plan update is required. Since counties are on different five-year update schedules, all counties would not complete this review until a full five years passes from the time the new regulations are adopted.

Option 3 – Establish new state laws and regulations requiring counties to develop and implement updated solid waste plans that adopt new waste reduction practices. Counties could demonstrate that alternative waste reduction practices accomplish similar benefits to prescribed programs.

Option 3 establishes several new requirements associated with solid waste planning as well as requirements to implement new waste reduction practices in certain situations. For example, cities with a population of 5,000 or more must implement new programs to reduce the disposal of yard waste or to facilitate its biodegradation in landfills, and provide curbside collection of recyclables from households. In addition, every county must have an HHW facility for citizen use, at least one community composting facility, and carry out an evaluation of the need for food waste collection from large generators.

Waste reduction will increase under option 3 but the amount of reduction will vary from county to county depending upon programs that are already in place. For example, little improvement may be likely in locations such as Johnson County, Shawnee County, El Dorado, and Lawrence where major programs already exist or are planned; however, significant improvement is possible in Wichita/Sedgwick County where there is less curbside collection of recyclables. Statewide, KDHE believes that Option 3 would accelerate the growth in the recycling rate because the standards would immediately apply to all cities above 5,000. Even with some allowed time to phase in new programs, the growth in the recycling rate should exceed any improvements based upon voluntary programs only and it should yield an end result that peaks above voluntary rates by at least 5%. This means it would be likely for the long-term recycling rate under Option 3 to reach at least 45%.

The cost to implement Option 3 would vary by county since some counties have programs in-place that would satisfy the minimum standards and others do not. Counties would still need to carry out feasibility studies as part of the five-year plan updates, but under this option they would be required to implement new waste reduction programs rather than choose what they implement based upon local preferences and needs. Most counties would pass the cost of waste reduction program implementation on to waste generators, which in most cases would be residential homeowners. As previously reviewed in Chapter 4, typical costs to implement curbside collection programs for recyclables would be about \$3 per month per home. Similarly, separate curbside collection of yard waste would add to the total waste management cost for homeowners.

KDHE Recommendation

Based upon all factors including available landfill capacity, voluntary trends in waste reduction, public opinion, stakeholder opinion, costs of program start-up or expansion, and anticipated environmental benefits, KDHE recommends that Option 1 be selected as the pathway forward, at least through 2015 which is when the state solid waste plan will be updated.

Kansas continues to make significant voluntary progress and all indicators are that this progress will continue without new state laws or regulations. The Kansas recycling rate should be equal to or better than the national average within the next few years. Additionally, the per capita disposal rate continues to decrease based upon more recycling and other source reduction efforts such as increased lawn mulching.

Collected yard waste diversion from landfills into composting operations also continues to grow without new state requirements because of growing public awareness, lower disposal costs, and local government decisions to require separate disposal. Despite this growth in composting, there is legitimate debate about whether yard waste diversion is necessary when landfills have active landfill gas recovery systems. KDHE intends to establish an awareness campaign that encourages yard waste disposal to be in paper biodegradable sacks when the waste is landfilled to facilitate degradation of the waste and the earlier stabilization of landfills.

KDHE will continue to encourage counties to consider new waste reduction projects which can be voluntarily evaluated as part of the five-year solid waste plan update procedures. All waste reduction decision-making will remain with locally elected officials, solid waste planners, private businesses and citizens. Given this freedom to choose, whether individually or at the local government level, Kansans have demonstrated that they will adopt practices to reduce waste, recycle waste, and conserve natural resources when it is practical.

This recommended approach is consistent with the 2010 State Solid Waste Management Plan. During the scheduled preparation of a plan update in 2015, KDHE will re-evaluate these three options to decide whether the new plan should include recommendations to adopt more rigorous waste reduction practices.

State Financial Assistance for Waste Reduction

Little state financial assistance can be provided to stimulate improvements in local waste reduction projects and programs based upon existing revenue. If funds were available to offer grants for new programs some increases in recycling may occur and some struggling programs that are in danger of failure may be sustained. However, at the present time, improving trends do not seem dependent on state grants. Consequently, no increased funding is recommended strictly to support waste reduction grant programs.

This recommendation related to funding for waste reduction grants does not fully address all solid waste program funding needs. This issue will continue to be addressed more fully in the annual required report to the Legislature on all solid waste program activities and the adequacy of fund revenue to meet all needs. It is probable that current funding level based primarily on the \$1 per ton landfill fee that has been constant since 1996 will need to be adjusted within the next few years or another revenue source will need to be established.

Appendix A

KDHE Waste Composition Study - 2012

Municipal Solid Waste Composition in Kansas
2012

Material	% of Municipal Solid Waste
Newspaper	2.61%
Office Paper	2.81%
Corrugated Paper	8.36%
Magazines	2.41%
Other Paper	17.13%
Total Paper Fibers	33.31%
PET #1	2.80%
HDPE #2	1.44%
Other Plastics	14.17%
Total Plastics	18.41%
Tin	2.40%
Aluminum	1.32%
Other Metals	0.67%
Total Metals	4.39%
Glass	3.31%
Other Glass	0.53%
Total Glass	3.84%
Diapers	5.83%
Food	16.74%
Textiles/Rubber/Leather	5.45%
Wood	0.81%
Yard Waste	7.04%
E-Waste	0.17%
Household Hazardous Waste	0.57%
Non-Distinct	2.95%
Medical Waste (weighed but not sorted)	0.50%
TOTAL	100.00%

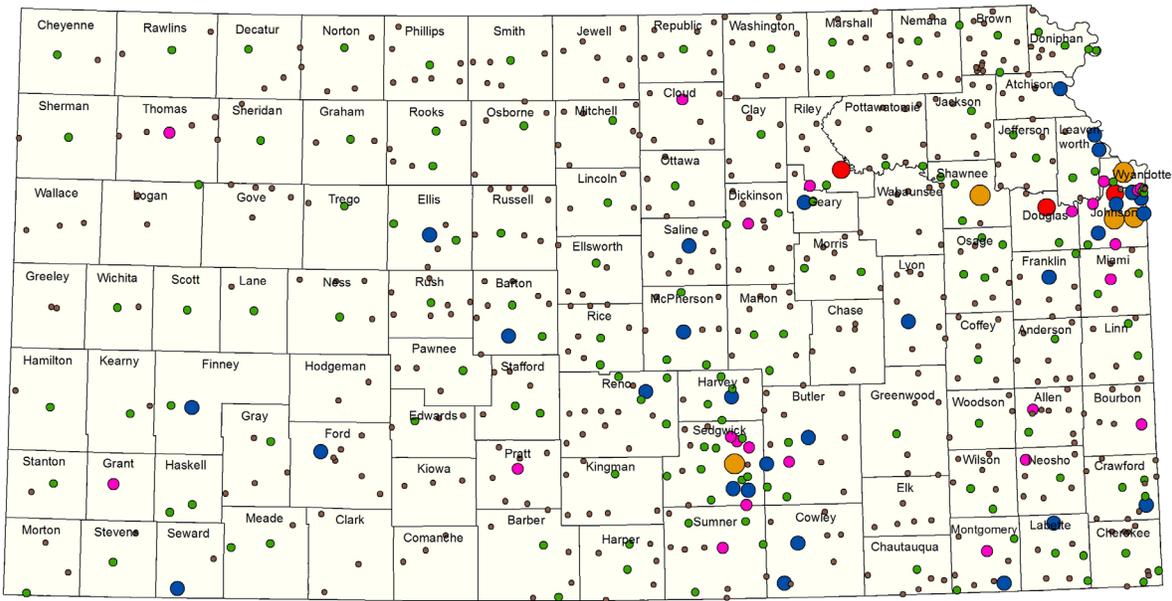
Source:

KDHE sampling effort and study performed by Engineering Solutions and Design, Inc. at five MSW landfills in September 2011

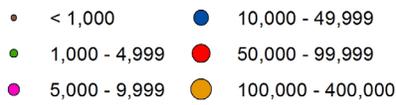
Appendix B

Kansas Population Data

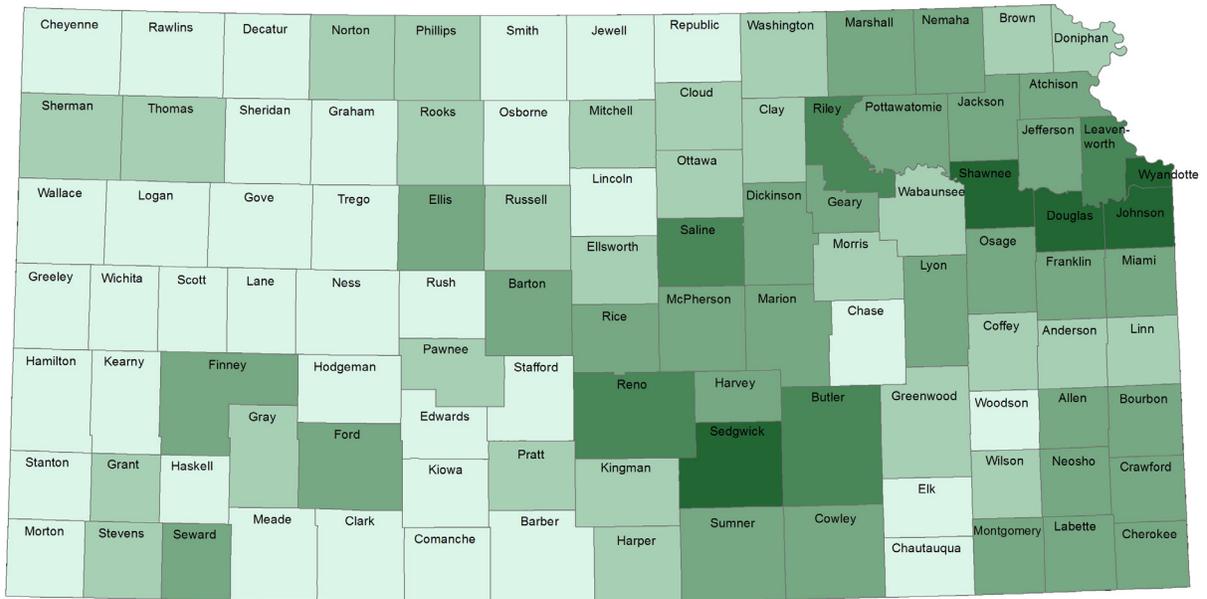
Population of Cities in Kansas



Population in 2010



Population of Counties in Kansas



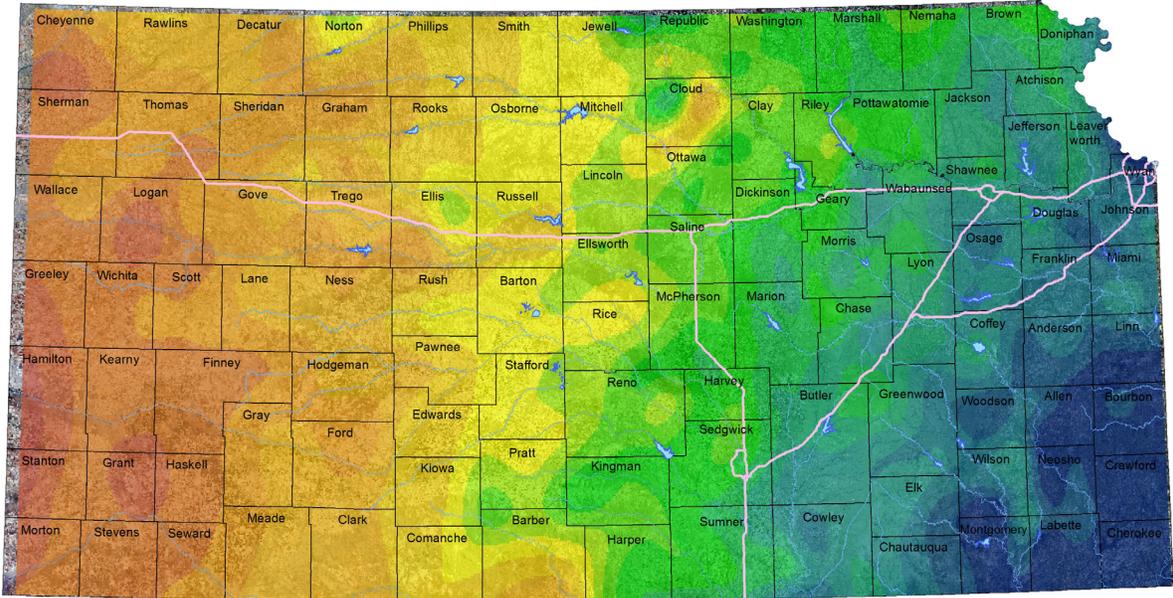
Population in 2010



Appendix C

Kansas Precipitation Data

Kansas Annual Precipitation



Average Annual Precipitation 1981 - 2010



Appendix D

Public Survey Results

KDHE Survey Results: The Adequacy of Waste Reduction Practices in Kansas

The Kansas Legislature passed House Bill 2249 in 2013 requiring the Kansas Department of Health and Environment (KDHE) to perform a study that assesses the adequacy of solid waste reduction practices in Kansas and to report those findings to the Legislature in January 2014. In performing this study, KDHE was directed to seek input from a variety of parties including any person or organization that generates solid waste and uses disposal and/or recycling services. Since everyone generates solid waste, KDHE invited all Kansans to complete a survey during the summer of 2013 which was designed to assess public opinion regarding a wide variety of waste disposal and recycling issues. A total of 616 people completed the survey.

The raw results of the survey are presented in this report. Survey results are presently being analyzed in combination with other stakeholder feedback obtained by KDHE through meetings and written communications. Public and stakeholder input is being combined with actual waste management data in preparing the required report for the Legislature. When that report is delivered to the Legislature, it will also be made available online to interested persons.

It is noteworthy that existing state law establishes several broad solid waste management policies that relate to waste reduction including actions ***“to encourage the wise use of resources through development of strategies that reduce, reuse, and recycle materials.”*** In accordance with this direction and other statutory provisions, KDHE has for the past 20 years encouraged and assisted local governments and private businesses in the implementation and operation of waste reduction programs. Significant progress has been made over this period to increase waste diversion from landfills and nearly one third of all municipal solid waste, or more than one million tons, was recycled or beneficially used in 2011. These efforts conserve valuable natural resources and limited landfill space.

KDHE thanks everyone who completed this survey. The information received will help the department and the Legislature gain a better understanding of public opinion on these important issues and develop public policy that is responsive to the needs and preferences of Kansans.

Bill Bider, Director
Bureau of Waste Management

Adequacy of SW Reduction Practices

Comprehensive Report – Bureau of Waste Management Survey

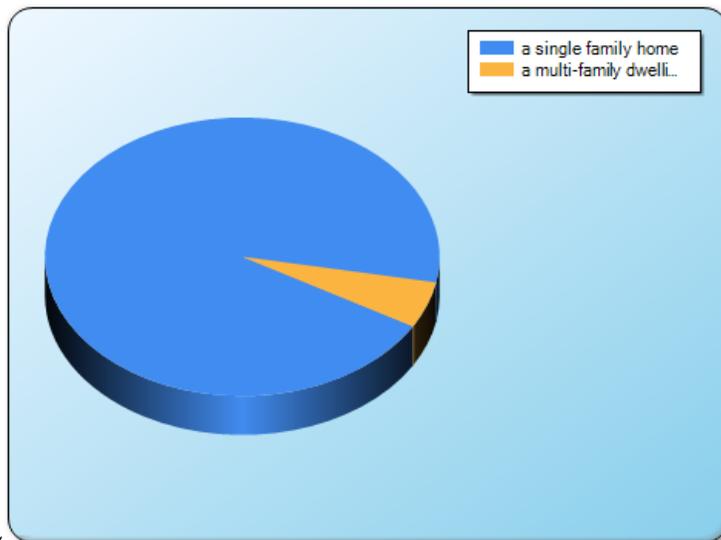
9/23/2013

I live in . . .

- a single family home
- a multi-family dwelling

(Respondents could only choose a **single** response)

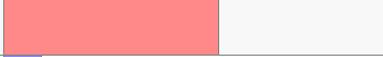
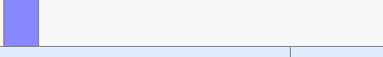
Response	Chart	Frequency	Count
a single family home		94.6%	580
a multi-family dwelling		5.4%	33
Not Answered			3
		Valid Responses	613
		Total Responses	616



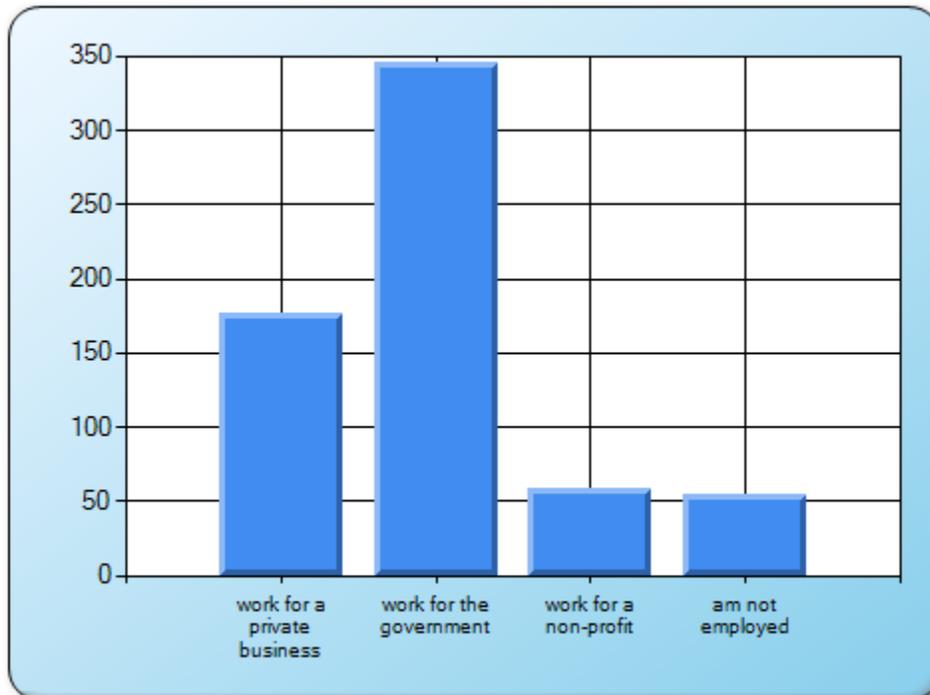
I presently . . . (check all that apply)

- work for a private business
- work for the government
- work for a non-profit
- am not employed

(Respondents were allowed to choose **multiple** responses)

Response	Chart	Frequency	Count
work for a private business		28.6%	176
work for the government		56.0%	345
work for a non-profit		9.6%	59
am not employed		8.8%	54
		Valid Responses	616
		Total Responses	616

(Respondents were allowed to choose **multiple** responses)



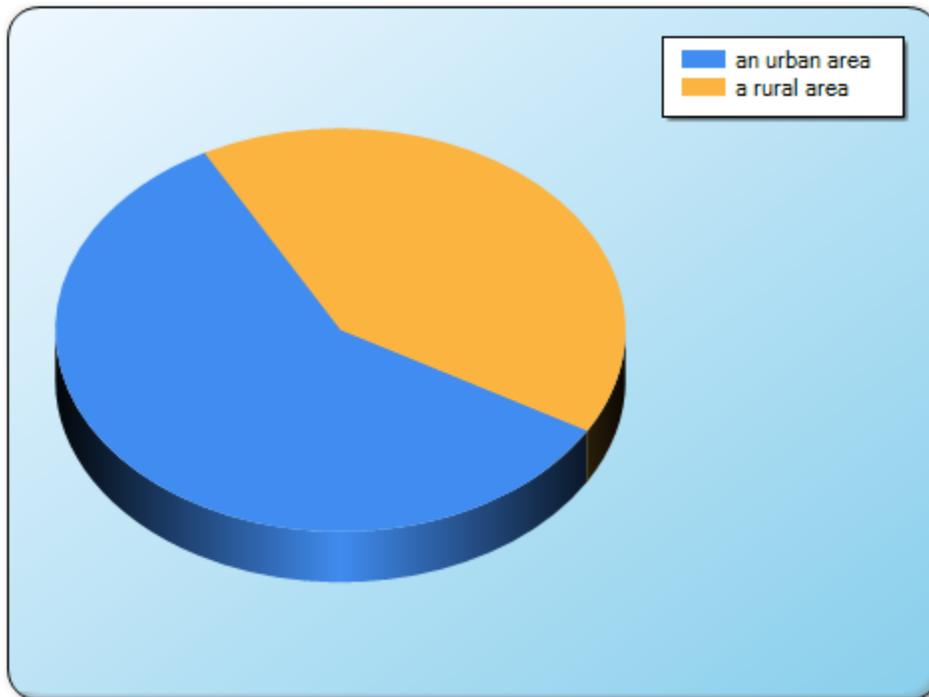
The community I live in is . . .

- an urban area
- a rural area

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
an urban area		58.8%	359
a rural area		41.2%	252
Not Answered			5
		Valid Responses	611
		Total Responses	616

(Respondents could only choose a **single** response)



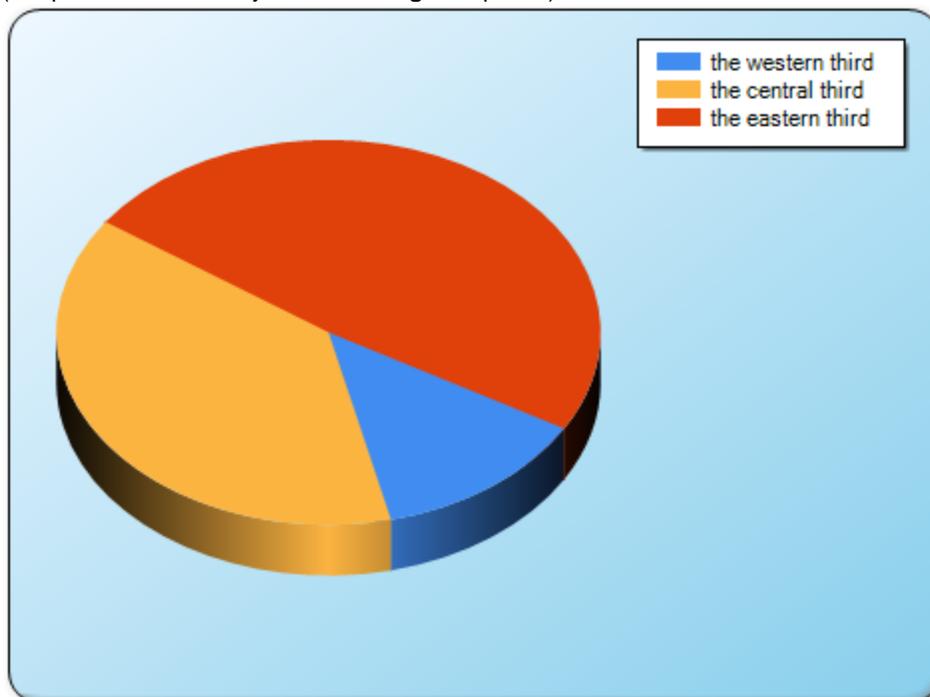
Which area of Kansas do you live in?

- the western third
- the central third
- the eastern third

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
the western third		13.0%	79
the central third		38.4%	234
the eastern third		48.6%	296
Not Answered			7
		Valid Responses	609
		Total Responses	616

(Respondents could only choose a **single** response)



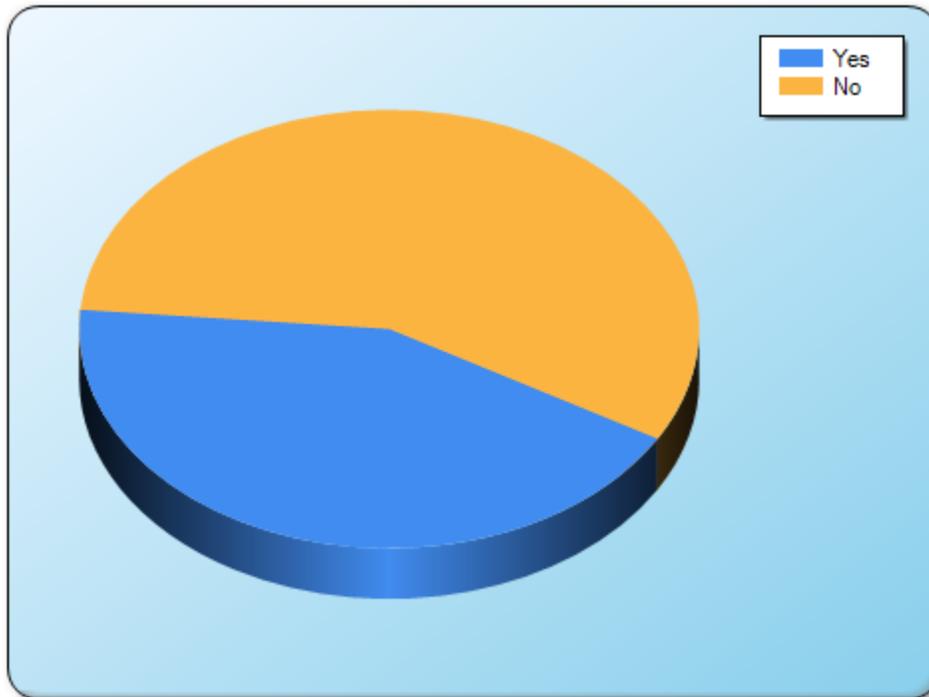
Does your job have waste management responsibilities?

- Yes
- No

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Yes		43.1%	261
No		56.9%	345
Not Answered			10
		Valid Responses	606
		Total Responses	616

(Respondents could only choose a **single** response)





If your job has waste management responsibilities, what kind do you have? (check all that apply)

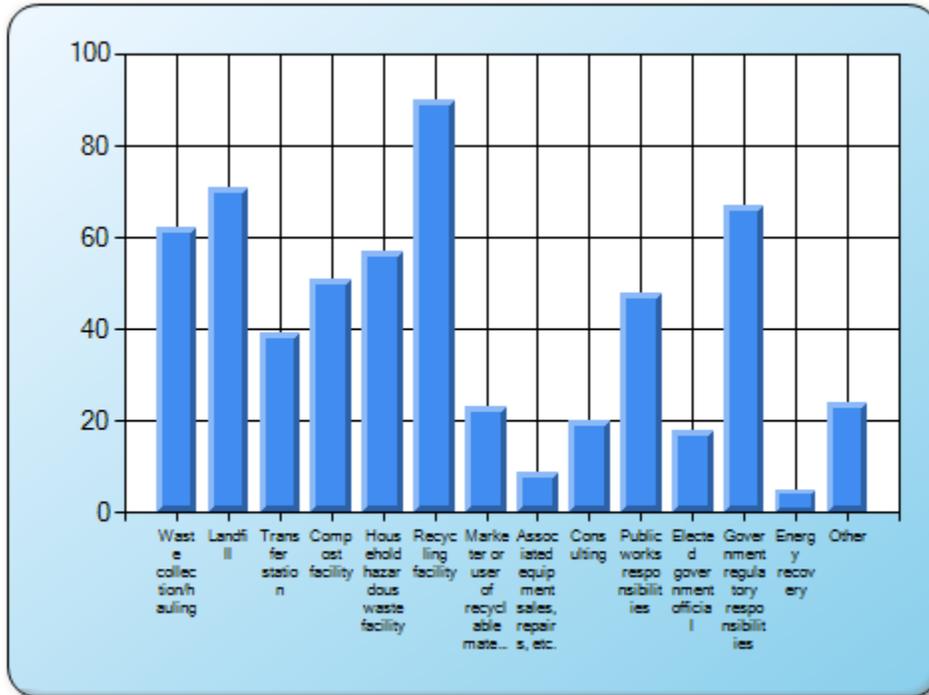
- Waste collection/hauling
- Landfill
- Transfer station
- Compost facility
- Household hazardous waste facility
- Recycling facility
- Marketer or user of recyclable material
- Associated equipment sales, repairs, etc.
- Consulting
- Public works responsibilities
- Elected government official
- Government regulatory responsibilities
- Energy recovery
- Other _____

(Respondents were allowed to choose **multiple** responses)

Response	Chart	Frequency	Count
Waste collection/hauling		22.2%	62
Landfill		25.4%	71
Transfer station		14.0%	39
Compost facility		18.3%	51
Household hazardous waste facility		20.4%	57
Recycling facility		32.3%	90
Marketer or user of recyclable material		8.2%	23
Associated equipment sales, repairs, etc.		3.2%	9
Consulting		7.2%	20
Public works responsibilities		17.2%	48
Elected government official		6.5%	18
Government regulatory responsibilities		24.0%	67
Energy recovery		1.8%	5
Other		8.6%	24
		Valid Responses	279
		Total Responses	279

(cont'd) If your job has waste management responsibilities, what kind do you have? (check all that apply)

(Respondents were allowed to choose **multiple** responses)



Other responses

WW sludge disposal/reuse
recycle computers and electronics
Solid Waste Planning
planning/coordination
Retired Volunteer for Recycling
retired
medical waste disposal management
Waste reduction, pollution prevention
Medical
volunteer at recycling facility
On the board that reviews the Solid Waste 1 and 5 year plans
government administration
County Environmentalist
Onsite recycling, composting
County Commissioner



Shred and Re-cycle Documents and Cardboard
Landfill Gas
Coordinate City Services with City wide contract for waste, recycling, yard waste
Annual Reporting Requirements
Educating the Public and liason between private haulers
Private Company, Generator
Waste reduction education
Administering city solid waste program

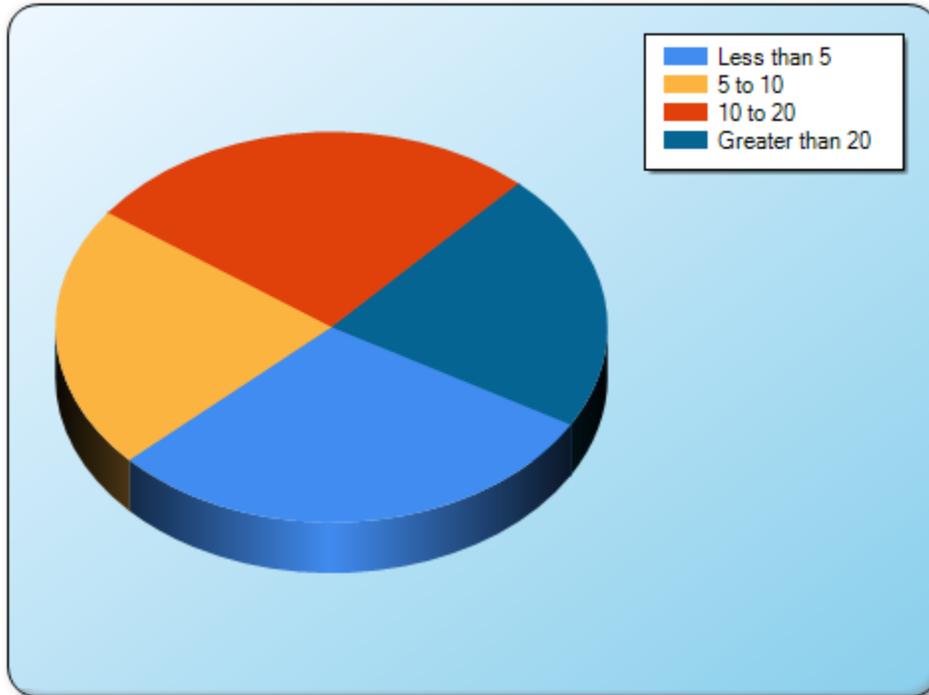
How many years have you worked in the waste management field?

- Less than 5
- 5 to 10
- 10 to 20
- Greater than 20

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Less than 5		29.8%	72
5 to 10		21.9%	53
10 to 20		26.9%	65
Greater than 20		21.5%	52
Not Answered			37
		Valid Responses	242
		Total Responses	279

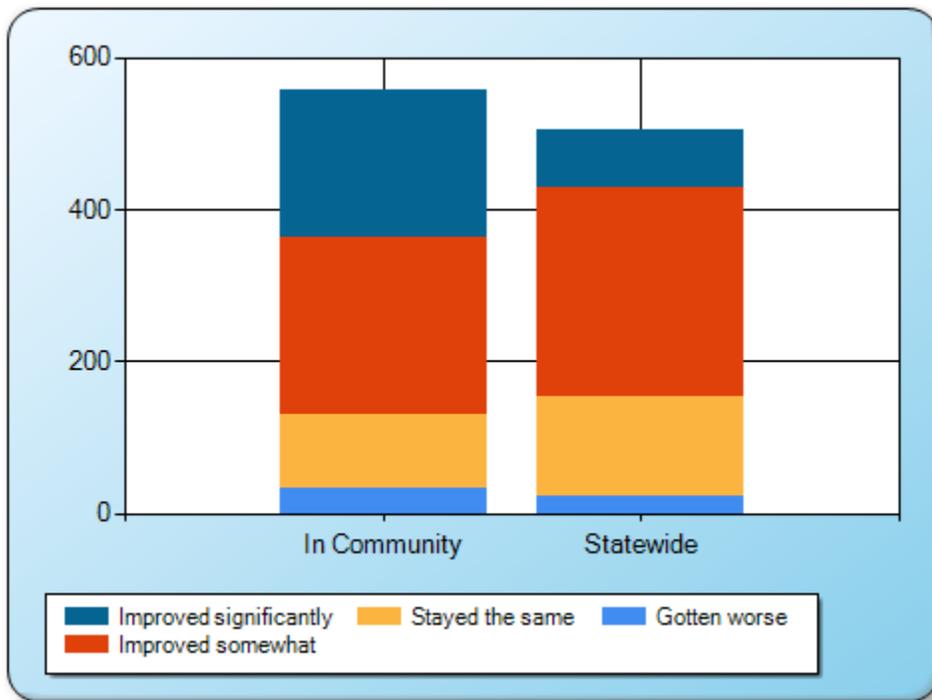
(Respondents could only choose a **single** response)





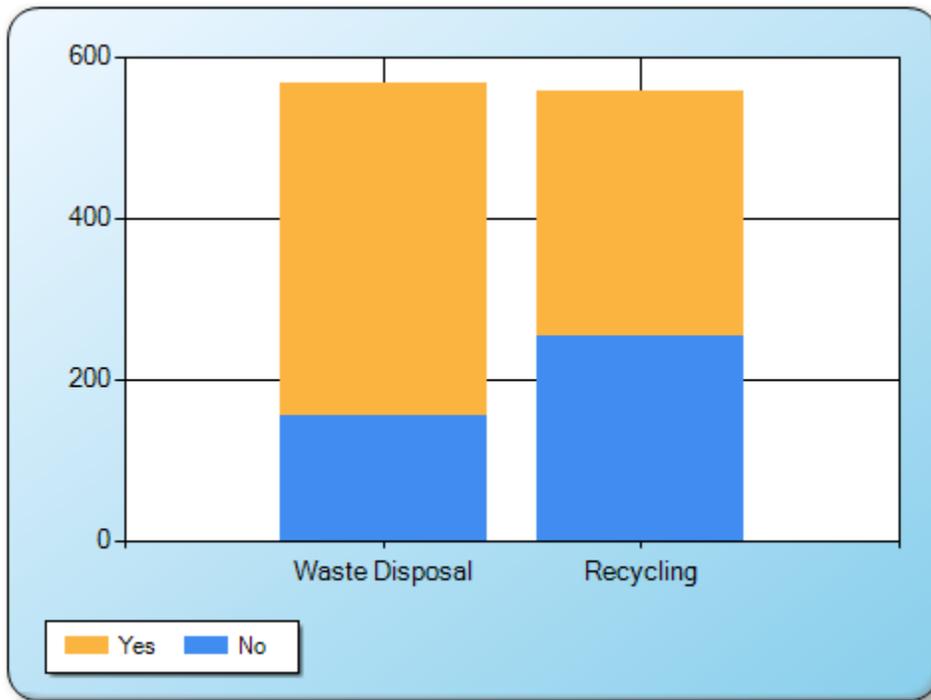
Waste management practices and available services have changed significantly in most of Kansas over the past 10 years. In your opinion, which of the following best describes the overall changes that have occurred in your community and statewide? (select one for each)

	Improved significantly	Improved somewhat	Stayed the same	Gotten worse
In Community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Statewide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Are you satisfied with the waste disposal and recycling services offered in your community?

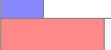
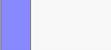
	Yes	No
Waste Disposal	<input type="radio"/>	<input type="radio"/>
Recycling	<input type="radio"/>	<input type="radio"/>

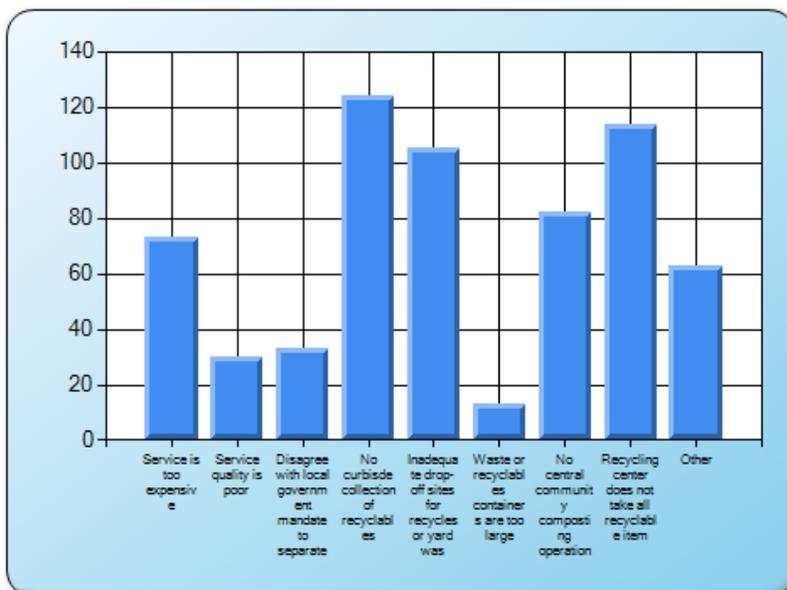


If you said you were dissatisfied with recycling services offered in your community, tell us why.

- Service is too expensive
- Service quality is poor
- Disagree with local government mandate to separate collection of recyclables or yard waste
- No curbside collection of recyclables
- Inadequate drop-off sites for recyclables or yard waste
- Waste or recyclables containers are too large
- No central community composting operation
- Recycling center does not take all recyclable items
- Other _____

(Respondents were allowed to choose **multiple** responses)

Response	Chart	Frequency	Count
Service is too expensive		12.8%	73
Service quality is poor		5.2%	30
Disagree with local government mandate to separate collection of recyclables or yard waste		5.8%	33
No curbside collection of recyclables		21.7%	124
Inadequate drop-off sites for recyclables or yard waste		18.4%	105
Waste or recyclables containers are too large		2.3%	13
No central community composting operation		14.3%	82
Recycling center does not take all recyclable items		19.9%	114
Other		11.0%	63
		Valid Responses	572
		Total Responses	572





(cont'd) If you said you were dissatisfied with recycling services offered in your community, tell us why.

Other responses

Not enough funding to implement an expanded program
Limited number of recycle bins available
No community-wide curbside recycling program
need more waste reduction and recycling facilities
County refuses to expand recycling
no recycling whatsoever offered
what we have is good but it needs to be a rule rather than an option
Increased cost and decreased freedom
Not enough recyclable operators.
None offered
recycling center not easily accessible- distance and time
city has no programs to encourage recycling
Need more participation
some recycling bins were removed while others stayed. Now what do i do with the recycled items... throw away?
We have to pay to recycle. Everyone should have to pay NOT to recycle.
City of Gardner does not have full drop off site
should have curbside yard debris option
City allows multiple residential recycling haulers
Attitudes of staff
How does China do it?
needs to be mandatory
My husband and I rent a townhome where trash service is included. I'd love it if property managers were required to provide recycling services.
Recycle service picks up only every other week instead of weekly
recycling containers too small
Waste containers are very large and picked up each week; recycling containers smaller and picked up bi-weekly (would like this to be reversed). Or, to only pay for what you throw away.
The County offices do not even try to recycle and, therefore, set a very poor example.
no firm government policies to direct recycling
No recycling available in apartment



needs to be mandatory and easier
must pay extra to recycle
Need to mandate for retailers to provide adequate recycle containers (Pop cans/bottles)
does not exist in our community
When you have 20 trucks going up and down your neighborhood EVERY DAY that is a waste of resources and makes it MORE expensive. CONSOLIDATE!
Bins provided at community site are too small - have to put items in one at a time.
City has not provided any kind of list of what can or cannot be recycled
no recycling in Jefferson County
not user friendly
Now I recycle 4free-charged soon
Lack of get out the message benefit messages
to complicated, to expensive to get rid of materials at recycling center
Doesn't pick up batteries, etc. to my knowledge. Maybe could pick those up once a month or something?
community does not recycle
No businesses collection
need curbside collection of glass
a mandate was approved by Johnson County where no yardwaste was to be deposited in the Deffenbaugh Landfill yet Deffenbaugh continues to deposit yardwaste in the landfill thus creating an unfair competitive advantage.
This should be voluntary, not mandated
Length of time recycling collection trailer available is too short
No curbside Glass recycling
People don't have the option to participate or not. Our last KS city has it as an option and we paid to participate as a choice. Or current city mandates it and it is not an option. Individual. Should be able to make their own decision about recycling.
state assistance to dispose of tires has gone away
no recycling available
extremely fragmented system; needs to be overseen by the government; too many haulers; poor information about what services are available; need recycling once a week
pay for curbside recycling, get points by weight, not many desirable items to redeem points for
need state wide Recycling incentives
There is no recycling option here
curbside recycling is NOT mandated
Government cooked data to benefit industry by telling public in JC that 11% of what went in the dump was yard debris... when in fact the national average for yard debris was 1 1/2 to 3% . JC



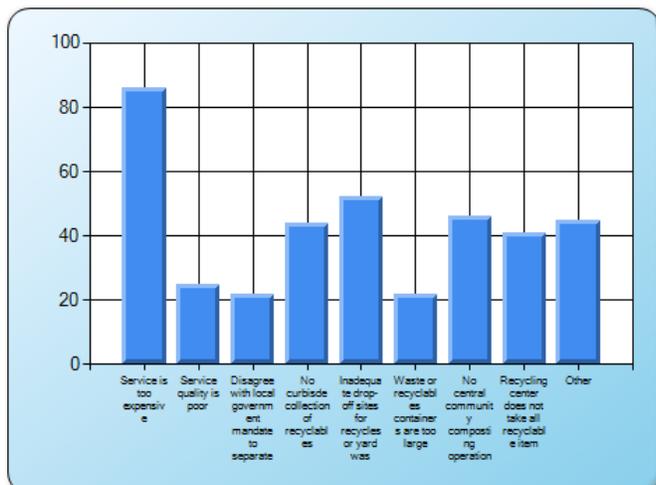
skued numbers by taking Construction debris" out of final number
too many trash companies in our small neighborhood
Limited recycling available
Need curbside pickup of organic waste. Also, need greater participation from commercial and institutional partners
No city recycling service, only private (Manhattan, KS)
We have Good service - but recycling needs bagged
Local Gov't. Mandating us paying for recycling whether we want it or not is a form of "Totalitarianism". Gov't. has not constitutional right to dictate to us on such matters.

If you said you were dissatisfied with the waste disposal services offered in your community, tell us why. (select all that apply)

- Service is too expensive
- Service quality is poor
- Disagree with local government mandate to separate collection of recyclables or yard waste
- No curbside collection of recyclables
- Inadequate drop-off sites for recyclables or yard waste
- Waste or recyclables containers are too large
- No central community composting operation
- Recycling center does not take all recyclable items
- Other _____

(Respondents were allowed to choose **multiple** responses)

Response	Chart	Frequency	Count
Service is too expensive		15.0%	86
Service quality is poor		4.4%	25
Disagree with local government mandate to separate collection of recyclables or yard waste		3.8%	22
No curbside collection of recyclables		7.7%	44
Inadequate drop-off sites for recyclables or yard waste		9.1%	52
Waste or recyclables containers are too large		3.8%	22
No central community composting operation		8.0%	46
Recycling center does not take all recyclable items		7.2%	41
Other		7.9%	45
		Valid Responses	572
		Total Responses	572





(cont'd) If you said you were dissatisfied with the waste disposal services offered in your community, tell us why. (select all that apply)

Other responses

The small town I am from, the city handles this instead of private carriers, works much better, more cost effective.
Have to remove bags from can which invites stray and wild animals.
I think we can do more with waht we have
no pick up of yard waste
not enough people participate
Increased cost and decreased freedom.
Rules for waste disposal are constrictive
No separate collection of yard waste or other organics
I'd rather have a citywide hauler to reduce overhead costs and number of trucks on the streets
Wichita needs to franchise haulers
Rural residents have to drive to the landfill
every other week/smaller container option unavailable
City allows multiple residential waste haulers
only need pickup every other week
How does China do it?
needs to be mandatory
Large bins seem to encourage more solid waste.
no provided trash containers at all, and the ones you purchase that are expensive they destroy
Need to mandate for retailers to provide adequate recycle containers (Pop cans/bottles)
Many people overload containers and are charged the same as those who waste and throw out very little
When you have 20 trucks going up and down your neighborhood EVERY DAY that is a waste of resources and makes it MORE expensive. CONSOLIDATE!
Landfill is expensive for private customers.
Too many trucks (different companies) serving same areas; no incentive to reduce waste by recycling
Too much burnable trash is hauled
prices are inconsistent throughout the city
< 15 lbs shouldn't need big cart
communtiy does not recycle



it's too easy to landfill our trash
if the rule doesn't apply to Deffenbaugh then why was this mandate passed to begin with?? it was sold as a promise to extend the life of their landfill not to stifle competition.
Government needs to get out of private business
state assistance to dispose of tires has gone away
no available recycling in entire county
People are allowed to burn trash on property.
People are allowed to burn trash on property.
proposing mandating franchising solid waste haulers
curbside recycling is NOT mandated
too many companies in our small neighborhood
recycling should be prioritized over disposal.
The alleys and easements are an absolute mess.
Yard waste needs to be composted
Businesses should be able to compost food waste.
no food compost pick-up
good service
Local gov't. demanding our residential waste be put in huge paper bags and other items such as kitchen waste go in other bags is "dictating" to the public, is way too expensive, and not needed based on landfill facts etc. in Johnson County. It's screwy.
Provider will not pickup yard waste in winter months

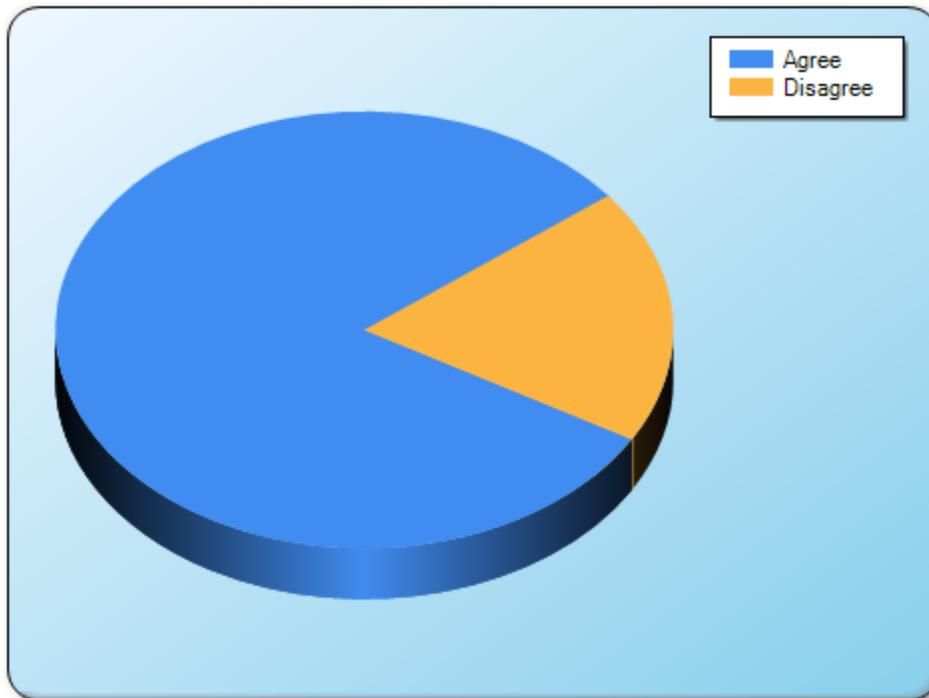
The existing delegation of waste reduction decisions to county solid waste planning committees and local government officials should be maintained.

- Agree Disagree

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Agree		81.1%	443
Disagree		18.9%	103
Not Answered			15
		Valid Responses	546
		Total Responses	561

(Respondents could only choose a **single** response)





You disagreed that existing delegation of waste reduction decisions to county solid waste planning committees and local government officials should be maintained. Select one or more of the following potential roles of state government.

- Set statewide quantitative waste reduction or recycling rate goals which local governments must achieve through local planning, goal setting, and program implementation.
- Establish landfill disposal bans for yard waste or other recyclables.
- Require all county solid waste plans to include certain waste reduction services such as separate collection of recyclables, community composting, household hazardous waste (HHW) collection. etc.
- Adopt a beverage container deposit law.
- Adopt an extended producer responsibility law that requires select businesses to contribute resources to state and local recycling programs based upon the nature of consumers product sold (for example, electronics, carpeting, paint, etc.).
- Work with local solid waste planning committees to develop local or regional recycling goals based upon needs and available resources.
- Other _____

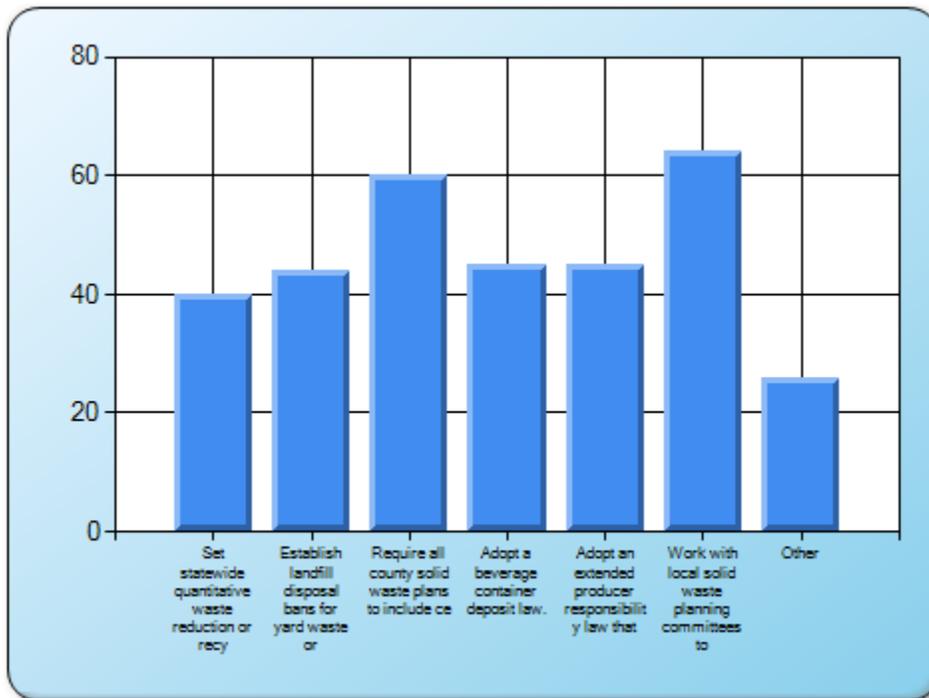
(Respondents were allowed to choose **multiple** responses)

Response	Chart	Frequency	Count
Set statewide quantitative waste reduction or recycling rate goals which local governments must achieve through local planning, goal setting, and program implementation.		35.4%	40
Establish landfill disposal bans for yard waste or other recyclables.		38.9%	44
Require all county solid waste plans to include certain waste reduction services such as separate collection of recyclables, community composting, household hazardous waste (HHW) collection. etc.		53.1%	60
Adopt a beverage container deposit law.		39.8%	45
Adopt an extended producer responsibility law that requires select businesses to contribute resources to state and local recycling programs based upon the nature of consumers product sold (for example, electronics, carpeting, paint, etc.).		39.8%	45
Work with local solid waste planning committees to develop local or regional recycling goals based upon needs and available resources.		56.6%	64
Other		23.0%	26
		Valid Responses	113
		Total Responses	113

(cont'd) You disagreed that existing delegation of waste reduction decisions to county solid waste planning committees and local government officials should be maintained. Select one or more of the following potential roles of state government.

- Set statewide quantitative waste reduction or recycling rate goals which local governments must achieve through local planning, goal setting, and program implementation.
- Establish landfill disposal bans for yard waste or other recyclables.
- Require all county solid waste plans to include certain waste reduction services such as separate collection of recyclables, community composting, household hazardous waste (HHW) collection. etc.
- Adopt a beverage container deposit law.
- Adopt an extended producer responsibility law that requires select businesses to contribute resources to state and local recycling programs based upon the nature of consumers product sold (for example, electronics, carpeting, paint, etc.).
- Work with local solid waste planning committees to develop local or regional recycling goals based upon needs and available resources.
- Other _____

(Respondents were allowed to choose **multiple** responses)



Other Responses

Develop Recycling resources
Federal & State government mandates make it too expensive for Local governments
Unsure
Ensure plans are provided to the general public.
relax regulation on burning
encourage development of businesses or products that utilize recyclables in order create market



and reduce surplus recyclables stockpiles
Enforce regulations and permits aggressively
make mixed recycling available for free
must be mandatory
Open more recycle centers
incentivize local counties to establish compost centers
Adequately fund regional efforts.
Oversight only
Allow registered recyclers to reclaim demolition debris from C/D landfills (lumber in particular).
Don't think that local governments should be made to meet certain goals. Too expensive for many small cities and counties in western Kansas to implement these programs.
State needs to quit mandating things without funding them
make tire recycling mandatory
encourage the development of privately owned composting operations
Allow for beverage deposits but don't make it mandatory. Each business can decide what they want to do.
Ban plastic bags from landfills
County wide service rather than by individual household; oversight of how counties use trash companies as revenue sources
stop making new laws
so glad you are thinking about these issues!! this is very needed
Keep Brownback out of it!
Support Waste Recycling/Composting Education
Waste disposal pick-up is a business and should be governed by the law of supply & demand. Get government out of our lives.

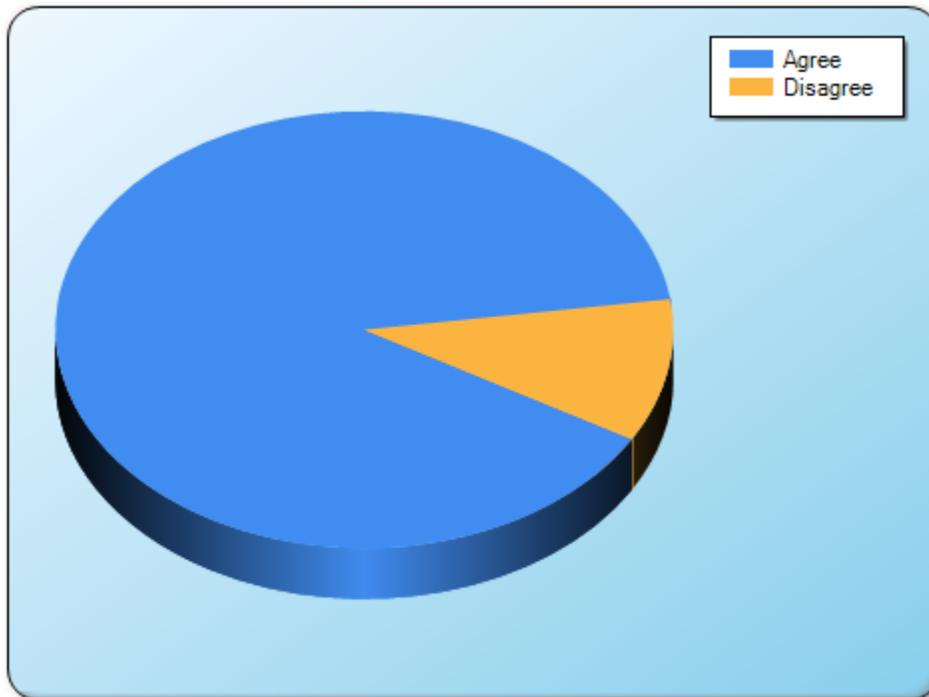
The state should play an active and ongoing role in providing education and outreach to the public that encourages participation in waste reduction practices such as recycling, composting, and other source reduction lifestyle behaviors.

- Agree
- Disagree

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Agree		89.4%	473
Disagree		10.6%	56
Not Answered			5
		Valid Responses	529
		Total Responses	534

(Respondents could only choose a **single** response)



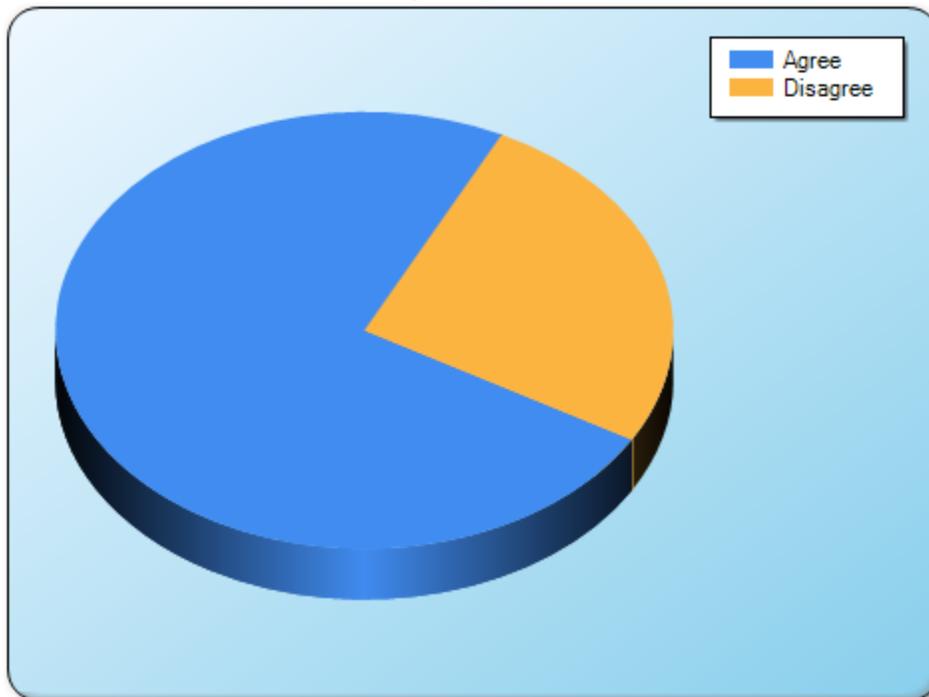
The state should combine public education and outreach with financial incentives in the form of grants to stimulate the voluntary development or expansion of waste reduction programs rather than establish statewide mandates related to waste reduction practices.

- Agree
- Disagree

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Agree		74.0%	387
Disagree		26.0%	136
Not Answered			11
		Valid Responses	523
		Total Responses	534

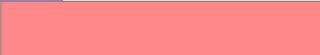
(Respondents could only choose a **single** response)



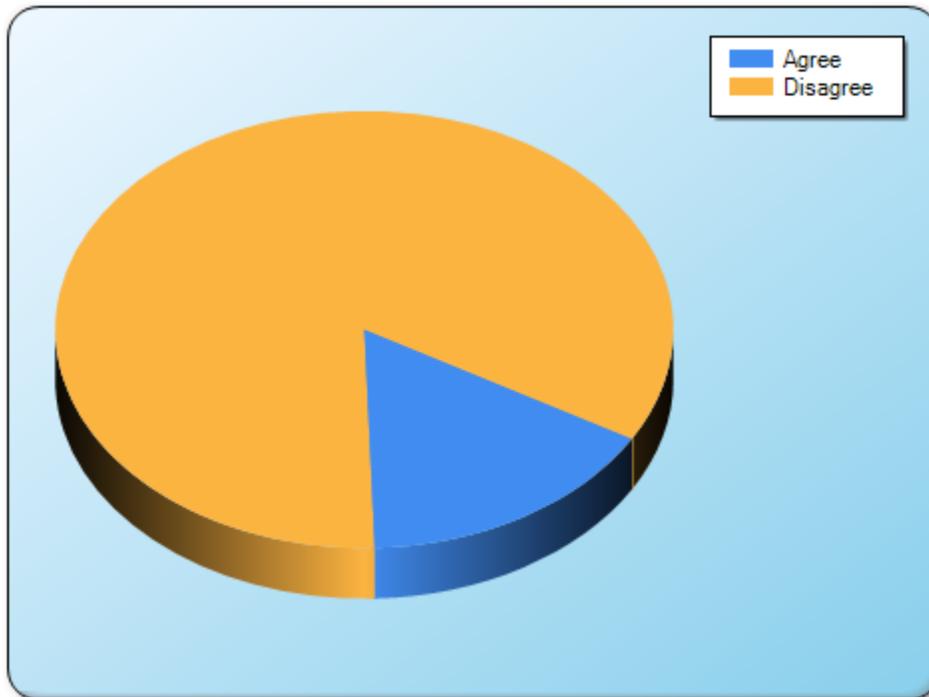
Most of Kansas has enough landfill capacity to last many years; therefore, no statewide waste reduction rules are needed.

- Agree
- Disagree

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Agree		16.1%	84
Disagree		83.9%	437
Not Answered			13
		Valid Responses	521
		Total Responses	534

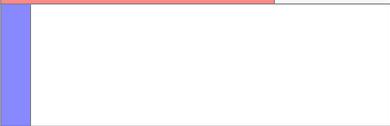
(Respondents could only choose a **single** response)



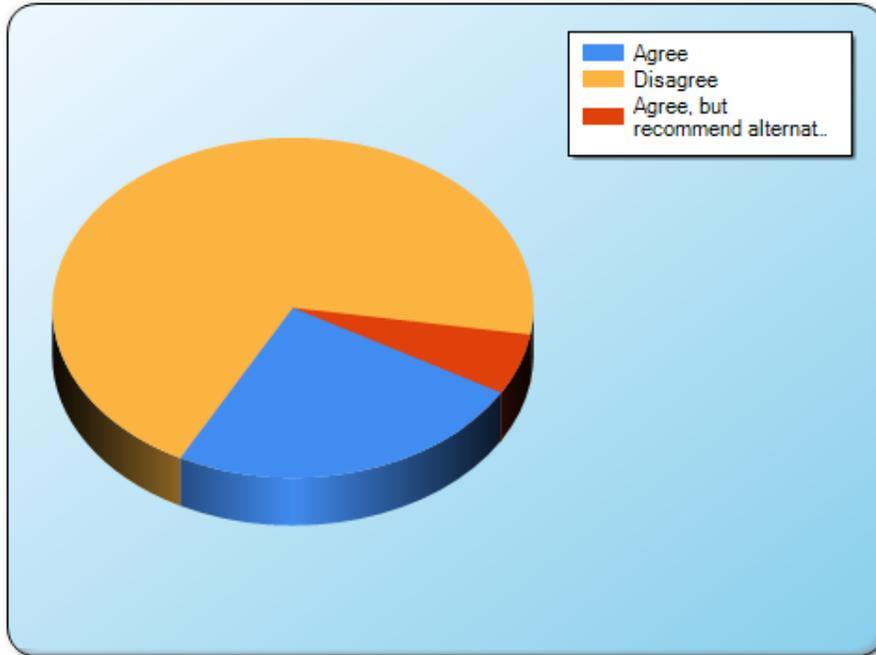
If a county can demonstrate adequate landfill capacity (25 years or more) based upon current disposal rates into the landfill they are using, the county should be exempt from any state-directed waste reduction requirements.

- Agree
- Disagree
- Agree, but recommend alternate number of years capacity (enter number of years)

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Agree		24.4%	126
Disagree		69.8%	360
Agree, but recommend alternate number of years capacity (enter number of years)		5.8%	30
Not Answered			18
		Valid Responses	516
		Total Responses	534

(Respondents could only choose a **single** response)





(cont'd) If a county can demonstrate adequate landfill capacity (25 years or more) based upon current disposal rates into the landfill they are using, the county should be exempt from any state-directed waste reduction requirements.

Agreed, but recommended alternate number of years capacity

20
5
15
Why put any years on it?
100
50
10 or less
20
50
50
50
40
50
50
10
50
50+?
30
Vague question.
50
20 years
30 or more
10 or more
20
20
30
10-15
50
50
50

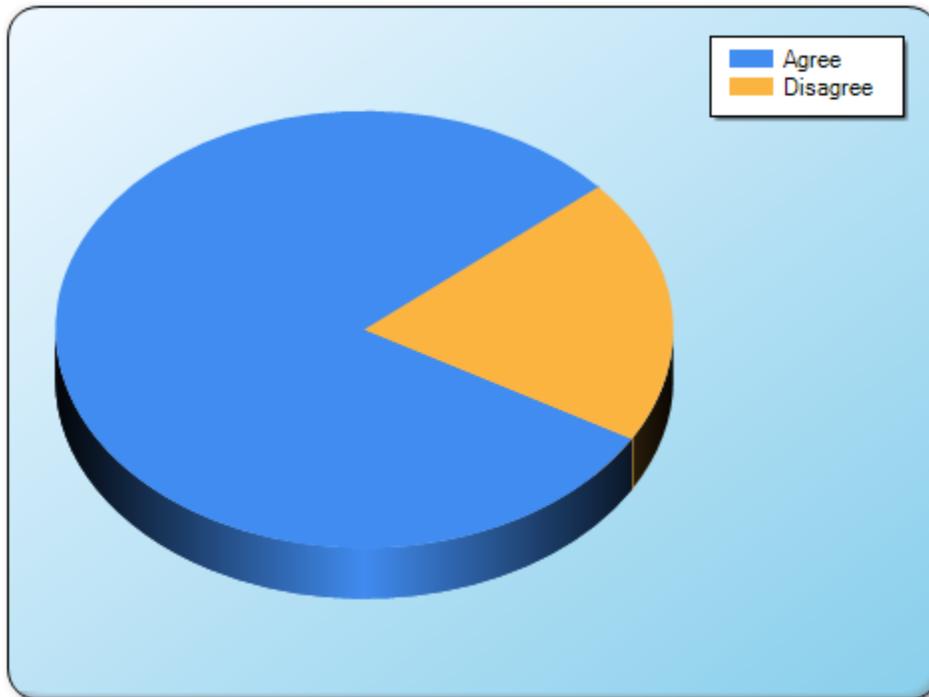
Overall, the state should seek to identify and establish other incentives to reduce waste such as community recognition and awards.

- Agree
- Disagree

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Agree		80.3%	417
Disagree		19.7%	102
Not Answered			15
		Valid Responses	519
		Total Responses	534

(Respondents could only choose a **single** response)



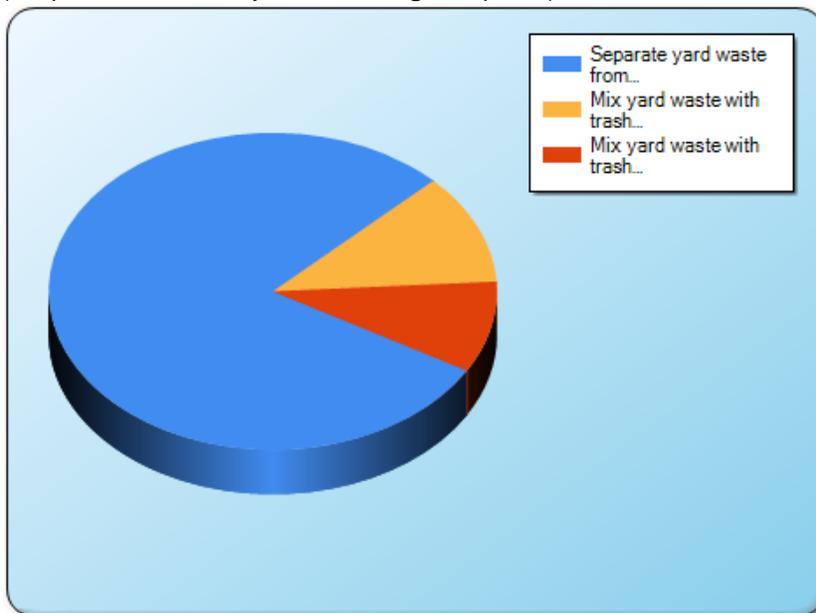
The best way to manage yard waste is to:

- Separate yard waste from other trash for composting
- Mix yard waste with trash when the landfill has a landfill gas recovery system because yard waste, if buried quickly, produces usable landfill gas when it decomposes
- Mix yard waste with trash in all cases to avoid the costs and environmental impacts of separate collection and handling

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Separate yard waste from other trash for composting		79.4%	400
Mix yard waste with trash when the landfill has a landfill gas recovery system because yard waste, if buried quickly, produces usable landfill gas when it decomposes		11.3%	57
Mix yard waste with trash in all cases to avoid the costs and environmental impacts of separate collection and handling		9.3%	47
Not Answered			17
		Valid Responses	504
		Total Responses	521

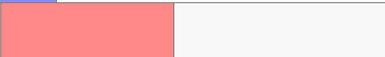
(Respondents could only choose a **single** response)



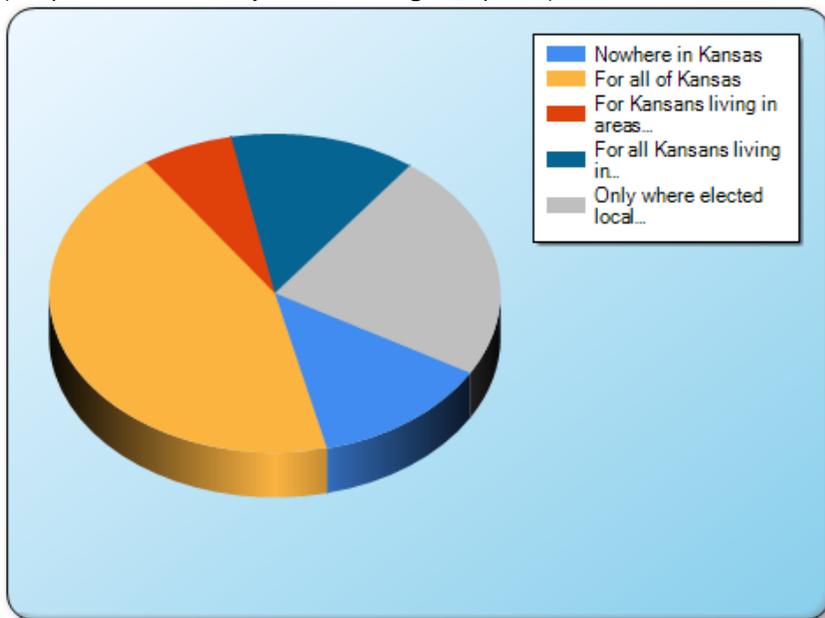
Yard waste separation for composting should be required:

- Nowhere in Kansas
- For all of Kansas
- For Kansans living in areas of high precipitation (east of the 25-inch per year line)
- For all Kansans living in cities with populations of greater than 5,000
- Only where elected local government officials establish disposal restrictions

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Nowhere in Kansas		12.9%	65
For all of Kansas		44.0%	221
For Kansans living in areas of high precipitation (east of the 25-inch per year line)		6.6%	33
For all Kansans living in cities with populations of greater than 5,000		13.3%	67
Only where elected local government officials establish disposal restrictions		23.1%	116
Not Answered			19
		Valid Responses	502
		Total Responses	521

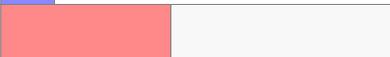
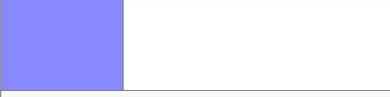
(Respondents could only choose a **single** response)



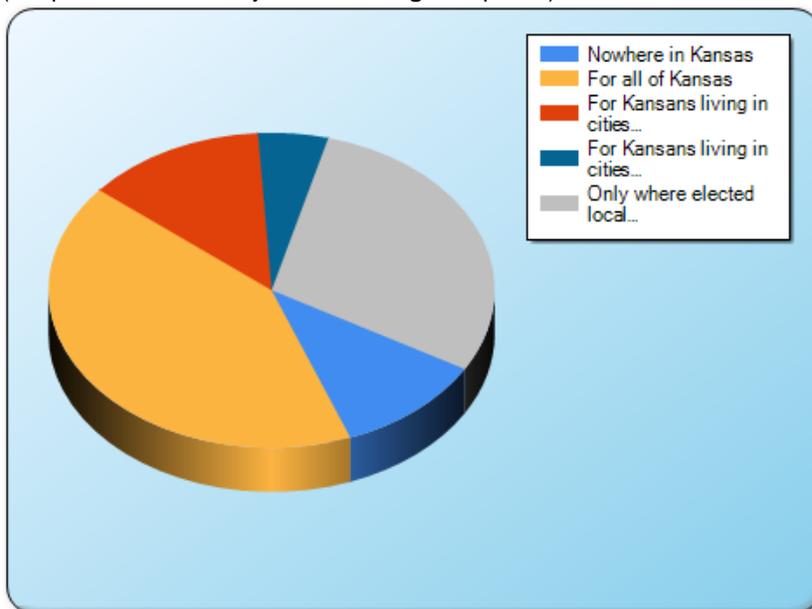
Curbside collection of recyclables should be required:

- Nowhere in Kansas
- For all of Kansas
- For Kansans living in cities with a population greater than 10,000
- For Kansans living in cities with a population greater than 25,000
- Only where elected local government officials establish such a requirement

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Nowhere in Kansas		10.9%	56
For all of Kansas		41.7%	214
For Kansans living in cities with a population greater than 10,000		13.1%	67
For Kansans living in cities with a population greater than 25,000		5.1%	26
Only where elected local government officials establish such a requirement		29.2%	150
Not Answered			8
		Valid Responses	513
		Total Responses	521

(Respondents could only choose a **single** response)



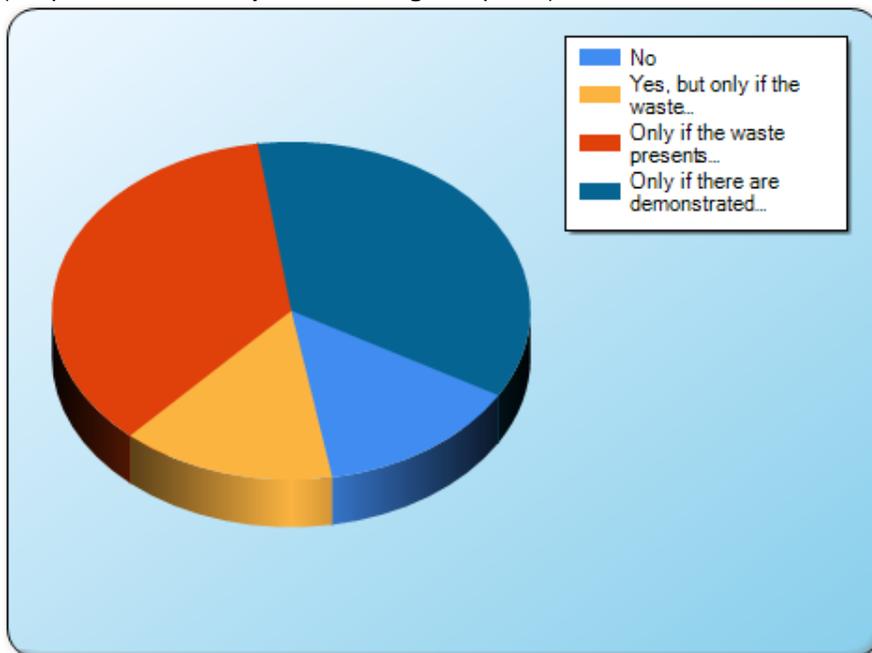
Should the State of Kansas establish a landfill disposal ban on electronic waste?

- No
- Yes, but only if the waste is generated by businesses, institutions, or government
- Only if the waste presents a clear environmental threat when disposed in an MSW landfill
- Only if there are demonstrated recycling markets for the material

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
No		13.9%	70
Yes, but only if the waste is generated by businesses, institutions, or government		14.5%	73
Only if the waste presents a clear environmental threat when disposed in an MSW landfill		36.0%	181
Only if there are demonstrated recycling markets for the material		35.6%	179
Not Answered			18
		Valid Responses	503
		Total Responses	521

(Respondents could only choose a **single** response)



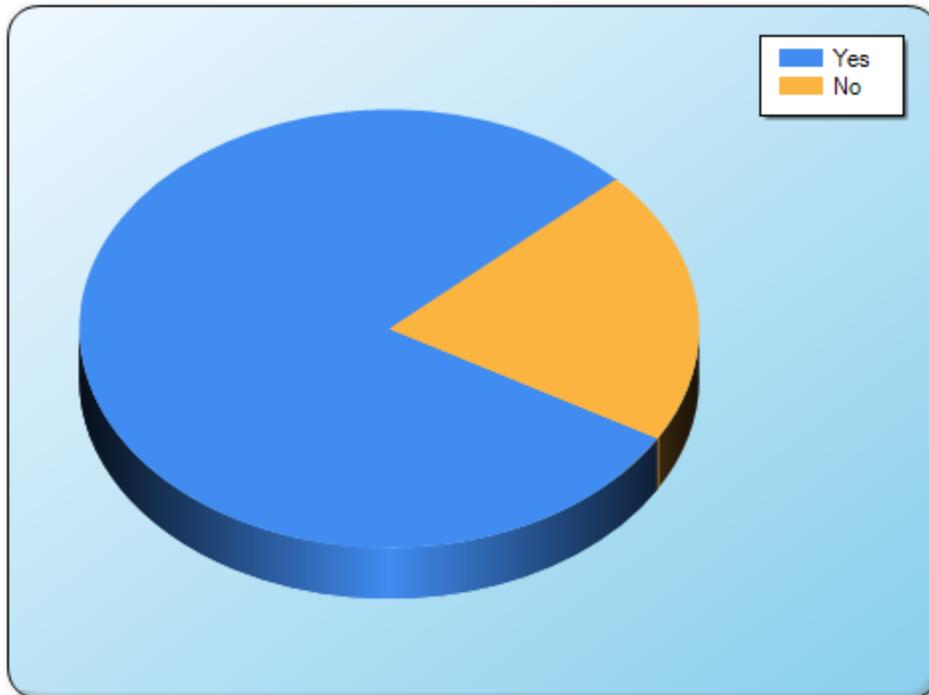
Should every Kansas county be required to operate a household hazardous waste collection center for citizen and small business use in order to keep dangerous materials out of our landfills?

- Yes
- No

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Yes		79.7%	409
No		20.3%	104
Not Answered			8
		Valid Responses	513
		Total Responses	521

(Respondents could only choose a **single** response)



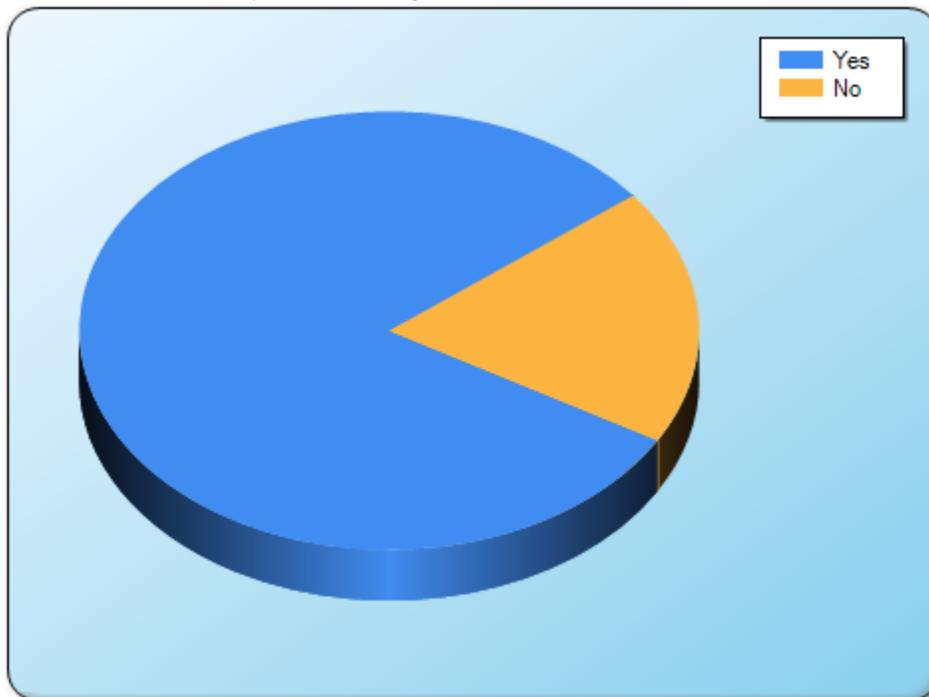
If every Kansas county were required to operate a household hazardous waste collection center as you indicated in the previous question, should the state provide financial support for facility construction, improvement, and operations?

- Yes
- No

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Yes		81.1%	330
No		18.9%	77
Not Answered			13
		Valid Responses	407
		Total Responses	420

(Respondents could only choose a **single** response)



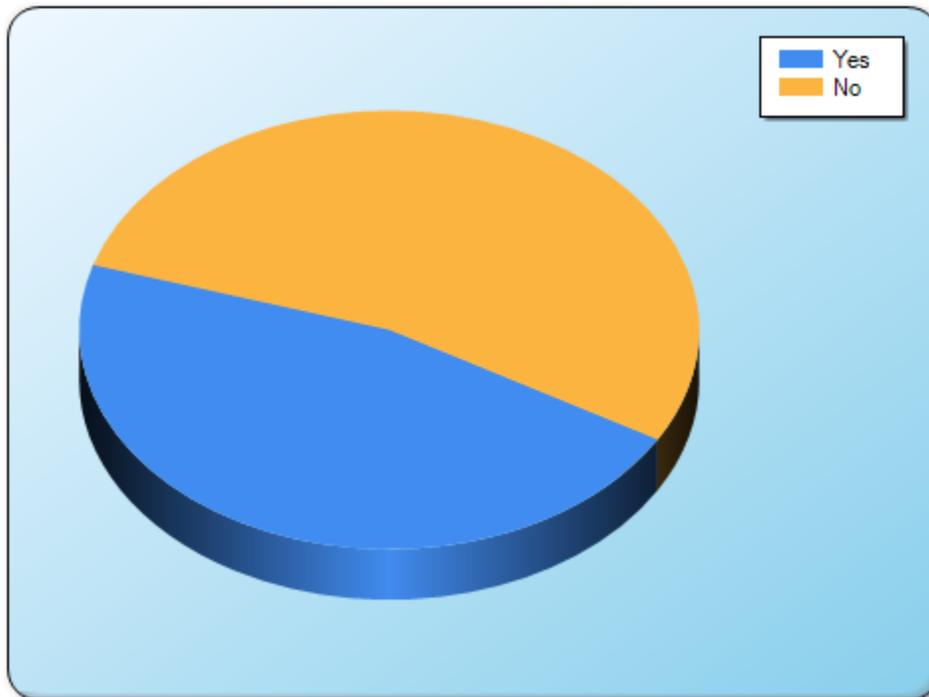
Should the State of Kansas establish one or more waste taxes to fund a grant program to support waste reduction?

- Yes
- No

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Yes		46.5%	236
No		53.5%	272
Not Answered			13
		Valid Responses	508
		Total Responses	521

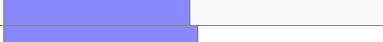
(Respondents could only choose a **single** response)



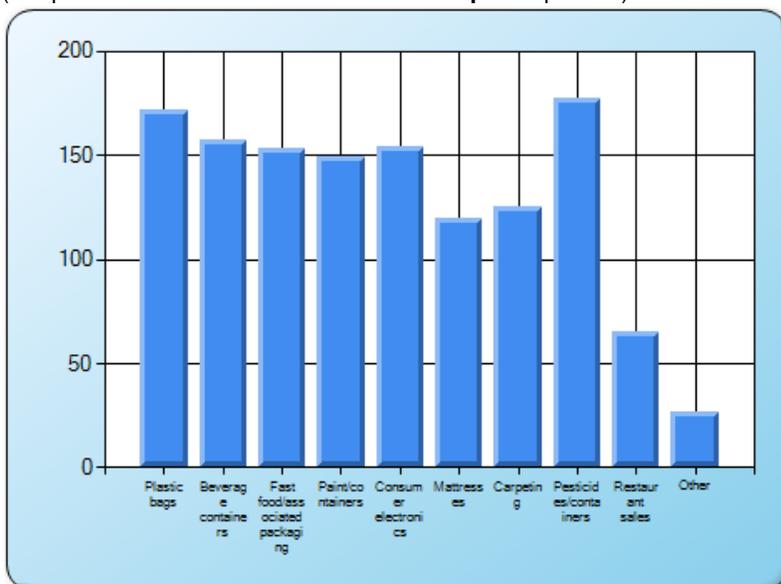
You indicated the State of Kansas should establish one or more waste taxes to fund a grant program to support waste reduction. Select all items that should be subject to a new excise tax for the purpose of funding a grant program supporting waste reduction.

- Plastic bags
- Beverage containers
- Fast food/associated packaging
- Paint/containers
- Consumer electronics
- Mattresses
- Carpeting
- Pesticides/containers
- Restaurant sales
- Other _____

(Respondents were allowed to choose **multiple** responses)

Response	Chart	Frequency	Count
Plastic bags		69.6%	172
Beverage containers		63.6%	157
Fast food/associated packaging		61.9%	153
Paint/containers		60.3%	149
Consumer electronics		62.3%	154
Mattresses		48.6%	120
Carpeting		50.6%	125
Pesticides/containers		71.7%	177
Restaurant sales		26.3%	65
Other		10.9%	27
		Valid Responses	247
		Total Responses	247

(Respondents were allowed to choose **multiple** responses)





You indicated the State of Kansas should establish one or more waste taxes to fund a grant program to support waste reduction. Select all items that should be subject to a new excise tax for the purpose of funding a grant program supporting waste reduction.

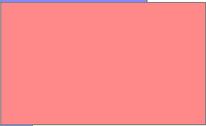
Other responses

Disposable wipes
Tires
Increase State Tipping Fee
Tires
not in favor of an excise tax
All of the above to share cost
Bars / ABC Package Stores
Grocery Market sales of tin cans
Construction waste
Styrofoam
tax on disposable cups
none
tires
Any item sold that could end up in a landfill
automotive fluids
Lawn fertilizers
we don't need any more taxation
Any household hazardous waste
tires and automotive wastes
Bottle bill
Tires
Plastic grain storage containment systems
exempt items that when proof of recycling is available.
Manufacturing Industry
All plastics
increased tipping fee at transfer stations and landfills
Styrofoam

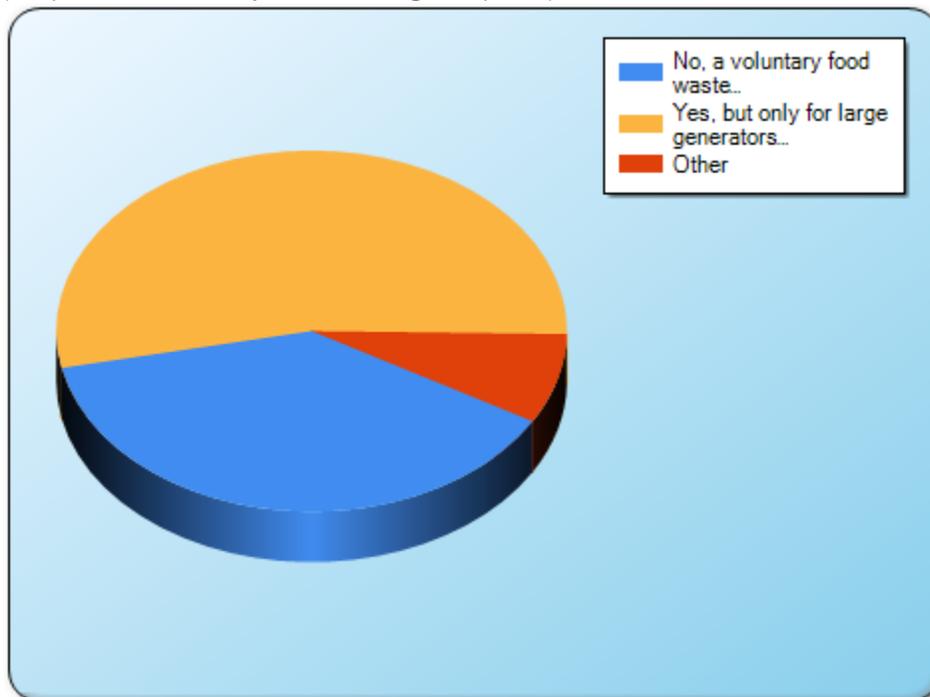
Should the State of Kansas develop new rules requiring the diversion of food waste from landfills to composting or energy recovery projects?

- No, a voluntary food waste recovery program is adequate
- Yes, but only for large generators of food waste such as grocery stores or institutions
- Other _____

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
No, a voluntary food waste recovery program is adequate		38.4%	195
Yes, but only for large generators of food waste such as grocery stores or institutions		53.5%	272
Other		8.1%	41
Not Answered			9
		Valid Responses	508
		Total Responses	517

(Respondents could only choose a **single** response)





(cont'd) Should the State of Kansas develop new rules requiring the diversion of food waste from landfills to composting or energy recovery projects?

Other responses

To expensive for rural counties
yes
not sure
Unsure
unknown
yes, for all
Make public aware of problem
no opinion
Not in landfills where gas recovery is ongoing
Yes - for all
This is a idiot idea.
Mandatory for large generators; voluntary for the public
Yes, but only at large landfills
YES, for all of Kansas
Yes - period
Yes, for large generators, such as restaurants, grocery stores, and institutions
Educate the public on the benefits of composting food waste.
restaurants, grocery stores, schools, hospitals
Yes for all large food waste generators including restaurants, grocery stores, etc.
Yes, for everyone
Yes, everyone should be composting.
all should take part in improving our state
in larger cities, everyone
Yes, for large generators including grocery stores, institutions, schools, hospitals, etc.
try education & incentives 1st
Clearly not a yes/no question
it might solve one problem and cause another because of insects and animals and rats
Yes! For everything!
Yes.
I would like to answer just yes, no caveat.



Yes, for Grocery Stores, Institutions and Restaurants
Yes
Most sewage treatment facilities have the capacity to handle food waste. Why not require sink food disposals?
Maybe, more information needed
No... food waste decomposes in land fills
I don't know
Yes. Your survey so far skirts the issue whereby the state overruled Johnson County's regulations to ban yard waste from landfills. That was an egregious overreach by a state which provides almost no leadership for an important issue.
It would be a great goal to start moving toward composting pick up in all locations, but realistically that will take awhile to build acceptance
support piloting and then move it out statewide.
Yes for every community
Food waste is a valuable resource.

Which of the following best describes your opinion of the adequacy of current waste reduction in Kansas?

- Voluntary waste reduction efforts have achieved adequate results and no new state mandates are needed
- Kansas has made much progress in waste reduction over the past 20 years, but some new state requirements are appropriate to ensure continued improvements
- Kansas can do much better in waste reduction than current practices, especially in some locations; therefore, it is necessary to establish new state requirements

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Voluntary waste reduction efforts have achieved adequate results and no new state mandates are needed		23.6%	118
Kansas has made much progress in waste reduction over the past 20 years, but some new state requirements are appropriate to ensure continued improvements		39.2%	196
Kansas can do much better in waste reduction than current practices, especially in some locations; therefore, it is necessary to establish new state requirements		37.4%	187
Not Answered			8
		Valid Responses	501
		Total Responses	509

(Respondents could only choose a **single** response)

