

Southeast Tennessee Municipal Solid Waste Region

RHEA COUNTY

Solid Waste Needs Assessment



Fiscal Year 2016

The Solid Waste Management Act of 1991 requires Tennessee local governments to prepare and maintain a comprehensive plan for managing their solid waste through modern, integrated, efficient systems. To assure that such planning is carried out on a solid foundation of relevant and objective knowledge of local conditions, the Act requires that the Development District staff coordinate, conduct and maintain an assessment of the solid waste needs for each municipal solid waste planning region. This assessment shall be revised every five years [T.C.A. 68-211-811].

The Solid Waste Management Act of 1991 (SWMA) was written to avert extreme financial hardships that could have occurred if small local governments were suddenly required to upgrade landfills to meet Resource Conservation and Recovery Act (Subtitle D) regulations. The Tennessee Department of Environment & Conservation promulgated rules to implement Subtitle D included provisions requiring landfill operators to line facilities with impermeable clay and synthetic materials; install leachate collection systems and monitoring wells; and provide thirty years of post-closure care. These were, at the time, extremely expensive changes in the development and operation of disposal facilities, and there was fear in the legislature that some counties would not have a disposal option.

To ensure that local governments were protected from high costs and lack of disposal capacity, the SWMA promoted regional landfills, an attempt to guide small counties into alliances with other counties. Theoretically, small counties would form a regional board that would then settle on a disposal site, and each local government would share in the cost of operation. The law even has a provision that would allow local governments to require all entities within their respective jurisdictions to dispose of their waste at the regional landfill. The premise behind the latter concept proved to be unconstitutional (see *Carbone vs Clarkstown*, U.S. Supreme Court, May 1994). While acknowledging that the flow control provision existed, no county in the State was willing to pledge public funds to facilities that may not receive enough waste to garner the tipping fees needed to meet costs.

During the same period in the early 1990s, the Tennessee Valley Authority was exploring ways to integrate solid waste into fuel supply systems at power plants that had the existing technology to properly combust waste material. One of these plants was located in Kingston, and local officials became interested in combining their respective waste streams, closing most of their landfills, and hauling everything to a waste-to-energy facility.

Engineers working with TVA had prepared studies for other power plants and suggested the Watts Bar site as an alternative because two moth-balled fossil fuel plants are located there.

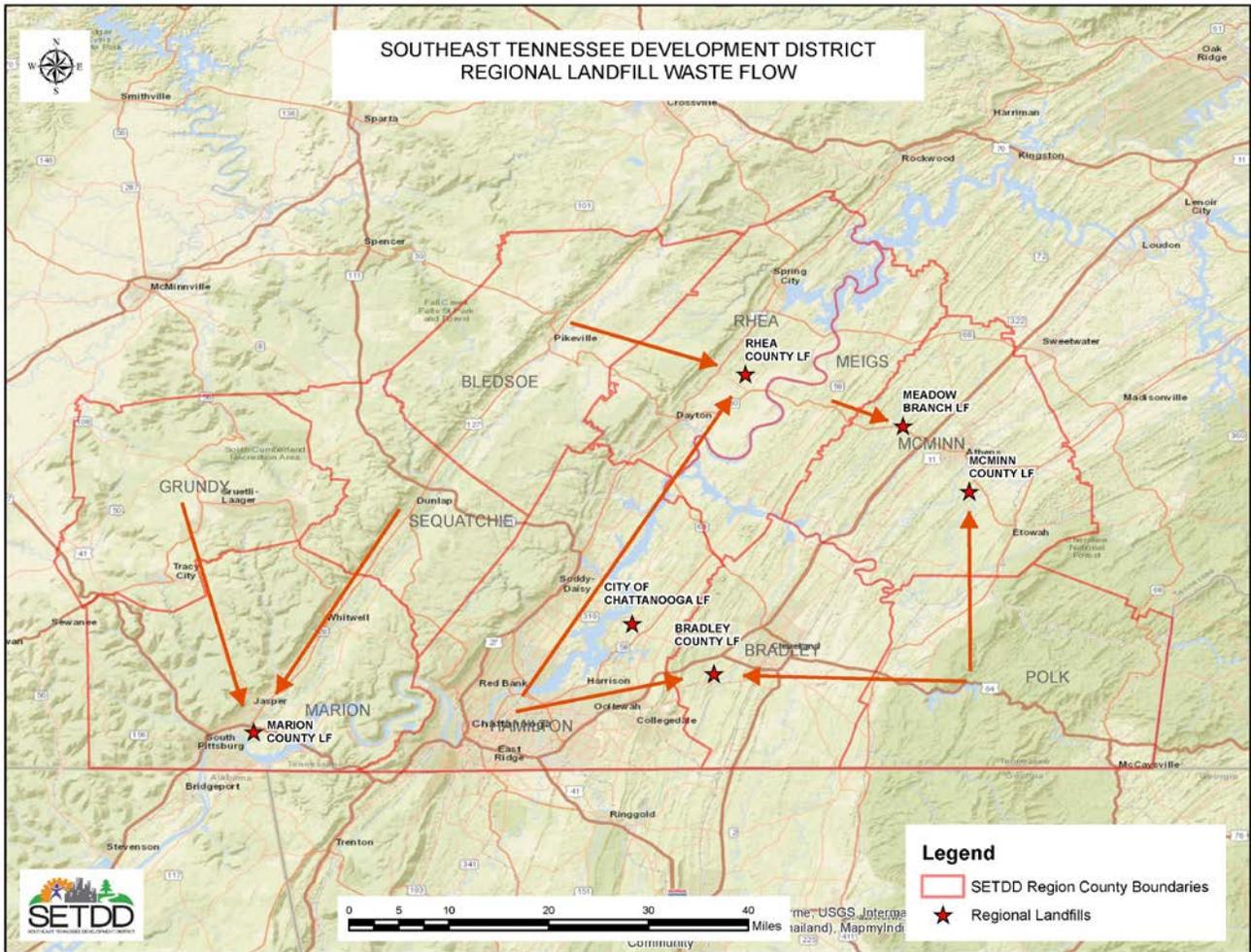
The engineers recommended installing a companion boiler system that would utilize existing infrastructure and reduce the haul distance for all southeast Tennessee counties. Other infrastructure planned for the site included a materials recovery facility (MRF), which would have diverted enough material to meet the SWMA waste reduction goal. This situation was the catalyst for the formation of the Southeast Tennessee Municipal Solid Waste Planning Region, which included all the counties within the Southeast Tennessee Development District. Without the flow control provision, commitments from all counties and cities were vital in bringing this project to fruition.

After the completion of studies funded by TVA, the utility lost interest in the project. No official reason was ever conveyed, but the decision was probably based on the fact that any emissions from the proposed plant would have a potential impact on the Cherokee National Forest and the Smokey Mountain National Park. TVA's involvement in the project was crucial because the utility had existing infrastructure and would have bought the steam produced by the plant. Tipping fees would have been a reasonable \$35 per ton, including MRF operations. Without TVA, the Board could not finance a stand-alone facility because tipping fees would have reached \$100 or more, far above existing landfill disposal costs.

The failure to implement the waste-to-energy project did not deter the Board from remaining a regional planning entity. Board members were comfortable with the situation and wished to remain together in the event that other regional opportunities arose.

Saving landfill space was a primary goal of the SWMA. Many experts believed early on that the cost per ton of garbage would be in the \$40 - \$90/ton range at Class I facilities. Consequently, recycling, waste diversion, and saving landfill space became paramount goals. However, high tipping fees failed to materialize as competition and economies of scale drove down development costs. Subsequently, many cities and counties found themselves with expensive recycling and waste diversion programs. Studies by several jurisdictions showed costs of \$280+ to recycle a ton of waste material versus \$25-\$28 dollars to simply dump it in the landfill. It is no surprise that many cities dropped their recycling programs, since the law did not require them to have one in any case, and shifted most of the burden to county governments, which were required to meet SWMA goals. There were no crises, no shortage of landfill space, and most of the landfill operators were marketing their space to most sectors in Tennessee and in the surrounding states. The more waste disposed of in the landfill, the more revenues. Few landfill operators were (or are) working diligently to save space; they are generally selling as much space as possible for the best price.

In Southeast Tennessee, there are six (6) operating Class I Landfills. SANTEK Environmental, Inc. operates two of these facilities for Bradley and Rhea Counties respectively. SANTEK can generally landfill all the waste that it can attract to either landfill, some of it from Georgia. In return, the counties get reduced or no disposal costs, income from disposal operations, and assistance with programs, including the State's Household Hazardous Waste collection events.



Meadow Branch, a private landfill located in McMinn County, provides disposal for several counties in East Tennessee, including several outside of the region. McMinn County receives a host fee for Meadow Branch, and operates its own C&D landfill, which also accepts waste from outside the region.

Marion County's landfill is operated Solid Waste Disposal, Inc. Like the other landfills, waste is accepted from any source. In the past, landfill operators have received waste from Dade County, Georgia, Jackson County, Alabama, and both Hamilton and Franklin Counties in Tennessee. The landfill routinely accepts all of Grundy and Sequatchie County's waste.

Chattanooga operates the sixth landfill in the region. It is a facility that originally belonged to Hamilton County, but when the city's Summitt Landfill was closing, the city and county came to an agreement that allowed Chattanooga to own and operate the landfill. This landfill accepts waste from Hamilton County and all municipalities within the county. About 78% of the Chattanooga/Hamilton County waste stream, over 335,000 tons annually, goes to landfills located outside the county. More than 54% is hauled to the SANTEK landfill in Bradley County.

The original 1991 solid waste assessment for the entire region advocated sub-regions composed of natural “waste sheds.” In reality, these sub-regions have occurred, essentially as predicted, based on the economics of waste generation, hauling distance, etc. As the previous map indicates, these sub-regions consist of county groupings as follows: Bledsoe-Rhea; Meigs-McMinn-Polk; Bradley County; Hamilton County; and Grundy-Marion-Sequatchie.

The following is a detailed description of Rhea County’s waste collection, diversion, and disposal system and how these programs function in relation to other parts of the Region. Every attempt has been made to provide an objective assessment of the County’s infrastructure and program needs based on the legal requirements of the SWMA.

Item 1-Demographic Information & Projections

Provide a table and chart of the region’s population during the past ten (10) years with a projection for the next five (5) years. Provide a breakdown by sub- table and sub-chart, or some similar method to detail county and municipality populations. Considering the trends, discuss the affect on the solid waste infrastructure needs over the next five (5) years.

Like most of the rural counties in the southeastern section of Tennessee, Rhea County’s population decreased after 1950. This was primarily due to out-migration as people moved elsewhere for jobs. This trend began to reverse after 1970 when some economic development opportunities began to emerge in the region. Two developments had a profound impact on the county: the completion of a four-lane highway connecting the county to the Chattanooga metropolitan area, and a bridge over the Tennessee River on Highway 60 that provides a link to I-75. Since then, population growth has accelerated, increasing 20 percent from 1990 to 2010. The population density in the non-municipal portion of the county is 90 people per square mile (40 households), which is very near the national density of 86.2 persons/square mile but much lower than Tennessee’s 149.4 (2013 U.S. Census American Community Survey).

Table 1.1-Rhea County Historical Population & Projections

Year	Mathematical Model	Tenn. Dept. of Health	Mean
2000	28,400	28,400	28,400
2001	28,190	28,643	28,417
2002	28,465	28,958	28,711
2003	28,739	29,356	29,047
2004	29,013	29,601	29,307
2005	29,288	29,858	29,573
2006	29,562	30,330	29,946
2007	29,836	30,551	30,194
2008	30,110	30,804	30,457
2009	30,385	31,072	30,728
2010	30,659	31,357	31,008
2011	30,933	31,576	31,255
2012	31,208	31,803	31,505
2013	31,482	32,061	31,772
2014	31,756	32,337	32,047
2015	32,031	32,625	32,328
2016	32,286	32,913	32,600
2017	32,551	33,201	32,876
2018	32,816	33,489	33,153
2019	33,081	33,777	33,429
2020	33,346	34,065	33,706
2021	33,611	34,353	33,982

Sources: Southeast Tenn. Development District mathematical projection, and Tennessee Dept. of Health, Office of Policy, Planning, and Assessment, Division of Health Statistics cohort methodology.

There are likely to be fluctuations in the population because there is a significant population of migrant workers in the county, especially during the growing season. To take this variance into account, it was decided to average to two projection methods. The county and its municipalities have the industrial, commercial, or institutional resources to support additional population growth. It is also near enough to the Chattanooga-Hamilton County Metropolitan Statistical Area to benefit from the metropolitan economic center.

Table 1.2-County-Municipal Population Historical Breakdown

Year	Population		County Percent
	County	Municipal	
1950	16,041	N/A	N/A
1960	15,863	13,677	13.8%
1970	17,202	14,292	16.9%
1980	24,235	14,510	40.1%
1990	24,344	14,217	41.6%
2000	28,400	15,306	46.1%
2010	30,659	16,395	46.5%

Source: U. S. Census Bureau

Table 1.3-Municipal Population Projections

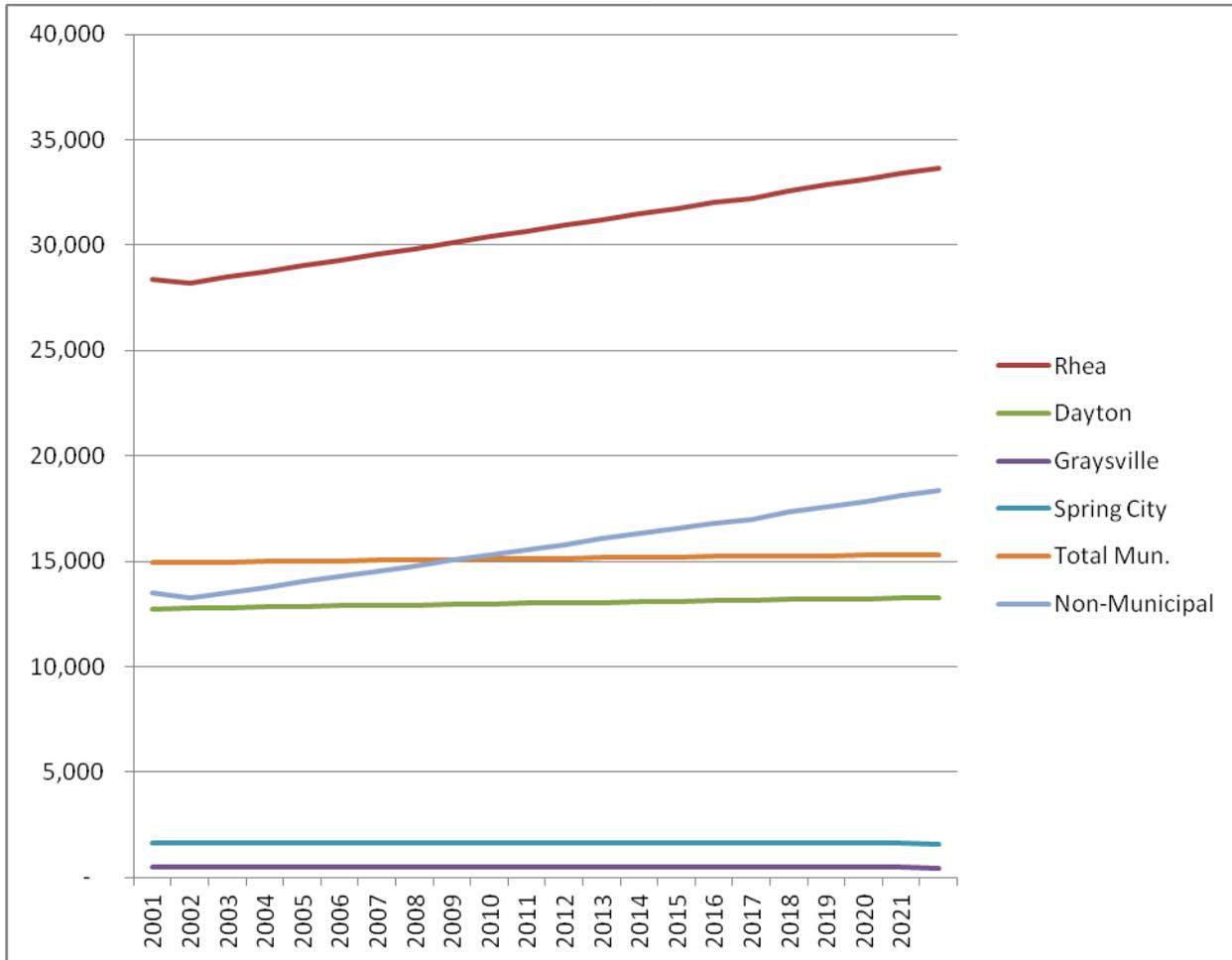
Year	Rhea	Dayton	Graysville	Spring City	Total Municipal	Non-Municipal
2016	32,600	13,149	471	1,613	15,233	17,367
2017	32,876	13,174	468	1,610	15,252	17,624
2018	33,153	13,199	465	1,607	15,271	17,585
2019	33,429	13,224	462	1,604	15,290	17,863
2020	33,706	13,249	459	1,601	15,309	18,397
2021	33,982	13,274	456	1,598	15,328	18,654

Sources: Southeast Tenn. Development District mathematical projection, and Tennessee Dept. of Health, Office of Policy, Planning, and Assessment, Division of Health Statistics cohort method.

Since all the municipalities provide waste collection service, about half the county’s population should have access to curbside collection. If current trends prevail, the non-municipal portion of the county’s population will continue to surpass the municipal population. However, annexation could change this scenario. The cities have growth boundaries developed under

Tennessee Code, Public Chapter 1101 (Growth Policy, Annexation, and Incorporation) that will allow them add territory to their respective jurisdictions if there is the political will to do so. Also, the Tennessee Legislature made annexation by ordinance illegal in 2015. So, any future municipal annexation must now take place via referendum of affected property owners. Any chance for municipal population growth will likely take place via infill development, rather than via greenfield development to previous undisturbed areas. Therefore, the non-municipal population is likely to increase as a percentage of total county population in the coming years.

Chart 1.1-Municipal Population Projections



Item 2-Analysis of Economic Activity within the Region

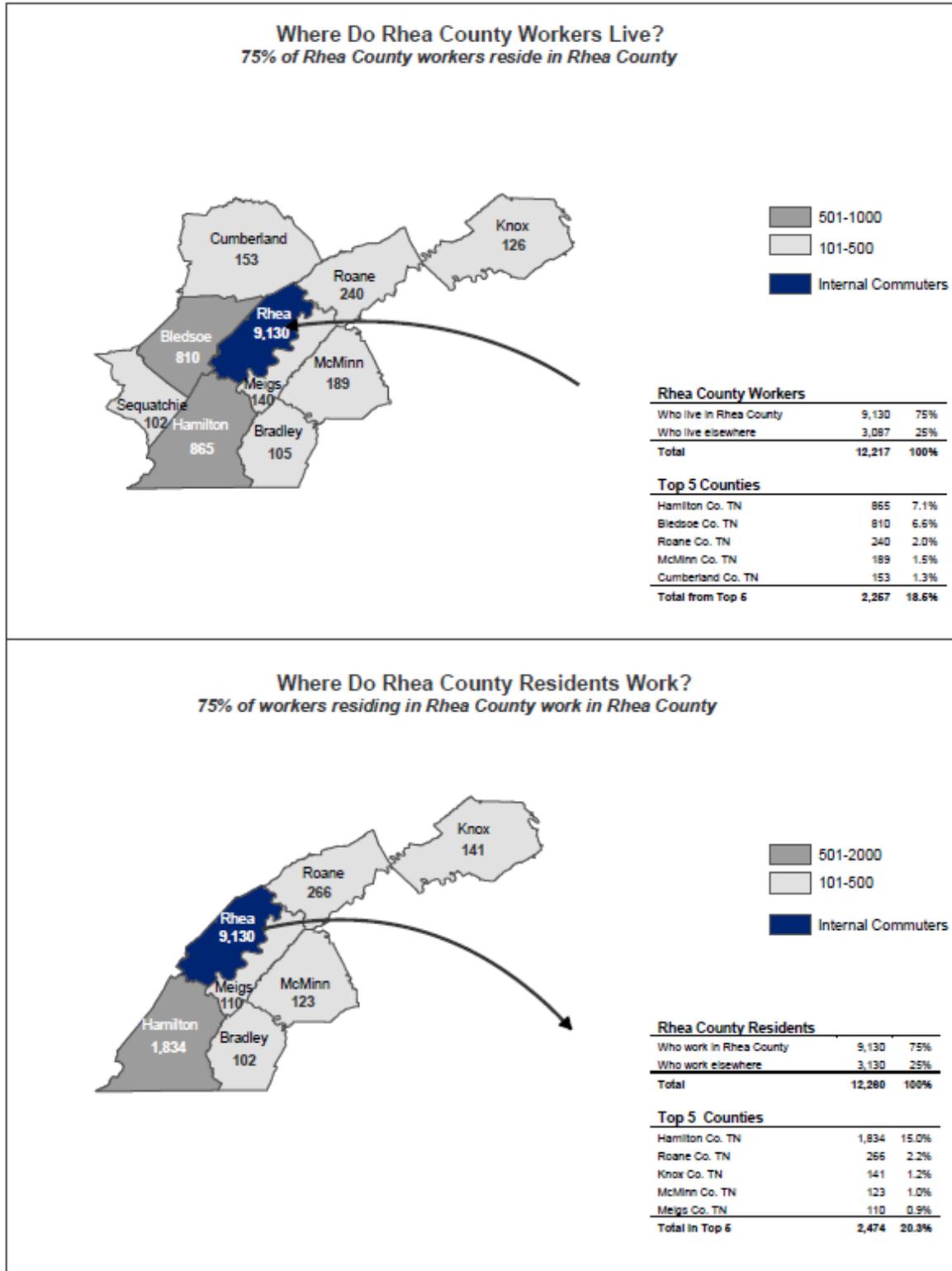
Provide a table and chart showing the region's economic profile for the county and its municipalities for the last ten (10) years with a projection for the next five (5) years. This can be accomplished by using the following economic indicators:

- *Taxable sales, property tax generation, and per capita income*
- *Evaluation by break down of each economic sector*
- *County or municipal budgeting information*
- *Other commonly accepted economic indicators*

Rhea County's economy is only moderately dependent on surrounding areas for employment opportunities because there is a significant industrial base within the county. The county is home to several major manufacturing plants, including La-Z-Boy furniture and a Huber particle board plant. However, there are some upcoming plant closures (that have been announced, but have yet to formally occur) that will drastically change the economic situation in Rhea County. Goodman Manufacturing has announced that it will shutter its Dayton plant in the fall of 2016, resulting in the loss of 630 jobs. Also, Fujifilm Hunt Chemicals will shutter its Dayton plant in 2017, resulting in the loss of 100 jobs. These two plant closures will undoubtedly have a severe negative impact on Rhea County's economy when they occur in 2016 and 2017.

As the Figure 2.1 indicates, 75% of Rhea County's workforce reside and work within the county. There is easy access to the neighboring Chattanooga metropolitan area where there are many employment opportunities. It is therefore significant that there are currently enough employers locally to accommodate the workforce.

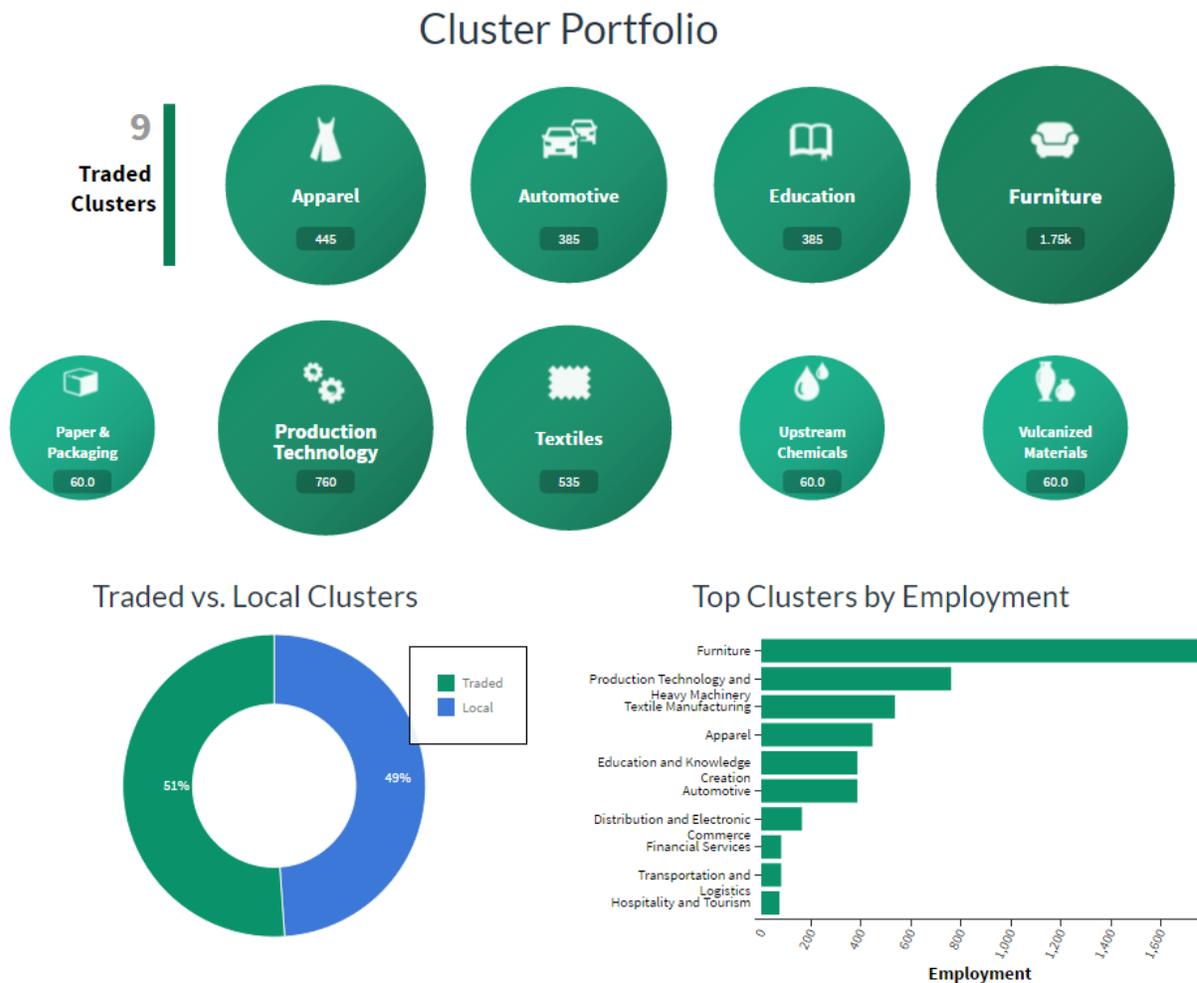
Figure 2.1-Rhea County In-Migration & Out-Migration Commuting Patterns



Data Source: U.S. Census 2000 County-To-County Worker Flow Files. Retrieved July 2009, from <http://www.census.gov/population/www/cen2000/commuting/index.html>.

Prepared by TACIR, 04/2010

Figure 2.2 Rhea County-Cluster Portfolio & Top Employment by Cluster



Rank numbers are out of 3221 for counties.

Source: [U.S. Cluster Mapping Project](#), Institute for Strategy and Competitiveness, Harvard Business School. [Data Sources](#)

Figure 2.2 emphasizes the economic reliance on furniture manufacturing (Lay-Z-Boy) and production technology (Fuji). If reductions in employment occur as expected, this chart will alter significantly by 2018, reducing production technology and textiles to a much smaller segment of the economy. This will likely result in an increase in the number of people seeking employment outside the county, particularly in the Chattanooga/Hamilton County metropolitan area where new jobs will be available the automotive sector at the Volkswagen plant and companies that provide products and materials for Volkswagen. Per a January 16, 2016 article in the Chattanooga *Times Free Press*, VW will likely add up to 2000 new jobs at its plant.

Table 2.1-Rhea County Economic Indicators

Year	Total in Workforce Pool	Employment	Unemployed		Per Capita Income	Retail Sales (\$1,000's)
			Total	Percent		
2006	13,399	12,559	840	6.3%	25,540	329,050
2007	13,174	12,410	764	5.8%	26,921	336,742
2008	13,466	12,373	1,093	8.1%	27,835	346,073
2009	13,468	11,645	1,823	13.5%	27,390	312,351
2010	13,562	11,892	1,670	12.3%	27,639	280,090
2011	13,854	12,294	1,560	11.3%	29,000	292,362
2012	13,512	12,130	1,382	10.2%	29,907	298,001
2013	13,392	11,962	1,430	10.7%	29,979	310,650
2014	13,309	12,199	1,110	8.3%	31,198	315,700
2015	13,101	12,109	992	7.6%	32,573	318,000
2016	13,367	12,299	1,068	8.0%	32,601	320,300
2017	13,357	12,307	1,050	7.9%	32,683	322,600
2018	13,347	12,424	923	6.9%	32,690	324,900
2019	13,337	12,490	847	6.4%	32,707	327,200
2020	13,332	11,828	1,504	6.6%	32,798	329,500
2021	13,316	11,793	1,523	6.5%	32,804	331,800

Sources: Historic employment data, U. S. Dept. of Labor; Per capita income data, U.S. Bureau of Economic Analysis; Retail data, Tenn. Dept. of Revenue

All state and local area dollar estimates are in current dollars (not adjusted for inflation).

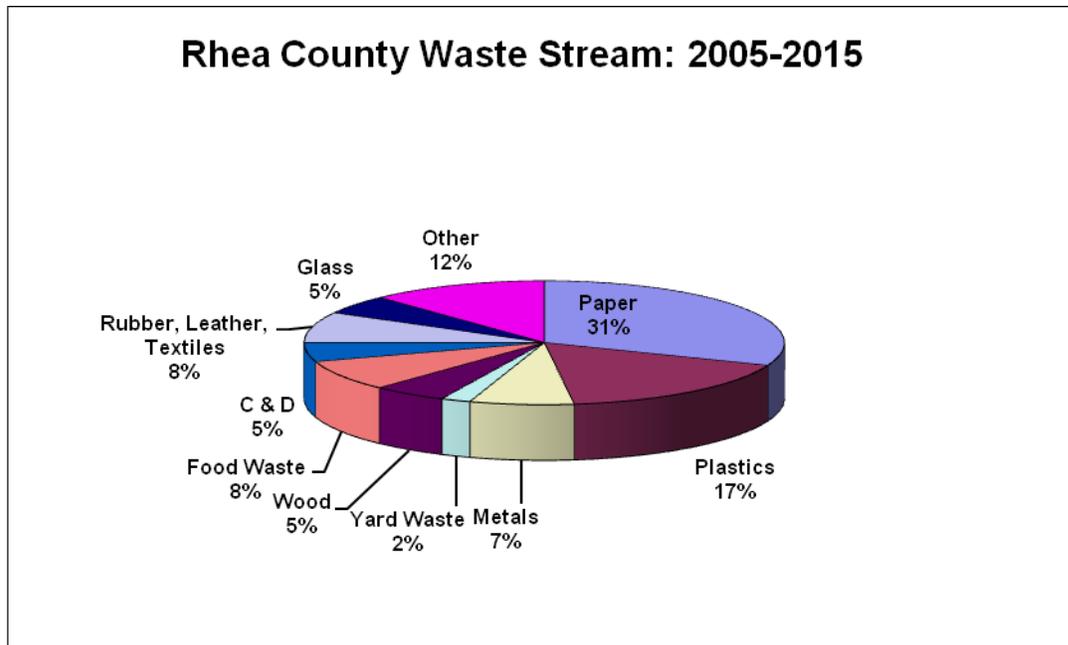
Table 2.1 shows unemployment rising from 5.8% in 2007 to 13.5% in 2009. This of course is attributable to the effects of the recession that occurred in 2008. Subsequently, the local economy has recovered significantly with unemployment down to 7.6% in 2015, indicating a robust local economy that seems to be performing well. Even with reductions in local employment, the regional economy is likely to help maintain employment levels.

Item 3-Characterization of the Solid Waste Stream

Elaborate on the region’s solid waste stream. Compare the current waste stream with trend anticipated over the next five (5) years, and discuss how this new total will be handled. Include in this discussion how problem wastes like waste tires, used oil, latex paint, electronics and other problem wastes are currently handled and are projected to be handled in the next five (5) years. What other waste types generated in this region require special attention? Discuss disposal options and management of these waste streams as well as how these waste streams will be handled in the future. Include in this discussion how commercial and industrial wastes are managed. Also, provide an analysis of any wastes entering or leaving the region, noting the source and amounts of such wastes.

Using composite percentages based on random observation of the waste stream, the following chart provides a rough illustration of waste volumes by type of material. Waste generation does not necessarily mean that these materials enter the waste collection system. In rural counties like Rhea, much of the wood waste, construction, demolition (C & D), and food wastes are disposed of on private property. Very little change is expected in waste stream composition over the next five (5) years.

Figure 3.1 Waste Stream Characterization



The remote locations of convenience centers that serve very small population means that fuel costs are high for collection and transport of materials while volumes are low because there are few if any commercial or industrial customers that provide a concentrated stream of recyclable material that can offset the cost of access small volumes produced by residential customers alone.

Table 3.1- Rhea County Solid Waste Collection

Jurisdiction/ Sector	Collection	Disposal Options	Current Problem Waste Handling	Future Problem Waste Handling	Other Problem Waste
Rhea County	Nine (9) county convenience centers. Available to all residents, including those within municipalities	All waste collected at convenience centers is taken to the Rhea County Class I landfill in the Evensville community of Rhea County, TN.	Waste Tires: Liberty Tire Recyclers Automotive Fluids: Local commercial lube operations Used Oil: Latex Paint: Available at 3 CCs. Electronics: None	Waste Tires: Collected at the landfill; hauled by a contractor Develop collection method at convenience centers	HHW collected at mobile collection event.
City of Dayton	Curbside	Rhea County Landfill	Residential & Commercial		
City of Graysville	Curbside	Rhea County Landfill	Residential only		
Town of Spring City	Curbside	Rhea County Landfill	Residential only		
Business	Contracts with private haulers and self-service by business/industry.		In-house programs and contractors	In-house programs and contractors.	Commercial generation of hazardous waste is regulated by TDEC. Participation in the mobile HHW/CESQG collection service for a fee

Currently, there are no programs available to handle electronics in Rhea County.

Item 4-Solid Waste Collection System

Provide a detailed description of the waste collection system in the county and each municipality, including a narrative of the life cycle of solid waste from the moment it becomes waste (loses value) until it ceases to be a waste by becoming a useful product, residual landfill material or an emission to air or water. Label all major steps in this cycle noting all locations where wastes are collected, stored or processed, along with the name of operators and transporters for these sites.

Convenience centers are the primary waste collection method available to Rhea County residents. Recycling available at convenience centers includes mixed metals that are collected in roll-off containers. Tires are collected at the landfill and hauled by a contractor under the State grant program. Virtually all the waste is taken to the Rhea County Class I landfill for disposal. The convenience center system is utilized by the residential sector in Rhea County. All the garbage is hauled by residents to their convenience center. Then, Santek hauls all waste from the convenience centers to the Rhea County Landfill (which is operated by Santek). The industrial and commercial sectors are serviced by private haulers, as commercial and industrial entities are not allowed to utilize the convenience center system. However, Santek has contracts with most major commercial/ industrial sectors in Rhea County.

Rhea County has nine (9) convenience centers strategically located to maximize access to all residents (see Map 5.1). The centers are located as follows:

Morgantown	St. Clair	Evansville
Frazier	Grandview	
Back Valley	Graysville	
Wolf Creek	Landfill	

Convenience centers are open from 7 am to 7 pm, Monday, Wednesday, Friday, and Saturday, and they are open on Sunday from 1 pm to 6pm

The minimum number of convenience centers required is calculated using the formula that determines a reasonable number by land area rather than population. This method was chosen because population densities are low and the county is relatively large.

Table 4.1-Collection Requirements

Minimum Collection Required

	Total Sq. Miles	Non-Service Area*	Difference	Required Centers	Existing Centers
Rhea	336	29.38	306.62	2	9

*Includes water cover and municipalities with waste collection service.

Although the formula suggests that two centers are adequate, nine centers were constructed to serve sections of the county that would be cut off from essential services due to topographic barriers and poor transportation facilities.

Most of the yard waste is disposed on site by burning (a permitted option) or hauled to a remote location. The City of Dayton's yard waste is chipped and used for mulch and compost, and Spring City has a land application site for its brush. All wood waste from sawmills and other commercial operations is generally used for livestock bedding and/or as a soil additive. In an urban county, this data would likely be captured and counted toward waste reduction/re-use efforts, but most of the local commercial operations are small, family-owned businesses, and collecting sufficient information to make an estimate of waste volumes is extremely difficult.

Dayton, Graysville, and Spring City operate curbside programs and haul all their waste to the Rhea County landfill. All this waste becomes residual landfill material subject to decomposition. None of the municipalities have recycling programs apart from those offered by the county at convenience centers.

Rhea County has recycling bins for paper, plastics, and used oil at three convenience centers, collection around 160 tons per year of material for recycling. The remainder of the material collected is sent to the landfill where it becomes residual material.

Item 5-Analysis of Existing or Potential Solid Waste Flows within the Region and Between Adjacent Regions

*Provide organizational charts of each county and municipality's solid waste program and staff arrangement. Identify needed positions, facilities, and equipment that a fully integrated solid waste system would have to provide at a full level of service. **Provide a page-size, scaled county map indicating the location of all solid waste facilities**, including convenience centers, transfer stations, recycling centers, waste tire drop-off sites, used oil collection sites, paint recycling centers, all landfills, etc. Identify any short comings in service and note what might be needed to fill this need.*

The county employs nine convenience center operators, providing a full range of service. Each is equipped with a 4 yd³ compactor feeding into a 40 yd³ receiving container; and at least one 40 yd³ open top roll-off container for bulky items.

Municipal Waste Collection

City of Dayton

Sanitation Supervisor

Five employees: Driver and 2 laborers for trash collection, once per week
 Driver and 1 laborer for brush

Four waste collection trucks, one used for brush

City of Graysville

Public Works Supervisor

1 driver for trash collection once per week
 One truck with side loader

Town of Spring City

Sanitation Supervisor

Three employees Driver and 2 laborers for trash collection, once per week
 Two rear loading trucks (one older model for backup)

Table 5.1-Regional Landfills

Site Name(s)	Annual Tons Rhea County	Permit Number	Current Capacity	Maximum Capacity	Projected Life of Facility
Rhea County Landfill	36,000	SNL72-0269	800 TPD	1500 TPD	14.33 years

All waste collected at Rhea County Convenience Centers is hauled to the regional landfill in Rhea County, which is operated by SANTEK Environmental, Inc. There are no Class III/IV landfills within a reasonable haul distance of Rhea County waste collection facilities.

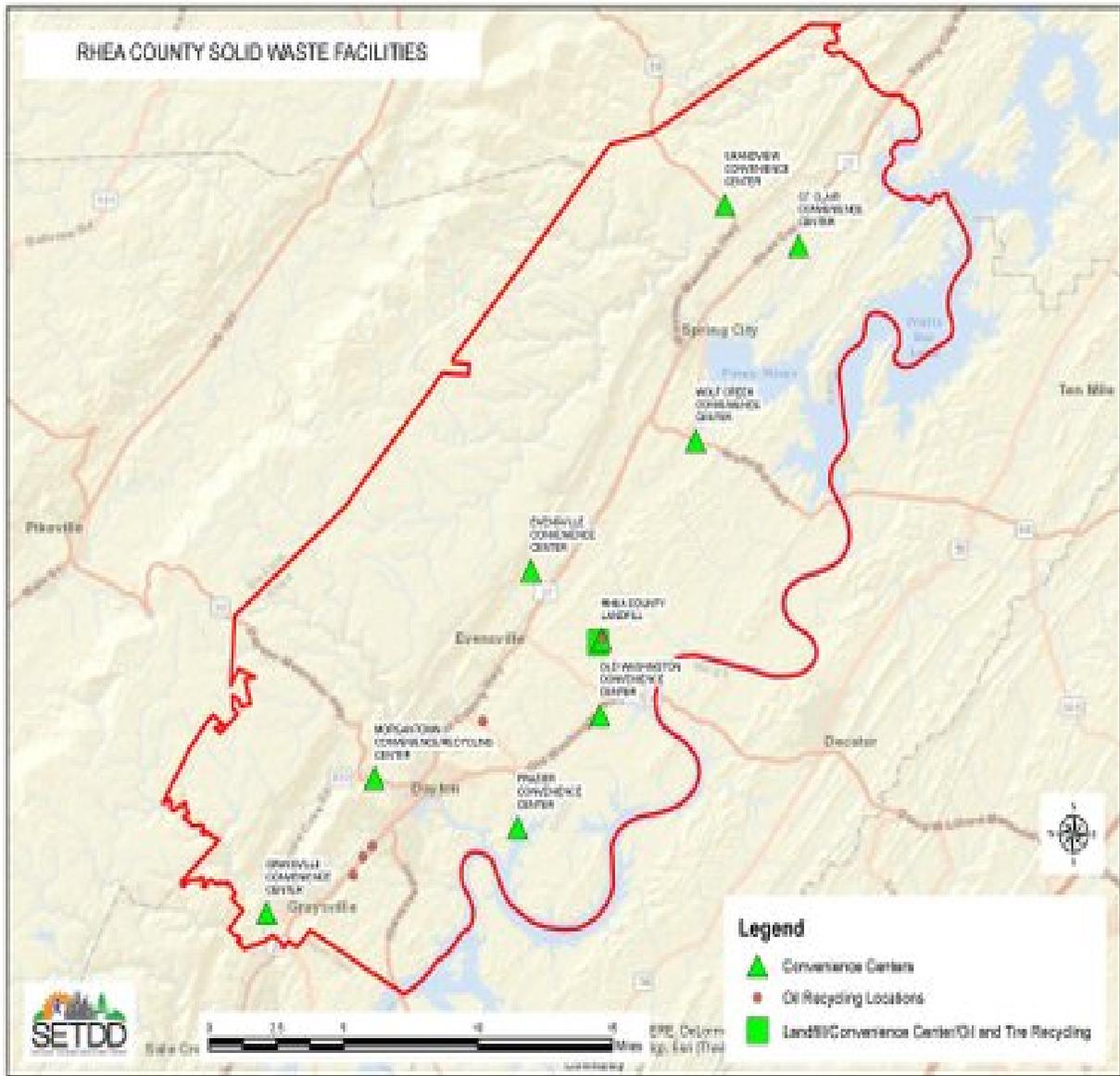
Table 5.2: Regional Collection Systems

Provider of Service	Service Area	Population Total Under This Service	Frequency of Service (Weekly, Bi-weekly, on call, etc.)	Annual Tonnage Capacity	Type Service (Curbside, Convenience Center, Green Box)
Rhea County	County-wide drop-off	16,830	As Needed	15,400	Convenience Center
Town of Graysville	Municipal Limits	470	Weekly	430	Curbside
City of	Municipal Limits	13,100	Weekly	11,950	Curbside

Dayton					
Town of Spring City	Municipal Limits	1,600	Weekly	1,500	Curbside

As is apparent from Tables 5.2 and 5.2, Rhea County has adequate collection and disposal capacity for the next ten years. There are no known impediments to the functionality of the system. All the facilities and equipment necessary to maintain the system are in place.

Map 5.1 Solid Waste Facilities



Item 6-Analyze Attitude of Region Toward Waste Management in General and Specify Needed Changes and/or Educational Measures

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.

Current attitudes of the citizens of Rhea County toward recycling and waste reduction efforts have basically been about average for counties of similar size, population, and economic vitality. While there are some residents that fully support and participate in the drop-off recycling program, most residents are still reluctant to view recycling and waste reduction as an option. The current general feeling is that most residents approve of recycling as an option to waste disposal but are not motivated to participate consistently. If measures could be implemented, a program designed to show the public the environmental and financial benefits to the community of recycling and waste reduction programs should be implemented.

Current education programs focus on brochures to combat littering and promote recycling as well as K-12 educational programs in county schools. The TDOT Litter Grant is a useful tool in educating school-age children about recycling, but more messaging is needed towards the adult population in Rhea County. Funding for these programs is very limited, and it is difficult for the county commission to fund them when essential services require all the county's resources.

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

The Solid Waste Management Act of 1991 requires all regions to 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 the reduction rate by each of these goal calculation methodologies. Discuss how the region made the goal by each methodology, or why it 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.

Table 7.1-Rhea County 2014 APR

SE TN 2014 APR Data

County	% Reduction Compared to Base Year	MSW % Reduction Pop Ratio	MSW % Reduction Using Pop Econ Ratio	Real Time Comparison	Maximum % Reduction Qualified For	Is county in Compliance?
	23%	23%	11%	33%	33%	Yes
Bledsoe				2%	2%	No
Bradley				12%	12%	No
Grundy				3%	3%	No
Hamilton				40%	40%	Yes
Marion				48%	48%	Yes
McMinn				30%	30%	Yes
Meigs				6%	6%	No
Polk				3%	3%	No
Rhea				24%	24%	No
Sequatchie				23%	23%	No

Rhea County is a part of the Southeast Tennessee Solid Waste Planning Region. The Southeast Tennessee Solid Waste Planning Region has always met the required 25% goal using the “real time” calculation method. Rhea County did not meet the goal individually in 2015, with a reduction rate of 24%. However, a large volume of wood waste from the City of Dayton was not reported, and that quantity would have pushed the county above the 25% real time waste reduction goal. In addition, Spring City diverts all its brush to a land application site, and none of that waste was reported, primarily because there was no documentation on quantities disposed over the last calendar year.

The region did not meet the goal using the base year method, probably because the base year generation rate was incorrect. During the early phases of solid waste planning in Southeast Tennessee there were waste haulers moving materials in and out of neighboring Georgia and Alabama. Often, haulers were not required to report quantities hauled in or out of the state,

and landfills in these states did not keep waste origin records. Consequently, base year numbers for the Southeast Tennessee region have always been suspect.

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

Using the example shown below, provide a chart indicating current collection and disposal capacity by facility site and the maximum capacity the current infrastructure can handle at maximum through put. Provide this for both Class I and Class III/IV disposal and recycled materials. Identify and discuss any potential shortfalls in materials management capacity whether these are at the collection or processor level.

Table 8.1-Regional Landfills

Site Name(s)	Annual Tons Rhea County	Permit Number	Current Capacity	Maximum Capacity	Projected Life of Facility
Rhea County Landfill	36,000	SNL72-0269	800 TPD	1500 TPD	14.33 years

All waste collected at Rhea County Convenience Centers is hauled to the regional landfill in Rhea County, which is operated by SANTEK Environmental, Inc. There are no Class III/IV landfills within a reasonable haul distance of Rhea County waste collection facilities.

Table 8.2: Regional Collection Systems

Provider of Service	Service Area	Population Total Under This Service	Frequency of Service (Weekly, Bi-weekly, on call, etc.)	Annual Tonnage Capacity	Type Service (Curbside, Convenience Center, Green Box)
Rhea County	County-wide drop-off	28,000	As Needed	22,000	Convenience Center
Town of Graysville	Municipal Limits	488	Weekly	300	Curbside
City of Dayton	Municipal Limits	12,999	Weekly	8,300	Curbside
Town of Spring City	Municipal Limits	1,628	Weekly	1,050	Curbside

The county’s convenience centers provide a full range of service. Each is equipped with a 4 yd³ compactor feeding into a 40 yd³ receiving container; and at least one 40 yd³ open top roll-off container for bulky items.

Item 9-Unmet Financial Needs and Cost Summary

Complete the following chart and discuss unmet solid waste financial needs to maintain current level of service. Provide a cost summary for current year expenditures and projected increased costs for unmet needs.

Chart 9.1 Expenditures & Revenues

EXPENDITURES			
Description	Present Need \$/year	Unmet Needs \$/year	Total Needs (Present + Unmet) \$/year
Waste Pickup	\$712,139		\$712,139
Transportation/hauling			
Collection and Disposal Systems			
Equipment		\$75,000	\$75,000
Sites			
Convenience Center			
Transfer Station			
Recycling Center		\$50,000	\$50,000
MRF			
Landfills			
Site			
Operation			
Closure			
Post Closure Care			
Administration (supplies, communication costs, etc.)			
Education			
Public			
Continuing Ed.			
Other	\$12,416		\$12,416
REVENUE			
State Revenue Sharing	\$39,681		\$39,681
Tipping fees			
Local taxes	\$426,324	\$13,434	\$439,758
Property tax	\$67,340		\$67,340
Surcharges			
Disposal Fees			
Collection charges			
Industrial or Commercial charges			
Residential charges	\$167,061		\$167,061
Convenience Centers charges			
Transfer Station charges			
Sale of Methane Gas			
Other sources: (Grants, bonds,	\$10,715		\$5,304.00

interest, sales, etc.)			
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Source: Tennessee Dept. of Revenue, 2015 Rhea County Audit

Rhea County had a deficit of \$13,434 as of June 2015, which was transferred from the General Fund. The figures in Table 9.1 include all solid waste fund activities. The county owns the landfill, but SANTEK operates it and provides all funding for operations and closure/post closure funds. Thus, none of these expenditures are included in the audit.

Costs for operating the recycling component of the convenience center system are not available separate from general operating costs. An additional \$50,000 was included in the "Unmet Needs" category to purchase recycling equipment, including two cardboard compactors and at least two 30 yd³ roll-off containers for plastic and paper at convenience centers that do not have recycling service.

The county needs to replace old waste compactors at convenience centers, so \$75,000 was added to account for this need. It is probable that the county will be able to replace this equipment with tax-based funds.

Item 10-Compare Revenue Sources for the Region's Current Solid Waste Programs with Projected Future Demands. Identify Any Potential Shortfalls in that Capacity

Identify all current revenue sources by county and municipality that are used for materials and solid waste management. Project future revenue needs from these categories and discuss how these needs will be met. (Use Chart 9 as an example to present data)

Like most rural counties, there are no waste collection fees levied at convenience centers. The county's last audit indicates that the solid waste budget was \$711,211 and most those funds were taken from tax-based sources. At this time, there are no plans to increase property taxes, and no plans to institute fees at convenience centers. These costs are likely to remain fairly constant according to the county mayor, and there should be no difficulty in meeting costs through tax-based sources.

The City of Dayton, the City of Graysville, and the Town of Spring City fund their residential solid waste collection and disposal systems through local taxes. Both municipalities provide disposal for the commercial sector for a fee sufficient to cover costs.

Item 11-Sustainable Goals Consistent with the State Plan

Discuss the region's plan for managing its solid waste system over the next five (5) years. Identify any deficiencies in that plan and offer recommendations for eliminating these deficiencies. Suggest and list the specific ways in which the region can improve its solid waste program to reach a level of waste reduction above that of the goal and provide long term sustainability to the current solid waste collection system.

*Show how the region's plan supports the **statewide Solid Waste Management Plan**.*

The region and its constituent local governments have essentially implemented the original solid waste plan submitted in 1994 and approved in 1995 by the State. All waste collection centers are in place and all the counties in the Southeast Tennessee Region have a waste reduction strategy.

Rhea County has a recycling program although it is primarily limited to paper and oil collection at the convenience centers. This program could easily be expanded to include other materials.

Since municipalities comprise nearly half the Rhea County population (Table 1.2), their participation in a waste reduction strategy is imperative. The City of Dayton attempted a curbside recycling program last year using a commercial hauler, Republic Services. This program failed because the participation level was so low that the hauler could not financially justify the program. There is obviously a great deal of public apathy, which may be overcome with a concerted education program, but that will require funding.

Municipal populations do have access to the county's convenience centers, and centers are available just outside of each municipal boundary. Expanding the recycling capacities of these centers would likely net a better return on investment than developing stand-alone centers in each municipality.

Reducing and accounting for wood waste, brush, and yard waste is another waste reduction strategy that is not well understood in Rhea County. The City of Dayton collects brush and yard waste, which is chipped and used for beneficial purposes. However, the City has not reported these volumes. Spring City would like to have a similar chipping operation but cannot afford the equipment.

In general, there are several low-cost methods of improving waste reduction in Rhea County. However, public participation is necessary before these methods can achieve any degree of success.

Recommendations

Education

Recommendation 1: It is imperative that the county develop and maintain a website that provides all the basic details of county programs and services, including solid waste and recycling.

Action Item: Request to the county mayor to include additional waste reduction and recycling information on the county's website.

Recommendation 2: Develop a county-wide program to inform the general public where and when to recycle.

Action Item: Expand the Litter Grant program to promote recycling and waste diversion at public events beyond K-12 education, such as the Strawberry Festival that is held every year in May.

Facilities and Programs

Recommendation 1: All convenience centers need used oil collection containers.

Action Item: Apply for grant funds to purchase collection containers, containment systems and covers or contract with a private oil collection company that will provide necessary equipment.

Funding Source: TDEC grant

Recommendation 2: All convenience centers need waste paint collection containers.

Action Item: Apply for grant funds to purchase waste paint collection containers.

Funding Source: County Sanitation/Solid Waste Management Fund

Recommendation 3: Compactors and receiving boxes purchased in the mid-1990s need replacement.

Action Item: Purchase new compactors

Funding Source: County Solid Waste Fund/ TDEC Recycling Equipment Grant

Recommendation 4: Encourage the development of recycling and waste reduction programs in municipalities, including brush chippers needed for Dayton and Spring City.

Action Item: Meetings between county and municipal officials and promotions at the Joint Economic & Community Development Board.

Funding Source: Appalachian Regional Commission/USDA Rural Development, Rural Utilities Service

Recommendation 5: Encourage cooperation between the county and municipalities to expand recycling opportunities at convenience centers located adjacent to city boundaries.

Action Item: Meetings between county and municipal officials and promotions at the Joint Economic & Community Development Board.

Funding Source: TDEC Recycling Equipment Grant, county, and municipalities.

Conclusion

In general, Rhea County has all the facilities and programs in place to meet statutory requirements. Some improvements are necessary, but the county has made a good faith effort to provide its residents with clean, efficient waste collection facilities using the most cost-effective methods available.

Sources:

- US Census: <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- UTK Center for Business and Economic Research: <http://cber.utk.edu/>
- TN Department of the Comptroller:
<http://www.comptroller.tn.gov/la/CountySelect.asp>:
- TN Department of Revenue
- U.S. Cluster Mapping Project (<http://clustermapping.us/>), Institute for Strategy and Competitiveness, Harvard Business School. Data Sources
- US Bureau of Economic Analysis: <http://www.bea.gov/>
- U.S. Department of Commerce, Bureau of Labor Statistics
- Southeast Tennessee Comprehensive Economic Development Strategy
<http://www.sedev.org/downloads/SETDD2015DraftCEDSUpdate.pdf>
- TACIR: <https://www.tn.gov/tacir/>
- Rhea County Audit, Fiscal Year 2015
- Times Free Press, January 16, 2016