
2014 ANNUAL REPORT ON THE ENVIRONMENT

CHAPTER V

SOLID WASTE

V. SOLID WASTE

A. ISSUES AND OVERVIEW

The Fairfax County Solid Waste Management Program continues to effectively manage solid waste recycling, collection, transfer and disposal within the county through the operation of existing programs, implementation of the County Solid Waste Management Plan and code compliance activities. As it has for many years now, Fairfax County's recycling rate exceeds the Virginia minimum requirement of 25 percent. The program achieved a recycling rate of 48 percent last year. As always, the county has also met the 930,750 tons annual waste delivery obligation to the Energy/Resource Recovery Facility, which is located at the county's I-95 Landfill Complex and owned and operated by Covanta Fairfax, Inc.

The program continued to provide waste collection and recycling services to over 44,000 homes in designated County Sanitary Districts. The program also moved a daily average of 105 tractor-trailer loads of municipal solid waste from the I-66 Transfer Station to the Energy/Resource Recovery Facility, Lorton Debris Landfill, Davis Industries, Loudoun Composting, Broad Run Recycling and other appropriate disposal and recycling locations.

1. Energy Resource Recovery Facility and Landfill Capacity

The Energy Resource Recovery Facility continued to serve as the primary disposal location for the county's municipal solid waste, processing approximately 1,018,000 tons of waste in FY 2014. The county bypassed 39,650 tons of waste to a municipal solid waste landfill due to scheduled and unscheduled maintenance outages at the facility. Approximately 25 percent of waste processed by the facility was from neighboring jurisdictions, including Prince William and Loudoun counties and the District of Columbia.

2. Solid Waste Management Plan Implementation

The 20-year Solid Waste Management Plan was approved by the Board of Supervisors in 2004 and revalidated in 2010. Highlights of the plan include the following:

a. Environmental Stewardship

The Solid Waste Management Program achieved the following goals and objectives for 2014:

- Finalization of an agreement to assure the continued use of the Covanta Fairfax facility after the original Service Agreement expires in 2016. After multi-year negotiations with Covanta, a new five-year Waste Disposal Agreement was awarded in April 2014. The contract allows for two additional five-year extensions and will help stabilize the cost of disposal for county residents over

possibly the next 15 years. The contract's price will be about 14-24 percent below market price and reduces the county's annual commitment to Covanta. Covanta will pay the county a fee for every ton of merchant waste the company brings to the facility.

- Continued development of an energy plan concept for an inactive area of the I-95 Landfill.
- Support for improvements in ferrous and non-ferrous metals recovery from ash generated from the combustion of refuse. This improved recycling of these materials netted additional revenue to the county and reduced the ash capacity needs at the landfill.
- Increased construction/demolition/debris recycling in FY 2013 by about 39,900 tons of material that was transported from the I-66 Transfer Station to a CDD recycling facility rather than to a landfill for disposal. Unrecyclable but combustible material from the CDD recycling facility was backhauled to the Energy Resource Recovery Facility for processing.
- Implementation of new waste handling areas at both disposal facilities to better dispose of cooking oil; this effort actually generates revenue for county operations.
- Expansion of hours of operations at the Household Hazardous Waste facilities to encourage residents to divert more of these contaminants from the waste stream to proper disposal.
- Reorganization of the functions of disposal, resource recovery, collections and recycling programs into the Solid Waste Management Program, which came into existence on July 1, 2013. Administrative, operational and engineering support functions were consolidated to improve environmental compliance, customer services and program efficiency.
- Continuation of in-kind and financial support of various outreach events and programs to support environmental stewardship in Fairfax County, including: Springfest; Fall for Fairfax; and education programs at about 33 Fairfax County Public Schools and other community events.

b. Compliance Assistance for Non-Residential Properties

The Solid Waste Management Program has amplified its compliance assistance program to help business owners and operators understand their responsibilities with respect to solid waste management. The focus of these efforts has been to educate business owners about how to comply with the county's solid waste ordinance to prevent enforcement actions. Without a mandate for businesses to

recycle, voluntary compliance is the only way to improve business recycling numbers.

c. Remote Household Hazardous Waste Collection and other Events

- In addition to its permanent collection sites at the I-66 and I-95 complexes that were opened to residents every day, the Solid Waste Management Program held four remote household hazardous waste collection events in 2013. The four events collected about 46 tons of solvents, sprays, mercury and paints. HHW disposal is conducted at no cost for county residents.
- Monthly e-waste collection events were held for residents, with over 706 tons collected in FY 2014. After analyzing costs and amounts of e-waste being collected, the program will expand e-waste collection by offering drop-off service daily at both the I-66 Transfer Station and the I-95 Landfill Complex. Curbside collection of e-waste will be offered in the sanitary districts beginning in July 2014.
- Staff organized nine document shredding events throughout the magisterial districts, processing almost 125 tons of documents from residents.

3. Solid Waste Disposal Fee

The contract waste disposal fee, offered to companies that sign agreements with the county, was \$54.00 per ton in FY 2014 and will remain the same for FY 2015. Disposal fees support all solid waste public benefit programs such as household hazardous waste disposal, electronics recycling, personal document shredding, enforcement of the county’s solid waste ordinance and solid waste public outreach/education. The base solid waste disposal fee remained at \$60.00 per ton for FY 2014 but increased to \$62.00 in FY 2015. A complete list of fees for various materials is posted on the county’s website and at the facilities.

B. PROGRAMS, PROJECTS AND ANALYSIS

1. Waste Disposal Program

a. Overview

The Fairfax County Solid Waste Management Program is responsible for providing the municipal solid waste disposal capacity for both private and public sector waste collectors countywide. This is accomplished through a network of facilities and programs including:

- The I-95 Landfill Complex and Recycling & Disposal Center.
- The I-95 Energy/Resource Recovery Facility.
- The I-66 Transfer Station Complex and Recycling & Disposal Center.

- The Household Hazardous Waste Program.
- Newington Facility (county collection in sanitary districts).
- Other related services.

Each element of this network is described under a separate heading below.

b. I-95 Landfill Complex and Recycling & Disposal Center

The I-95 Sanitary Landfill was opened by the District of Columbia in 1972. The county assumed operational responsibility for the facility in 1982. The facility accepted municipal solid waste for disposal through 1995. Since that time, only incinerator ash has been disposed in the landfill. Various environmental protection efforts are currently being undertaken as discussed below.

i. Groundwater Monitoring and Remediation

Groundwater Protection Standards were originally established for the I-95 Sanitary Landfill on November 20, 2000, through an amendment to the facility permit. In accordance with Waste Management Regulation 9 VAC 20-81-260(C)(3), an Assessment of Corrective Measures report was submitted to the Virginia Department of Environmental Quality in August 2002, as the groundwater protection standards were exceeded for some constituents. VDEQ commented on the ACM and the county addressed VDEQ's comments by submitting a revised ACM and Corrective Action Plan on April 30, 2004.

On February 4, 2011, VDEQ issued an amendment to the I-95 Sanitary Landfill Solid Waste Permit. That amendment included approval of the CAP prepared to address the noted exceedances of certain Groundwater Protection Standards in landfill monitoring wells.

The Corrective Action Plan specifies the required groundwater remediation approaches:

- Monitoring of natural attenuation (no action but continued monitoring) is specified for two areas where the groundwater quality is already improving.
- Enhancement of bioremediation is specified for three areas where groundwater quality has not improved. Enhanced bioremediation involves the injection of a food-grade Hydrogen Releasing Compound, similar to molasses, into the groundwater in these areas.
- A preliminary injection was completed in June 2011 to evaluate the transmission of the HRC, the initial effectiveness of the remedy and provide data that could be used to refine the proposed injection grid.

- A full round of injections was completed in August and September 2012 to fulfill the permit mandated CAP and to further enhance the overall response of the preliminary injection.

A Corrective Action Monitoring Plan approved as part of the 2011 permit amendment required installation of eight additional performance and sentinel monitoring wells. This work was completed in January 2011 in anticipation of permit issuance. The CAMP establishes the procedures and criteria by which the results of the CAP are to be observed. The CAP activity is required to show reasonable reduction in the concentration of the targeted compounds after one year.

Sufficient progress was shown at two out of three injection zones within one year of the preliminary injection to warrant continuing the prescribed active remedy at these locations. Slow groundwater flow at the third location appeared to limit the transmission of HRC to the performance wells, resulting in insufficient evidence to evaluate the remedy. Additional injections were continued as prescribed at this location since the effectiveness of the remedy was uncertain and to allow more time for transmission of the HRC. This activity was completed in 2012 as previously discussed.

Once every three years, a Corrective Action System Evaluation report will be submitted to the Director of VDEQ. The CASE report summarizes the CAP activity and progress toward attainment of the GPS for each remediation zone.

The first CASE Report was submitted to VDEQ in April 2014. The report recognized that the remedies identified in the CAP have been effective in achieving their objective at each front.

Additional groundwater impacts were observed in the sentinel well for the west front, NES-18. As this plume was associated with a different geographic groundwater front, a Nature and Extent Study was completed and submitted to VDEQ. Following the review of this document by VDEQ, the county will submit an Assessment of Corrective Measures. An interim corrective measure, injection of HRC, was implemented to address these groundwater impacts immediately. This has been effective at reducing the constituents of concern associated with this plume.

ii. Landfill Closure

Capping of the municipal solid waste section of the landfill (an area of 260 acres) was completed during 2008. Phases I and II of the closure of this section were completed by placing a synthetic cap over an area of 125 acres. Phases III and IV of the closure consisted of capping 135 acres of landfill with a thick, low permeability soil layer to minimize surface water infiltration. The capping work on some of the side slopes of the Area Three Lined Landfill (the ashfill) was

completed during 2008 by using a synthetic landfill cap. Small areas will be capped throughout the life of the landfill as they reach their final fill grade.

The closed areas of the landfill will require attention and maintenance for many years to come, but they also provide the opportunity for interim use. A review by a consulting engineer identified a number of uses that could occur on the property at this time, including additional green energy development through solar power. This solar project is included in a public/private effort being considered in the Lorton area to maximize sustainability opportunities, in a collective initiative called the Green Energy Triangle.

iii. Landfill Gas System and Environmental Compliance Activity

The I-95 Landfill operates a large landfill gas collection system, with over 350 installed wells extracting landfill gas for energy recovery. Approximately 2,300 cubic feet per minute of this gas is distributed to a variety of energy recovery systems, including the six-megawatt Landfill Energy Systems electric generating facility and the three-mile landfill gas pipeline that provides fuel as a substitute for natural gas at the Noman M. Cole, Jr. Pollution Control Plant. In 2012, the county and Landfill Energy Systems signed a 10-year extension of the original contract which sets new terms for prioritizing gas delivery to the Noman M. Cole facility and returns revenue to the county based on electricity sales and renewable energy certificates.

County staff has also converted space heating at the landfill maintenance shop to use landfill gas as the fuel source (the original heating system used bottled propane gas). This conversion continues to save approximately \$5,000 per year in heating costs; it received a national award from the U.S. Environmental Protection Agency.

During this reporting period, the county faced challenges with weather and infrastructure systems that need to be upgraded. The county addressed issues of compliance with Virginia's air pollution, landfill gas control, solid waste management and stormwater management regulations, as well as the Environmental Protection Agency's Greenhouse Gas Reporting Rule. The county annually submits reports to VDEQ or the EPA, compiling the following:

- Ground water quality monitoring data.
- Surface water quality data.
- Landfill gas system gas monitoring and operational data.
- Greenhouse gas monitoring data.

The county also compiles landfill methane gas surface emissions and facility perimeter monitoring data in accordance with Virginia Solid Waste Management regulations. VDEQ and EPA have found all submittals to be acceptable.

iv. Ash Landfill

The Energy Resource Recovery Facility combustion process reduces the processed waste to only 10 percent of its original volume and about 25 percent of its original weight. Therefore, ash disposal requires significantly less landfill space than that which is consumed by the disposal of unprocessed municipal solid waste. Incinerator ash from the facility, a similar Covanta facility serving the City of Alexandria and Arlington County and from the Noman Cole Plant is disposed of at the I-95 Ash Landfill (Area Three Lined Landfill). Ash is placed in a double-composite lined landfill, which is controlled by state-of-the-art leachate collection and detection systems. The collected leachate is sent via the wastewater system to the Noman Cole Plant for treatment. In FY 2013, about 850 tons of ash were placed in the ash landfill each day.

The ash landfill has been constructed in four phases. Phases I and II have reached capacity and an intermediate cover has been placed on these areas. Construction of Phase IIIA of the ash landfill was completed during March 2008 and is the currently active landfill cell. Phase IIIB construction was completed in February 2013. The estimated remaining life for disposal of ash in the combined Phase I, II and III footprint is approximately 17 years. If necessary, the county could use additional permitted capacity, Phase IV, which could extend the life an additional 10 - 15 years.

The Energy Resource Recovery Facility's suite of pollution control equipment includes a dolomitic lime system that chemically treats the ash to reduce the potential of mobilizing metals that may leach from the ash after landfilling. The ash is tested twice per year using the Toxicity Characteristic Leaching Procedure, as specified in federal regulations. During FY 2014, analysis of the ash by a certified laboratory found the ash to be non-hazardous, demonstrating that all parameters analyzed are within the limits for all regulated constituents and that the ash is non-hazardous waste.

Cadmium is a constituent of concern in the ash generated by the combustion of municipal solid waste. To reduce the potential for cadmium to be introduced into the Energy Resource Recovery Facility, the Solid Waste Management Program supports and actively publicizes efforts to collect rechargeable nickel-cadmium batteries separately for recycling. Through a partnership with the Rechargeable Battery Recycling Corporation, large retailers such as Wal-Mart, Radio Shack and Best Buy are collecting old batteries as new ones are sold. The batteries are recycled at a permitted waste management facility specifically designed to recover these metals. This effort is anticipated to significantly reduce the amount of cadmium present in the ash. Electronics recycling also assists in reducing metals concentrations in the ash. Moreover, the program pays for the application of dolomitic lime to the ash to bind heavy metals so that they do not leach into the groundwater once landfilled.

v. Recycling and Disposal Center

The Recycling and Disposal Center allows county residents and small businesses to bring their municipal solid waste and recyclables directly to the I-95 Complex for disposal. The center offers a full range of recycling opportunities as well as household hazardous waste disposal service. Recycling of paper, cardboard, cans and bottles is free to residents. In FY 2013, there were over 41,360 visits by residents to the RDC.

c. **Energy/Resource Recovery Facility**

i. Overview

Operations at the Energy/Resource Recovery Facility continue to meet or exceed accepted industry standards, as evidenced by the annual independent engineering report prepared by Dvirka and Bartilucci Consulting Engineers in October 2013. This report states: “CFI (Covanta Fairfax, Inc.) has complied with the requirements of the Service Agreement, as amended, and has complied with the Facility’s various environmental permit and regulatory obligations.”

Since 2008, the Energy Resource Recovery Facility has been allowed to produce energy over its nameplate rating. During periods when this energy is



produced, it is sold for premium prices on the PJM regional energy market. Revenue from the sale of the over-80 MW of electricity as well as all electrical revenues are used to keep the disposal fees low.

A new waste disposal agreement was negotiated with Covanta Fairfax, Inc.

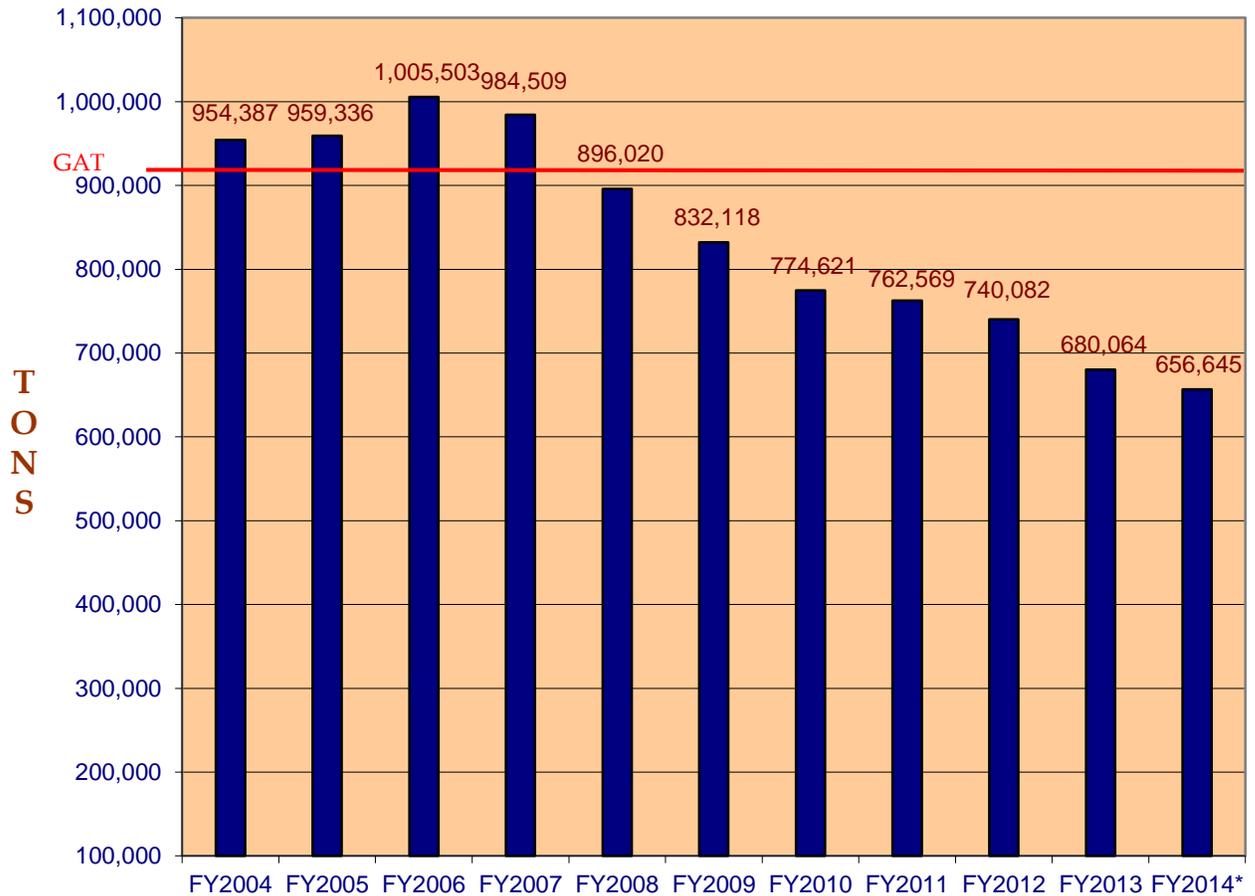
for the continued processing of county waste when the original Service Agreement expires in February 2016. This new five-year contract: reduced the guarantees the county provided to Covanta; established a below market cost for waste disposal; and supported the goals of the Solid Waste Management Plan.

Alternative technologies are being explored to handle a portion of the waste stream to divert it from either the landfill or the Energy Resource Recovery Facility.

ii. Quantity of Waste Processed

The county guaranteed to provide, and the Energy Resource Recovery Facility agreed to process, at least 930,750 tons of municipal solid waste per year. In FY 2014, the facility processed over 1,018,000 tons of waste delivered on the county’s behalf (over 86,000 tons per month). Approximately 656,600 tons of this waste (65 percent) originated in Fairfax County, with the remainder coming primarily from the District of Columbia and Prince William County. Figure V-1 provides the total waste generated, including that processed at the facility and the amount bypassed to alternate disposal. The quantity of Fairfax County waste generated is decreasing, primarily due to reduced waste generation and increased recycling.

Figure V-1. Total Fairfax County Municipal Solid Waste FY 2004-2014



FISCAL YEAR (FY) = July - June

iii. Air Quality

The Energy Resource Recovery Facility's continuous emissions monitoring systems sample flue gas from the combustion process and alerts CFI operating personnel when monitored emissions are approaching the concentration limits specified in the facility's air pollution control permits. Permit exceedances must be reported to VDEQ, with an explanation as to the circumstances of the event and proposed solutions, as warranted. The facility continues to meet its air permit limits, with parameters well below their regulatory limits. Table V-1 presents stack emissions as documented by an independent lab test in June 2013 and reported to VDEQ.

Table V-1 Energy Resource Recovery Facility Emissions Results June 2013		
Parameter	Permit Limit	Average E/RRF Result
Sulfur Dioxide	29 ppm	4.75 ppm
Carbon Monoxide	100 ppm	3.75 ppm
Nitrogen Oxides	205 ppm	183.0 ppm
Hydrochloric Acid	29 ppm	4.40 ppm
Particulate Matter	27 mg/dscm	1.42 mg/dscm
Mercury	0.080 mg/dscm	.0018 mg/dscm
Dioxin/Furans*	30.0 ng/dscm	Not measured ng/dscm
Lead	0.44 mg/dscm	.0030 mg/dscm

ppm = parts per million

mg = milligram

ng = nanogram

Dscm = dry standard cubic meter

* only one unit tested annually

Covanta Fairfax Inc., Annual Determination of Compliance with Permitted Emission Limits and 40 CFR, Subpart Cb Report, (COV Report No. 3640 Volume 1), pages 12-15 for testing conducted May 28-June 8, 2012

iv. Materials Recovery

In addition to recovering energy from municipal solid waste, metals are recovered from the ash residue and recycled. In 2013, 24,306 tons of ferrous metal and 1,950 tons of non-ferrous metal were recycled from the ash.

d. **I-66 Transfer Station & Recycling and Disposal Center**

The I-66 Transfer Station handles approximately 70 percent of the county's municipal solid waste destined for disposal. The Transfer Station consolidates waste delivered by individual residents and businesses, and also private sector and county collection vehicles, into large transfer trailers. These trailers are hauled over the road to a final disposal site, primarily to the Energy Resource Recovery Facility or recycling locations. The benefits of this type of transfer system are a reduction in the number of vehicles traversing the county to reach the final disposal point and

reduced operating costs for the county's solid waste management system as a whole. Further, the Transfer Station plays a pivotal role when waste needs to bypass the Energy Resource Recovery Facility during maintenance outages.

VDEQ regularly inspects the Transfer Station; the facility was found to be in full compliance during all inspections in FY 2013 and FY 2014.

i. Transfer Operations

The main role of the Transfer Station is to move waste collected in the northern and western parts of the county to the Energy Resource Recovery Facility in the south. The county also uses a private trucking contractor to augment its transportation fleet.

The county vehicle fleet, including the transfer trucks at the Transfer Station, now uses ultra-low-sulfur diesel fuel and exhaust after-treatment systems. These changes reduce air pollutant emissions as much as possible, while performing the mission of transporting waste.



An automated truck wash system was installed in the truck wash building. The state-of-the-art system better recovers and recycles water, discharging minimal amounts to the sewer while reducing manpower requirements to wash large vehicles. Other county vehicles, including waste collection vehicles, are washed here as well.

In FY 2012, a project was completed whereby landfill gas lines were extended to a nearby bus garage owned by the Washington Metropolitan Area Transit Authority and a repair shop related to the Transfer Station. The landfill gas is also used to heat the new Operations Center at the Transfer Station, which was completed in November 2011.

The LEED silver certified Operations Center serves as a training site for employees, offers offices, showers and a lunch area for the drivers. Savings in water use and energy are realized annually.

Always on the forefront of safety matters, the SWMP has engaged a company to monitor realtime driving activities of the solid waste transfer drivers and collection truck drivers. Drive Cam software alerts supervisors of identified issues regarding driver behavior--following too closely, not wearing seat belts, near misses, etc. The cameras and audio record situations and retain the detail for later review. The pilot project was just approved for implementation both with transfer trailer and collection vehicle drivers.

ii. Recycling and Disposal Center

The Transfer Station complex also has one of the county's two Recycling and Disposal Centers where residents and small businesses self-haul their waste and recyclables. The facility has undergone significant modernization to accommodate growing local demands for recycling and disposal services. New scales and scales houses with improved weighing technology and redesigned entrances and exits were installed to improve customer service and increase capacity. In FY 2013, over 136,400 residents visited the facility to dispose of waste.

e. **Household Hazardous Waste Program**

The Household Hazardous Waste and the Conditionally Exempt Small Quantity Generator collection programs are operated by the Solid Waste Management Program. The statistics about the program results are provided in the Hazardous Materials chapter of this report. In FY 2014, the hours of operation expanded to seven days per week during the operational hours of the Transfer Station.

f. **Newington Collection Facility**



This facility is responsible for providing weekly collection for about 44,000 residential customers (out of the estimated 400,000 single-family homes and townhomes in the county) in areas known as Sanitary Districts. A special fee applies to these collection areas. The facility consists of administrative offices, maintenance/garage area, refueling station, parking lot and various storage. The county

operates a fleet of approximately 70 collection vehicles based at the facility. County employees and county-owned equipment are used to perform the weekly collection of waste and recycling. Seasonal curbside vacuum leaf collection is provided for about 25,000 residences in leaf districts.

Also there is weekly collection of refuse and recycling for approximately 200 commercial properties that the county owns and occupies. Service for recycling collection is provided to the campus of George Mason University. Staff performs some primary maintenance of the vehicles on site as well.

This location is primarily responsible for the management and operation of the following services that benefit all county residents:

- Management of eight Recycling Drop-Off Centers.
- Removal of oversized piles of trash through the *Clean Streets Initiatives* and *MegaBulk* programs. The *Megabulk* program was originally established for county refuse and recycling customers in Sanitary Districts to collect oversized piles of refuse and yard debris. Customers schedule this service and pay an additional fee for the collection of oversized quantities of materials that are not part of the basic level of service for routine weekly collections. The service is now available to residents countywide for a fee, based upon equipment and personnel availability.
- Working in conjunction with the Fairfax County Health Department, the Solid Waste Management Program's *Clean Streets Initiative* is designed to address complaints from residents about piles of refuse that are placed in neighborhoods where the property owner does not take responsibility for its timely removal or where no responsible party can be found. Under this initiative, the property owner is notified that the refuse must be removed, and if he or she fails to do so or otherwise cooperate, the Solid Waste Management Program removes the refuse and bills the owner for removal of the material. If the property owner refuses to pay that bill, a lien is placed on the property.
- Removal of waste due to evictions and other court orders.
- Assistance in the removal of materials damaged by storms, floods or other emergency situations.

g. Other Relevant Activities

i. Permitting

All solid waste collection companies operating in Fairfax County must obtain a Certificate to Operate and permits for individual vehicles, both issued by the Solid Waste Management Program. An integral requirement of these permitting programs is that collectors must demonstrate that they comply with all applicable provisions of Chapter 109.1, the county's solid waste management ordinance, and post a bond to ensure payment of disposal bills at county facilities.

ii. Enforcement of Code

The Solid Waste Management Program has responsibility for enforcing Chapter 109.1 of the county code and for resolving any potential violations observed by program staff. In addition to this responsibility, the program coordinates with other county agencies as necessary to lead enforcement of relevant provisions of

other chapters of the county code related to the solid waste management aspects of public health menaces, nuisance noise and debris landfills.

iii. Alternative technologies or processes

As part of the research conducted during the negotiations with Covanta, a request for expressions of interest was published to gauge the state of alternative technologies for handling wastes beyond landfill or incineration. The RFEI resulted in five proposals and two subsequent ones that offered to develop pilot projects for the county that gasify, compost or pelletize waste. None offered a viable alternative to the contract with Covanta to handle the bulk of the county's waste stream. Moreover, the alternatives required a site, guaranteed waste stream and other support from the county. In the final analysis, county staff will continue to explore other options for diverting portions of the county's waste stream such as organics.

The county is in the process of evaluating the development of a pilot-scale organic material processing facility at one of its operational locations. This evaluation will be done in conjunction with the required revision to the county's solid waste management plan, due to VDEQ in June 2015. The county envisions a pilot-scale project using yard waste as the organic material to be processed.

iv. Update of Solid Waste Management Plan

The SWMP describes how the county plans to handle various waste streams through a 20-year planning horizon. The Virginia Department of Environmental Quality requires that the SWMP be updated every five years with any changes in waste projects, facilities or projects and to confirm that disposal capacity remains available for 20 years.

The next update is due to VDEQ in June 2015. Staff was to have surveyed county residents about their ideas for waste management. Results of the survey, waste projections and the draft of the new SWMP were to have been discussed with community groups and other stakeholders during meeting in the summer-fall 2014. A public hearing is required before the Board of Supervisors approves the plan for submission to VDEQ.

Issues for the SWMP include: how to increase recycling; alternative technologies; changing waste streams; declining waste generation and how to pay for public benefit programs; CDD processing; and many others. A Web page is available for residents to review the status of the SWMP update and have input to the process. Go to <http://www.fairfaxcounty.gov/dpwes/trashplan2015/>.

2. Waste Reduction and Recycling Programs

The Fairfax County Solid Waste Management Program is responsible for implementing the countywide recycling program. The Virginia Department of Environmental Quality established regulations that require all municipalities in the commonwealth to recycle a certain minimum percentage of the total volume (by weight) of Municipal Solid Waste generated in the jurisdiction. These regulations are codified as 9 VAC 20-130-10 and Fairfax County is responsible for meeting a 25 percent requirement. Smaller communities, with low population or low employment statistics, are required to meet a lower threshold, set at 15 percent. Reports documenting the recycling rate for the preceding calendar year are required to be sent to VDEQ each year in the spring. Fairfax County's recycling rate for calendar year 2013 was 48 percent. The rate is down slightly due to a decrease in overall waste generation in the county attributable to reduced packaging and vendor take-back programs as well as reuse efforts.

Chapter 109.1 requires annual reports on the tonnages of recyclables collected by a broad spectrum of businesses and commercial establishments, material recovery facilities and other entities that operate in the county. These reports are compiled to calculate the countywide recycling rate. Figure V-2 depicts the historical quantities of recyclables collected in the county since 2000. Since the recycling program's inception in 1988, the county has recycled over 9.5 million tons and continues to exceed the state-mandated requirement.

Chapter 109.1 of the Fairfax County Code requires residents to separate recyclables from trash and place them separately at the curb for collection. Recyclables that must be collected at the curb include: metal food and beverage containers; glass bottles and jars; plastic bottles and jugs; mixed paper; cardboard; and yard waste.

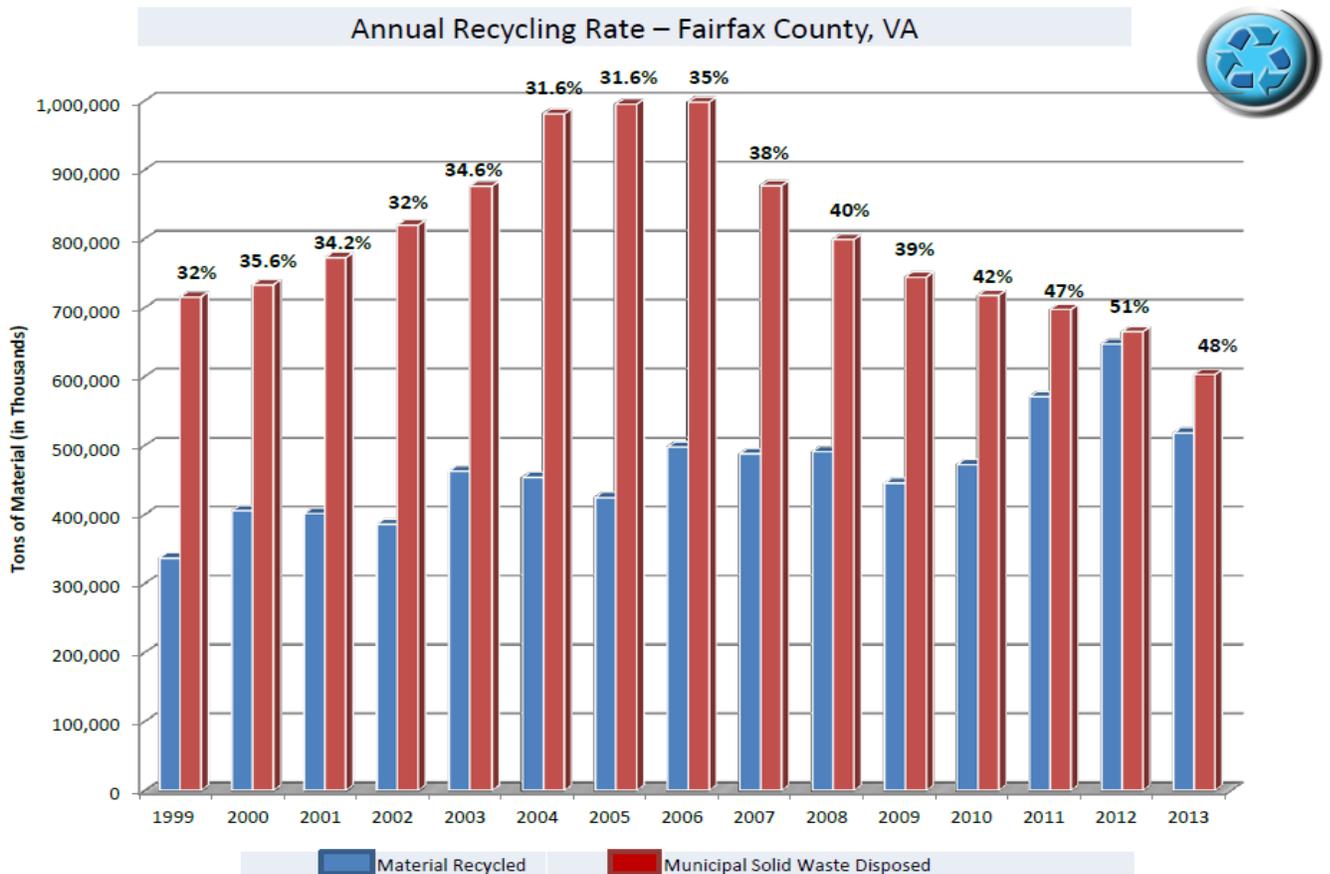
Recycling of mixed paper and cardboard is required for all nonresidential properties in the county. All nonresidential entities that generate a principal recyclable material other than mixed paper and cardboard are required to recycle that material in addition to the mixed paper and cardboard. Recycling of mixed paper and cardboard is required for all multifamily buildings in existence prior to July 2007.

Recycling of mixed paper, cardboard, metal food and beverage containers, glass bottles and jars and plastic bottles and jugs is required for all multifamily buildings constructed *after* July 2007. Appliances from these properties are also required to be recycled.

Recycling of mixed paper and cardboard is required for all schools and institutions.

All construction and demolition contractors are required to recycle cardboard.

Figure V-2 - Historical Quantities of Materials Recycled in Fairfax County



The annual recycling rate is calculated by comparing the material recycled to the municipal solid waste generated. The technique for calculating the annual recycling rate is defined in Virginia's administrative code, 9VAC20-130-125B. Fairfax County includes a 2% credit for having a source reduction program, as allowed by 9VAC20-130-125C(4).

b. Major Program Elements in FY 2013

i. Compact Fluorescent Lamps

The management of compact and other fluorescent lamps from residences in the county is addressed in several ways. CFLs and other fluorescent lamps can be taken to either of the county's Household Hazardous Waste facilities at the I-66 Transfer Station complex in Fairfax or the I-95 Landfill complex in Lorton. Both of the facilities recycle these lamps at no charge to county residents. Advertising placed in print media for the e-waste recycling events, known as *Electric Sunday*, has emphasized the fact that fluorescent lamps can be recycled during these events. Remote HHW events netted 635 pounds of the lamps in FY 2013. Participation in the e-waste collection events has resulted in increased participation in the county's HHW program, resulting in the collection of increased amounts of fluorescent lamps for recycling. Information detailing these recycling opportunities is on the county website at:

<http://www.fairfaxcounty.gov/dpwes/recycling/mat-light.htm>. This portion of

the website also provides information about other organizations in the county that are accepting CFLs for recycling.

ii. E-Wastes



In FY 2013, the Solid Waste Management Program continued its *Electric Sunday* program whereby, on one Sunday each month, residents can bring their e-wastes, including televisions, for recycling to either the I-66 Transfer Station or the I-95 Landfill Complex.

In CY 2013, eleven *Electric Sunday* events were held where residents recycled obsolete and/or broken computers and peripherals as well as televisions. In CY 2013, 12,775 residents brought about 706 tons of obsolete electronics, including televisions to these event.

As of July 1, 2014, electronics are collected daily at the Household Hazardous Waste areas at both the I-66 Transfer Station and the I-95 Landfill. Electronics (computers, televisions, audio equipment) will be processed under a contract with Service Source, a sheltered workshop, and the components recycled, sold or the residue disposed.

iii. Yard waste

Recycling of yard waste (brush, leaves and grass) is required for all residential properties in Fairfax County and collection of that yard waste is required to be provided as part of the base level of service by all permitted collection companies operating in the county from March 1st through December 24th of each year. Yard waste recycling is suspended in the months of January and February because very few leaves and virtually no grass are generated during that part of the year.



Townhouse communities may apply to the county for approval of an alternative yard waste recycling system. The reason for this flexibility is because lawns are typically small and these communities contract with landscaping firms that

groom common areas. Approximately 300 townhouse communities have approved alternative recycling systems for yard waste.

Woody materials, referred to as brush, comprise a significant portion of the yard waste collected in the county. Brush is managed at either the I-66 or I-95 facility and is ground into mulch. The mulch from these facilities is available free to county residents who can self-haul the material to the end use location. Typically, mulch is used as a top-dressing around decorative plantings to reduce weed growth and maintain soil moisture.

Leaves and grass comprise the balance of the yard waste managed in the county. This material is generally collected in bags or by curbside vacuum collection and is sent to either of two composting facilities where the material undergoes biological decomposition to turn it into compost. Typically, compost is used as a soil amendment or substitute. In CY 2013, more than 204,100 tons of yard waste were recycled in Fairfax County.

Leaves collected in the fall by the county for customers receiving (and paying for) curbside vacuum leaf collection are ground during the vacuuming process. These ground leaves are taken to several Fairfax County parks where the ground leaf mulch is available for use by the Park Authority and by residents who can haul it away themselves for use in their yards.

iv. Recycling Drop-Off Centers

Fairfax County operates eight Recycling Drop-Off Centers at various locations throughout the county. These are unmanned facilities, open 24 hours and there is no fee to use them. In CY 2013, about 3,300 tons of recyclables were collected in the drop-off centers. Recycling Drop-Off Centers continue to play an important role in supporting recycling in the community, serving patrons in multifamily units and small businesses.

v. Recycling by county agencies

All county agencies receiving refuse collection and recycling services from the Solid Waste Management Program participate in the county recycling program. In CY 2013, county agency locations recycled approximately 1,100 tons of material. The program provides containers for the collection of bottles and cans (plastic bottles, aluminum beverage cans and glass bottles) from buildings owned and occupied by Fairfax County and its employees. Recycling collection containers have been placed in all of the county's larger office buildings and most of the smaller agency buildings in areas where beverages are sold and consumed (e.g., cafeterias and conference rooms).

vi. Document shredding

Fairfax County offers residents the opportunity to shred personal documents at certain locations around the county, usually in conjunction with electronic recycling events or household hazardous waste collection events. This service is offered to help residents protect their personal financial information while directing the shredded paper to a recycling facility. In CY 2013 nine document shredding events were held and almost 125 tons of personal documents were shredded.

vii. Public Education and Outreach

Public education and outreach are key components of any successful municipal recycling program. To that end, the Solid Waste Management Program has focused on developing creative education programs that take advantage of its partnerships with county agencies, Fairfax County Public Schools, community organizations, commercial businesses and privately-owned collection companies. Outreach programs consist of: activities and displays at county festivals; support and publicity for several events specifically dedicated to recycling; public speaking opportunities; and technical support in the research of recycling technologies and issues.

The Solid Waste Management Program continues to work closely with the Northern Virginia Regional Commission on a regional public information program entitled "KnowToxics." The purpose of this program is to educate business owners about their responsibility to comply with federal and state regulations that require proper disposal or recycling of spent fluorescent lamps, rechargeable batteries and computers and related electronics. The program is centered on its website: www.KnowToxics.com which provides a resource where businesses can learn how to legally and appropriately manage these materials.

The Solid Waste Management Program also continues to support a rechargeable battery recycling program, in collaboration with the Rechargeable Battery Recycling Corporation Program. RBRC is an industry-funded program through which rechargeable batteries can be collected and sent for recycling at no charge. Collection boxes for rechargeable batteries are now located at offices of all members of the Fairfax County Board of Supervisors and at major county buildings. A complete listing of collection locations is on the county website at: <http://www.fairfaxcounty.gov/dpwes/recycling/mat-bat.htm>.

The Solid Waste Management Program continues to be a prime sponsor of Fall for Fairfax and participant in Celebrate Fairfax. These events provide great opportunities to conduct public outreach and disseminate technical guidance and practical information on using the county's solid waste management system.



The Solid Waste Management Program is a proud financial sponsor of the annual Earth Day/Arbor Day celebrations promoted by Clean Fairfax Council. The program also supports the Johnie Forte, Jr. Environmental Scholarship, which awarded fifteen \$500 grants to applicants from the Fairfax County Public Schools. Details of the Johnie

Forte, Jr. grant program are available on Clean Fairfax Council's website at: <http://www.cleanfairfax.org>. Over the years, Clean Fairfax Council has awarded over \$85,000 worth of grants through the Johnie Forte program.

The Solid Waste Management Program also supports Fairfax County's Employees for Environmental Excellence. The group meets monthly and works on projects designed to encourage county employee participation in recycling and other environmental protection activities. It also maintains the FEEE website available in the county's Intranet where information about recycling in county buildings is provided.

The SWMP program posts pertinent information about timely subjects on the appropriate websites. Information about the program's involvement in community events, as well as new information about solid waste matters, can be found at: www.fairfaxcounty.gov/living/recycling.

Staff updates the Solid Waste Management Program's website to improve its ease of use for residents and businesses. Information is continuously updated to help county residents, solid waste industry companies and schools access forms, data and publications about the program.



The program publishes an electronic "listserv" to county collection customers to automatically send updates to customers about the program and to provide updates regarding service changes due to inclement weather. A similar

"listserv" tool was developed to give vacuum leaf collection customers the most up-to-date information on the exact dates that the leaf collections would be conducted on their streets in order to ensure that residents would have time to rake their leaves to the curb.

3. Alice Ferguson Foundation

The nonprofit Alice Ferguson Foundation was established in 1954. While chartered in Maryland, it has implemented programs throughout the Potomac River watershed, with benefits to the main stem of the river as well as tributaries in Washington, D.C., Maryland, Pennsylvania, West Virginia and Virginia. As stated on its website, the foundation's mission is "to provide experiences that encourage connections between people, the natural environment, farming and the cultural heritage of the Potomac River Watershed, which lead to personal environmental responsibility."

In April 2014, the foundation held its 26th annual Potomac River Watershed Cleanup. While not all data is currently available from these cleanups, preliminary reports show that over 11,375 volunteers removed almost 220 tons trash and debris from the region at 318 cleanup sites throughout Washington, D.C., Maryland, Virginia, West Virginia and Pennsylvania. The trash collected during the cleanup included 938 tires, 205,200 beverage containers, 35,500 plastic bags and 18,600 cigarette butts.

Other programs implemented by the foundation include:

Trash Free Potomac Watershed Initiative - This is a program to reduce trash, increase recycling and provide education regarding trash issues in the watershed. Multiple years of data are available for specific areas. There is a free toolkit available to help supporters change behavior regarding littering and illegal dumping. Go to <http://fergusonfoundation.org/trash-free-potomac-watershed-initiative/>.

Potomac Watershed Trash Summit—The foundation convenes this meeting annually to provide a venue for key stakeholders to collaborate on strategies to eliminate trash from waterways, communities, streets and public lands, including regional public policy, model best management practices, business actions and public education.

Enforcement—In April 2014, the foundation worked in partnership with the Metropolitan Washington Council of Governments and nine local jurisdictions in a campaign to reduce littering and illegal dumping through enforcement of local laws. This effort provided a focus on litter-related crimes and raised awareness of the harmful effects trash has on communities and the environment.

There are numerous other programs and initiatives that are implemented by the foundation; the reader is encouraged to visit the foundation's website at www.fergusonfoundation.org.

4. Clean Fairfax

Clean Fairfax Council, now known as Clean Fairfax, is a private, nonprofit (501(c)(3)) corporation dedicated to educating residents, students and businesses in Fairfax County about litter prevention and recycling. Clean Fairfax focuses on environmental education provided to students and adults throughout the county. Clean Fairfax continues efforts of updating the educational and interactive programs for students,

community service opportunities for students (i.e., support at the council's office or organizing clean ups), classroom presentations and presentations to homeowner associations, church groups, small businesses and more.

A key effort of the council is the sponsorship of spring and fall cleanups. These cleanups rely on volunteers who desire to clean up a certain area of the county. The council asks volunteers to plan their cleanup by selecting a site, gathering volunteers and setting a date and time. Clean Fairfax supplies all the necessary tools (gloves, trash bags, recycling bags, vests and safety tips as well as assistance in large scale pickups by connecting residents with the county's trash pickup program) for a successful clean up. A follow up form is available on the Clean Fairfax website to track progress, tally volunteer hours and tally trash pickup tonnage. Last year, Clean Fairfax worked with over 2,310 volunteers, at 90 assisted clean ups, picking up over 7,800 bags trash and recycling, on and around Fairfax County's roads, parks and side streets. Clean Fairfax also organizes periodic clean-up projects around Government Center (with Fairfax County employees and area businesses) and supports the Virginia Department of Transportation with its Adopt-a-Highway program.

Clean Fairfax continues to organize and lead the Earth Day/Arbor Day event, now called SpringFest Fairfax, in partnership with the Fairfax County Park Authority and Workhouse Arts. Now in its second year at The Workhouse, over 5,000 children and families attended this all day, Virginia Green certified event which included environmental education and entertainment, local food vendors, urban forestry workshops and open studio artist exhibitions. County agencies charged with quality of life and environmental programming were key to the success of the event, specifically the Health Department and Department of Public Works and Environmental Services.

This is also the second year of the Clean Fairfax Environmental Passport—a SpringFest Fairfax booklet that encourages attendees to visit each table/tent or booth to learn what each organization supports and represents. For every visit, children earn a sticker or a stamp and can show their passports at Clean Fairfax to be presented with an Environmental Good Citizen award (a globe “medal” made of recycled paper and seeds that can be planted in a pot or the family's backyard.) Clean Fairfax would be interested in working with organizations to carry the Environmental Passport over to other county events over the course of the year.

At the direction of the Fairfax County Police Department, the Report-a-Litterer program has been dismantled. While its reach was not wide, and it is unclear whether the program had any impact on auto-centric litter, it did serve as an outlet for residents who were interested in keeping their neighborhoods and county roads clean, green and healthy. Clean Fairfax continues to look for new opportunities to assist the county in litter reduction and enforcement and will encourage participation in the State Police's Cover Your Load campaign, which happens in the early spring.

Other major continuing projects include: outreach on reducing residents' reliance on plastic grocery bags; cigarette butt litter education and reduction through a unique partnership with northern Virginia auto dealerships; promotion of the use of rain

barrels; advising and mentoring environmental clubs in the school system; encouragement of small scale, backyard composting, grass-cycling, rain and pollinator gardens and other sustainable practices; and encouragement of community gardens and micro farms at schools and churches. Moving forward, Clean Fairfax would like to provide services and workshops as well as Virginia-made reusable mesh produce bags at Fairfax County farmers markets in an attempt to make farmers markets a plastic-bag-free zone.

Clean Fairfax is provided office space by in DPWES, and the Executive Director works directly with many county staff on litter control and recycling education issues. The Executive Director also serves on the cross-agency Litter Task Force and the MS4 Tactical Team on Public Outreach. The Memorandum of Understanding between the county and Clean Fairfax allows the organization to be deployed to assist on important tasks such as information dissemination in Stormwater Management, Recycling, Urban Forestry and other crucial county environmental endeavors.

Clean Fairfax reaches Fairfax County residents by e-newsletters, Facebook and twitter as well as an environmental blog updated twice weekly at www.cleanfairfax.org. The organization also provides The Fairfax County Visitors Center with more than a thousand auto litter bags, informational bookmarks and brochures.

There are many other programs offered by the Clean Fairfax, including programs that are beyond litter prevention/control aspects. For more information, please visit the website at www.cleanfairfax.org or the SpringFest Fairfax website at www.springfestfairfax.org

C. COMMENTS

1. The five year contract with Covanta should provide stability and reasonable cost to county residents.
2. Improved metals recovery from Covanta ash is beneficial by increasing recycling and lowering the ash that consumes landfill space.
3. The newly expanded hazardous waste disposal hours will assist in making it easier for residents to properly dispose of these materials and make it less likely such wastes will be released into the environment. See the Hazardous Materials chapter for additional discussion.
4. The county's education programs help support environmental stewardship.
5. Portions of the I-95 Landfill predate modern landfill environmental protection requirements. As a result, the potential for groundwater contamination requires careful attention and remediation actions. The county has been exemplary in doing what is needed. This program should continue to be a priority for environmental protection.

6. The landfill gas recovery program assists in reducing methane release, an important action to ameliorate greenhouse gas emissions.
7. The county continues to examine alternate waste reduction methods to the Covanta facility. These alternatives are unlikely to be implemented in the near future. The county is encouraged to continue examining these alternatives to Covanta with a focus on overall environmental benefit.
8. The county uses single stream recycling where glass, paper and plastics are all collected in a single stream. While this is efficient in collection, it results in lowering the value and environmental benefit of the recycled material.
9. The county provides trash and recyclables collection to a little over 10 percent of county households. The remainder of households and commercial needs are met by private haulers. While this approach provides for competition and choice, the result can be excess traffic, increased greenhouse gas generation and increased fuel use. Redundant truck traffic exerts extreme wear on county roads requiring additional maintenance and unnecessary traffic that risks increased traffic accidents. Traffic safety is the major concern in trash collection; reductions in truck traffic would result in traffic safety improvements.

D. RECOMMENDATIONS

1. While the county's 48 percent recycling rate exceeds the minimum state requirement, it is considerably less than Montgomery County Maryland's rate of 58 percent. Additional means of increasing recycling should be investigated and implemented. In particular, recycling requirements for commercial properties should be enforced and additional requirements should be considered.
2. EQAC recommends the continued investigation of alternative waste stream reduction including food waste composting. Regional cooperation should be considered.
3. EQAC recommends that opportunities to minimize redundant trash truck collection trips in the same neighborhoods be examined for implementation while not increasing cost.
4. To increase the value and environmental benefit of recycled materials, the county should investigate ways to improve the quality of recyclables collected at residential and commercial properties. Removing glass from residential collection systems could significantly improve the quality of paper and plastic recycled. As such, alternative methods of glass recycling should be considered in addition to other ways to improve the quality of recyclables collected. One potential method to reduce the quantity of glass in the waste stream would be to establish a container redemption fee; such a fee would also reduce litter and increase the recovery of containers. EQAC therefore supports a statewide container redemption fee.

5. The county should investigate the potential for increased county participation in recycling of materials such as asphalt, glass and organic materials.

E. REFERENCES

Much of the narrative and illustrations were supplied by the Solid Waste Management Program of the Department of Public Works and Environmental Services. EQAC also acknowledges Clean Fairfax and the Alice Ferguson Foundation for the information each organization provided.