

MONTGOMERY COUNTY SOLID WASTE
NEEDS ASSESSMENT

FY 2014



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Item 1: Demographic Information & Projections

Historic Population - Montgomery County’s population growth has increased dramatically over the last decade. Between 2000 and 2010, Montgomery County’s total population grew from 134,768 to 172,331, a 27.87% growth rate. The county’s growth hinges on job creation or job loss, particularly with Fort Campbell. Montgomery County has made strides to recruit new large industries, which will help maintain this growth and lessen the impact of troop drawdowns.

The county has one city, Clarksville, which comprises the majority of the county. See Table 1 and Figure 1 showing historic population change in both the county and cities.

Table 1: MONTGOMERY COUNTY HISTORIC POPULATION 2005-2014										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Clarksville	116,341	120,097	123,853	127,609	130,628	133,647	136,442	143,229	142,773	146,806
Unincorporated	38,134	38,134	38,134	38,134	38,871	39,608	40,327	42,131	41,956	43,155
MONTGOMERY COUNTY TOTAL	154,475	158,231	161,987	165,743	169,499	173,255	176,769	185,360	184,729	189,961

Source: U.S. Census Bureau-2010\ACS, GNRC Linear Trend Analysis 2000-2009

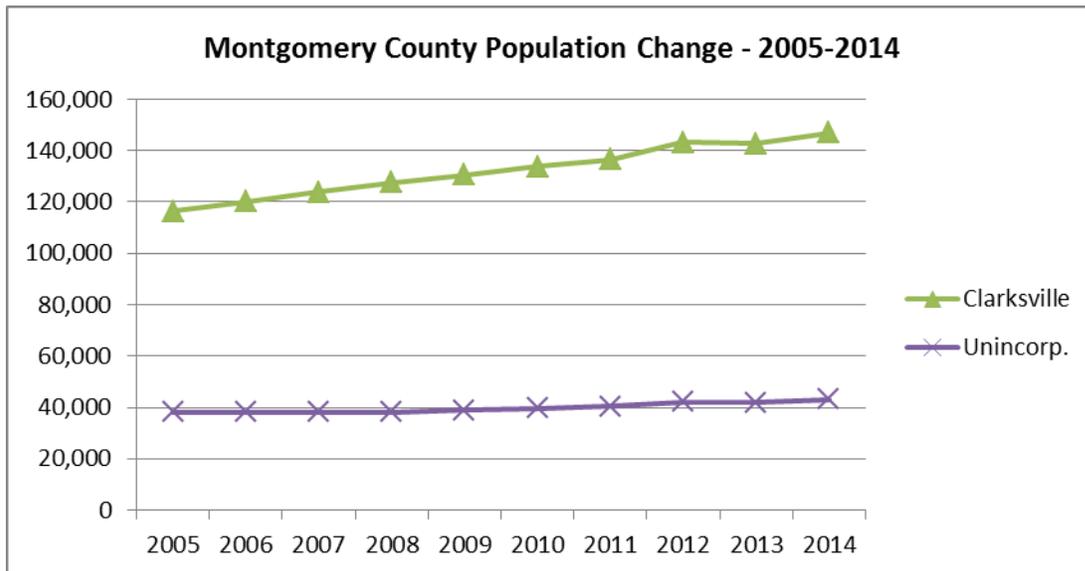


Figure 1-Montgomery County Historic Population, 2005-2014

Population Projections – Population does not always capture short-term influences on growth, such as economic downturns or major industry relocations. Still, projections are the best estimate, and the expectation for Montgomery County is for a significant

continued growth of 11.2% from 2015 to 2020. Woods & Poole population projections were used to estimate yearly growth (see Table 2 and Figures 2 and 3 below).

Table 2: MONTGOMERY COUNTY POPULATION PROJECTIONS						
	2015	2016	2017	2018	2019	2020
Clarksville	150,839	154,872	158,905	162,938	166,971	171,004
Unincorporated Area	41,101	41,388	41,675	41,962	42,249	42,536
MONTGOMERY COUNTY TOTAL	191,940	196,260	200,580	204,900	209,220	213,540
Source: 2015 Woods & Poole, GNRC Linear Trend Analysis 2015-2020.						

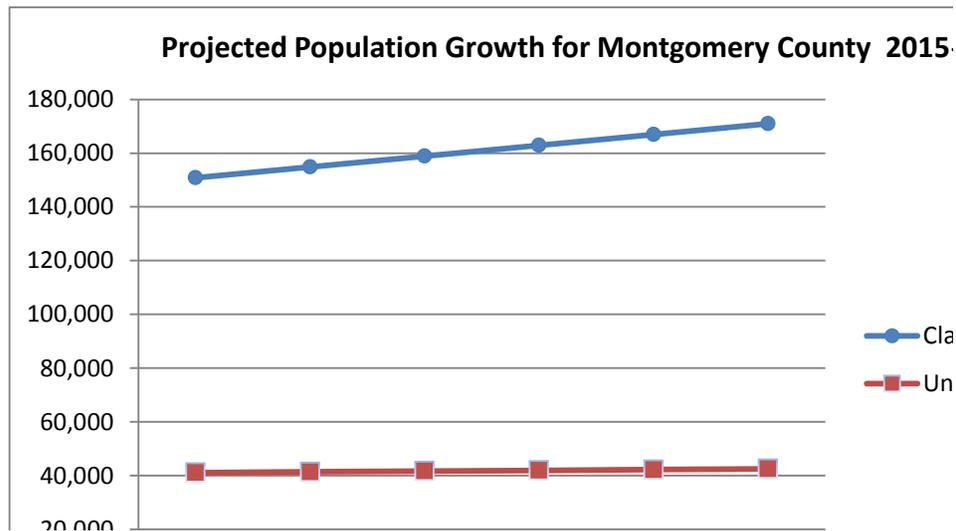


Figure 2-Montgomery County Population Projections, 2015-2020

The best use of these numbers for solid waste planning may be in their ability to project the number of **households** in future years. Dividing the projected population by the average household size yields an estimated projection of the number of new households that will be added and will contribute to the waste stream. The number of potential new households in Montgomery County is shown in Table 3, using the Woods & Poole population projections to examine the most aggressive projections of new residential solid-waste generators.

Table 3: HOUSEHOLD INCREASE PROJECTION TO 2020

2014 U.S. Census Population Montgomery County	2020 Projected Population	Population Increase 2014-2020	Average Household Size	Potential New Montgomery County Households, 2020
189,961	213,540	23,579	2.72	8,669

Montgomery County and Clarksville both separately issue residential building permits, so the combination had to be used to track the total.

The benefits of solid waste planning are to help address the potential added waste stream volume, ensure adequate convenience center numbers and locations, and forecast transportation needs and costs as best as possible, given the variable of price fluctuation. Census estimates indicate Montgomery County’s population has increased considerably over the last five years. Both the city and county have had growth, but the county’s growth has likely been near city boundaries.

Item 2: Analysis of Economic Activity within the Region

Table 4: MONTGOMERY COUNTY ECONOMIC DATA, HISTORIC AND PROJECTED 2005 - 2020

YEAR	LABOR FORCE	UNEMPLOYMENT	UNEMPLOYMENT RATE	PER CAPITA INCOME	PROPERTY TAX	RETAIL SALES
2005	66,000	3,270	5.0%	\$38,700	\$80,000,000	\$2,350,000,000
2006	68,940	3,250	4.7%	\$38,900	\$83,000,000	\$2,400,000,000
2007	68,530	3,310	4.8%	\$39,500	\$84,000,000	\$2,350,000,000
2008	68,060	4,310	6.3%	\$39,500	\$86,000,000	\$2,200,000,000
2009	68,920	6,180	9.0%	\$39,300	\$85,000,000	\$2,000,000,000
2010	75,200	6,830	9.1%	\$39,187	\$82,899,207	\$2,094,510,000
2011	77,250	7,090	9.2%	\$38,500	\$92,499,300	\$2,100,000,000
2012	78,220	6,310	8.1%	\$38,000	\$94,835,465	\$2,350,000,000
2013	77,550	6,280	8.1%	\$38,846	\$98,177,405	\$2,413,110,000
2014	76,100	5,120	6.7%	\$39,000	\$97,244,814	\$2,500,000,000
2015	77,380	4,450	6.3%	\$39,252	\$99,000,000	\$2,582,140,000
2016	78,200	4,850	6.2%	\$39,500	\$103,000,000	\$2,650,000,000
2017	78,500	4,710	6.0%	\$39,800	\$105,000,000	\$2,700,000,000
2018	79,000	4,850	6.2%	\$40,200	\$110,000,000	\$2,775,000,000
2019	79,300	4,600	5.8%	\$40,900	\$112,000,000	\$2,875,000,000
2020	79,300	4,760	6.0%	\$41,746	\$117,000,000	\$2,977,390,000

Sources: TN Dept of Labor & Workforce Dev, Div Emp Sec, R&S; TN Dept of Revenue, Montgomery County Trustee, TACIR, [Woods & Poole 2015 State Profile](#) , [GNRC Estimates](#)

Montgomery County has traditionally had a labor force dependent on Fort Campbell Army Base, however the county now relies less on the base due to the growth of other

sectors. Unfortunately, comparative historic sector data is not available. Property tax collections dipped throughout the economic downturn, and retail sales slowed, however, not to the degree of other counties. It is apparent the economy is back on track, based on the information in Table 4 (above).

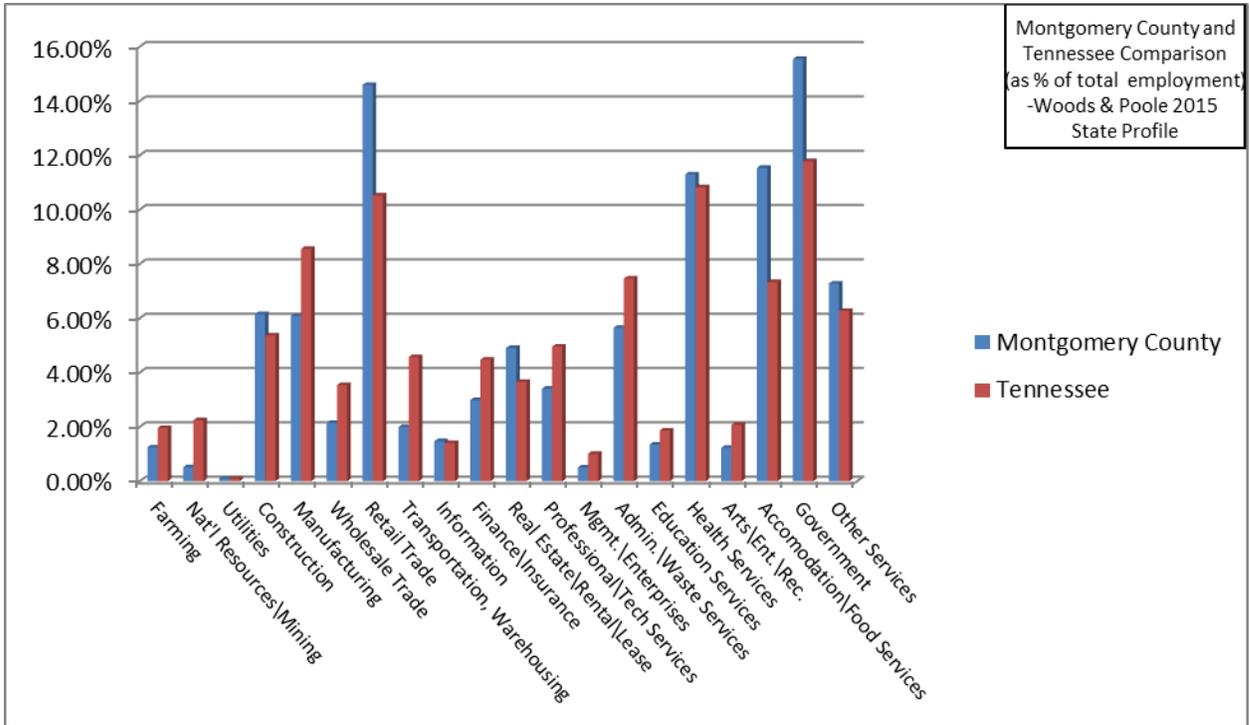


Figure 3 – Montgomery County Employment vs. State of Tennessee

Source: Woods & Poole, 2015 TN State Profile

Montgomery County’s sector employment does not follow State of Tennessee trends, as shown above from the *Woods & Poole, 2015 TN State Profile*. Montgomery County far surpasses the State averages for employment in government, retail trade, and food services. The manufacturing, wholesale trade, and warehousing services categories are significantly below state averages. Sectors were analyzed differently in the 2010 Needs Assessment, using a different data set, making comparison uneven. The State of Tennessee Department of Labor and Workforce Development includes Montgomery County in its Labor and Workforce Investment Area (LWIA) #8 (which also includes Cheatham, Dickson, Houston, Humphreys, Robertson, Stewart, Sumner, and Williamson Counties).

Item 3: Characterization of the Solid Waste Stream

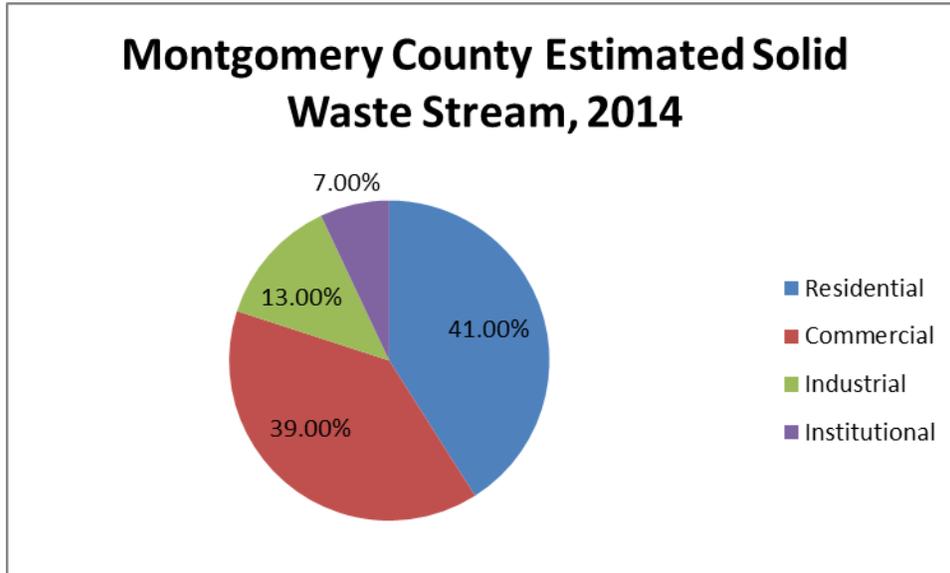


Figure 5

Generally, as of 2014's *Annual Progress Report (APR)*, Montgomery County's waste stream is nearly evenly divided between residential (41%) and commercial (39%) waste. Industrial waste contributed 13%. Institutional waste (7%) comprises the remainder. This waste stream reflects the County's large commercial tax base.

The specific composition of the waste stream specific to Montgomery County has not been measured. A report prepared in 2008 by Tennessee State University for the Tennessee Department of Environment and Conservation conducted a municipal solid waste characterization study of waste being handled at two facilities in Tennessee: Cedar Ridge Landfill in Lewisburg (Marshall County), and Bi-County Landfill in Montgomery County. Samples were taken and weighed, and results categorized. The report, **2008 Tennessee Waste Characterization Study**, noted that the two Middle Tennessee landfills surveyed had statistically significant differences in waste stream composition than the United States at large. As shown below, the two studied landfills had larger percentages of paper and plastics, but smaller percentages of food scraps, rubber, leather, textiles, and wood. All county waste streams will vary dependent on the mix of residential and commercial contributors, as well as the level of recycling efforts, however, the results of the TDEC/TSU study can be points of comparison for future measurement specific to Montgomery County.

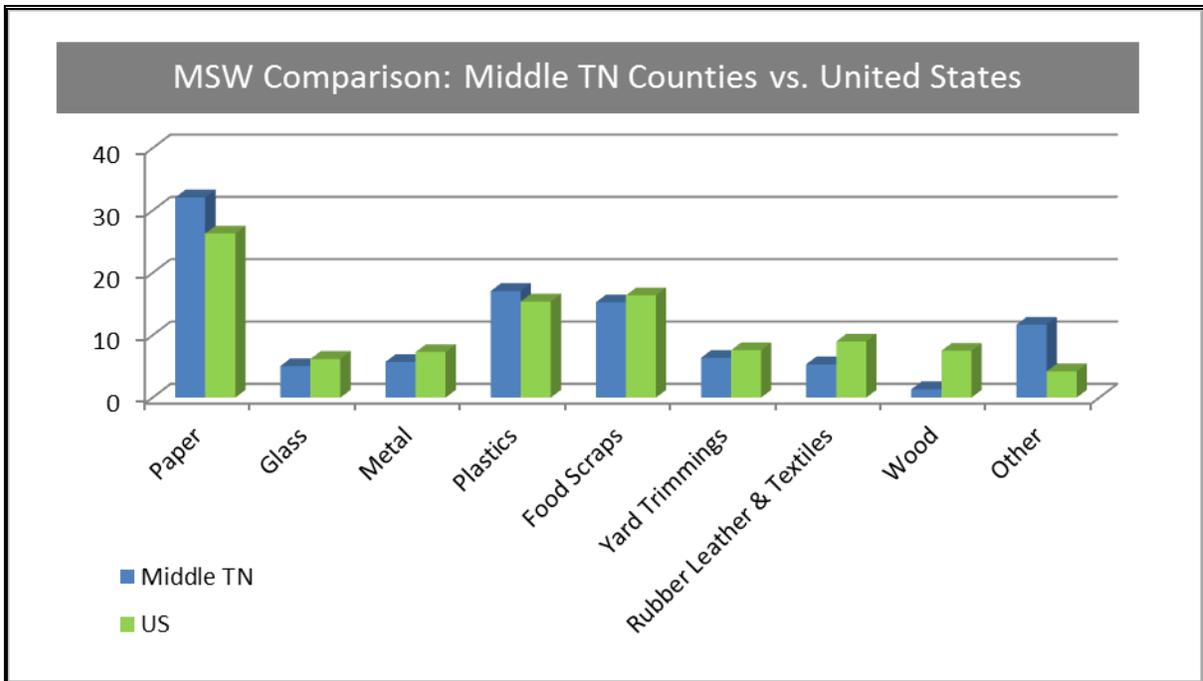


Figure 6 – Waste Stream Comparison

Montgomery County handles problem wastes, such as batteries, oil, tires, paint, e-scrap, and antifreeze through its recycling program. All of these are collected at the Montgomery County Landfill Convenience Center on Dover Road, and many are collected at other centers.

Future efforts planned by Montgomery County include:

- More recycling and solid waste collection processing equipment, such as compactors, a roll off truck, a tire grinder, and other needs.

- An expanded household hazardous waste facility and program.

- An Office of Rural Collections for areas outside of the Clarksville city limits.

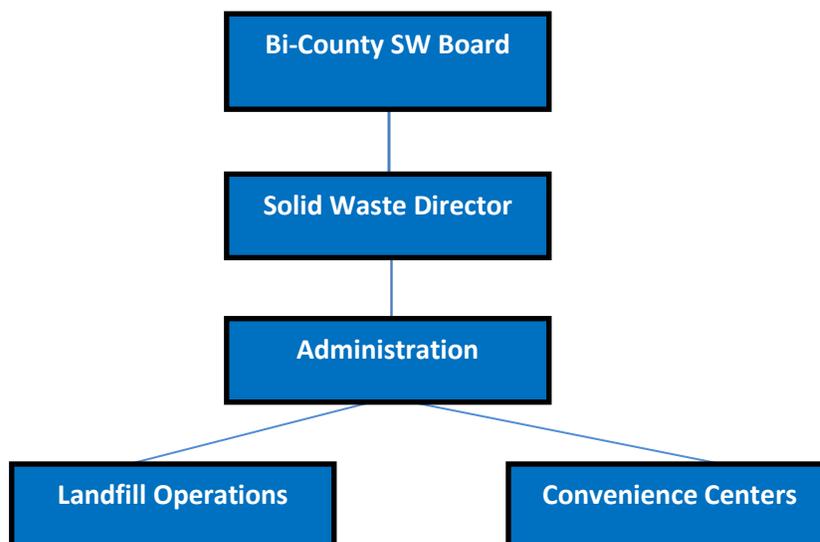
Item 4: Solid Waste Collection System

Montgomery County has nine convenience centers, and one transfer station located at 3212 Dover Road. The convenience centers are located throughout the county (Fredonia, Outlaw Field, Palmrya, Ferry Rd., Sango, Southside, St. Bethlehem, Crossland Ave., and Barge Point Rd.) serving both the unincorporated areas and the City of Clarksville. The County and Clarksville provide no solid waste pickup service; their residents have the option to contract directly with private haulers, most notably Queen City Disposal. It is unknown how many citizens use private haulers; many choose to transport their waste directly to the County Convenience Centers. Due to the good level of service and geographic coverage, the County has no plans to add additional convenience centers. In addition, curbside collection would be very expensive to implement; increasing taxes to accommodate such a new service would not be cost-effective.

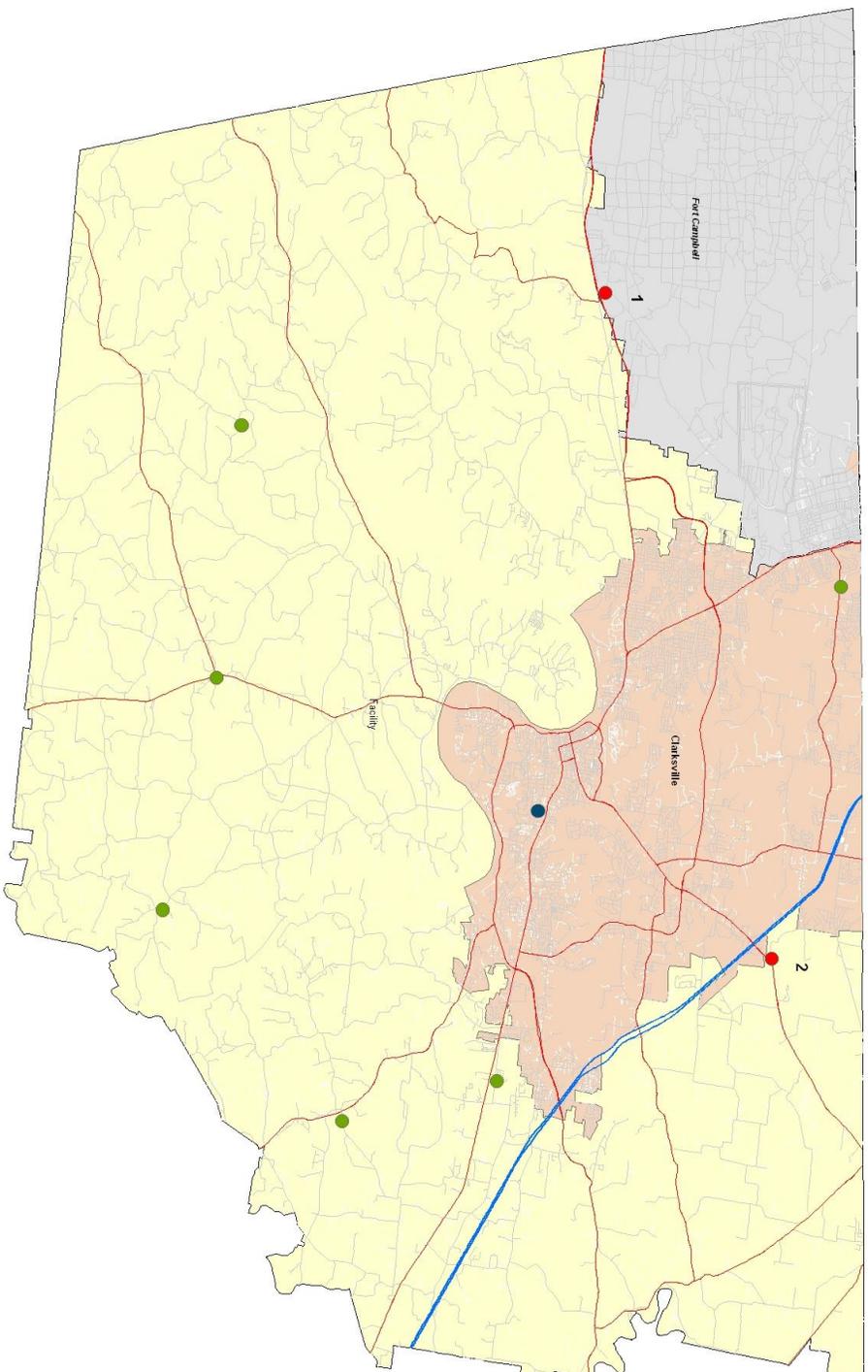
With County populations projected to significantly increase, Bi-County worked with Ft. Campbell in 2007 to gain land to accommodate over 100 years of landfill life. However, Bi-County is waiting for approval for additional solid waste storage area to increase the currently permitted lifespan of the landfill, which has only two years remaining. Bi-County Solid Waste Landfill accepts trash from not only Montgomery County, but many other surrounding counties, as well.

Item 5: Analysis of Existing Solid Waste System in the Region

The Bi-County Solid Waste Board and management is made up of Montgomery, Stewart, and Robertson counties, as well as a collective representative for Robertson County cities, and individual ones for the cities of Clarksville and Dover. However, Montgomery is the only entity participating in funding and service. The rest participate in user's fees. The Board oversees the Solid Waste Director and his staff. The Solid Waste Director is in charge of the landfill, convenience centers, and their staff, with 75 full time employees in the landfill operations, and 33 part-time employees in the convenience center operations.



MONTGOMERY COUNTY SOLID WASTE FACILITIES



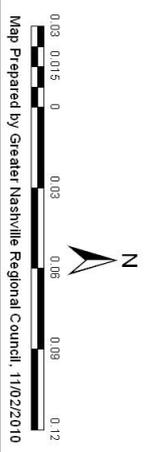
Street Type

- Interstate 24
- US and State Highways
- Local Streets

Facility

- Convenience Center
- Transfer Station
- Landfill/Convenience Center

1. Bi-County Landfill Class I and c&d
2. St. Bethlehem C&D Landfill



Item 6: Analysis of Public Attitude of Solid Waste Management Program and Public Outreach/Education

Describe current attitudes of the region and its citizens towards recycling, waste diversion, and waste disposal in general. Where recycling is provided, discuss participation within the region. Indicate current and ongoing education measures to curb apathy or negative attitude towards waste reduction. Are additional measures needed to change citizen's behaviors? If so, what specific behaviors need to be targeted and by what means.

Bi-County Solid Waste has made tremendous strides in its recycling program, and continues to reduce recyclable material sent to landfills through its education and outreach programs. The County has worked over the last 10 years to increase diversion efforts, and more material is collected for recycling than in the past. Continued education and public outreach will assist in modifying the public's behavior over time. Education and outreach efforts are conducted with Montgomery County students, businesses and industry, and the public. To assist with diversion efforts, and to help reduce the amount of recyclables going to the landfill, Bi-County Solid Waste educates the community, local businesses, and industries on the importance of recycling. They also provide tours of facilities and talks to school and civic groups, and participate in Rivers & Spires community festival and Riverfest to increase public education and awareness. They have also worked with companies and organizations for them to achieve certification through the Clarksville-Montgomery County Green Certification Program, with approximately 120 of them who have become part of the program.

The overall effects of education and outreach programs should be measured over time, as receptiveness to new initiatives is not typically immediate. Examining the recycling rate over time in a temporal study (comparing years) is a way this can be measured. Encouraging the public to make environmentally conscious decisions is the goal of education and outreach. More visible options for recycling, as well as changes in policies and mandates, place those opportunities to the forefront.

Citizens are able to contact Bi-County for information and to express concerns. Residents are able to provide feedback on all matters, including programs for the public. This allows Bi-County to examine their progress and maximize the effectiveness of their efforts.

Item 7: Evaluation of the Waste Reduction Systems for Counties & Municipalities in Region

The Solid Waste Management Act of 1991 states that all regions must reduce the amount of waste going into Class I landfills by 25%. Amendments to the Act allow for consideration of economic growth, and a “qualitative” method in which the reduction rate is compared on a yearly basis with the amount of Class I disposal. Provide a table showing reduction rate by each goal calculation methodology. Discuss how the region made the goal by each methodology or why they did not. If the Region did not meet the 25% waste reduction goal, what steps or infrastructure improvements should be taken to attain the goal and to sustain this goal into the future.

Utilizing the two methods authorized by amendments to the Solid Waste Management Act of 1991 tends to show very different diversion outcomes.

Base Year Diversion, Montgomery County

Table 5

Year	Tons Disposed	Population	Tons Per Capita Diverted
1995	74,050	117,265	1.58
2009	191,770	169,499	0.88
2014	212,770	189,961	0.89

The per capita diversion increased from 1995 and 2009, however a decrease is apparent as of 2014. The latest numbers does not reflect the increase in the rate of recycling, only the amount diverted due to the additional population. Also, in 1995, the volume of waste disposed was potentially inaccurate due to possible overestimation, which would have helped them in long run, or underestimation, which would have made it more difficult to reach their goal. However, the impact of diversion efforts since should not be discounted.

Real Time Diversion, Montgomery County

Table 6

	Tons Disposed	Waste Diverted (Tons)	Total Waste (Tons)	% Diverted
2009	191,770	58,166	249,936	51.0
2010	386,771	30,700	417,471	70.0
2011	219,354	62,873	282,227	51.0
2012	219,719	62,545	282,264	50.0
2013	206,993	47,424	254,417	40.0
2014	212,770	31,841	244,611	33.0

The county has diverted waste has fluctuated during this timeframe, but has exceeded 25% reduction each of the last five years.

Item 8: Collection/Disposal Capacity and Projected Life of Solid Waste Sites

Table 7

Site Name	Current Capacity (tons/day)	Maximum Capacity (tons/day)	Projected Life of Facility (years)
Bi-County (Class I)	1,000+ tons	1,000+ tons	2yrs permitted, 80+ years capacity

Montgomery County sends all of its waste to the Bi-County Landfill in Montgomery County. Some private haulers may utilize other facilities, however, it does not show up on the origin report. Bi-County Landfill is an excellent option for the time being, however, it has nearly reached the current capacity that they are permitted for. However, if allowed to expand, it has a very large overall capacity and a long projected life.

Evaluation of the Waste Reduction Systems for Counties & Municipalities in Region

Table 8

Service Provider	Service Area	Population Served	Service Frequency	Tonnage Capacity	Service Type
Clarksville	Municipal	146,806	7 Days/Wk	1,000+ tons	Convenience Center
Montgomery County	Unincorporated	43,155	7 Days/Wk	1,000+ tons	Convenience Center

The citizens of Clarksville and Montgomery County have the option of contracting directly with private haulers for curbside pick-up or using the County Convenience Centers. It is unknown how many use either method. All municipal waste is transported to Bi-County for disposal. Due to their excellent current geographic coverage, the County has no plans to expand their collection system.

Item 9: Unmet Financial Needs and Cost Summary

Table 9 below details the current budget, as well as suggested feasible needs. Funding is added under the staff line for performance-based raises in order to provide a benefit and goal for employees that are valuable to the organization. The need for equipment for disposal and recycling is also noted in Montgomery's annual progress report for 2014. Other unmet needs are shown below, as Development District recommendations. The convenience centers have many recycling options, and continue to be utilized more over time.

Table 9: Expenditures and Revenues			
EXPENDITURES			
Description	Present Need \$/year (2013 APR)	Unmet Needs \$/year	Total Needs (Present + Unmet) \$/year**
Salary and Benefits	886,684	70,000*	70,000*
Waste Pickup			
Collection and Disposal Systems			
Equipment		850,000	850,000
Sites			
Convenience Center	1,388,310		
Transfer Station			
Recycling Center			
Problem Waste Ctr.			
Compost Center			
Other Collection			
Landfills	6,264,652		
Site			
Operation			
Closure			
Post Closure Care	50,000		
Other Waste Disposal			
Administration (supplies, communication costs, etc.)			
Education		40,000	40,000
Public			
Continuing Ed.			
Capital Projects			
REVENUE			
Host agreement fee			
Tipping fees	9,650,000		
Property taxes			
Sales tax			
Surcharges			
Disposal Fees	2,880,000		
Collection charges			
Industrial or commercial charges			
Residential charges			
Convenience Center charges			
Transfer Station charges			
Sale of Methane Gas			
Sale of Recycled Materials	1,000,000		
Solid Waste Grants	287,000		
Other Governments and Citizens Groups			
Other sources: (Grants, bonds, interest, sales, etc.)			
Transfer from General Fund			

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Continuing Ed.			
Capital Projects			
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Solid Waste Grants	287,000		
Other Governments and Citizens Groups			
Other sources: (Grants, bonds, interest, sales, etc.)			
Transfer from General Fund			

*Running Annual Cost

Item 10: Revenue Sources/Needs

The primary source of revenue for Bi-County was from tipping and disposal fees. The solid waste program relies on these to fund the operation. Sale of recycled materials and solid waste grants are two other major sources of revenue. Maintenance costs and replacing equipment are Bi-County's biggest challenge, given the size of their operation. Montgomery County has a budget in which it can provide services for citizens and help fund Bi-County, and Bi-County effectively uses its revenue to continue its operations in an efficient and useful manner.

Montgomery County offers many disposal and recycling options to its residents at its convenience centers. The convenience centers are well distributed geographically, and do not put a transport burden on residents. The current budget ranges from excellent to adequate for the centers, compared to other counties.

Additional education could be addressed with funding increases. Continuing to reach out to other industries for the purpose of creating public-private partnerships for education & outreach on recycling & diversion/composting could provide additional funding for education programs. There are large variations in recycling year to year, and education may help stabilize this variability.

Item 11: Sustainable Goals Consistent with the State Plan

No major changes are expected in the Region's Solid Waste Management Plan. Montgomery County government and the Bi-County Solid Waste Board review planned needs, along with other budgetary items. The County will continue its current education programs on appropriate waste reduction, management, and disposal. Education encourages positive waste management habits by the public, and provides them knowledge of the available options.

The efforts put forth by Houston County support the Statewide Solid Waste Management Plan. Waste reduction and diversion is a common goal that their Solid Waste program intends to continually improve on. This is dependent on subsidies from the County budget and TDEC grants to carry on existing activities, as well as add new initiatives. The challenge of balancing a budget with additional running annual costs to keep the program running would seem to be the biggest challenge, particularly with staffing facilities. Adding new services creates this budget issue many times as well. Countywide trash pickup and recycling would be a difficult to impossible goal, and one that would require a tax increase, which would likely make it an unpopular decision. Ensuring that the current program has up-to-date equipment, continuing education, and working toward making recycling more convenient is recommended for Houston County in the next five years.

Sources:

- 1995-2014 Re-trac Annual Progress Reports
- 2010 Solid Waste Needs Assessment
- 2015 Woods & Poole Annual State Profile
- Tennessee Dept. of Labor and Workforce Development
- Mary Anderson, Director of Administration and Education, Bi-County Solid Waste
- Jeff Truitt, Montgomery County Mayor's Office
- Corinthia Elder, Montgomery County Chief Deputy Trustee
- Mike Baker, City of Clarksville Codes Dept.
- Brandy Fallis, Montgomery County Codes Dept.
- Tennessee Department of Revenue