

**Loudon
Solid Waste
Needs Assessment
2010**

Item # 1 Demographic Information

The following table and charts illustrate the population trends of the region, which includes respective municipalities, total municipal residents and county only residents. The 2010 and 2015 projects are based on existing trends for each jurisdiction as well as knowledge of the area.

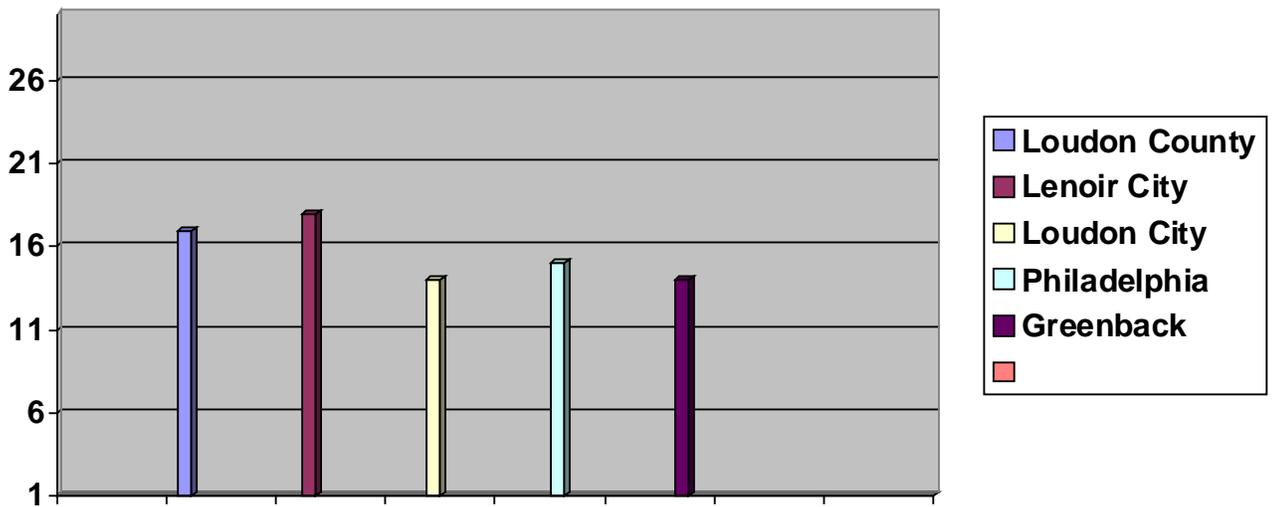
The county as a whole is expected to continue to increase in population between 2000 and 2015. Loudon County has continued to see modest growth and a large part of that growth is due to its emerging as an economic force in the East Tennessee Region. Most of this population growth will be centered in the Knoxville-Lenoir City corridor. Each year, Loudon County is also experiencing a significant amount of new commercial and industrial development. Currently, over sixty manufacturing plants call Loudon County home. The key is to the success of its location, favorable business climate, abundance of reasonable electricity, good selection of industrial properties, and especially, its highly productive labor force.

Experts at U.T. are showing that the County will have a slight increase over the State's growth in the next five-year solid waste needs assessment. The entities of the region will see the following growth. Lenoir City will continue to see growth and if the economy comes back, their commercial growth will dictate their residential growth in the area. Their proximity to Knoxville will continue to be a driving force behind their growth. The City of Loudon will also see growth and as the economy gets stronger that growth will largely stem from industrial placement in the region. Philadelphia will see very little growth in the area and most of that is due to their inability to provide services to its residents. Greenback will continue to see growth and as some of the farms change hands to heirs, more residential growth will become prominent due to their proximity to Maryville and that workforce. The mindset of the community is to keep it small and that will dictate the growth in the future. The region of Loudon County is not going to see large increase in population in the future unless economic amenities are apparent, such as a new industrial plant that will affect population spurts. Such growth will be shown in the single family dwellings. The rate of growth will vary depending on a host of local, regional, and national trends, as well as the employment of management tools that can affect this rate. These trends will impact countywide land use, housing, transportation and solid waste decisions. Based on past history, Loudon County should not see any large increases that would affect their waste stream to the extent of making it un-manageable.

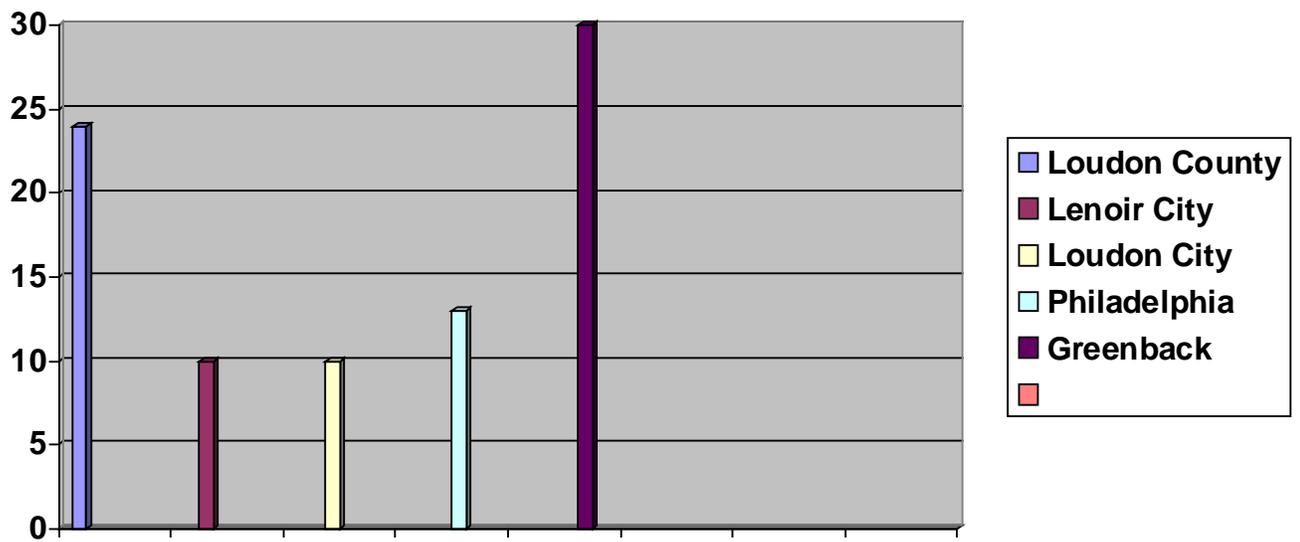
| Jurisdiction | 1990 | 2000/% change | 2010 / % | 2015 / % |
|---------------|--------|---------------|--------------|--------------|
| Loudon County | 20,008 | 26,304/24% | 31,536 / 17% | 36,972 / 15% |
| Lenoir City | 6,147 | 6,819/10% | 8,310 / 18% | 9,703 / 14% |
| Loudon City | 4,026 | 4,476 / 10% | 5,183 / 14% | 5,918/ 12% |
| Philadelphia | 463 | 533 / 13% | 625 / 15% | 729 / 14% |
| Greenback | 611 | 954 / 36% | 1,106 / 14% | 1,273 / 13% |

Loudon County and Cities

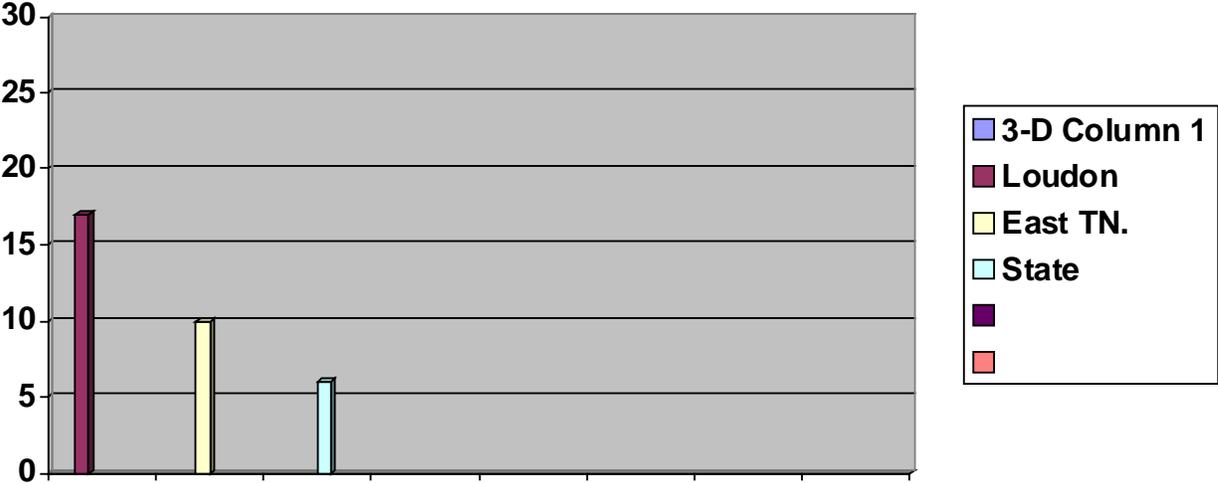
Population Growth Percentage: 2000 - 2010



Population Growth: 1990-2000



Population Growth: 2000 - 2010



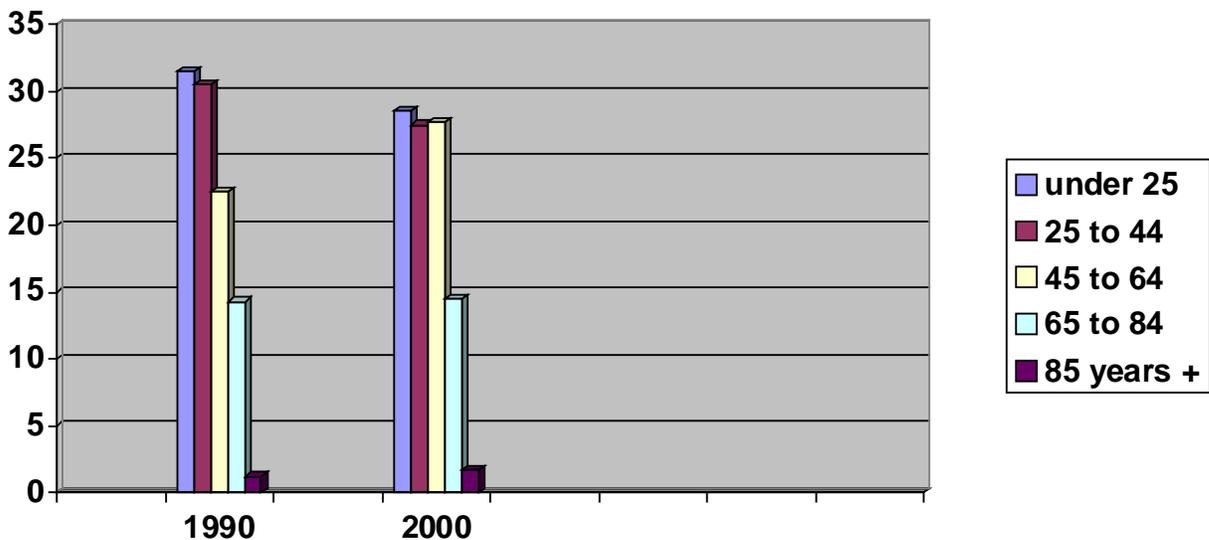
Item 2 Region Economies

The following table and charts show the per capita incomes for the county and each municipality in 1989 and 1999 and estimates for 2007, 2010 and 2015. The existing trends are expected to continue for each municipality and the county, though increases will likely be smaller in the future for most municipalities.

In looking at per capita incomes, one must realize that this purchasing power is largely affected by the in-migration of working-age people, 25 to 64 years of age. Conversely, the higher proportions of young and old people are often associated with lower rates of per capita income growth. The median age in Loudon County has increased every census year from 1980, 33.2 to 1990, 36.4 and 2000, 41.0. As the region gets older, one could suggest that more recycling will be done in the future that will help to reduce the amount of waste that is going into the landfill. Also, the amount of waste per household will also go down as families get older and children move out of the home.

| Ages | 1990 Number of People | Percent | 2000 Number of People | Percent |
|--------------------|-----------------------|---------|-----------------------|---------|
| Under 25 | 10,216 | 31.5 | 11,187 | 28.6 |
| 25 to 44 | 9,492 | 30.5 | 10,734 | 27.5 |
| 45 to 64 | 6,994 | 22.5 | 10,827 | 27.7 |
| 65 to 84 | 4,172 | 14.3 | 5,684 | 14.5 |
| 85 years and older | 381 | 1.2 | 654 | 1.7 |

Age Distribution

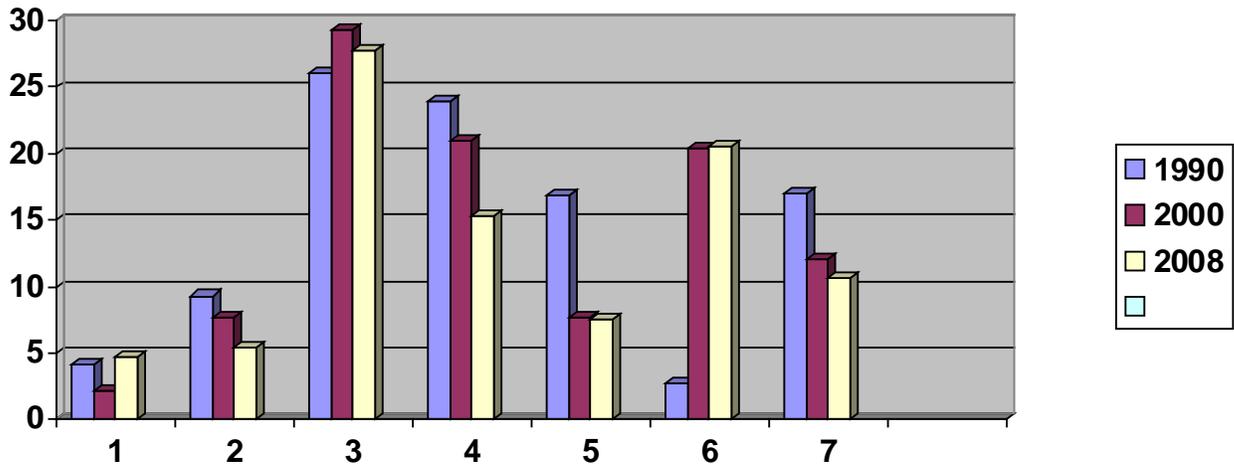


The estimates for the current per capita incomes show that most all entities have experienced an increase in the purchasing power of their residents. Most residents are likely to use this increased purchasing power to spend more monies in the future. This is likely to mean an overall increase in solid waste generated by economic growth. However, this increase in solid waste will be from the consumer industries and not large industries that have the potential to create problem waste. The region of Loudon has seen its per capita increase to 67% in the last twenty years. This increase is compared to the State increase of 55%. One could suggest that the County has been able to attract the higher paying jobs that the rest of the State has seen. Knowledge of the area would suggest that the region has been able to attract more industries and industrial warehouses that have brought residents into the area with higher paying jobs, than the more rural areas of the East Tennessee that attract the lower manufacture jobs.

| Jurisdiction | 1989 | 1999 | 2010 | 2015 |
|--------------|----------|----------|----------|----------|
| Loudon | \$12,006 | \$21,061 | \$33,543 | \$36,897 |
| Lenoir City | \$9,345 | \$16,631 | \$21,005 | \$23,106 |
| Loudon | \$10,140 | \$16,501 | \$20,412 | \$22,453 |
| Philadelphia | \$9,809 | \$12,239 | \$15,701 | \$17,271 |
| Greenback | \$11,366 | \$13,914 | \$17,849 | \$19,634 |
| Tennessee | \$12,255 | \$21,587 | \$23,418 | \$27,165 |

The following table takes a look at the types of businesses in Loudon County that can have an effect on the amount of solid waste being generated. The table looks at the percentage of each classified work from 1990, 2000 and 2008. The Census Bureau changed their classification in 1997, so the seven (7) shown are based on a uniform categorization by the author to derive and similar numbers for comparison. As the table shows, manufacturing continues to be the leading industry in the region. This basically results in less garbage that is produced in terms of large volume. The manufacturing jobs will generally produce a lot of cardboard, paper and glass that can be recycled. Also, the public industry and the professional industry are closely related and that generates a lot of paper and will not put any extra burden on the waste stream in the future. Jobs have increased during every census from 14,509 (1990) to 18,072 (2000) to 20,640 (2009) for Loudon County.

| Industry | 1990 | 2000 | 2008 |
|---------------------------------------------|-------|-------|-------|
| 1. Agriculture, Forestry, Fisheries, Mining | 4.1% | 2.1% | 4.7% |
| 2. Construction | 9.3% | 7.7% | 5.4% |
| 3. Manufacturing | 26.1% | 29.3% | 27.8% |
| 4. Trade and Finance | 24.0% | 20.9% | 15.3% |
| 5. Professional Services | 16.8% | 7.7% | 7.5 |
| 6. Public Administration | 2.7% | 20.4% | 20.5% |
| 7. Other | 17.0% | 12% | 10.6% |

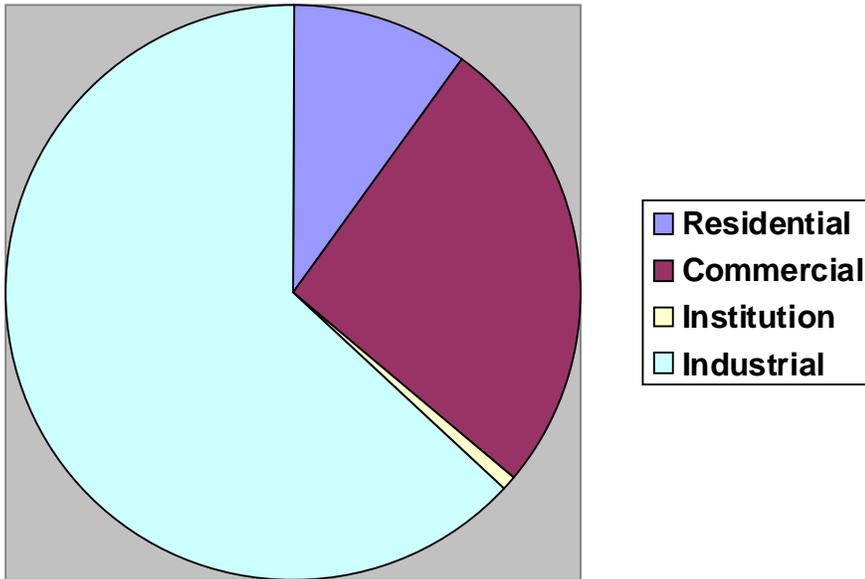


In looking at the job patterns for the region, one can see that there has been more of a shift from the labor intensive jobs to the white collar jobs in the region. Public administration jobs have seen the largest increase from 2000 to 2007. Manufacturing jobs have leveled off and those kinds of jobs are becoming more warehouse type jobs rather than the sewing operations. The numbers above show that Loudon is a bedroom community that has the mobility to shop in Knoxville and Chattanooga, which reflects on the retail trade in the area. Construction numbers have come to a halt, which emulates the economy where no new houses are being built. The Region of Loudon County will continue to experience its largest increase in white collar jobs with the employees having a more environmental awareness. This will shift some of the taxes being spent to more environmental programs that will create more opportunities to divert waste from Class I landfills. The next needs assessment should see a slight increase in waste from residents due to population increases and that should not adversely affect the waste stream or cause a financial burden on the region.

Item # 3 Region Waste Stream

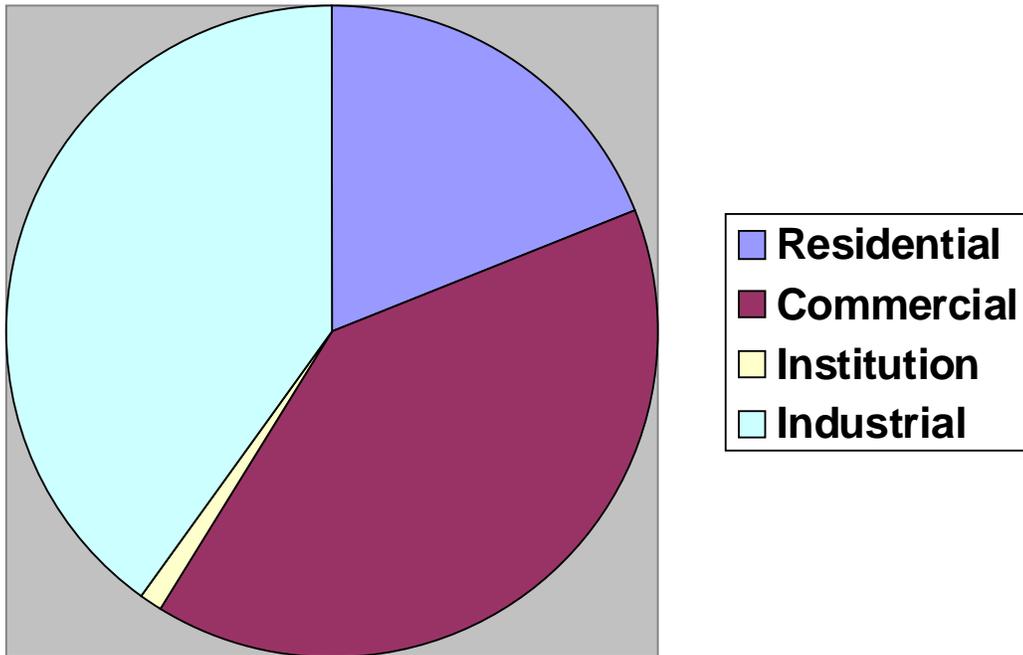
Loudon County solid waste stream is shown below.

Residential 10%
Commercial 26%
Institution 1%
Industrial 63%



The waste stream during the last needs assessment looked like the following.

Residential 19%
Commercial 40%
Institution 1%
Industrial 40%



This can be further broken down into the following:

Recycling – 8,488 – 3.6%

Mulching – 1,985 – .8%

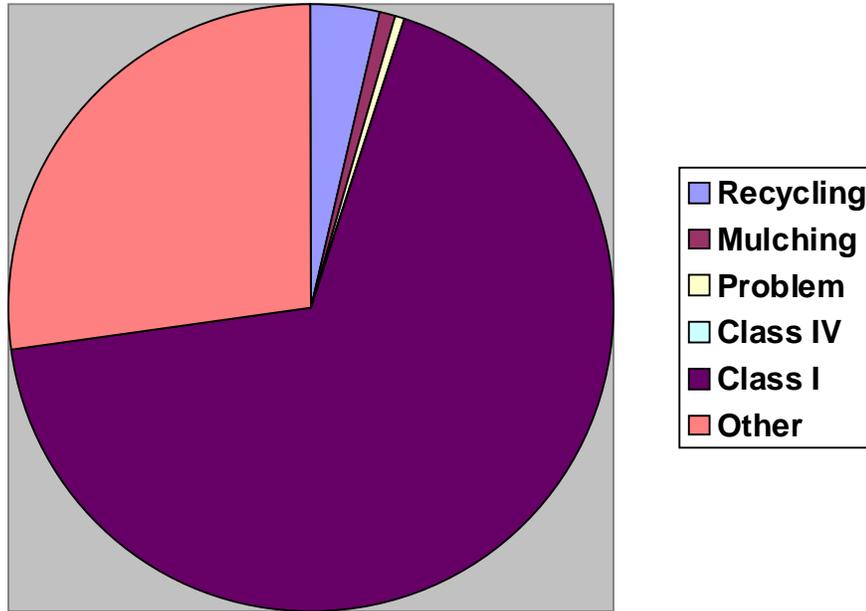
Industrial By-Product – 64,170 -27.2%

Problem Waste – 829 – .5%

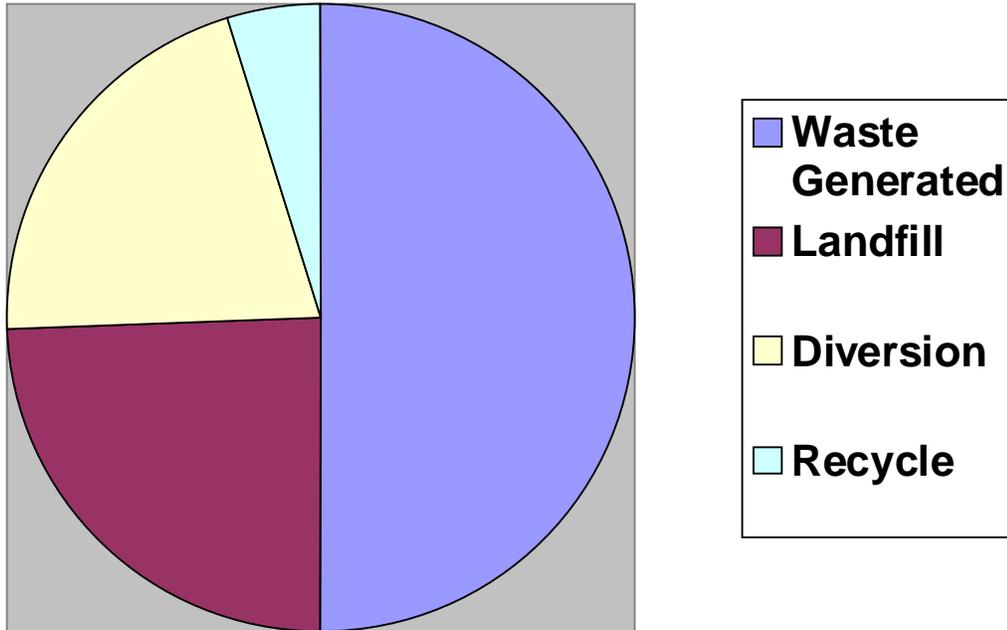
Class IV Waste – 0 – 0%

Class I Waste – 160,305 – 67.9%

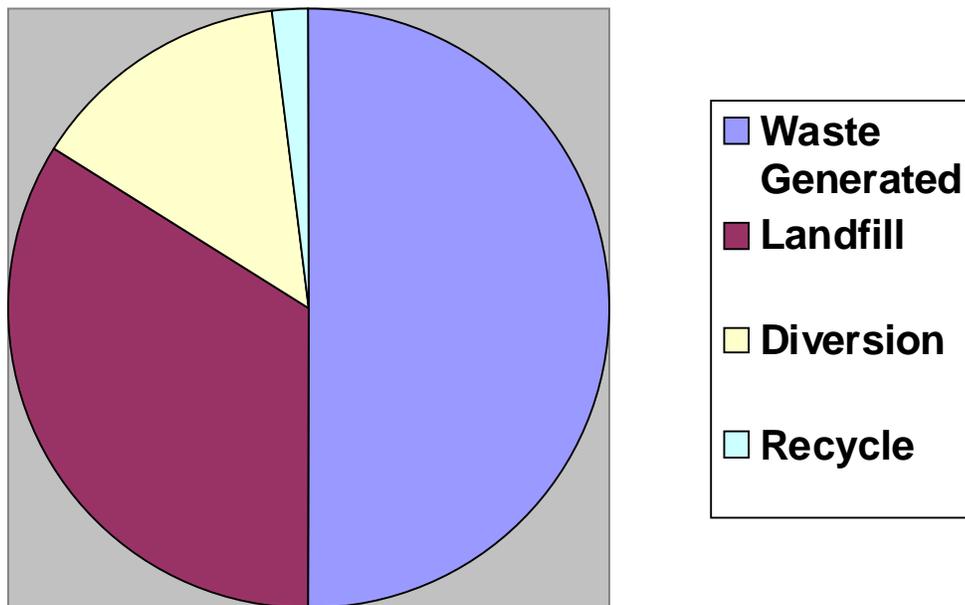
Total = 235,777.00 – 100%



Waste Stream 2004 Totals



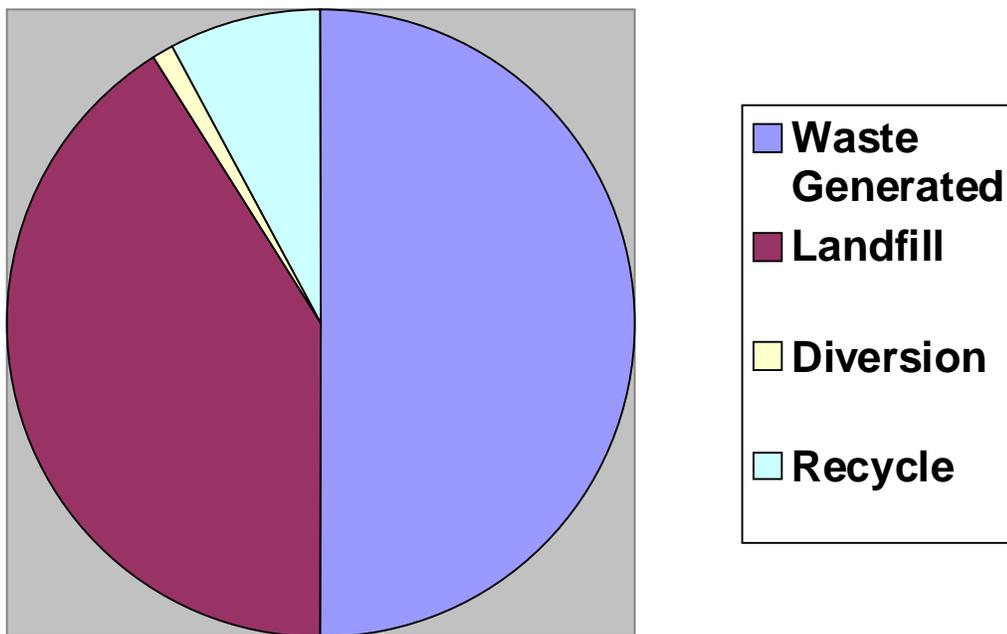
Waste Stream 2009 Totals



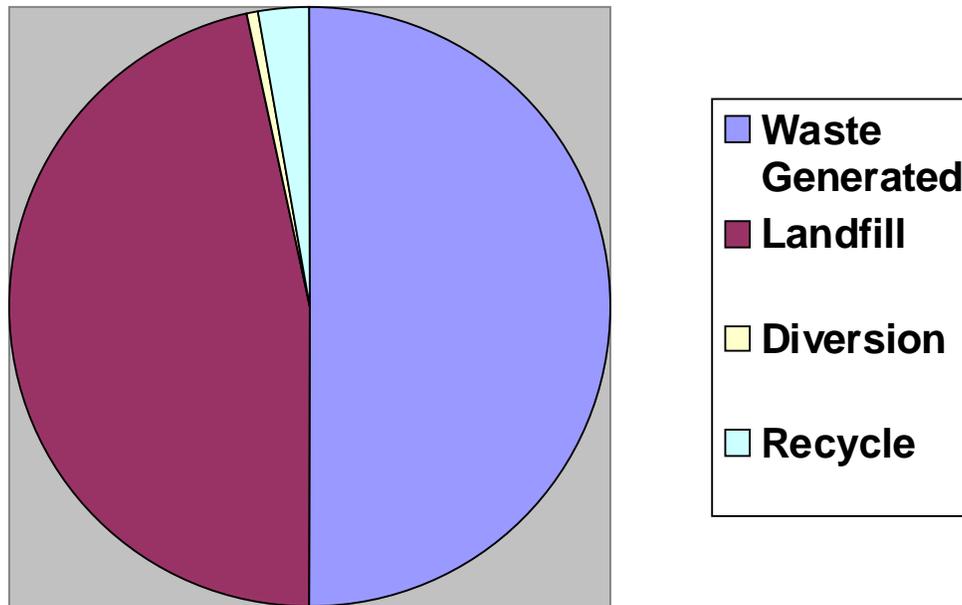
Waste Stream 2009 Totals

** Note: In order to get a more accurate account of what is going on from one needs assessment to another, we must take out the industrial numbers for recycling that include a large amount of industrial by-products. Below is a new chart that takes away the recycling numbers from all the industries.

Waste Stream 2004 Totals



Waste Stream 2009 Totals



The pie charts show the percentage of waste that has changed from the 1998 needs assessment to the current needs assessment. Class I Landfill waste was shown as 82% in 1998 and is now 93% of the waste. Diversion methods shown were 2.5% in 1998 and are now shown as 1.2 %, Recycling efforts shown as 15.5% in 1998 are now shown as 5.4%. The chart shows that the generated waste has seen an increase from 2004 to 2009 of 72,605 tons. The reason for the large increase, which basically took place in 2008 and has continued, is that a majority of the waste stream that originated from several local industries which began new or different manufacturing processes resulting in much larger volume of special waste being taken to the landfill. With the disparity between reports due to this increase, in order to get a reading on the tons per person, let's take a look at the 1995 base year rate of 1.827 tons per person and compare that to the 2007 report that shows a tonnage per person of 2.4 tons per person. What this shows, which is still the case in 2010, is that the region has relied upon industries to provide the largest amount of diversion. The population of Loudon has not bought into the need to recycle. That being said, the region has become more environmentally green in terms of recycling from the past by the increase in recycling numbers at the convenience centers. The region needs to develop more diversion methods, such as region chipping of brush or house to house collection of recyclable items in the future. The State average is 1.2 tons per person. The region of Loudon County has room for growth in terms of providing more recycling efforts in the future.

Loudon County operates their own landfill that dictates the desire to find methods in reducing Class I waste in order to save landfill space. The tipping fee of \$20 is significantly lower than other communities that often provide an incentive to save money by recycling in order to reduce the tonnage taken to the landfill.

The components of solid waste are being handled the following way by the entities in the Loudon County region.

Class I waste is being handled through a network of convenience centers that are serviced by the County. A total of three (3) convenience centers are scattered throughout the county. All of the convenience centers are manned with county employees and the containers are owned by the county. Loudon County owns their own landfill and has a contract with a private company to manage the landfill. The Class I waste from the convenience centers is collected using a roll-off system and taken directly to the landfill. The region of Loudon has two large private collection companies, Waste Management and Waste Connection, that collect from industries and commercial businesses. Most of the waste collected by these companies is taken to their own landfills that are located outside the region of Loudon. The city of Lenoir City collects their Class I waste house to house once a week using a rear loader and three men on the sanitation crew. The waste that is collected is taken directly to the Matlock Bend Landfill that owned by the county. The city of Loudon also collects Class I waste house to house utilizing a rear loader. The city also picks up commercial waste utilizing a front end loader and solid waste containers placed at the businesses. The city of Loudon picks up residential waste twice a week. The waste that is collected is taken directly to the Loudon County landfill. The city of Philadelphia and the town of Greenback utilize the convenience centers for the collection of their residential waste. No collection fees are being charged by the Cities for this service. The Loudon County landfill is in the process of getting a new permit that will provide a life expectancy of 22 years.

C&D waste or Class IV waste is also collected at the Loudon County landfill, but the waste has not been reported in the annual report. The managing company of the landfill, San-Tec, reported that most of the Class IV waste goes to other landfills and they receive a small amount. The Cities of Lenoir City and Loudon will pick up small amounts of Class IV waste and take it to the landfill. Neither city will pick up shingles, but will pick up building materials from residents that do their own work. The cities of Philadelphia and Greenback do not provide such service. The tipping fee for Class IV waste is \$28.70.

Waste Tires are collected at the Loudon County Landfill. No tires are collected at the convenience centers. The cities of Lenoir City and Loudon will pick up small amounts of tires from the residents. The tires and rims collected by Lenoir City are picked up by Lankford Metals in Sweetwater. The cities of Philadelphia and Greenback do not provide these services. The county accepts tires from the commercial tire dealers as long as invoices on the tires are provided for that can be reimbursed under the state program.

The Loudon County region contracts out the collection and hauling of the tires. Mac Tire Recycling in Nashville sets up a transfer trailer at the landfill site that allows for the placement of the tires into the trailer. San-Tec employees will help residents that need assistance to avoid any personnel injuries. A total of 481 tons of tires was collected and diverted from the Class I landfill.

Used Oil is collected at all three (3) convenience centers, utilizing used oil collection tanks. The tanks, when full, are serviced by a private company, Spectra in Maryville, that collects the used oil. The city of Loudon has a used oil collection site at the utility companies that services their own equipment, but will also allow the public to drop off used oil. The city of Loudon then takes the used oil to heat their public works building. The city of Lenoir City also has a collection site at their public works building for the public to use and they currently have Enterprise Oil of Knoxville picking up their used oil and receive a nominal fee for it. The city of Lenoir City also has a portable pump with a 55-gallon drum that allows them to collect used oil at commercial establishments and residential homes. The cities of Philadelphia and Greenback do not provide these services. A total of 49 tons of used oil was collected in 2009.

E-Waste is collected at all three (3) convenience center sites and the waste that is collected is being serviced by a private company, Creative Recycling Solutions in Nashville. Gordon Harless, Recycling Coordinator for Loudon County, calls the company when enough material is collected to warrant a full load. The cities of Lenoir City and Loudon will collect e-waste from the residents and take to the nearest convenience center for disposal. The cities of Philadelphia and Greenback do not provide these services. A total of nine (9) tons of electronic waste was collected in 2009.

White Goods / Metals are collected at the convenience centers; the metal is collected in 40-cu.-yd. open-top containers. All of the metals that are collected are collected by Lankford in Sweetwater, Tennessee. The city of Loudon will collect small amounts of metals from residents on a call-in basis and transports the metals to the convenience centers. The city of Lenoir City has a 40-yard container at the public works compound that is provided by Lankford of Sweetwater and they collect and take the metals and pay Lenoir City ½ of the revenues. The cities of Philadelphia and Greenback do not provide these services. A total of 266 tons was collected in the Loudon County region.

Brush / Compost materials are not collected at any of the convenience center sites. Any resident that has brush is directed to the landfill site. There is no fee to dispose of your brush at the landfill. The brush is collected and burned at the landfill site. The city of Lenoir City operates a brush collection system year round and picks up the brush and chips most of the brush on site into a truck. The chipped brush is taken to Lenoir City Utilities and is used with their sludge. The brush that is collected is diverted from being landfilled. Lenoir City also collects leaves in the same manner about four months out of the year.

The city of Loudon also collects brush and leaves and chips the material into a truck and takes back to the public works compound and utilizes the mulch for recreational fields and some residential use. The cities of Philadelphia and Greenback do not provide these services. A total of 1,925 tons of mulch was reported in the region of Loudon in 2009.

Sewer sludge is being produced by the two wastewater utilities in the region. Loudon Utilities dries their sludge with a kiln dryer that produces a class A bio-solid and they sell the material for agriculture use. The only time that the sludge would be taken to the landfill is if they don't have a buyer for their product. An estimated 120 tons a year is diverted from the landfill. Lenoir City Utilities takes their sludge and mixes it with wood chips and heats the material to kill off the pathogens and then gives the mulch away to residents. None of their sludge goes to the landfill. An estimated 145 tons a year is diverted from the landfill.

Paint is currently not being accepted by the region of Monroe. Any paint that is collected has been placed in the Class I containers without knowledge of the attendants. None of the cities provide for the collection of paint. Loudon County will host a HHW event once a year for the collection of oil based paint at the Lenoir City Convenience Center.

Paper and cardboard is collected at each convenience center utilizing 4-cu.-yd. containers. The paper is taken from the Greenback and Loudon Convenience Center loose back to the Lenoir City Convenience Center. The paper is then collected by Spectra of Maryville for final processing and taken to the paper mill. None of the cities in the region recycle paper. The cardboard that is collected at each center is baled at that center and then taken to the Lenoir City Convenience Center, where Rock-Tenn of Knoxville collects the cardboard. The City of Lenoir City has a small pilot program of about 110 homes that allows those residents to take their paper and cardboard in bags and the city picks it up and takes it to the Convenience Center. The city of Loudon does provide the collection of cardboard and some of their commercial establishments and takes the cardboard to the Convenience Center for proper processing. The cities of Philadelphia and Greenback don't provide any services. A total of 1,070 tons of paper and cardboard was collected and properly disposed of in 2009 by the region.

Plastic is collected at each convenience center utilizing a recycling container. The plastic that is recycled at the Loudon and Greenback Convenience Centers is taken to the Lenoir City Convenience Center where the material is baled and then Spectra of Maryville collects the baled product. The city of Lenoir City provides a small pilot program of about 110 homes that can recycle plastic by placing the material in bags and the City collects the bags and takes them to the Convenience Center. None of the other cities in the region recycle plastic. A total of 153 tons of plastic was recycled in 2009.

Glass is not collected at the convenience centers and none of the cities collect glass.

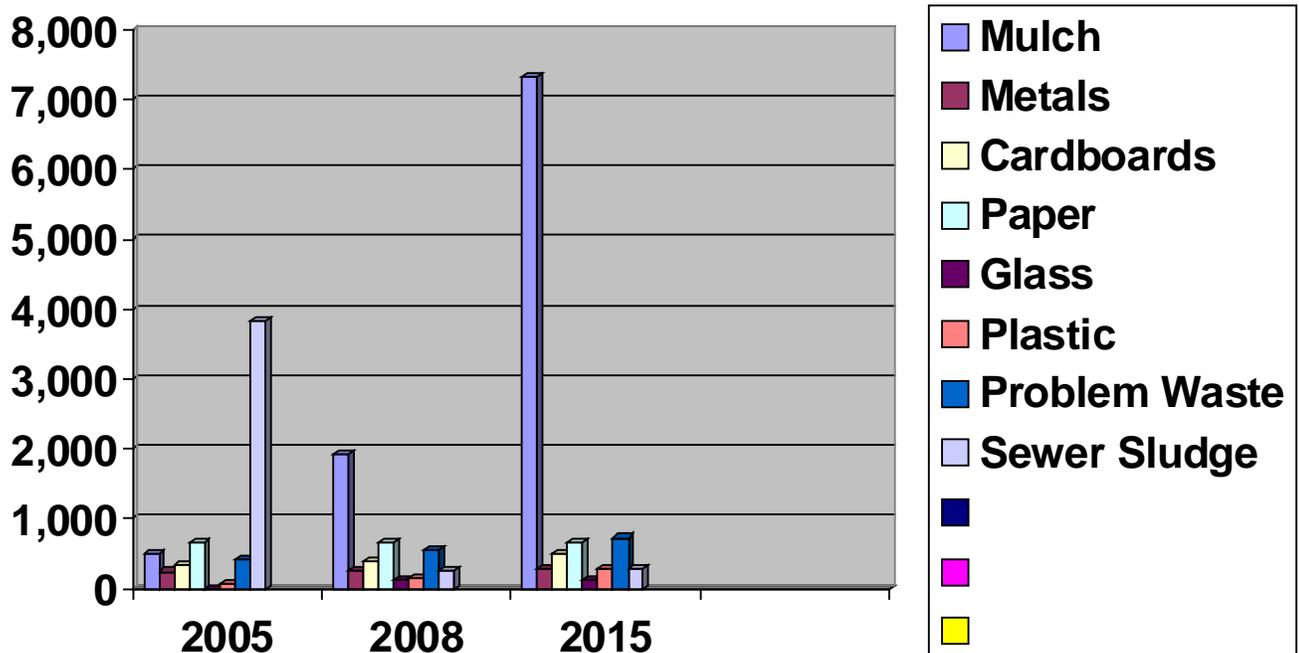
Aluminum cans are collected at all of the convenience centers. Residents can bring the aluminum cans into the convenience centers and place into recycling containers. When the containers are full at the Loudon and Greenback Convenience Centers they are taken to the Lenoir City Convenience Center. Langford of Sweetwater collects the aluminum cans loose from the Lenoir City Convenience Center. The city of Lenoir City does collect aluminum cans as part of their pilot door to door program of about 110 homes. The material that is collected by the city is taken to the convenience center for processing. None of the other cities provide the collection of aluminum cans. A total of 12 tons was reported in 2009.

The above information represents a good analogy of the public sector and how it takes care of its waste. Below is a table showing an analysis for two known amount periods and one estimated period that will be the next needs assessment. The numbers below only represent the public entities.

| Material | Material – 2007 | Material –2009 | Material –2015 |
|---------------------------------------------------------------------|-----------------|----------------|----------------|
| Sanitation - Land filled | 95,122 | 160,304 | 170,000 |
| Metals / White Goods | 243 | 266 | 290 |
| Cardboard | 332 | 405 | 498 |
| Paper | 672 | 667 | 674 |
| Glass | 0 | 123 | 123 |
| Plastic | 81 | 153 | 288 |
| Problem Waste – tires, batteries, automotive fluid, e-waste, paint. | 414 | 549 | 730 |
| Sewer Sludge | 3,840 | 0-260 est. | 280 |
| Mulch | 502 | 1,925 | 7,315 |
| Class III/IV | 0 | 0 | 00 |
| Other | 23 | 0 | 132 |
| Total Generated | 35,930 | 28,928 | 32,358 |

The landfill number is skewed based on the amount of waste brought in by the industries. The large influx from 2007 to 2009 is based on a new way for some of the industries to handle their waste that brought more special waste into the landfill. The 2015 number is a simple guess with very little data to go on. This will also affect the Total Generated for 2015. The other numbers will provide a good analysis on what is currently happening in the region and what can be expected.

The region has done a good job to make residents more aware of the need to divert as much waste from the landfill as possible. Below are the numbers for materials that are not being landfilled in either Class I or Class IV.



Item # 4: Waste Collection System and Life Cycle

The Region of Loudon County utilizes three (3) convenience centers and the landfill to collect Class I waste for Loudon County. The city of Lenoir City and Loudon collect and dispose of their Class I waste for their residents. The cities utilize their own vehicles, equipment and manpower. The cities of Philadelphia and Greenback don't provide those services for their residents. The residents must privately contract out the pickup of their Class I waste or take the waste to the convenience center. All of the waste is taken to the Matlock Bend Landfill that is owned by Loudon County. The landfill has at least 11 years left, with a new permit in the works for another 11 years. A tipping fee of \$28.70 is charged at the landfill site and the cities and county are charged \$20 per ton.

Class IV waste can be taken by residents of the region to the Matlock Bend Landfill. The cities pick up small amounts of this waste and take it to the landfill. The convenience centers do not accept Class IV waste. The tipping fee for class IV waste is the same as Class I waste, \$28.70 per ton.

Brush and leaves are collected in the cities of Loudon and Lenoir City and the waste is taken to their own sites. The citizens of Loudon County must take their brush and leaves to Matlock Bend Landfill. The convenience centers do not collect brush or leaves. A mulching component is being used by all of the entities that collect the material.

Tires are collected at the Matlock Bend Landfill. Residents must take their tires to the landfill site; tires are not collected at the convenience centers. The city of Loudon will pick up tires for their residents and take it to the landfill site. Lenoir City will also pick up tires in a 40-yard open-top container at the public works compound and the tires are taken by Lankford of Sweetwater. There are no drops off sites for the collection of tires, except at the landfill.

Metals are collected at all of the convenience centers and taking to an end user by Langsford in Sweetwater. The cities will collect small amount of white/goods from its citizens and then transport the material to the convenience centers for collection and transport to the processing center.

Recyclable items that include plastic, cardboard, news print and mixed paper are collected at all of the convenience centers in Loudon County region. All of the items except cardboard are transported by Spectra of Maryville to a processing center and then to an end user. The cardboard that is baled by Loudon County is transported by Rock-Tenn in Knoxville and then taking to a paper mill. The city of Lenoir City will pick up door-to-door as part of a pilot program of about 110 homes. The city of Loudon does collect some cardboard at some commercial establishments and takes the cardboard to the County convenience center. The other cities don't provide any services for the collection of recyclables.

Used oil is collected at all of the convenience centers and the used oil is then transported to an end user by Spectra of Maryville. The city of Loudon collects and uses their own used oil for heat. The city of Lenoir City collects their used oil and then gets paid a nominal fee by Enterprise Oil of Knoxville for the collection of the used oil. No other public sites are available in the Loudon Region.

E-Waste is collected at all of the convenience center sites and the e-waste that is collected at the Greenback and Loudon City site is then transported to the Lenoir City site for final collection by Creative Recycling Solutions of Nashville. The cities of Loudon and Lenoir City will collect small amounts of e-waste from their citizens.

Paint is not being collected in the region at the present time. The county has utilized the HHW event from the State to collect and transport paint. None of the cities provide for the collection of paint.

Sewer sludge is being recycled by both of the utility boards, Loudon and Lenoir City. Very little sludge is taken to the landfill for disposal.

Section 5 – Loudon County Reduction Rate

| Current Year Generation | Current Year Disposal | Base Year Disposal | Current Year Population | % Reduction compared to Base Year | Real Time Comparison |
|-------------------------|-----------------------|--------------------|-------------------------|-----------------------------------|----------------------|
| 235,777 | 160,305 | 109,602 | 51,868 | -12% | 32% |

The region of Loudon County currently meets the 25% waste reduction goal in 2009 as shown in the table above. Below is an illustration on what items are needed or in the process of starting that will help the Region to continue meeting the goal in the future. Initial review of last year's annual report showed that very little commercial establishments reported. Grocery stores would probably create another 400 tons of recyclables that are collected in the region. We probably need to see if we can receive these numbers in the future. The author had received data from the Dollar Store and Dollar General that would have produced another 200 tons on this report.

Since the original solid waste plan was implemented, the region of Loudon County has been very active in the pursuit of providing recycling opportunities for their citizens. The region has added such items as computers/electronics, used oil, metals and plastic. These items are in addition to the cardboard and mixed papers that are available in the region. One change from the last needs assessment is that some of the larger industries in the region have changed or added to their manufacture of materials that has created a larger volume of waste that is going to the landfill.

Class I waste in the region of Loudon County will continue to be the same during the next needs assessment. The County has enough permitted landfill space to operate for another 20+ years and is already looking at purchasing some more land. The entire process seems to be running quite efficient and no major changes are needed in the foreseeable future. The convenience centers seem to be well equipped to handle the collection of Class I waste. The only glaring deficiency is that Greenback and Philadelphia don't provide any Class I waste pickup for their residents. Greenback is not as crucial because they have a convenience center close by. Due to financial constraints, neither city is able to provide such services at the present time.

Class IV waste in the region of Loudon County will continue to be the same during the next needs assessment. If meeting the 25% waste reduction rate becomes a problem in the future, the region might look at reducing the tipping fee in order to attract more business. Such a move may result in an additional 1,500 tons of Class IV waste that is collected in the region. It should be noted that getting these numbers for the regional report is acceptable to count towards the waste reduction, since the waste is generated in Loudon County. However, quite

often companies such as Waste Mgt. and Waste Connection are not very helpful in providing numbers. There is no reason for the region to change how they handle Class IV waste at the present time. The region does provide the service for its customers.

Waste tires are being handled efficiently by the region. No changes in the process are needed for the region.

Used oil drop-offs have been made accessible to most residents in the region. The convenience centers, the cities of Loudon and Lenoir City and the Loudon Utility Board provide plenty of public access for the public. The only thing that could change in the future is that if the region is able to develop a sorting building for recyclables, then the used oil collected at the convenience centers could be used as heat for that building. Currently, that used oil is transported out of the region by Spectra of Maryville. The used oil program seems to be running efficiently in the region.

E-waste will continue to increase in the future. The County has a very good program with all of their convenience centers collected e-waste. The cities of Lenoir City and Loudon provide some small pickup of e-waste and have clean up days that help to collect such waste. Don't see any deficiency in the program that could create more waste.

Metals are being collected at the convenience centers and the program is run quite efficiently. The city of Lenoir City has used the collection of metals as a revenue source that other cities might want to look at in the future. No changes are needed at the present time.

Brush / Compost materials in the County are not being collected at the convenience centers. Such material can be taken to the landfill located in Lenoir City. Would it be easier for most residents to take their brush/leaves to the convenience centers? The answer is yes, but that is not fiscally prudent to offer such services. The landfill operation is being operated in an efficient manner and the fact that they two largest cities provide for the collection and disposal of this material covers the majority of the residents in the region.

Paint is one area that the region is lacking in providing a diversion from Class I waste. The County does provide a once a year HHW site using the States program. The region is currently looking at providing those services at one of the convenience centers and on a set time each week. This would allow the attendants to personally review the waste that is being taken to the center. One would estimate that an additional **45 tons** of waste could be diverted by the region. The region could take the oil-based paint and empty the paint into buckets that would allow for full paint cans. The paint could then be reused by the county for projects such as painting the recycling containers and painting equipment at play grounds.

The region could donate paint to Habitat for Humanity. Other regions that utilize this process report about 60% of the paint are white-based paints. The latex-based paint could also be accepted and the paint that can't be reused could be mixed in with brush chips to dry out the paint and then the paint could be landfilled.

Sewer sludge is being handled by the utility boards in a very efficient manner that provides a good diversion from the Class I landfill. The region will need to make sure that the numbers are being reported.

Paper and cardboard is collected at each convenience center in the region. None of the cities provide such collection. This is an area of growth that the region can experience in the future. The city of Lenoir City has a pilot program on collecting recyclables house to house. The program has had trouble expanding due to the lack of containers. The collection of such material house to house will never be a great money revenue, but it could save money on the tipping fee charges. In order to make the program more acceptable for the cities, the collection of the recyclable items needs to be single-stream. This would make it easier for city employees to collect and make it easier for residents to store. In order to do this, the county must be able to have a processing building that can handle such items single-stream. A processing facility would allow the cities to collect their materials and dump the material into a hopper without any separation. The hopper would disperse the material onto a conveyor belt that will take the material from point A to point B, and along those points personnel would separate the material. It is estimated that an additional **150 tons** of waste could be diverted through this process. The county also has the potential for growth into the governmental offices for the collection of paper and the collection of paper and cardboard at the schools. The problem right now is the ability to find funding to provide containers to be placed into these entities.

The region may want to look at what the Cocke County region has done in terms of recycling at the schools in the future. Their program, although infant in its inception, has done quite well. The Cocke County region has tied the recycling at the schools to an incentive program, whereby the schools can receive monies that can be used for the classrooms. The region could possibly contract this out with a company like Goodwill Industries.

Plastic is collected at all of the convenience centers in the same manner as cardboard and paper. The same potential growth that was outlined above would apply to plastic. Plastic is quite bulky and the region needs help in funding to provide a better method of handling plastic. Right now the plastic is baled in the vertical baler and the juices that are left behind are leaked to the bottom of the baler and those plates must be replaced once a year due to rusting out. The bottle caps also can become lodged into areas of the vertical baler. The region has not spent too much time on finding a better method due to no funding. The region probably needs to go ahead and identify a more efficient method in order to better prepare for future changes in the handling of plastic. None of the cities provide for the collection of plastic.

The problem is that plastic takes up a lot of space in a container and has to be dumped more frequently. Until plastic becomes a high dollar commodity for recycling, very little else can and should be done in the region.

Glass is not collected at the convenience centers and is not collected in the region. The problem is that the region does not have a good end user to make collecting glass a viable commodity. The region has looked at using glass as a component of road resurfacing, but that has not taken hold at the present time. The collection of glass by the region could easily net 125 tons a year in waste diversion.

The region of Loudon County has made great strides in providing new services to its residents in terms of recycling. The region of Loudon County needs to find ways to get the cities more involved in the future.

Item # 6: 10-Year Regional Disposal Assurance in Loudon County Region.

| Site Name | Annual Tons Disposed by Loudon County | SNL Permit # | Current Landfill Capacity (daily throughput) | Maximum capacity | Projected Life of Facility |
|-----------------------|---------------------------------------|--------------|----------------------------------------------|--------------------------------------------------------------------|----------------------------|
| Matlock Bend Landfill | 146,402 | SNL-53-0203 | 300 per day | Depends on compaction rate and Landfill Design and Operations Plan | 11 years left |

Note: Loudon County region does utilize three other landfills with smaller amounts that would not affect the region if they closed. The other landfills are Meadow Branch, Chestnut Ridge and McMinn Sanitary Landfill.

Public and Private Collection Service in the Loudon County Region (class I waste)

| Service Provider | Service Area | Frequency of Service | Estimated average annual tons collected | Type of Service |
|------------------|--------------|----------------------|-----------------------------------------|----------------------------------------------------------------------|
| Loudon County | County Wide | Six Days a Week | 75,686 | Convenience Centers |
| City of Loudon | City Limits | Once a Week | 9,662 | Door to Door Collection |
| Lenoir City | City Limits | Once a Week | 14,753 | Door to Door Collection |
| Philadelphia | City Limits | Six days a week | 1,111 | Does not provide service utilize Convenience Centers from the County |
| Greenback | City Limits | Six days a week | 1,466 | Does not provide service utilize Convenience Centers from the County |

** Estimated tonnage is based on 2.4 tons per person times population of entity.

All commercial and industrial establishments contract out the collection of their waste with private haulers.

Public and Private Collection Service in the Loudon County Region (Recycling)

| Service Provider | Service Area | Frequency of Service | Estimated average annual tons collected | Type of Service |
|------------------|--------------|----------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Loudon County | County Wide | Six Days a Week | 4,086 | Convenience Centers (recycling drop off sites) |
| City of Loudon | City Limits | No Service | 110 | Small pickup of white goods; brush and leaf program. |
| Lenoir City | City Limits | Small Pilot Program | 175 | Collection of aluminum cans, tin cans, paper, plastic and cardboard. Small pickup of white goods; brush and leaf program are also part of the recycling program. |
| Philadelphia | City Limits | No Service | 0 | None |
| Greenback | City Limits | No Service | 0 | None |

Loudon County has three registered convenience centers that are scattered throughout the region. All of the convenience centers operate as recycling drop off sites. The sites handle metal, paper, used oil, e-waste and batteries. The operating hours are 7:00 – 6:00; M-Sa for Loudon and Lenoir City Convenience Centers and 7:00 – 6:00 T-Sa for Greenback Convenience Center.

Industries and Commercial establishments coordinate their own recycling efforts.

Item # 7: Solid Waste Management Infrastructure

Loudon County

| Expenditures | | | |
|-------------------------------------------------------|-------------------------|------------------------|---------------------------------------------|
| Description | Present Need \$/year | Unmet Needs \$/year | Total Needs (Present + Unmet) \$/year |
| Salary and Benefits | \$328,728 | \$0 | \$328,728 |
| Transportation/hauling | | \$0 | |
| Collection and Disposal Systems | | | |
| Equipment | | | |
| Sites | \$0 | \$0 | \$0 |
| Convenience Center | \$206,305 | \$0 | \$206,305 |
| Transfer Station | \$0 | \$0 | \$0 |
| Recycling Center | \$0 | \$0 | \$0 |
| MRF | \$0 | \$0 | \$0 |
| Landfills | \$0 | \$0 | \$0 |
| Site | \$69,013 | \$0 | \$69,013 |
| Operation | \$268,619 | \$0 | \$268,619 |
| Closure | \$462,000 | \$0 | \$462,000 |
| Post Closure Care | | \$0 | |
| Administration (supplies, communication cost, etc.) | | \$0 | |
| Education | \$39,104 | \$0 | \$39,104 |
| Public | | | |
| Continuing Education | | | |
| Capital Projects | \$49,732 | \$385,000 | \$434,732 |
| Total | \$1,423,501 | \$385,000 | \$1,808,501 |
| Revenue | | | |
| Host agreement fee | \$0 | \$0 | \$0 |
| Tipping fees | | \$0 | |
| Property taxes | | \$0 | |
| Sales tax | \$544,897 | \$0 | \$544,897 |
| Surcharges | \$316,829 | \$0 | \$316,829 |
| Disposal fees | \$0 | \$0 | \$0 |
| Collection charges | | | |
| Industrial or Commercial charges | \$0 | \$0 | \$0 |
| Residential charges | \$20,792 | \$0 | \$20,792 |
| Convenience Centers charges | \$0 | \$0 | \$0 |
| Transfer Station charges | \$0 | \$0 | \$0 |
| Sale of Recyclables & Commodity Rebates | \$167,510 | \$0 | \$167,510 |
| Other sources: (Grants, bonds, interest, sales, etc.) | \$17,319 | \$0 | \$17,319 |
| Total | \$1,067,347 | \$0 | \$1,067,347 |

The region of Loudon County needs are for a horizontal baler, recycling containers, plastic gaylords, tub grinder and a new processing center to allow for single-stream collection.

City of Lenoir City

| Expenditures | | | |
|-------------------------------------------------------|-------------------------|---------------------------|---------------------------------------------|
| Description | Present Need \$/year | Unmet Needs \$/year | Total Needs (Present + Unmet) \$/year |
| Salary and Benefits | \$152,200 | \$0 | \$152,200 |
| Transportation/hauling | | \$0 | |
| Collection and Disposal Systems | | | |
| Equipment | \$62,800 | \$25,000 | \$62,800 |
| Sites | \$0 | \$0 | \$0 |
| Convenience Center | \$0 | \$0 | \$0 |
| Transfer Station | \$0 | \$0 | \$0 |
| Recycling Drop Off Center | \$0 | \$0 | \$0 |
| MRF | \$0 | \$0 | \$0 |
| Landfills | \$110,000 | \$0 | \$110,000 |
| Site | \$0 | \$0 | \$0 |
| Operation | \$0 | \$0 | \$0 |
| Closure – See total under post closure | \$0 | \$0 | \$0 |
| Post Closure Care | \$0 | \$0 | \$0 |
| Administration (supplies, communication cost, etc.) | \$0 | \$0 | \$0 |
| Education | \$0 | \$0 | \$0 |
| Public | | | |
| Continuing Education | | | |
| Capital Projects | \$0 | \$0 | \$0 |
| Total | \$325,000 | \$25,000 | \$350,000 |
| Revenue\$ | | | |
| Host agreement fee | \$0 | \$0 | \$0 |
| Tipping fees | \$0 | \$0 | \$0 |
| Property taxes | \$0 | \$0 | \$0 |
| Sales tax | \$0 | \$0 | \$0 |
| Surcharges | \$0 | \$0 | \$0 |
| Disposal fees | \$0 | \$0 | \$0 |
| Collection charges | | | |
| Industrial or Commercial charges | \$0 | \$0 | \$0 |
| Residential charges | \$325,000 | \$0 | \$325,000 |
| Convenience Centers charges | \$0 | \$0 | \$0 |
| Transfer Station charges | \$0 | \$0 | \$0 |
| Sale of Methane Gas | \$0 | \$0 | \$0 |
| Other sources: (Grants, bonds, interest, sales, etc.) | \$ | \$0 | \$ |
| Total | \$325,000 | \$0 | \$325,000 |

The city of Lenoir City needs a brush chipper.

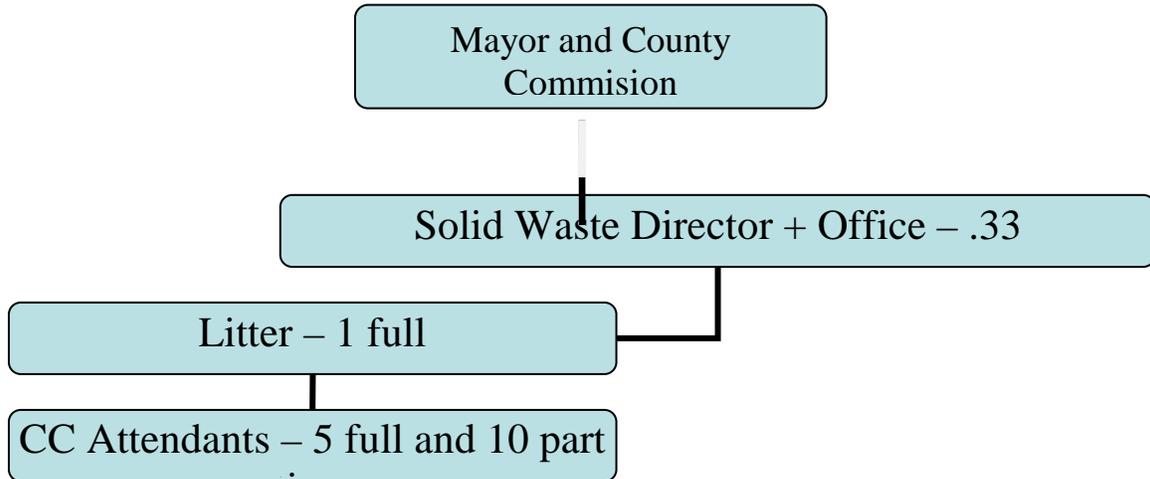
City of Loudon

| Expenditures | | | |
|-------------------------------------------------------|-------------------------|---------------------------|---------------------------------------------|
| Description | Present Need \$/year | Unmet Needs \$/year | Total Needs (Present + Unmet) \$/year |
| Salary and Benefits | \$165,000 | \$0 | \$165,000 |
| Transportation/hauling | \$0 | \$0 | \$0 |
| Collection and Disposal Systems | | | |
| Equipment | \$185,222 | \$0 | \$185,222 |
| Sites | \$0 | \$0 | \$0 |
| Convenience Center | \$0 | \$0 | \$0 |
| Transfer Station | \$0 | \$0 | \$0 |
| Recycling Center | \$0 | \$0 | \$0 |
| MRF | \$0 | \$0 | \$0 |
| Landfills | \$78,000 | \$0 | \$78,000 |
| Site | \$0 | \$0 | \$0 |
| Operation | \$0 | \$0 | \$0 |
| Closure – See total under post closure | \$0 | \$0 | \$0 |
| Post Closure Care | \$0 | \$0 | \$0 |
| Administration (supplies, communication cost, etc.) | \$0 | \$0 | \$0 |
| Education | \$0 | \$0 | \$0 |
| Public | | | |
| Continuing Education | | | |
| Capital Projects | \$0 | \$0 | \$0 |
| Total | \$428,222 | \$0 | \$428,222 |
| Revenue | | | |
| Host agreement fee | \$0 | \$0 | \$0 |
| Tipping fees | \$0 | \$0 | \$0 |
| Property taxes | \$174,227 | \$0 | \$174,227 |
| Sales tax | \$0 | \$0 | \$0 |
| Surcharges | \$0 | \$0 | \$0 |
| Disposal fees | \$0 | \$0 | \$0 |
| Collection charges | | | |
| Industrial or Commercial charges | \$0 | \$0 | \$0 |
| Residential charges | \$253,995 | \$0 | \$253,995 |
| Convenience Centers charges | \$0 | \$0 | \$0 |
| Transfer Station charges | \$0 | \$0 | \$0 |
| Sale of Methane Gas | \$0 | \$0 | \$0 |
| Other sources: (Grants, bonds, interest, sales, etc.) | \$0 | \$0 | \$0 |
| Total | \$428,222 | \$0 | \$428,222 |

All needs of the city of Loudon are being met at the present time.

Item # 8: Solid Waste Department Organization and Location

Loudon County



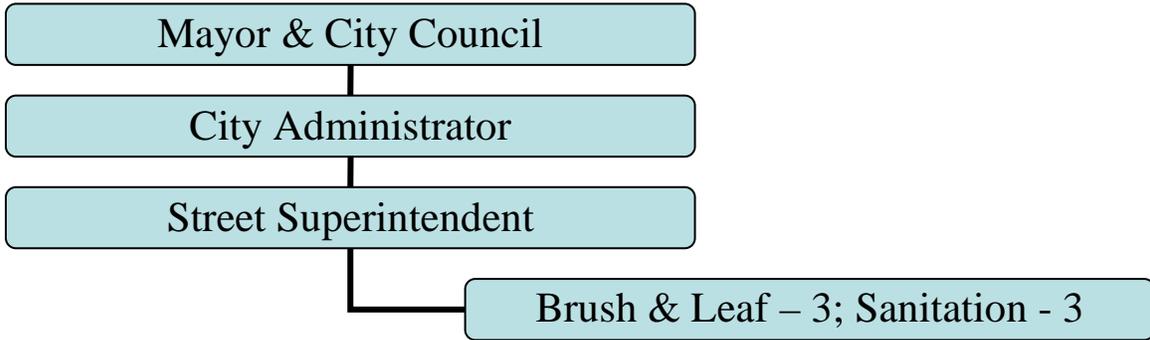
Loudon County has three convenience centers with the following locations:

1. Lenoir City CC – 500 Halls Ferry Road, Lenoir City, 37771
2. Loudon CC – 300 Rock Quarry Road, Loudon, 37774
3. Greenback CC – 3840 Hwy 95, Greenback, 37742

Loudon County has one landfill for Class I, Class IV and Special Waste:

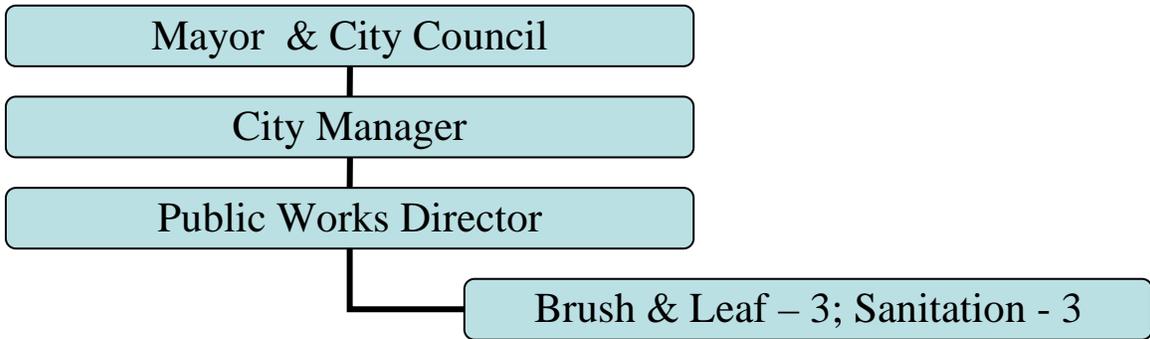
1. Matlock Bend Landfill (Loudon County Sanitary Landfill) – 21712 Hwy 72 N., Loudon, 37774

City of Lenoir City



The Lenoir City Public Works Compound is located at the following location:
1. 600 East Broadway, Lenoir City, 37771

City of Loudon

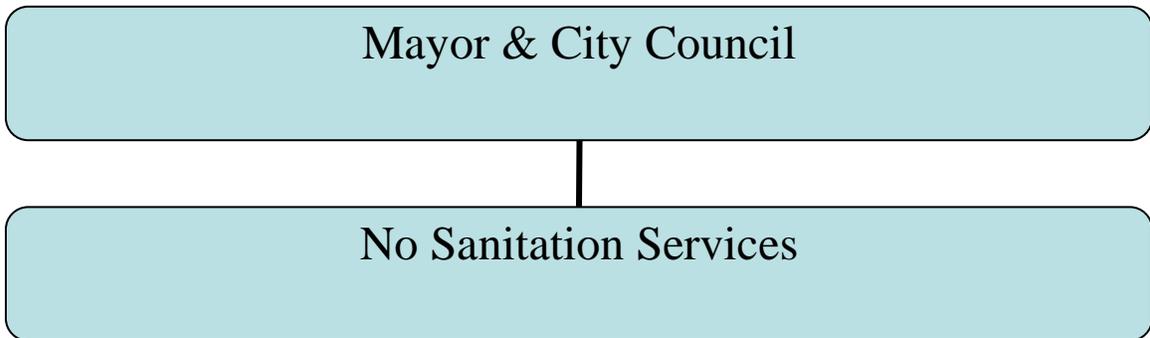


The Loudon Public Works Compound is located at the following location:
1. 100 Highland Ave., Loudon, 37774

City of Philadelphia



Town of Greenback



Item # 9: Future Waste Management Needs

Loudon County Region

Collection

| Equipment | Operational Use | Estimated Cost | Potential Revenue Source | Entity |
|-----------------------|-----------------|----------------|--------------------------|---------------|
| 4 cu. Yd containers | Recyclables | \$10,000 | Grants | Loudon County |
| Brush Chipper | Brush | \$25,000 | Grant | Lenoir City |
| Plastic Gaylord Boxes | Recycling | \$10,000 | Grant | Loudon County |
| Horizontal Baler | Recycling | \$60,000 | Grant | Loudon County |

Disposal

| Equipment | Operational Use | Estimated Cost | Potential Revenue Source | Entity |
|-------------------|-------------------------------------------|----------------|--------------------------|---------------|
| Processing Center | Collection and processing of recyclables. | \$125,000 | Grant | Loudon County |
| Tub Grinder | Collection of Wood Waste | \$180,000 | Grant | Loudon County |

The region of Loudon County has equipment needs as shown above that will take time to purchase on their own. The region has some areas that can be improved upon, if money was available. The region has identified the need for a paint collection system and with grant help could have that ready at anytime. The region has also realized that the only way they can increase their recycling efforts is for the cities to begin door to door collection. In order for the program to be cost efficient for the cities, the region would need to allow for single-stream collection. In order to handle single stream collection, the region would need to develop a recycling processing center that would include a building, conveyor belts, bobcat, etc.

Item # 10: Residents Attitude and Participation

No formalized surveys have been done to measure the public's attitude of Loudon County residents concerning support for environmental programs. The mindset of the people is changing as the population gets older as illustrated by the decrease in the tons per person in the region. Most residents that were casually asked about recycling agree that it is a good way to help do their part in saving the environment. However, most are not willing to go out of their way to recycle. The word convenience tends to come in mind towards the reaction towards recycling. Most feel it is the government's job to provide recycling opportunities and that it should be left up to that person to choose to do so. Most feel that stringent regulations should not be passed that force residents to recycle. As the school age children become older and they are used to recycling items at school. a habit of recycling will dictate the increase in public participation in the future. That is why it is important to start a recycling program in the schools. None of the cities provide recycling opportunities for their residents at the present time. Lenoir City does have a pilot program that handles about 110 homes house to house for the collection of recyclables. That program illustrates that there is not an outcry by the residents demanding collection of recyclables within the city limits. The region of Loudon County has the resources available to grow with the public in terms of recycling.

Item # 11: Regional Solid Waste Plan / Executive Summary

The Loudon County Region's plan for the next five years is to continue to find ways to expand services within their recycling program. As part of the needs assessment, I will take a look at every area of the solid waste stream to give my thoughts on the needs in those areas.

Class I waste is currently being handled in the region by a network of convenience centers that also operate as recycling drop-off sites. The region using their own equipment picks up the convenience centers Class I waste and takes it to the regional landfill that is owned by Loudon County. The county does contract out the running of the landfill to Santek Environmental. This contract will take the region through the next needs assessment. As shown on the attached map, the convenience centers have been strategically placed throughout the region. A five-mile radius shows that every section of the county can be reached by a convenience center. The region has been very proactive in building convenience centers around growth areas in the past. The region will need to look at the growth area within the next needs assessment to make sure that there will not need to be another convenience center based on growth patterns. The lack of any major dumps in the area illustrates that the current convenience centers are taking care of the need for Class I disposal. The cities of Lenoir City and Loudon provide house-to-house collection of Class I waste. The cities provide their own equipment and manpower for the collection of Class I waste and take the waste to the regional landfill. The cities of Greenback and Philadelphia provide no collection services for its citizens. There is, however, a convenience center within the city limits of Greenback that services their residents. The population base size of Philadelphia does not warrant the placement of a convenience center. It is the author's belief that the Class I waste is being handled very efficiently for the region of Loudon and no immediate changes are needed.

Class IV waste is available at the regional landfill. The region does not count all of the Class IV waste that is generated due to the fact that other Class IV landfills are also taking Class IV waste from Loudon County. There is no change needed in the way the Class IV waste is being handled. If at some point regulations change that warrant the region relying more on Class IV waste in the future, the region might have to lower its price to attract additional Class IV waste. That being said, the region just needs to be able to better track the Class IV waste that is leaving the area and count the amounts towards their 25% reduction.

Waste tires are being handled efficiently at the regional landfill for the Loudon County. The region has a contract with a private company to dispose of the tires when a trailer load is collected (Mac Tires of Nashville). The state probably needs to provide more funding for this program, but other than that, there is no reason to change what is being done for the collection of waste tires.

Used oil collection sites are scattered throughout the region and seem to be operating quite efficiently. The only change from the last needs assessment is that the city of Lenoir City has their used oil being collected, rather than burning the used oil for heat. The burners become quite troublesome for communities after about five years of use. The state needs to look at providing some of the used oil funds to replace these burners more often for the communities that used the oil for heat. The region is adequately covered with used oil collection centers by having the collection of used oil at all of their convenience centers.

E waste is something that the region has added since the last needs assessment. E waste is collected at the convenience centers. The region has a contract for the disposal of the waste. The cities do provide for small pick-ups of such waste during annual clean-up days. No changes to the program are needed at the present time.

White goods and metals are collected at all the convenience centers. The method of handling the metals is working quite well for the county. The cities also provide for the collection of metal with special day pick-ups, or a collection site in the case of Lenoir City. The collection sites are there for people to use and see no way that the region could increase such collection.

Brush/Compost is being handled efficiently by the region and there is no reason to change anything in the near future. The cities in the region have done a good job in providing the collection of brush and leaves for its residents and providing the material for mulching. The region actually shows great cooperation between the municipalities, county and the utility districts in the handling of brush/leaves and the processing of those materials. By working together, the region has been able to recycle sewer sludge.

The collection of paint is something that the region needs to improve upon during the next needs assessment. In talking with the solid waste director, paint is an item that the region has looked at and is willing to provide for such collection once funds are available. The region has a site that can be used for the collection of paint--Lenoir City Convenience Center. The region will need to pay close attention to the labor intensive side of operating a paint reuse center. The region will probably need to experiment on different scenarios to find the most efficient way to handle the paint. Other regions in East Tennessee have been able to utilize prison labor that helps to offset the personnel cost involved in operating a paint recycling center.

Paper and cardboard have always been collected at the convenience centers in the region. The regions have placed a baler at all three centers to reduce the amount of trips to the recycling processing center. The recycling processing center is operated out of the Lenoir City Convenience Center that makes use of existing facilities. The city of Loudon does provide for some small collection of cardboard and the city of Lenoir City does have a small pilot program for the collection of recyclables.

However, the region needs to look at ways to provide for door-to-door collection at the city level. It is the author's belief that in order to make this happen, the region will need to develop a separate processing center that will allow for the cities to collect single-stream and take the recyclables to the processing center and at that point the items are separated and processed. Grants to help purchase containers will need to be available for the cities in order to make the process easier for their residents. The region also needs to look at ways to start a more comprehensive recycling program in the schools. The region will need to secure funding for equipment in the future to start the program. The region might want to look at an incentive program at the schools where some of the proceeds go back to the classrooms as a way to increase participation.

The region does not collect glass at the convenience centers and the cities do not provide the service. The market will dictate if the region should make such steps to increase the collection of glass in the future. Glass may become more of a viable option, if meeting tonnage diversion becomes a problem in the future.

In summary, the region has met the 25% waste reduction goal that is mandated by the state. The region does a good job in receiving numbers from area businesses and industries and should concentrate on getting more Class IV numbers in the future. The region, as illustrated, has made steps to improve the collection of recyclables since the last needs assessment. The region has growth potential in terms of more diversion by having the cities become more active in recycling and the schools to become more involved with recycling. As is the case in all regions there are still things that can be done to further enhance the diversion of waste from a Class I landfill. The economy has dictated more of a cost benefit analysis on future programs during the next needs assessment period. The region has come a long way since the last needs assessment and will continue to reach their goal of having one of the most comprehensive recycling programs in the East Tennessee Region.

Sources:

Loudon County Solid Waste Department

Loudon County Home Page

U.S. Census Bureau

City of Lenoir City

City of Loudon

Town of Greenback

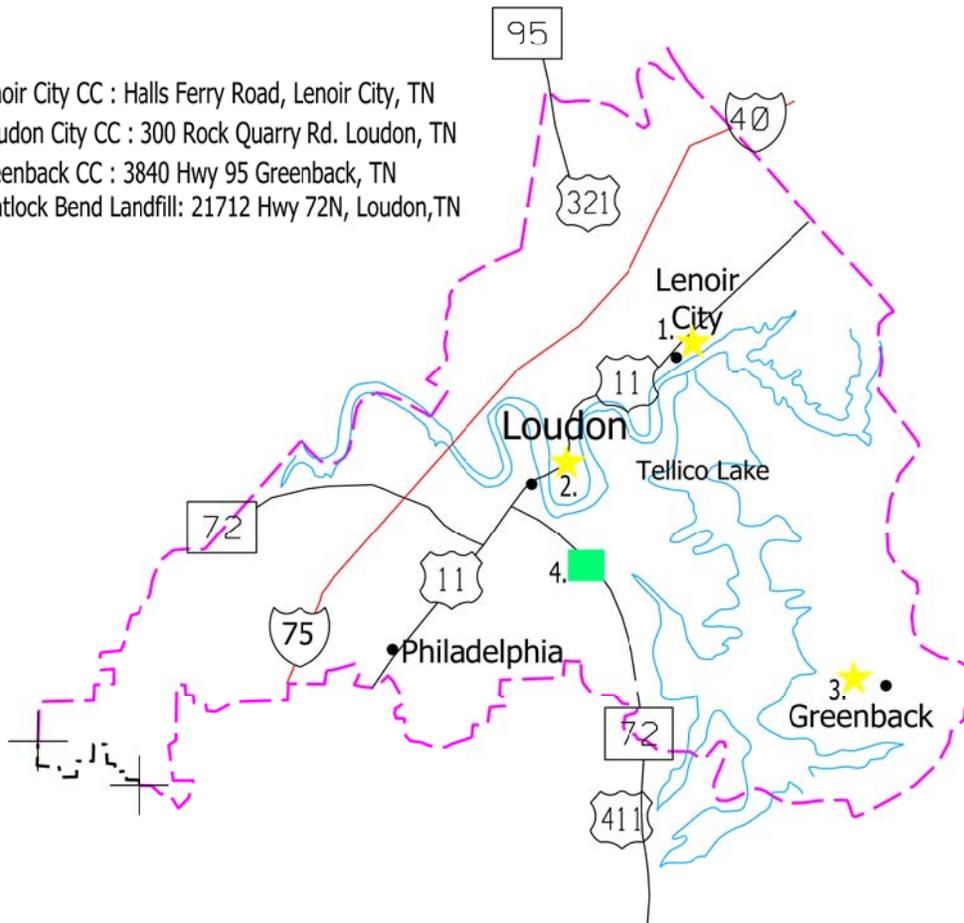
City of Philadelphia

Tennessee Division of Solid Waste Management

[www. City-data.com](http://www.city-data.com)

[www. Headwaterseconomics.org](http://www.Headwaterseconomics.org)

1. Lenoir City CC : Halls Ferry Road, Lenoir City, TN
2. Loudon City CC : 300 Rock Quarry Rd. Loudon, TN
3. Greenback CC : 3840 Hwy 95 Greenback, TN
4. Matlock Bend Landfill: 21712 Hwy 72N, Loudon, TN

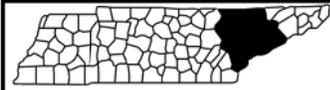


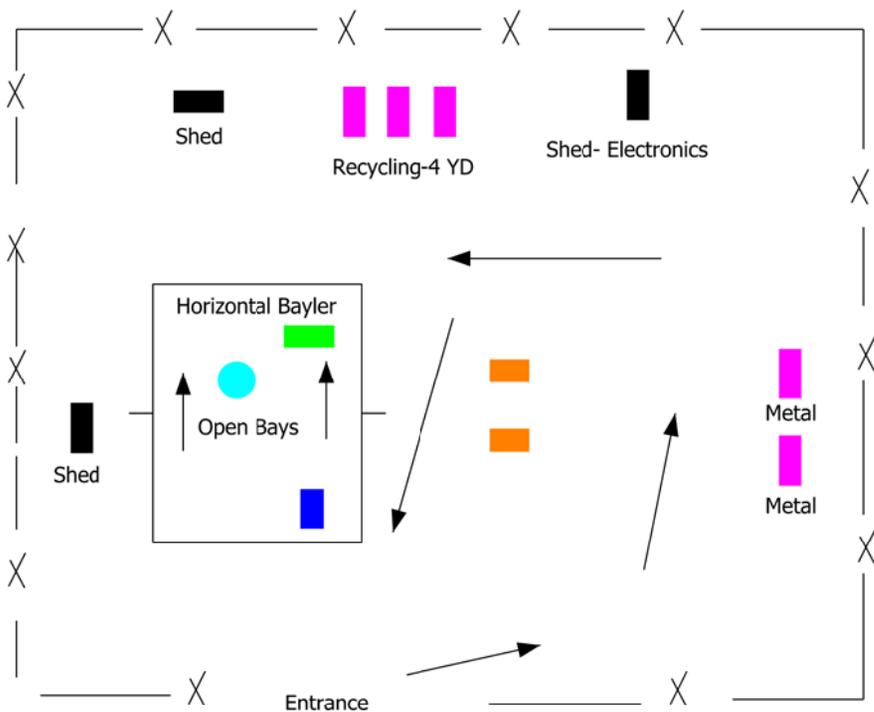
Legend

- ★ Loudon County Convenience Centers
- Landfill

Loudon County
Convenience Centers

Prepared by ETDD
Updated on 11-09-10





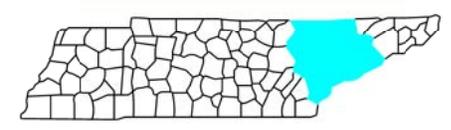
500 Halls Ferry Road



2010 
Solid Waste
Lenoir City

- Legend
-  Attendent Office
 -  Recycling Containers
 -  Fence
 -  Class I
 -  Vertical Bayler

NOT TO SCALE
 Prepared By: ETDD
 November 11, 2010



Lenoir City Convenience Center
 500 Halls Ferry Road Lenoir City, TN

