

# BUTLER COUNTY, KANSAS RECYCLING PLAN

*Prepared for*

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## **INTRODUCTION**

In 2006 the Butler County Commission established a Recycling Committee to address the issue of recycling and waste reduction. This committee was asked to develop a plan for implementing a recycling program that would increase both recycling and waste reduction county wide. This document represents the efforts of the Recycling Committee in developing a recycling plan for the county.

The recycling plan builds on the efforts of the county as well as the numerous community and private efforts that have been established. This plan also considers the need to protect the environment of Butler County and to offer the citizens of Butler County an alternative to landfilling of their solid waste.

This document is divided into seven chapters. Each chapter presents the information and analysis that was utilized in the development of this plan. A brief description of each chapter follows.

- Chapter 1 – Overview of the county, communities, and demographics
- Chapter 2 – Discussion of present solid waste generation and potential for waste reduction and recycling
- Chapter 3 - Overview of existing recycling programs
- Chapter 4 - Consideration and evaluation of recycling technologies
- Chapter 5 - Identification of optimal recycling program
- Chapter 6 - Development of the cost of the optimal program
- Chapter 7 – Development of the program implementation

Each of these chapters provides insight to the planning process and the extensive efforts made by the planning committee to develop this recycling plan. The planning effort involved a series of meetings, the collection of data, the consideration of options, and careful consideration of many programs before the optimal recycling program was identified.

## **CHAPTER 1: COUNTY AND COMMUNITY INFORMATION**

Butler County is the largest county in the State of Kansas based on land area. The Office of Social and Economic Trends Analysis (SETA, Iowa State University) estimate the 2004 population of Butler County as 61,828. There are 13 communities in Butler County. These communities are dispersed throughout the county with the majority of them located in the central and western portions of the county.

The communities within Butler County are located along major transportation routes such as Interstate 35, U.S. Route 400, U.S. Route 54, and U.S. Route 77 or are served by state or county highways. Table 1.1 presents each community, its 2004 estimated population, and the highways that service the community.

**Table 1.1  
Community, Estimated Population, and Highways**

<b>City</b>	<b>2004 Estimated Population</b>	<b>Highway(s) Servicing Community</b>
Andover	8,617	Interstate 35
Augusta	8,560	US 54, US 400, US 77
Benton	817	K - 254
Cassoday	127	K - 177
Douglass	1,810	US 77
El Dorado	12,717	US 54, US 77
Elbing	210	County Road
Latham	164	County Road
Leon	648	US 400
Potwin	438	K - 196
Rose Hill	3,857	County Road
Towanda	1,342	K - 254
Whitewater	639	K - 196
<b>TOTAL</b>	<b>39,946</b>	

The cities in the study area range in size from the largest, El Dorado at 12,717, to the smallest, Cassoday at 127 residents. These 13 communities contain 65% of the population of the entire county and the four largest communities, El Dorado, Augusta, Andover, and Rose Hill account for over 54% of the county's population. Population is an important aspect of any study involving solid waste. To further emphasize the population situation in Butler County, Map 1 presents the population contours for the county.

**MAP**  
**BUTLER COUNTY Population Contours**

As the population contour map indicates, the majority of the population of the county is within a triangular area that fans out from El Dorado and is bordered on the north by Highway K-254, the south by a line running from El Dorado to Rose Hill, and on the west by the Butler County - Sedgwick County line. The population distribution within Butler County is categorized as urban and rural, 65% to 35%, respectively. This study area distribution does not correlate to the State of Kansas population distribution, which is 79% urban and 21% rural (according to League of Kansas Municipalities data). The continuing trend toward rural living likely maintains the relatively high rural population. This can be seen in the most recent rural urban numbers from SETA which indicates a continued decrease in farm population (from 2,638 in 1990 to 1,854 in 200) while the rural population stays relatively the same (24,440 in 1990 to 24,399 in 2000).

Butler County's unique rural-urban population is further defined by the location of its population centers. The three largest communities – El Dorado, Augusta, and Andover – are located in the central and western portion of the county. Additionally, the major rural growth is also occurring in these portions of the county. This unbalanced population growth results in a higher population density in the western portion of the county with a steady or falling population in the remainder of the county.

### **Major Employers**

In Butler County over 55 percent of the work force is employed by the government, service providers, or retail businesses. Each of these economic sectors generates a significant amount of recyclable materials including white paper, cardboard, plastics, and mixed paper. The majority of the business and industry in Butler County is located around El Dorado and in the Augusta and Andover areas.

### **Transportation**

Butler County has a major network of highways and roads as well as a number of rail lines that cross through the county. The study area is served by a major interstate highway, U.S. routes, state routes, and various county roads. The

major highways in Butler County consist of Interstate 35 operated by the Kansas Turnpike Authority, U. S. Route 54 running east-west, U.S. Route 77 running north-south, U.S. Route 400 and state routes K-254, K-196, and K-177.

Federal Aid Secondary (FAS) roads serve as feeders from the federal and state highways to rural areas of Butler County. FAS roads maintained by the Butler County Public Works Department include approximately 310 miles of medium to heavy asphalt, 65 miles of light asphalt, and 55 miles of aggregate roads.

Both the Union Pacific and the BNSF Railroads have trackage in Butler County. The main east-west line of the BNSF Railroad crosses the county from the northeast to the southwest. The railline passes through Cassoday, El Dorado, Augusta, and Rose Hill. A spur line for the Union Pacific Railroad runs from Wichita to El Dorado.

## **CHAPTER 2: SOLID WASTE GENERATION**

Solid waste in Butler County is collected by both public and private entities. The solid waste collected in the county is either taken to the Butler County Landfill or exported to transfer stations in Harvey or Sedgwick counties. Table 2.1 presents the potential amount of recyclables that could be captured based on the current solid waste inflow to the Butler County Landfill.

The population for the townships reflects the portion of the Butler County population that is not within the limits of the 13 communities. Table 2.2 presents an estimate of the amount of recyclables that could be captured based on an estimate of the total solid waste generated in Butler County. In order to determine the amount of waste generated in the entire county it was assumed that the per person generation rate of the county was 0.66 tons per person per year. This figure is similar to the ton per person for both the communities of Leon and Augusta.

**Table 2.1**  
**Estimation of Recycling Potential**  
**From All Tons Currently being Delivered to the Butler County Landfill**

<b>Category</b>	Andover	Augusta	Benton	Cassoday	Douglass	Elbing	El Dorado	Latham	Leon	Potwin	Rose Hill	Towanda	Whitewater	Townships	Total
<b>Population</b>	8,617	8,560	817	127	1,810	210	12,717	164	648	438	3,857	1,342	639	21,882	61,828
<b>Total Tonnage</b>	1,947	5,660	238	229	455	5	9,925	15	435	68	809	582	641	4,130	25,139
<b>Tons/Person</b>	0.23	0.66	0.29	1.80	0.25	0.02	0.78	0.09	0.67	0.16	0.21	0.43	1.00	0.19	0.41
<b>Newspaper (6.9%)</b>	134	391	16	16	31	0	685	1	30	5	56	40	44	285	1,735
<b>Office Paper (8.2%)</b>	160	464	20	19	37	0	814	1	36	6	66	48	53	339	2,061
<b>Corrugated Paper (14.4%)</b>	280	815	34	33	66	1	1,429	2	63	10	116	84	92	595	3,620
<b>Magazines (3.9%)</b>	76	221	9	9	18	0	387	1	17	3	32	23	25	161	980
<b>Other Paper (6.2%)</b>	121	351	15	14	28	0	615	1	27	4	50	36	40	256	1,559
<b>PET (1.2%)</b>	23	68	3	3	5	0	119	0	5	1	10	7	8	50	302
<b>HDPE (1.2%)</b>	23	68	3	3	5	0	119	0	5	1	10	7	8	50	302
<b>Tin (4.1%)</b>	80	232	10	9	19	0	407	1	18	3	33	24	26	169	1,031
<b>Aluminum (0.6%)</b>	12	34	1	1	3	0	60	0	3	0	5	3	4	25	151
<b>Glass (2.7%)</b>	53	153	6	6	12	0	268	0	12	2	22	16	17	112	679
<b>Remaining Tons</b>	985	2,918	121	116	231	3	5,022	8	220	34	409	294	325	2,089	12,775

**NOTES:**

1. Total tonnage based on the amount of solid waste delivered to Butler County Landfill.
2. Category percentage based on 2003 State of Kansas Waste Characterization Study.
3. Population figures based on 2004 population estimate.

**Table 2.2**

**Estimation of Recycling Potential  
From All Tons Generated in Butler County**

<b>Category</b>	<b>Andover</b>	<b>Augusta</b>	<b>Benton</b>	<b>Cassoday</b>	<b>Douglass</b>	<b>Elbing</b>	<b>El Dorado</b>	<b>Latham</b>	<b>Leon</b>	<b>Potwin</b>	<b>Rose Hill</b>	<b>Towanda</b>	<b>Whitewater</b>	<b>Townships</b>	<b>Total</b>
<b>Population</b>	8,617	8,560	817	127	1,810	210	12,717	164	648	438	3,857	1,342	639	21,882	61,828
<b>Total Tonnage</b>	5,687	5,660	539	229	1,195	139	9,925	108	434	289	2,546	886	639	14,442	42,701
<b>Tons/Person</b>	0.66	0.66	0.66	1.80	0.66	0.66	0.78	0.66	0.67	0.66	0.66	0.66	1.00	0.66	0.69
<b>Newspaper (6.9%)</b>	392	390	37	16	82	10	684	7	30	20	176	61	44	997	2,946
<b>Office Paper (8.2%)</b>	466	463	44	19	98	11	813	9	36	24	209	73	52	1,184	3,501
<b>Corrugated Paper (14.4%)</b>	819	814	78	33	172	20	1,428	16	63	42	367	128	92	2,080	6,149
<b>Magazines (3.9%)</b>	222	220	21	9	47	5	387	4	17	11	99	35	25	563	1,665
<b>Other Paper (6.2%)</b>	353	350	33	14	74	9	615	7	27	18	158	55	40	895	2,647
<b>PET (1.2%)</b>	68	68	6	3	14	2	119	1	5	3	31	11	8	173	512
<b>HDPE (1.2%)</b>	68	68	6	3	14	2	119	1	5	3	31	11	8	173	512
<b>Tin (4.1%)</b>	233	232	22	9	49	6	407	4	18	12	104	36	26	592	1,751
<b>Aluminum (0.6%)</b>	34	34	3	1	7	1	60	1	3	2	15	5	4	87	256
<b>Glass (2.7%)</b>	154	153	15	6	32	4	268	3	12	8	69	24	17	390	1,115
<b>Remaining Tons</b>	2,877	2,858	272	116	605	70	5,019	55	219	146	1,288	448	324	7,308	21,605

**NOTES:**

1. Total tonnage based on an estimate of 0.66 tons per person rate for those communities that do not send all of their solid waste to the Butler County Landfill. Those that do send all of their waste to the Butler County Landfill the amount provided is based on Information provided by Butler County.
2. Category percentage based on 2003 State of Kansas Waste Characterization Study
3. Population figures based on 2004 population estimate

## **CHAPTER 3:        EXISTING RECYCLING SYSTEMS**

This chapter discusses the collection, transportation, processing, and marketing systems for recyclables as presently operated in Butler County. Recycling is conducted by most of the communities in the county either directly or through the efforts of the county. The following sections describe the efforts of the communities and the county.

### **Community Efforts**

The community efforts are divided into three groups, El Dorado, Augusta, and the remaining communities. El Dorado and Augusta have established collection programs that are designed specifically for their communities. The other communities in the county utilize recycling services provided by the county or private recycling efforts. The following paragraphs described these three groups.

#### **El Dorado**

The City of El Dorado has offered curbside recycling since 2000. The city solid waste charges are based on the number of bags of waste placed at the curb. Citizens are allotted two bags for solid waste disposal each week and can have as many bags for recyclables as needed. Each household can utilize a maximum of two bags per week for disposal. The solid waste program in the city is supported by a base monthly fee per household.

At present, the City of El Dorado operates two recyclable collection vehicles daily (one residential and one commercial). The trucks collect upwards of 6 - 10 tons of recyclables per day and deliver the recyclables to the present recycling processing center located at the corner of East Olive and South Vine Street.

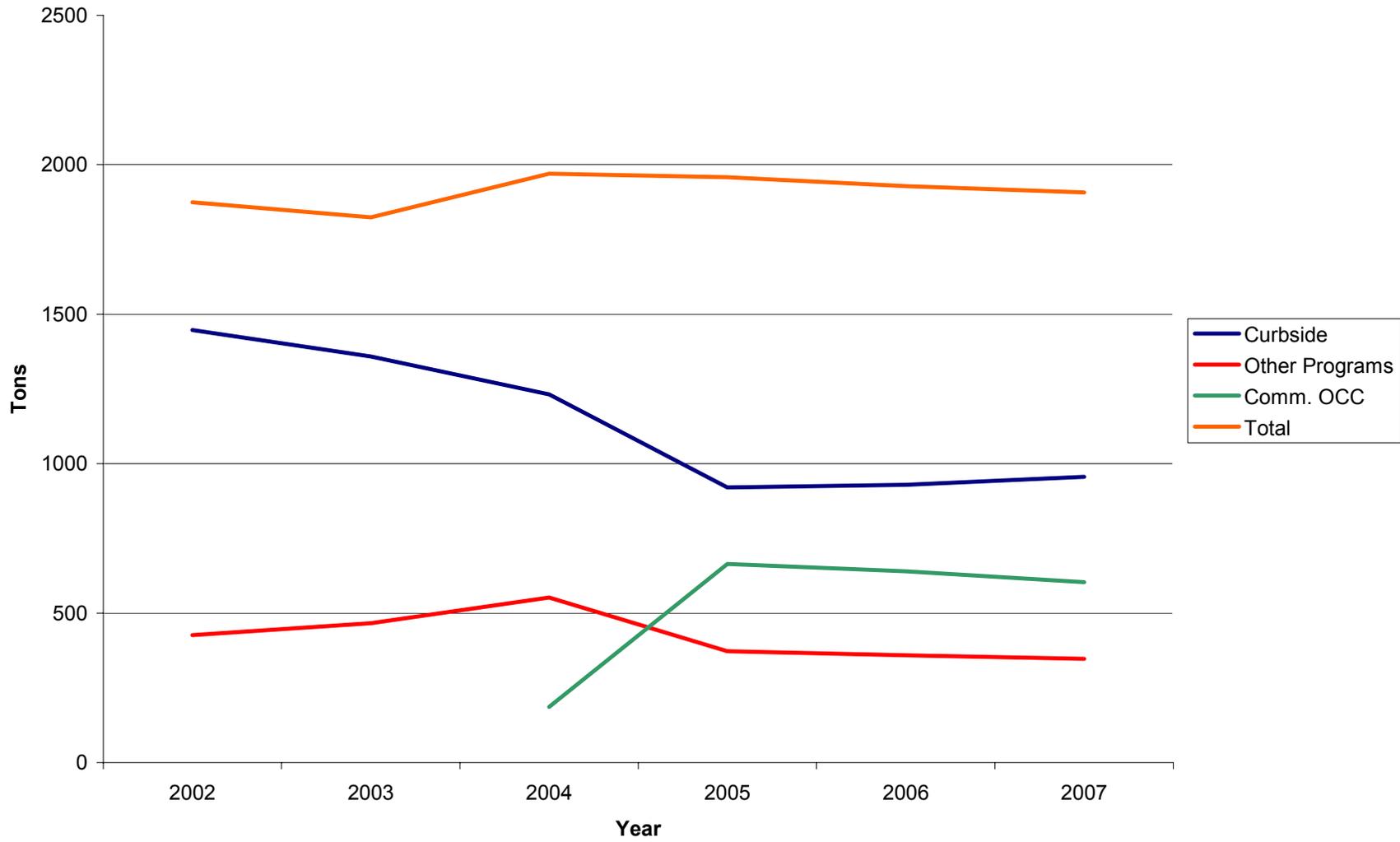
The recycling processing facility processes approximately 10 - 12 tons per day. The facility receives recyclables from City of El Dorado trucks as well as from Butler County trailers, from Greenwood and Elk counties, and from the drop-off center at the recycling facility. The facility operation involves unloading a truck or trailer at the northwest entrance of the building. The load is hand sorted on the floor to remove large items and cardboard. The material is then pushed onto a conveyor where a hand sort separates the recyclables. The El Dorado trucks bring

in presorted bags of recyclables while the Butler County trailers bring in recyclables in presorted bins.

The processed recyclables are sold to various brokers and end users. The City of El Dorado staff work with a variety of brokers and agents to identify the optimal price for the processed recyclables. Revenues have increased over time from an annual revenue of \$27,000.00 in 2000 to over \$200,000.00 in 2007.

Chart 3.1 indicates the annual production rate for the El Dorado facility. The blue line represents the amount of material processed from curbside collection in El Dorado. The red line represents the amount of material from other programs, including Butler County. The green line indicates the commercial OCC or cardboard that is delivered from El Dorado. The orange line is the total amount of recyclables processed annually.

Production Rate for El Dorado Facility



## **City of Augusta**

The City of Augusta operates a recycling processing facility near 5<sup>th</sup> and Osage at its public works yard. The facility processes approximately 5 tons per week. Only City of Augusta recyclables are delivered to the facility. Recyclables are collected utilizing a trailer, dumpsters, and a drive-through, drop-off service on Saturdays at the processing facility. The dumpsters and the trailer are located between the Wal-Mart and Dillon's parking lots. These dumpsters and trailer are rotated regularly.

The processing facility consists of a small building that allows for the unloading of the trailer or dumpster. Material is presorted in the trailer and dumpsters and moved into bins. The facility has a fork-lift truck that is utilized to load trailers. There is a loading dock for two semi-trailers. A skid loader is utilized to load the baler which bales cardboard and aluminum cans.

The recyclables obtained from the trailer and dumpster are sent to Weyerhaeuser. In 2006 the City of Augusta received over \$14,000.00 for the recyclables.

## **Remaining Communities**

All of the remaining communities in Butler County are served by private haulers. Some of these haulers provide various levels of service including collecting recyclables. If recyclables are collected by the private haulers the recyclables are delivered to locations in Sedgwick or Harvey County. Some of the communities require that the private hauler provide recyclable collection if the resident requests this service. The resident must request the service from the private hauler and the resident is responsible for any costs associated with the service.

In addition to private hauling services these communities are also provided with recyclable collection trailers. These trailers, furnished by Butler County, are placed at locations within each community on a regular schedule and are typically manned.

### **Butler County Recycling Efforts**

As noted in the previous section, Butler County provides trailers at selected locations around the county for the collection of recyclables. The trailers are comprised of a series of bins that will accept cardboard, newsprint, magazines, plastics, tin, glass, office paper, junk mail, plastic bags, phone books, paper and hard back books, and aluminum. Residents of the communities where the trailers are located as well as residents of the county are allowed to drop off recyclables at these trailers.

Table 3.1 provides information on the amount of recyclables collected via these trailers during the period beginning January 2007 and ending December 2007. Based on the 2007 results, over 234 tons of recyclables were collected in the county. As noted in the following table, the majority of these recyclables come from five communities - Andover, Benton, Whitewater, Rose Hill, and Towanda. These five communities account for over 79% of the recyclables collected in the trailers. Of these five communities, Andover and Rose Hill account for over 50% of all recyclables collected by trailers in the county.

**Table 3.1**  
**Recyclables Collected by Butler County Trailers**  
**In Pounds**  
**January through December 2007**

<b>Community</b>	<b>January February (Pounds)</b>	<b>March April (Pounds)</b>	<b>May June (Pounds)</b>	<b>July August (Pounds)</b>	<b>September October (Pounds)</b>	<b>November December (Pounds)</b>	<b>Total</b>
Andover	17,350	22,390	24,540	31,120	25,975	17,240	138,615
Benton	10,660	11,860	12,640	14,520	11,790	10,125	71,595
Elbing	2,280	2,960	2,400	2,280	2,500	2,980	15,400
Whitewater	4,660	4,760	6,920	5,260	7,050	7,200	35,850
Cassoday	460	440	1,420	440	800	400	3,960
Rose Hill	10,760	14,540	19,340	16,640	24,760	10,560	96,600
Towanda	4,160	5,060	6,940	3,860	5,060	4,000	29,080
Latham	2,455	2,035	2,090	2,230	2,135	240	11,185
Leon	2,260	2,300	3,120	3,610	2,660	2,020	15,970
Potwin	760	1,120	1,380	1,200	980	1,160	6,600
Rosalia	680	480	390	780	1,280	340	3,950
Beaumont*	-	-	-	-	300	160	460
Landfill	4,040	9,050	8,980	9,020	1,720	6,140	38,950
Total (Pounds)	60,525	76,995	90,160	90,960	87,010	62,565	468,215
Total (Tons)	30.3	38.5	45.1	45.5	43.5	31.3	234.1

\* Beaumont did not have trailer service until September 2007

Map 3.1 on the following page presents the existing recycling system in Butler County. As noted on the map there are 13 communities that have some access to recycling.

MAP

## **CHAPTER 4: EVALUATION OF RECYCLING TECHNOLOGIES**

Presently, the recycling technologies utilized in the study area include the following:

1. Curbside collection
2. Recycling drop-off centers
3. Recycling process center

The complexity of these technologies varies in accordance with the size of the facility and the particular needs of the service area. Recyclables are collected through drop-off centers (trailers or dumpsters) or curbside collection. The two processing facilities in the county, at El Dorado and Augusta, are sized to meet present demand. For example, the facilities have balers and some sorting capabilities. The City of El Dorado has 8,000 square feet of storage capacity while the Augusta facility has very little storage capacity within its facility. The following paragraphs briefly discuss the technologies that may benefit Butler County recycling efforts.

### **Collection**

The present system of either drop-off centers or curbside collection is the predominate method utilized nationally to collect recyclables. These systems are often enhanced through such changes as unmanned drop-off centers with specially configured openings that discourage large bags or other containers or objects that would contaminate the recyclables. Drop-off centers can also be improved with drive-up structures that improve the movement of the recyclables from the vehicle to the receptacles. Finally, drop-off centers can be located inside a structure where a variety of receptacles can be arranged for as much pre-sorting as possible. One of the keys to successful drop-off programs is the combination of convenience with maximum sorting. In this manner, a service is provided to the facility user as well as the processing center.

For curbside collection, the use of automated trucks and containers that reduce the amount of sorting at the residence improves the amount of recyclables

obtained as well as the amount of recyclables collected at as low a labor cost as possible. Unlike drop-off centers, the emphasis of curbside collection should be to capture as many recyclables as possible. To this end, technologies should be utilized that make recycling as user friendly as possible at the generator level, and as efficient as possible at the collection level.

### **Processing**

The processing technologies available today span the entire spectrum of automation. Beginning with the unloading of vehicles delivering recyclables to the processing facility, receiving pits are now designed to monitor the flow of material as well as weigh the material to identify potential problems or need for additional pre-fluffing. Metering systems are incorporated into the sort line feed belts that continually adjust the flow of recyclables onto the sort line.

Sort lines can be designed to accommodate both dual- and single-side sorts as well as provide for modulating belt movement to address piling situations. Sort lines can also be built to allow for both sitting and standing operation and the belt height can be adjustable to address changes in crew members' height.

The majority of advances in the process area is in mechanical sorting. Star screens and filter equipment have been further enhanced to improve the separation of papers, plastics, and metals. These processes reduce the amount of manpower needed to separate materials and the amount of material sorted in an hour has increased significantly. Plastic sorting has improved with the use of optical readers that detect variations in plastics based on the plastics' structure, color, and other characteristics. Finally, the separation of metals has further improved through the utilization of various magnetic equipment as well as eddy currents.

### **Application to Butler County**

All of the technologies described could, in time, benefit the recycling system in Butler County. Each of the technologies should be considered based on the following:

- Ease of Use – Does the technology improve the usefulness of the collection or processing procedures?
- Efficiency – Does the technology allow for the maximum efficiency in collection and/or processing based on amount and type of material?
- Value Enhancement – Does the technology provide added value to the recyclable through the ease of collection and/or processing?
- Cost Effective – Is the technology cost effective based on the amount of recyclables, where the recyclables are collected, and the level of processing required.

As the county develops its recycling program and the implementation of the plan proceeds, it will be invaluable to the system to continually address the technology issue. This process is enhanced not only by access to a number of sources via the internet, but also through a variety of organizations such as the National Recycling Coalition, the Soft Drink Container Organization, container organizations, and a number of manufacturing groups that provide collection and processing equipment and technologies.

## **CHAPTER 5: OPTIMAL RECYCLING PROGRAM**

The optimal recycling program for Butler County is based on the present conditions in the county and identifying types of recycling methodologies would best apply to the county. The previous four chapters have provided all of the information needed to identify the optimal recycling program. Important aspects of the county are:

1. The county and its communities are favorable to a more aggressive recycling program.
2. Recycling programs are in place that provide various levels of service to the citizens of the county.
3. The majority of the population of Butler County is located in one portion of the county, which has a significant transportation system in place.
4. Recycling programs for rural areas are in place and functioning well.
5. A variety of recycling programs such as curbside collection, drop-off centers, and rotating trailers are presently in place in the county.
6. There are efforts in place to educate the public on the benefits of recycling and waste reduction.

Although there are recycling efforts in Butler County these efforts vary from community to community. For example:

1. Some communities do not control nor provide solid waste collection.
2. The use of drop-off centers and the rotating trailers varies from community to community.
3. The existing processing facilities for recyclables are limited in capacity due to a lack of space or equipment.
4. Public awareness and education programs are not consistent throughout the county.
5. There is a lack of coordinated involvement by commercial and industrial sectors in recycling and waste reduction.

A critical component in the planning process was the Butler County Recycling Committee. This committee met on a monthly basis (starting in October 2006) to discuss the various aspects of the present recycling system and to identify potential approaches to improving and expanding the recycling program in Butler County. This critical and vital input coupled with the all of the information gathered was utilized to develop a list of criteria or needs that the optimal recycling program should meet or satisfy. These include:

1. The establishment of a focused recycling and waste reduction program throughout the county.
2. Greater access to recycling collection particularly in the four largest communities in the county.
3. Expanded access to the present rotating recycling trailer system.

4. Provide access to the recycling program for commercial and industrial sectors of the county.
5. Expand recyclables processing through the utilization of existing facilities or consolidation of facilities.
6. A centralized coordination of the overall recycling efforts in the county.

Utilizing this list, a series of matrices were developed to address the four major components of the recycling system:

- Responsibility: Who is responsible for the overall recycling system?
- Education: How are the users of the system educated and motivated to utilize the system?
- Collection: How are the recyclables collected?
- Processing: How are the recyclables processed and where?

The options that comprise each matrix are as follows:

**Responsibility:**

- Community and Area Based – Control of the recycling program would rest with each community and a selected area around the community. Decisions on the level of effort and recycling goals would be decided by committees formed from the community and area.
- County Based – The recycling program would be the responsibility of the county. The county would spearhead all efforts in the county and work with and coordinate efforts with communities. A recycling committee comprised of six to eight members appointed by City Councils or Commissions and by the County Commission would be

established. This committee would provide guidance to the County Commission.

- County/Community Coordination – The county and communities would work together in managing recycling in county. A committee would be formed with all communities and the county to provide guidance.
- New Authority - A recycling authority or similar organization would be established to address all of the recycling needs for Butler County. This organization would be responsible for all aspects of recycling including education, collection, and processing.

**Education:**

- School Program – The school systems in the county would be provided funding to prepare educational tools and lesson plans to instruct students at all grade levels on the various aspects of recycling. These tools would be updated to reflect changes in recycling and waste reduction as well as comply with the Kansas State Environmental Education Standards.
- Public Awareness Program – Utilizing national and state programs complimented with local information, this program would provide public awareness of recycling and waste reduction efforts. The program would be updated quarterly and would focus on existing information distribution systems such as radio, television, newspapers, web sites, and other formats.
- Centralized Program – A combination of a school program and public awareness program would be the responsibility of the county or an organization charged with this responsibility. This program would develop all educational documents for use in schools or as a public

awareness effort. The county or organization would be responsible for updating information and determining the success of the program.

**Collection:**

- Expand Drop-Offs – Expanding the availability of drop-off bins in selected communities would provide greater opportunity for the collection of recyclables as well as provide greater visibility to the recycling efforts.
- Expand Trailer Program – As with the expansion of drop-off bins, increasing the availability of the present trailer system would provide extended access for recycling and make the recycling effort more visible.
- Expand Curbside Collection to Four Communities – The present collection of recyclables utilizing curbside collection would be expanded to include four communities: El Dorado, Augusta, Andover, and Rose Hill. These are the major population centers in the county. A curbside collection program would potentially generate a larger amount of recyclables and would make the recycling efforts easier on the residents of these communities.
- Status Quo – The present collection program would remain as is.

**Processing:**

- Upgrade Existing Facilities – The facilities in El Dorado and Augusta would be expanded as the amount of recyclables increases. These facilities would be upgraded to provide more storage space, increase automation, and provide easier access to the public.
- Modify Facilities – The existing facilities in the county would be modified to meet increased demand and improve processing rates.

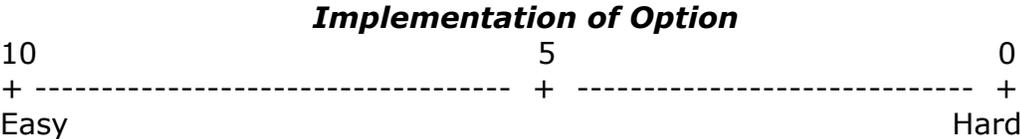
The Augusta facility would be modified to receive more material that is then transferred to the El Dorado facility for final processing. Some easy sorting or segregation of pure loads would be accomplished at the Augusta facility prior to transfer. The El Dorado facility would be automated and expanded.

- Centralized Facility – Both of the existing facilities would be modified to operate as collection and transfer points for recyclables. Both facilities would compact pure loads with all other recyclables transferred to a centralized facility. The centralized facility would be located at the present landfill site. This new facility would be designed to process all of the recyclables collected in the county.
- Status Quo – The present system would remain. The two existing facilities would be improved if and when additional recyclables are generated. Any improvements to these facilities would be based on actual need rather than future potentials.

To evaluate each of the options in each matrix, a rating system was established. The rating system includes a number of assessments of each option with potential varying scores dependent on the importance of the assessment. The assessments and rating range for each matrix are provided in the following sections.

**Responsibility Assessment**

There are a total of seven assessments utilized to evaluate the four options that comprise the responsibility matrix. The assessments and their rating range are as follows:







## Collection Assessment

There are a total of eight assessments utilized to evaluate the four options that comprise the collection matrix. The assessments and their rating range are as follows:

**Process**

10	5	0
+ -----	+ -----	+ -----
Easy		Complicated

**Resistance to Option**

10	5	0
+ -----	+ -----	+ -----
Want Improvements		Not Open to Change

**Confidence in Option**

10	5	0
+ -----	+ -----	+ -----
Will Improve Present System		Do Not See Advantages

**Control Issues**

10	5	0
+ -----	+ -----	+ -----
Want Value and Consistency		Wants Free Market

**Long-Term Viability**

20	10	0
+ -----	+ -----	+ -----
Easy Option Expandable		Limited Ability to Respond to Growth





The following pages are the four matrices. A brief discussion regarding the rating for each option is provided after each matrix.

### 5.1 Responsibility Matrix

<b>Responsibility Matrix</b>	<b>Implementation of Option</b>	<b>Resistance to Option</b>	<b>Confidence in Management</b>	<b>Control Issues</b>	<b>Long-Term Viability</b>	<b>Ease of Operation</b>	<b>Cost</b>	<b>Total</b>
Community and Area Based	5	10	10	8	5	5	8	51
County Based	9	15	15	10	10	10	8	77
County/Community Coordination	8	15	12	8	5	5	8	61
New Authority	4	9	10	5	10	6	6	50

Seven assessments were utilized to evaluate the four options that comprise the Responsibility Matrix. The option that ranked first is placing all responsibility for recycling in the county with the County Commission and county staff. This option scored well in all categories because of the county's record of performance, its responsibility for solid waste as provided in legislation enacted at the state level, and the county's present involvement with solid waste through recycling collection and the operation of the Butler County Landfill.

The second highest ranked option - County/Community Coordination - is very similar to the present system utilized in the county with the key exception that not all communities are active in solid waste management. This lack of consistent activity and involvement is why this option ranked lower than the County Based option.

The remaining two options both ranked relatively low compared to the highest ranked option. This lower ranking is the result of the newness of the option and the likely difficulty in implementing either option. Of these two lower ranked options; the New Authority may be a viable option if the cost of implementation and control issues can be addressed.

## 5.2 Education Matrix

Education Matrix	Ease of Operation	Confidence Level	Long-Term Viability	Commitment	Cost	Total
School Program	10	10	5	8	8	41
Public Awareness Program	5	10	5	8	5	33
Centralized Program	8	10	10	10	8	46

The Education Matrix evaluated three options. Five assessments were utilized in this analysis. The small variation in the rankings between the options reflects the quality of the options as well as the need for some combination of these options. The highest ranking option is a Centralized Education Program. The reason this option ranked highest is because it would establish a new education program with only one focus. The other two options utilized existing programs that have a number of responsibilities. These other responsibilities reduce the focus that would be needed to provide a continual education program.

The best example of this is the School Program option. Although the school systems in Butler County are well versed in developing exceptional educational programs, these school systems are also charged with educating on a number of subjects. This broad spectrum of education results in a divided focus which reduces the potential for continual and updated educational material.

This same problem exists with the Public Awareness Program. Utilizing an existing public awareness program to educate the public on recycling could be cost effective; however, because the recycling message is incorporated into a variety of other messages the strength of the program is diluted.

### 5.3 Collection Matrix

<b>Collection Matrix</b>	<b>Process</b>	<b>Resistance to Option</b>	<b>Confidence in Option</b>	<b>Control Issues</b>	<b>Long-Term Viability</b>	<b>Commitment</b>	<b>Ease of Operation</b>	<b>Cost</b>	<b>Total</b>
Expand Drop-Offs	10	10	8	10	10	15	15	15	93
Expand Trailer Program	10	10	8	10	10	15	15	15	93
Expand Curbside Collection to Four Communities	5	8	8	5	20	15	20	10	91
Status Quo	10	5	3	5	0	10	10	10	53

The Collection Matrix evaluated four options. Eight assessments were utilized in the evaluation. The result of the evaluation identified three of the four options as being very viable while a fourth option ranked poorly. The three options that ranked highest all involved expanding present recycling collection services. The evaluation results are not surprising given the anticipated increase in recycling in the county and the subsequent need for expanded collection services.

This matrix analysis indicates that the county would be best served with multiple collection options because of the size and diversity of the county. Further, the present collection system provides multiple options for residents of the county to utilize and the residents appear to utilize all of these options. The likely reason the Status Quo option did not score well is because it lacks the depth of service that will be needed in the future. Further, the present system has limited expansion capability because it is operated by a variety of government and private agencies with differing motivations and goals.

#### 5.4 Processing Matrix

Processing Matrix	Process	Access	Long-Term Viability	Ease of Operation	Cost	Total
Upgrade Existing Facilities	10	15	10	10	10	55
Modify Facilities	8	18	10	15	10	61
Centralized Facility	8	18	20	15	10	71
Status Quo	5	15	5	5	15	45

The Processing Matrix evaluated four options utilizing five assessments. This matrix produced the most uniform results with the Status Quo option ranking lowest and the most involved option - Centralized Facility - ranking the highest. These results were not necessarily surprising given the five assessments.

Each of the five assessments considered the basic needs of any processing option: ease of operation, ease of access, long-term viability, and cost. Unlike the other matrices processing of materials becomes more efficient with greater improvement to these assessments.

For this analysis the three most important assessments were access, long-term viability, and ease of operation. Considering the four options, each of these assessments will gradually improve as improvements are made to the processing procedures and facilities. For example, access improves as the facilities are improved because movement of material and accessibility to the processing facilities changes from two separate processing facilities to two very integrated facilities.

What is of greatest significance in this analysis is the long-term viability of each option. Given the limited space to expand at the El Dorado site and the lack of useable structures at the Augusta site, it is not surprising that a new facility more centrally located and coupled with a new transfer station would result in the best long-term viability.

## **Identification of Optimal Recycling Program**

The present recycling system is administered by both the county and some of the larger communities in the county. The majority of the small communities and the rural areas of the county are provided recycling services by the county. The cities of Augusta and El Dorado provide varied levels of recycling services. The remaining communities in the county with recycling services have these services provided by private companies. This present system has resulted in the collection of some recyclables, but it is not possible to determine the exact amount.

Taking into consideration the results of the matrix analysis, the present system could be modified in such a manner as to provide a greater level of service and this would likely result in an increased level of recycling in the county. The modifications to the system would include:

1. The county would take a greater lead in the recycling efforts in the entire county. This increased involvement would focus on expanded public education, improvements and upgrades to the collection of recyclables, and expanded capabilities within the county to process recyclables.
2. The public education efforts would involve working directly with the school districts within the county to establish a recycling education curriculum that is flexible and meets the environmental education standards for Kansas. The county would establish an on-going public relations campaign that would instruct and inform the public on the recycling efforts in the county and how to utilize the recycling system in their area.
3. The county will expand its present trailer collection program to provide increased times and places for the collection of recyclables. The county would also work directly with the four largest communities in the county - El Dorado, Augusta, Andover, and Rose Hill - to establish curbside recycling collection. For some communities, El Dorado and Augusta, this effort would involve supporting the community's present program and providing guidance and assistance in establishing or enhancing its present system, while with other communities, Rose Hill and Andover, the effort would entail providing guidance and support in establishing a curbside program.

4. A commercial recycling program would be established. The county would establish the program requirements and methods of collection. The program would be established in El Dorado, Augusta, Andover, and Rose Hill and would be implemented by these communities.
5. The processing of the recyclables would be centralized. The county would evaluate uses of existing facilities and determine the optimal location of the processing facility.

## **CHAPTER 6: RECYCLING PROGRAM IMPLEMENTATION**

The modifications to the present recycling system in Butler County will take some time to implement. Time will be needed to educate both the public and public officials. Further, these modifications will involve some significant changes in the way certain communities address recycling and solid waste issues in general. The following implementation program identifies the key steps that must be taken for this new recycling program to take effect and make the changes that Butler County wants.

***Adoption of the Plan*** – The first step in the process will be the adoption of this plan. The County Commission and each community within the county must adopt this plan in order for it to be successful. This adoption process will vary depending on the extent the plan will impact each community. For some communities the changes will be negligible. For other communities this plan will be a major change in how solid waste is addressed. The adoption process will begin with the plan’s submittal to the County Commission. A presentation will be made to the commission that provides an overview of the proposed recycling system and a description of the implementation process. Once the commission accepts the plan, presentations will be made to all of the incorporated communities within the county. For those communities that the plan will impact similarly, joint presentations will be made. For communities where the new recycling system will require more substantial changes individual presentations will be made. Once the presentation portion is complete, county staff will conduct follow-ups with communities that have questions or concerns regarding the plan. This step will conclude with the acceptance of the plan by the county and all incorporated communities.

***Public Education Program*** – In conjunction with the presentations to the various public entities, a public education program should be established. This program will evolve from an initial public relations campaign to an information program, to a long-term effort to educate the public through a

variety of efforts. The initial emphasis of the Public Education Program will be to inform the public of the benefits the new recycling program. This initial effort should continue until the plan has been adopted by the county and all incorporated communities.

In addition, the information program will involve educating the public on how the program will function. This phase will be constructed to be as localized as possible. This phase will further enforce the need for citizens to recycle and the significant benefits of the recycling program. The long-term education program will be divided between education programs within the various public and private schools in the county and a continuing public awareness and information campaign.

**Collection of Recyclables** - There are three areas where the collection of recyclables will change. First, with the aggressive public education and awareness campaign there will be a heightened interest in recycling. This increase will dictate an increase in the availability of the collection trailers at the smaller communities in the county. Second, this education and awareness campaign will affect the larger communities that presently have limited recycling collection options. For these communities, additional drop-off locations will be needed. In addition to the residents of these communities, it is likely this education and awareness campaign will also affect neighboring communities in Sedgwick County. Because of this impact, additional drop-off centers will need to be established to accommodate the increased in-flow of recyclables.

Third, a curbside collection program for residential recyclables and a commercial recyclables collection program should be established or enhanced in the four largest communities in the county. The communities will be responsible for establishing the program with county guidance and support as needed. For those communities that do not have an organized solid waste collection system, the county will assist in establishing a franchise system that will provide an economical approach to recyclable collection. The curbside collection system will be the most effective method for generating

and collecting residential recyclables in these larger communities. The commercial recyclables collection program should be organized through a joint effort of these communities and the county. Based on this effort, the communities can either provide the collection services themselves or franchise the collection of commercial recyclables. Both the residential and commercial recyclables will be directed to the Butler County processing facilities.

***Processing of Recyclables*** – The need for the improvement and expansion of the present processing system in Butler County will be predicated on the rate of increase in recyclable generation in the county. The two existing facilities will be modified as follows:

- The Augusta facility will be expanded to allow for increased recyclables. Recyclables collected in Augusta, Andover, Rose Hill, and adjoining areas will be delivered to the Augusta facility. At this facility, vehicles delivering the recyclables will unload onto a tipping floor sized to accommodate a maximum of 30 tons of recyclables. Those loads that are only one material (i.e., cardboard, newsprint, aluminum cans, etc.) will be pushed into the storage bin for that material or sent directly to the baler. Those loads with commingled materials will be pushed onto a floor conveyor that will take the material onto a sort line. The sort line will be utilized to separate the materials. All of the materials will be stored in segregated bunkers until enough of the material is captured to make a bale or bales. It is anticipated that a 10,000 square foot facility with a 25-foot clearance will be required at the Augusta site. This facility should be able to process 10 to 25 tons of recyclables a day depending on how many loads with only one material are received.

- The El Dorado facility will be modified to allow for processing of recyclables collected in El Dorado and delivered from the trailers and drop-off locations that are not taken to the Augusta site. The El Dorado facility will be remodeled to allow for the processing of a maximum of 25 tons of recyclables a day. This remodeling will include expanding the tipping floor, adding a sort line, installing a larger baler, and reconfiguring the truck loading area and storage facility.

Because of the limited expansion area at the El Dorado facility, it is anticipated that once the 25-ton capacity is reached the county will establish a new processing facility. Given the location of other operations relating to solid waste at the present landfill site, consideration should be made to locate the new processing facility in the vicinity of the existing landfill. With the improvements to the Augusta and El Dorado facilities, it is possible that a new facility will not be needed until after the first five years of the plan's implementation. The growth of recycling in Butler County will drive the need for the new facility. This growth should be monitored regularly.

The schedule on the following page has been generated to present this implementation plan graphically. This schedule provides a general timeline with emphasis on adjusting the timeline based on the success of previous efforts. For example, until the plan is adopted other aspects of the plan cannot be initiated. Further, until the collection system is in place and the initial success of the system determined, improvements to the processing facilities should be delayed.

Schedule

## **CHAPTER 7: COST OF THE OPTIMAL PROGRAM**

In order to establish the cost of the optimal recycling program for Butler County it is important to establish parameters. These parameters provide the limits in which the cost estimate is developed. The cost estimate is divided into three segments. Each of the segments and the cost parameters for each segment are provided in the following paragraphs.

***Implementation and Education*** – As indicated in the previous chapter, the county will be responsible for the overall recycling program within the county. The county will be directly or indirectly involved in all aspects of the recycling effort. To this end, it will be very important to establish a coordinator for the recycling program. The coordinator will be a county employee and will have a one-person support staff. The coordinator will be located within the present Butler County facilities and the office equipment and supplies for the coordinator and support staff will be provided by the county.

The recycling program coordinator will be charged with implementing the recycling plan. As noted in the previous chapters, a critical part of this effort will be public education and awareness. The coordinator will be responsible for retaining the services of a public relations firm or similar company to provide the education services. The coordinator may also determine that a portion of these services could be developed as a joint effort with the school districts within the county. For the purposes of the cost estimate, all of the education and awareness efforts will be provided by an outside consultant.

***Collection of Recyclables*** – The coordinator will work with county staff in the acquisition of additional trailers for recyclable collection. It is anticipated that two additional trailers will be needed after the first year of the program. The present county staff members who are responsible for the trailers will continue to manage the placement and oversight of the trailers. The coordinator will work with the communities served by the trailer system to

identify any changes in schedule and the frequency of the trailers at each community.

The coordinator will work with the communities of Augusta, Andover, and Rose Hill to identify when additional drop-off centers for the collection of recyclables will be needed. The coordinator will work with county staff members who are presently responsible for the trailers to establish the drop-off centers and methods for collecting the recyclables. It is anticipated that no new drop-off centers will be required until after the second year of the recycling program's implementation.

The curb side collection of recyclables will be the responsibility of the four communities identified for this effort. The community of El Dorado has a well-established program that will not be modified unless requested by this community. The community of Augusta will be requested to expand its present solid waste collection system to include the curbside collection of recyclables. Because Augusta has a collection system in place, it would be more practical and cost effective for Augusta to operate the curbside collection of recyclables. For the communities of Rose Hill and Andover, the recycling program coordinator will work with these two communities to establish curbside collection of recyclables. Because both communities do not presently control the collection of solid waste, the recycling program coordinator will provide guidance in establishing a franchise program that will allow both communities to contract for the collection of recyclables.

The collection of commercial recyclables will also be the responsibility of these four communities. The collection program will be established by a joint effort between the communities and the county. Each community will determine if it will conduct the commercial recyclables collection or if the collection will be franchised.

***Processing of Recyclables*** – The County will assume the operation of processing of recyclables in Butler County. The county will work with the communities of El Dorado and Augusta to establish the procedures for taking over operations at the existing facilities. The county will also address how

both facilities will be upgraded. It is anticipated that the transition will take at least one year after the adoption of the plan. Any improvements to the existing facilities will be dependent upon the implementation and initial success of the education and collection efforts. During the transition of operation responsibility, an assessment of the operation at each facility will be conducted. This assessment will consider a variety of scenarios relating to the increased flow of recyclables to these facilities. Responses to each scenario will be developed so that operations personnel can quickly respond to the increased flow of recyclables. For this cost analysis, it is anticipated that the greatest increase in recyclables will occur at the Augusta Facility. Improvements at this facility will include a larger processing building and baler. The addition of an eight-man sort line will also be included. For the El Dorado Facility, the only change would be a permanent eight-man sort line.

The tables at the end of this chapter present an estimate of the cost of the recycling program. The costs are presented for the first five years of the program. These costs reflect the scheduled implementation of the recycling program as described in Chapter 6. A number of assumptions and estimates were made in the generation of these cost tables. A list of these assumptions and estimates and a brief explanation of each is provided as follows.

1. All labor rates include social security taxes and an estimated insurance burden.
2. All costs are escalated at an inflation rate of 3.5% annually.
3. The cost for supplies and printing is based on typical office operations.
4. Consultant costs are based on fees from similar projects. These costs can vary based on the number of consultants interested in any of this work.

5. Trailer costs are based on the type of trailer presently utilized by the county.
6. The drop-off center is comprised of three-yard dumpsters located in parking lots at commercial establishments.
7. The transfer processing facility rate is based on the inspection of the facilities in 2007 and the estimated value of the equipment and structures.
8. The building updates cost is based on the anticipated construction of a new structure at the Augusta site and some minor structural modifications to the El Dorado facility.
9. The equipment updates cost is based on a baler, conveyor, and sort line for the Augusta facility and a sort line for the El Dorado facility.
10. It is anticipated that no new processing facility will be developed during the next five years.
11. The operations training consultant is provided for consistent training among all facilities and maximizing productivity.

Costs

## **Funding the Program**

The present recycling efforts in Butler County are funded through a number of sources and by a number of government agencies. For example, Butler County pays for the trailers that collect recyclables in the county; the City of El Dorado pays for the curbside collection and recyclable processing; and the City of Augusta pays for drop-off centers and the processing of its recyclables. With the proposed changes to the recycling program in Butler County the funding of the system will change. The collection of the recyclables will still be paid for by both the county and by select communities. The processing of the recyclables will now be the responsibility of the county.

To fund the new program a number of revenue sources are available. These revenue sources include fees charged to the generators, taxes on property or purchases, payment for the recyclables generated, and state or federal grants or loans. Each of these revenue sources have limited funding capability and should be utilized carefully so that no one funding source is overburdened.

It is recommended that the two funding sources that should carry the major responsibility for funding the program are the generators and the income gained from selling the processed recyclables. These two sources of revenue should be utilized as follows:

**Generator Fees** – These fees should be utilized to defray the costs of the collection and processing of recyclables.

**Income from Processed Recyclables** – This funding source should be utilized to pay for the recyclables processing.

Recognizing these funding sources, Butler County staff developed a program for funding the recycling program. The staff presented its funding program during a work session with the Board of County Commissioners. County staff discussed the desire to develop a funding plan that was fair and equitable to all citizens of the county.

The proposed recycling plan recommends that the four larger cities provide curbside collection of recyclable materials. Furthermore, collection in the remaining cities, communities and rural areas will be provided through a county program consisting of recycling trailers and drop-off locations. County staff felt that a county-wide assessment should not be used to fund collection services. A county-wide assessment would result in a duplication of charges for collection services in the four larger cities. Thus, it was suggested to and supported by the Board of County Commissioners to divide the costs for recycling into separate categories and to apply a funding mechanism to each category that equitably spreads the cost to all citizens on a fair basis.

The proposed categories would include: 1) collection and transportation services; 2) general administration and education; and, 3) sorting, processing and marketing. Collection and transportation services would be funded by a direct user charge. Residents in each of the four larger cities providing curbside collection would be assessed a charge on a monthly or periodic bill to each household by the city. Residents in the unincorporated areas and in the smaller cities receiving collection service from the county would receive an annual assessment from the county. General administration would be supported by a county-wide levy. General administration would include coordination of recycling activities county-wide, providing public education and marketing of processed materials. Materials processing would be funded by a combination of a county-wide levy and by proceeds from the sale of processed recycled materials.

Additional work will need to be performed to refine the costs of the separate categories. The major refinement of costs will include determining costs for curbside collection, recycling trailer and drop-off collection, and processing costs including facilities, sorting equipment, processing and storage.

One of the main factors in any funding consideration is how the increase in the recovery of recyclables will impact the other portions of a solid waste system. In Butler County the impact could be significant. With recyclables comprising almost 60% of the waste stream, the impact of an aggressive recycling program on the remainder of the solid waste system could be significant. Some of the impacts are:

1. The volume of solid waste entering the landfill could diminish by as much as half. This would result in lower income from tipping fees. In turn, this reduction of flow into the landfill would result in cost savings from reduced labor and equipment and increased landfill life which reduces the frequency of constructing new landfill cells. The longer landfill life will increase the length of the operating period of the landfill gas and leachate collection systems and groundwater monitoring which would be an added cost.
2. Because of the removal of the majority of recyclables from the waste stream, the type of waste entering the landfill will have a limited amount of organics. With the reduced level of organics two situations will occur. First, the amount of compaction that can be obtained will likely decrease. Compaction of inorganic material is more difficult because the structure of the material does not breakdown as easily as organics. Second, with fewer organic materials the decomposition of the solid waste will be reduced. This may reduce the amount of landfill gas generated; however, it will also reduce the amount of liquids absorbed by the solid waste, which may result in an increase in the amount of leachate generated by the landfill.
3. The amount of solid waste collected would be reduced which reduces the cost of collection. The reduced cost is because the number of collection routes would be reduced as trucks collecting the solid waste could visit more houses before going to the landfill to unload.
4. One of the organics that will likely remain in the solid waste stream is food. Food begins to decompose faster than any other organic waste and has the potential to generate odors quicker than any other organic. With the other organics, particularly the papers, removed from the waste stream, food waste can become a major nuisance issue for both collection and disposal.

As the implementation of the recycling plan progresses it will be very important that certain assessments be made to ensure the program's potential can be reached and the impact the program has on other portions of the solid waste system is clearly understood. These assessments include:

1. A waste characterization study should be performed within the next two years to determine the actual types of waste in the Butler County waste stream. This information is critical in determining improvements to the processing facilities and the size of any future processing facility.
2. Once the education program is in place, an evaluation of its impact should be conducted. This would include determining the increase in the amount of recyclables collected, the types of recyclables collected, and how the amount of recyclables collected varies. This assessment will be invaluable in guiding future education efforts.
3. The solid waste collection and disposal segments of the solid waste system should be assessed at least two years after the recycling program is implemented to determine initial impact. This assessment should look at both the flow of solid waste as well as the solid waste composition. The assessment should focus on how solid waste collection routes have changed and the inflow and composition of the solid waste at the landfill.
4. The increase in the amount of recyclables collected and processed should be assessed at least annually. This assessment should recognize both overall quantities as well as certain specific constituents in order to determine the quality of recyclables received. These assessments should be utilized to adjust the focus of the education program and the need to expand collection or processing in the coming

year. An additional aspect of this assessment should be the program's costs and income. Adjustments to the program should be made based upon variances in both costs and income.