

This document was authored in 2004. For the latest information on the County's Solid Waste Management Plan, please review the 2015 – 2035 update.



Chapter

6

Municipal Solid Waste

Municipal Solid Waste - Current Fairfax County Management System, Anticipated Gaps in Waste Management, and SWMP Actions

This chapter presents the process used by the county to evaluate the current SWM system, project the future waste stream, identify anticipated gaps in waste management, and select SWMP actions for MSW.

This chapter presents the evaluation of Fairfax County's current and projected solid waste management (SWM) activities for municipal solid waste (MSW), organized by the SWM hierarchy. It uses the hierarchy as the framework for determining how to bridge the gaps between the current SWM activities and the strategies needed to manage the county's MSW in the future. The chapter then presents Fairfax County's Solid Waste Management Plan (SWMP) actions for MSW over the next 20 years to address those gaps.

Using the SWM hierarchy, Fairfax County staff first evaluated current SWM practices, including source reduction and reuse initiatives, recycling activities and programs, future markets for recyclables, collection operations, transfer facilities, and characteristics of solid waste disposal facilities. Next, the county reviewed the current and future projections of its solid waste stream quantities over the SWMP planning period. Using these projections, the county assessed the changes in the solid waste stream over the planning period and identified the critical areas requiring modification. Finally, the county selected SWMP actions that will close the gaps between its current SWM system and that required in the future.

Overview of the 20-Year Plan for Fairfax County's MSW Management System

Fairfax County's current SWM programs and activities for MSW, the gaps in waste management, and SWMP actions over the SWMP planning period are summarized in Table 6-1. This table is organized by level of the waste hierarchy, from source reduction and reuse, to recycling, collection, transfer, and disposal. (Note that private companies are responsible for many of the activities in the current and future system.)

Table 6-1. MSW: Current Waste Management Activities, Anticipated Gaps in Waste Management, and SWMP Actions

	Current Programs in the County	Anticipated Gaps	SWMP Actions
Source reduction and reuse	<ul style="list-style-type: none"> - Public outreach and education - Network of charitable organizations and thrift shops - Internal county source reduction and reuse initiatives 	<ul style="list-style-type: none"> - Additional 206,000 to 692,000 tons per year of MSW generated in the county by 2025 	<ul style="list-style-type: none"> - Improve public outreach and education to promote source reduction and reuse - Promote public/private source reduction and reuse programs - Implement county internal source reduction and reuse programs
Recycling	<ul style="list-style-type: none"> - Public outreach and education - County recycling program policy administration through County Code, Chapter 109 - Recycling collection, including eight recycling drop-off centers - Three private MRFs: Capital Fiber, Fairfax Recycling, Waste Management - Electronics recycling program 	<ul style="list-style-type: none"> - Additional 81,000 to 195,000 tons per year of MSW recyclables by 2025 - Require additional recycling collection vehicles and labor - MRF capacity may need to expand to handle increased paper and commingled recyclables quantities 	<ul style="list-style-type: none"> - Promote public/private recycling programs - Improve public outreach and education to promote recycling - Increase business recycling by reducing commercial recycling thresholds - Expand curbside recyclables collected to include mixed paper, plastic bottles, and cardboard - Revise regulations to enhance recycling, including: <ul style="list-style-type: none"> • Expand recyclables collected at government buildings • Encourage increased MSW recycling in county schools • Increase MSW recycling inspections - Address suitable recycling alternatives for existing multiunit buildings - Explore additional waste exchange agreements to increase recycling - Support expansion of the capacity of existing MRFs, if quantities of recyclable materials warrant expansion
Collection	<ul style="list-style-type: none"> - Residential curbside and multiunit complex collection - Two MSW citizens' disposal drop-off centers - Commercial collection - County agency collection 	<ul style="list-style-type: none"> - Additional 163,000 to 559,000 tons per year of MSW collection by 2025 - Require additional MSW collection vehicles and labor - Service levels vary throughout the county - No single entity can take a holistic approach to managing all waste for the public benefit, especially during emergencies or weather events 	<ul style="list-style-type: none"> - Partner with private waste collection companies and community stakeholders to improve residential collection service - Revise County Code to improve residential collection service - Promote use of special fuels, filters, and special vehicles for collection - Implement a collection and disposal strategy for emergencies
Transfer	<ul style="list-style-type: none"> - I-66 Transfer Station - Three MRFs for MSW recyclables 	<ul style="list-style-type: none"> - Additional 66,000 to 403,000 tons per year of MSW handled at the I-66 Transfer Station by 2025 - May exceed transfer station capacity between 2020 and 2025 - Additional sorting and recycling of materials could divert more from disposal 	<ul style="list-style-type: none"> - Continue using the current transfer system - Reconfigure or construct waste handling areas at the I-66 Transfer Station, including unloading areas for citizens and commercial cash customers (for increased safety and efficiency) - Add transfer capabilities to the I-95 Landfill Complex, if increases in transfer quantities or waste exchange agreements require it
Disposal	<ul style="list-style-type: none"> - E/RRF as primary disposal method - Out-of-county sanitary landfills for E/RRF "overflow" waste 	<ul style="list-style-type: none"> - Annual disposal tonnage increases from current 816,000 tons to between 914,000 and 1,241,000 tons by 2025 - May exceed E/RRF capacity around 2015 - Contract with E/RRF ends in 2011 	<ul style="list-style-type: none"> - Continue using the current disposal system (as the preferred alternative) - If negotiations with Covanta Fairfax, Inc. are unsuccessful, the county will use only out-of-county landfills for MSW disposal

Source Reduction and Reuse

Current Programs

Fairfax County’s current source reduction and reuse initiatives for MSW include:

- identifying a network of local charitable organizations and thrift stores, and
- promoting internal government initiatives.

There are presently 41 consignment store locations and 23 thrift shop locations within Fairfax County.

Charitable Organizations and Thrift Stores

Fairfax County promotes a large network of charitable organizations and thrift stores for the reuse and resale of clothing and household items. These charitable organizations and thrift stores provide an opportunity for citizens to donate usable items for reuse rather than disposing of them. The county supports these organizations by providing lists of county thrift shops and consignment stores on the county website and at the I-95 Landfill Complex and I-66 Transfer Station recycling drop off centers (DOCs).



There are presently 41 consignment store locations and 23 thrift shop locations within the county. Thrift shops are run by Not-For-Profit organizations (e.g., Salvation Army, Goodwill) and accept donated merchandise that is sold to fund their charitable causes. Consignment shops accept merchandise on a consignment basis, paying the owners of the merchandise a percentage when and if the items are sold.

Fairfax County has implemented many internal initiatives to promote source reduction and reuse.

Internal County Practices

The county supports and pursues source reduction and reuse initiatives, including the following:

- The county is using electronic initiatives to reduce the paperwork and transportation affects associated with citizens and businesses paying bills, receiving information, applying for services, etc. The county also reduces paper generation by receiving invoices and billing some vendors electronically.



- County agencies and public schools review whether printed documents can be distributed and completed online.
- The Department of Purchasing and Supply Management (DPSM) incorporates source reduction and recycling requirements in all bid specifications. For example, DPSM mails one-page notice-of-solicitation letters rather than the entire solicitation package and provides for electronic posting of solicitations. All bids are available on-line.
- The Department of Information Technology encourages leasing copiers and printers that provide two-sided documents.
- County agencies are encouraged to check for the availability of existing supplies before purchasing new ones.
- The county uses two-sided copying when possible.
- The county established the Employee Recycling Committee (ERC) to facilitate the development of comprehensive waste reduction and recycling policies in all county agencies and to promote the purchase of products made from recycled materials.
- The county supports the Fairfax County Business Advisory Committee for Solid Waste and Recycling Issues to facilitate partnerships between the county and businesses to support source reduction programs.

Fairfax County's website provides its citizens and businesses information on source reduction and reuse.

Public Outreach and Education - Source Reduction and Reuse



Fairfax County provides its citizens and businesses

information on source reduction and reuse at its website, including suggestions for being a “smart shopper” and ways to reuse products and packaging at home and at work. The site includes a lengthy list of thrift stores and consignment shops that accept clothing and furniture donations. The site also contains a link to EPA’s *Consumer’s Handbook for Reducing Solid Waste*.

Assessment of Current and Future Source Reduction and Reuse Needs

Calculating the quantities of solid waste that are reduced prior to entering the waste stream is problematic. Therefore, the county does not develop source reduction and reuse projections for solid waste.

Fairfax County attempts to follow the waste management hierarchy in designing its SWM system. The county prefers source reduction followed by reuse and recycling to disposal of solid waste. The SWM Program goal is to implement new programs that will maximize the volume of solid waste handled by source reduction and reuse over the SWMP planning period.

SWMP Actions

Table 6-2 shows Fairfax County’s SWMP actions for the source reduction and reuse of MSW. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county’s current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 6-2. Fairfax County MSW Source Reduction and Reuse SWMP Actions

MSW Source Reduction and Reuse SWMP Actions
Improve public outreach and education to promote source reduction and reuse
Promote public/private source reduction and reuse programs
Implement internal county source reduction and reuse programs

Recycling

Current Programs

MSW recycling rates in Fairfax County have consistently exceeded the state mandated 25 percent.



Fairfax County has well established, publicized, and available recycling initiatives. Recycling levels in the county have consistently exceeded the state mandated recycling rate of 25 percent. The county’s most recent (2002) recycling rate was 32 percent, the majority of which is paper and yard debris. Approximately 386,000 tons of

recyclables were collected within the county in 2002. Table 6-3 shows recycling data for Fairfax County from 1999 to 2002. (Note that MSW recycling includes yard waste, which is discussed in Chapter 8).

Table 6-3. Fairfax County Recycling Rates (1999–2002), tons

Material	1999	2000	2001	2002
Paper	146,072	173,868	174,295	157,963
Metal	60,576	89,616	75,877	75,477
Plastic	3,358	3,521	2,508	2,581
Glass	14,516	17,228	9,183	10,453
Commingled bottles and cans	—	4,136	10,246	13,662
Yard waste	96,211	102,480	112,745	106,768
Wood	—	1,260	392	982
Textiles	1,717	444	2,711	2,353
Waste tires	4,799	4,229	3,950	7,649
Used oil	8,019	7,208	7,316	6,138
Used oil filters	—	—	128	182
Used antifreeze	—	—	920	705
Batteries	482	582	981	956
Electronics	—	—	54	132
Chemicals and solvents	788	967	61	47
Total material recycled	336,921	405,539	401,367	386,019
Waste generated	715,645	733,340	772,817	820,096
Total waste stream	1,052,566	1,138,879	1,174,184	1,206,115
County recycling rate	32.0%	35.6%	34.2%	32.0%

The following MSW materials may be recycled in Fairfax County:

Aluminum cans, food cans	Catalogs, magazines, junk mail	Newspaper, office paper, mixed paper
Appliances	Computers	Plastic bottles and jugs
Batteries	Glass bottles and jugs	Scrap metal
Cardboard	Motor oil	Telephone books

In Fairfax County, recycling of these materials is facilitated through the county recycling program, which consists of three primary components: (1) recycling collection, (2) material recovery facilities (MRFs), and (3) county recycling policy administration. The county’s current recycling programs also include electronics and computers recycling. These components are detailed below.

Recycling Collection

In Fairfax County, recyclables are collected at many different locations, including: curbside at residences, centralized containers at multiunit complexes, recycling drop-off centers (DOCs), containers at businesses, county agencies, special recycling collection events, and from the Energy/Resource Recovery Facility (E/RRF):

Fairfax County mandates the collection of recyclables curbside for single-family houses and townhouses.

- *Recycling collection curbside at residences.* Fairfax County mandates the collection of recyclables curbside for single-family houses and townhouses. Currently (2004), 20 private haulers are licensed to provide residential trash and recycling collection in Fairfax County. In addition, approximately 41,000 homes (around 11 percent of households in the county) receive county-provided collection service. All trash haulers in the county provide recycling pickup along with refuse service.



Fairfax County has established uniform baseline recycling requirements. County code requires curbside collection of the following recyclables (at a minimum): newspaper, tri-color glass bottles and jars, and metal food and beverage cans (some private haulers provide additional recycling services). Single-family homes and townhouses are required to recycle all of the above; apartment buildings larger than 100 units are only required to recycle newspaper, and smaller apartment buildings do not have any required recyclables.

Fairfax County requires apartment or condominium communities with 100 or more units to recycle newspaper.

- *Centralized containers at multiunit complexes.* Recycling requirements for multiunit units (apartments and condominiums) are less stringent than the requirements for single-family houses and townhouses. Fairfax County requires apartment or condominium communities with 100 or more units to recycle newspaper. Smaller communities (less than 100 units) are not required to recycle any materials.



Multiunit communities store recyclables in centralized containers prior to collection by the waste hauler. Some haulers in the county provide collection of recyclables in addition to newspaper, including metals, glass, and plastics.

Fairfax County currently operates eight recycling drop-off-centers throughout the county.

- *Recycling DOCs.* Fairfax County currently (2004) operates eight DOCs where residents can take materials for recycling. They are located throughout the county and provide citizens with a convenient addition to curbside collection. For example, DOCs accept mixed paper (cardboard, “junk” mail, catalogs, and magazines), and plastics.



Fairfax County maintains facilities at the I-66 Transfer Station and I-95 Landfill Complex citizens’ disposal areas that encourage citizens to recycle small and large appliances (such as refrigerators, stoves, washers, dryers, and air conditioners) and other scrap metal (lawn chairs, grills, metal framing, etc.). Recycling of white goods is free for county citizens, with the exception of items from which the staff has to remove Freon or a capacitor, which cost a dollar.

The I-66 Transfer Station and I-95 Landfill Complex citizens’ disposal facilities also accept special wastes for recycling, including used oil, antifreeze, waste tires, and batteries. (The recycling of special wastes is detailed later in this chapter.)

Businesses in Fairfax County with over 200 employees or that produce more than 100 tons of solid waste annually must recycle their “principal recyclable material.”

- *At businesses.* Businesses and institutions in Fairfax County that employ over 200 people or produce more than 100 tons of solid waste annually must recycle their “principal recyclable material.” For most of the county businesses, the principal recyclable material is office paper. These businesses typically contract with haulers for the collection of recyclables from dumpsters at the business location. Currently (2004), 23 private haulers are licensed to provide businesses trash and recycling collection in Fairfax County. Some businesses provide for recycling of materials in addition to the “principal recyclable material.”



Smaller businesses in the county may take office paper, cardboard, aluminum cans, newspaper, or any other

acceptable recyclable material to a local DOC or arrange for commercial collection.

- *Collection at county agencies.* Fairfax County's County Agency Route (CAR) program is responsible for the collection of trash and recyclables from county agencies and a small number of organizations associated with county agencies.
- *Special collection events.* Fairfax County sponsors periodic collection events to collect special recyclables from residents. During a typical special collection event, the county may collect 20 tons of computers, 100 bicycles, 500 cell phones and 300 pairs of eyeglasses. The county often organizes these events, which are held in different locations throughout the county, with local nonprofit and community groups.
- *Metal recovery at the E/RRF.* The county collects and recycles significant volumes of both ferrous and nonferrous metals from the E/RRF. The recovered metals are separated after the combustion process and sold to scrap recyclers. Table 6-4 shows the quantities of ferrous and nonferrous metals recovered from the E/RRF from 1999 to 2003.

Table 6-4. Fairfax County E/RRF Metal Recovery Quantities (1999–2003), tons

Year ^a	Ferrous	Nonferrous	Total
1999	19,641	599	20,240
2000	24,857	599	25,456
2001	22,485	375	22,860
2002	20,765	447	21,212
2003	22,204	318	22,522

^a- Fiscal Year Data (July-June)

Material Recovery Facilities

Once collected, most county recyclables are transported to one of the three private MRFs operating in Fairfax County: the Capitol Fiber MRF in Springfield, the Fairfax Recycling MRF in Burke, and the Waste Management MRF in Merrifield:



The Capitol Fiber MRF currently accepts Fairfax County DOC recyclables and county collection route recyclables.

- *Capitol Fiber MRF* - The Capitol Fiber MRF, majority owned by the Washington Post, is currently under contract with Fairfax County for recyclables collected from its recycling DOCs and county collection routes. In addition, the facility accepts recyclables from businesses in Fairfax County, as well as recyclables from surrounding areas, such as Anne Arundel County, Prince William County, and the District of Columbia. The facility receives about half commercial and half residential/small commercial recyclables.

The Capitol Fiber MRF in 2003 managed roughly 7,000 tons per month (84,000 tons per year) of recyclables; between 5,500 and 5,800 tons per month (80 percent) originates from Fairfax County. The capacity of the MRF is currently 10,000 tons per month.

Materials accepted include mixed paper (i.e., newspaper, magazines, cardboard, and white paper), glass, aluminum and steel cans, and plastics (high density polyethylene (HDPE) and polyethylene terephthalate (PET)). The facility processes only mixed paper, which is sorted through manual and mechanical processes into white (office paper), brown (cardboard), and gray paper (ground wood, i.e., newspaper).



In December 2003, the facility added the ability to process residential commingled recyclables on-site rather than transporting them to a subcontractor.

Capitol Fiber receives most recyclables (90 percent) through contracts with collection companies; the remaining 10 percent consists of “walk-ins” by collection companies. Once processed, recyclable materials are baled and sold by the truckload. Sales are split evenly between domestic and foreign markets. Capitol Fiber sells almost 75 percent of materials through contracts; the remainder is sold on the open market.

The Fairfax Recycling MRF currently accepts commingled residential recyclables and commercial cardboard recyclables.

- *Fairfax Recycling MRF* - Fairfax Recycling (owned by Waste Management) accepts commingled recyclables from residential curbside collection and cardboard from commercial collection. Materials accepted include mixed paper, tri-color glass, aluminum and steel cans, and plastics (HDPE and PET). Commingled recyclables from residential collection represent 90 percent of materials

accepted; the remaining 10 percent is commercial cardboard.

In 2003, the facility managed approximately 9,000 tons of recyclables per month (110,000 tons per year), of which roughly 55 percent was from Fairfax County. When materials arrive, they are sorted using several processes. Paper products are deposited on a conveyor belt and pass by a screen, where heavier junk mail and magazines fall into a container underneath. The remaining cardboard and newspaper are then separated manually. Roughly two thirds of paper products are sold in the United States, the remainder sold internationally.



Commingled recyclables first go through a trommel screen to remove mixed broken glass, followed by a set of magnets to remove the steel cans. An air screen then separates plastic and aluminum materials. Finally, an eddy current removes the aluminum cans. Glass and plastics are sorted separately by hand.

The capacity of the MRF is currently 10,000 tons per month (120,000 tons per year). The facility is planning to add a second bailer to increase total capacity to approximately 15,000 tons per month (180,000 tons per year).

Fairfax Recycling sells most recyclables through contracts with manufacturers, which establish monthly delivery quantities. The remaining recyclables are sold on the open market.

The Waste Management MRF currently accepts commercial and residential mixed paper.

- *Waste Management MRF* - The Waste Management MRF accepts commercial mixed paper (cardboard, office paper, and newspaper), residential mixed paper (newspaper, paperboard, and magazines), high-grade office paper, commingled recyclables, scrap metal, and carpeting (Dupont Nylon #6 only). Waste Management contracts for recyclables with commercial and residential haulers. The facility also accepts recyclables on a spot basis.

Waste Management in 2003 managed roughly 4,500 tons of recyclables per month (54,000 tons per year), of which roughly 60 to 70 percent is from Fairfax County. The capacity of the MRF is 8,000 tons per month (96,000 tons per year).



The facility currently processes only paper. Commercial mixed paper is sorted mechanically with minimal manual sorting. Residential mixed paper and high-grade office paper loads are sorted manually on conveyor belts. Commingled recyclables, scrap metals, and carpeting are loaded into large tractor-trailers and transported to other facilities for sorting.

The facility bales sorted paper by type and grade. Waste Management sells the recyclable paper, primarily domestically (approximately 90 percent).

The total MRF capacity in Fairfax County is 399,000 tons per year (295,000 tons of paper and 104,000 tons of commingled recyclables).

Table 6-5 shows the quantities of recyclables (paper and commingled) managed in 2003 and existing capacity for the three MRFs in Fairfax County. The total MRF capacity in Fairfax County is 399,000 tons per year; the capacity for paper recyclables is 295,000 tons per year and for commingled recyclables is 104,000 tons per year.

Table 6-5. Fairfax County MRF Quantities and Capacities 2003, tons

	Capitol Fiber	Fairfax Recycling	Waste Management	Total
Paper				
Current Quantity	72,000	61,000	49,000	182,000
Fairfax County Quantity	61,800	43,000	32,000	136,800
Capacity	90,000	123,000	82,000	295,000
Commingled				
Current Quantity	12,000	46,000	4,800	62,800
Fairfax County Quantity	6,000	19,000	3,100	28,100
Capacity	30,000	60,000	14,000	104,000

County Recycling Program Policy Administration

The county has created comprehensive recycling policies that are included in:

- planning and zoning required for new properties,
- regional recycling marketing plan for recyclables,

- preference in purchasing items that include recycled content,
- procedures for using recycled paper,
- authorization to conduct recycling audits in county agencies, and
- establishment of employee and business advisory recycling committees.

The county administers recycling policy through County Code, Chapter 109.

Electronics and Computers Recycling

Electronics waste is projected to grow significantly in Fairfax County.



The television and personal computer's rapid rate of obsolescence and environmentally unfriendly elements (including lead, mercury, and cadmium) make refurbishing, recycling, and disposal issues important. Fairfax County is developing electronics and computers recycling practices and policies to reduce

the volume of these products requiring disposal.

Projected growth and obsolescence rates of various categories of consumer electronics indicate an average of 400 million units scrapped per year in the United States.¹ Included in these estimates are approximately 20 million televisions and 30 million computers per year. Using national per capita average rates, Fairfax County will likely generate roughly 70,000 obsolete televisions and 105,000 obsolete computers per year.

The low cost of new electronics and computers coupled with stringent purchasing requirements have reduced the demand for refurbished and resold equipment. Scrapping and recycling are emerging as viable methods for managing old electronics and computers. The Mid-Atlantic Consortium of Recycling and Economic Officials estimates that scrapping a computer generates revenue of \$34.26 per machine and a cost of \$1 to \$10 for disposal of monitors in bulk.²

Fairfax County currently promotes electronics recycling through the Keep it Green "E-Waste" Program.

Fairfax County currently supports electronics recycling through the Keep It Green "E-Waste" Program. The program is a partnership between Service Source, Computer Donation Management, and



¹ International Association of Electronics Recyclers (IAER), *IAER Electronics Industry Report*, 2003.

² Northern Virginia Planning District Commission, *The Northern Virginia Recycling Market Development Project*, January 7, 2000.

Fairfax County. As of 2004, Keep It Green has recycled over 215 tons of electronics waste, providing convenient and environmentally responsible ways for Fairfax County businesses and citizens to recycle obsolete electronic equipment, while offering valued employment for people with disabilities.

Planned county programs will support initiatives to recycle electronics and computers, helping to eliminate these items from the waste stream. In addition to removing these items from the waste stream, recycling electronics and computers will help Fairfax County comply with the proposed EPA rule requiring recycling of cathode ray tubes, which are found in computer monitors, and televisions. Although the rule is still pending, it would further advance the county in its efforts to create a new market for recyclables. Fairfax County recently updated its policy to promote economically and environmentally sustainable recycling of electronics.

Public Outreach and Education - Recycling

Fairfax County promotes recycling through its public outreach and education efforts, which include presentations at county events, press releases, the Recycling Ambassadors program, the Fairfax County website, the Fairfax Business Recycling Awards, and outreach partnerships with the Metropolitan Washington Council of Governments (MWCOG) and Fairfax County Public Schools:

Fairfax County provides opportunities for citizens to learn about recycling by staffing booths at public events.

- *Presentations at County Events.* Fairfax County provides opportunities for citizens to learn about recycling by staffing booths at public events. During 2003, the county staffed recycling booths at Celebrate Fairfax, Fall



for Fairfax, Huntington Days, Providence District Environmental Festival, Mount Vernon District Town Meeting, Earth Day/Arbor Day and Earth Day at the Pentagon. The Fairfax County solid waste program booth was awarded the 2002 Best of Show award and 2003 Best Content award at Celebrate Fairfax, which draws over 100,000 attendees yearly.

- *Press Releases.* The county sends press releases each month on recycling efforts to local newspapers. In 2002, the Washington Post published more than 15 articles on recycling in Fairfax County in its Fairfax Weekly section.

Fairfax County's website provides information on residential and commercial recycling and buying recycled content products.

- *Recycling Ambassadors.* In 2003, Fairfax County launched a recycling volunteer program—the Recycling Ambassadors. The Division of Solid Waste Collection and Recycling (DSWCR) recruited 12 Ambassadors for the pilot program through solicitations to local homeowner’s associations. The Ambassadors’ role is to promote recycling in their communities, such as providing inserts in neighborhood newsletters and sponsoring of local events.
- *Fairfax Business Recycling Awards.* To encourage increased commercial recycling, DSWCR created the Fairfax Business Recycling Awards. The county awards businesses and schools on recycling successes; winning businesses are featured on the county website and invited to join the county’s Solid Waste Business Advisory Committee.
- *Fairfax County Website.* The county maintains a website—www.fairfaxcounty.gov/dpwes/trash/recyclingtrash.htm—which provides information on residential and commercial recycling and buying recycled content products. The website also provides electronic versions of most county recycling publications and a virtual tour of a MRF.

- *Outreach Partnerships with MWCOG.* Fairfax County recently collaborated with the MWCOG to support a regional recycling radio campaign.



The campaign promoted recycling in the Washington DC area over seven local radio stations during a two-week period. The county also worked with MWCOG to promote the America Recycles Day Campaign. To show their support for this important effort, the Fairfax County Board of Supervisors proclaimed November 15th, 2003 as America Recycles Day. The county distributed over 90,000 America Recycles Day pledge cards through county schools, libraries and recreation centers.

- *Outreach Partnerships with Fairfax County Public Schools.* The county established a partnership with the Fairfax County Public Schools for the Schools/ County Recycling Action Program (SCRAP) to further environmental and recycling education efforts within public schools. Fairfax County also provides a grant



program, the Johnnie Forte Jr. Litter/Recycling Grant Program, to fund recycling programs in the schools.

Economics is at the core of all recycling collection decisions.

Recycling Markets



Economics is at the core of all recycling collection decisions. Recycling plans must focus on the costs and benefits of current, new, and future programs. Although recycling specific material may benefit the environment, the economic cost is sometimes an obstacle for a municipality, which has little chance of affecting the

markets for these materials. Therefore, focusing on materials for which strong markets already exist is critical.

Economic viability of recycling is based on:

- 1. Disposal cost savings**
- 2. Material revenue**
- 3. Recyclable Transport Costs**
- 4. Recyclable Processing Costs.**

The economic viability of recycling is based on four factors: (1) the cost savings from eliminating disposal, (2) the revenue from selling recyclable materials, (3) the cost of transporting recyclable materials, and (4) the cost of processing recyclables. The economic viability of recycling may increase with higher alternative disposal costs, stronger local markets for recyclable materials, shorter transportation distances to markets, and more efficient processing of recyclables.

Appendix E contains September 2003, rates paid for recyclables in the local market and nationally. Revenue from sale of recyclable material offsets the costs to collect the materials.

Market Development

Four key factors drive the supply, demand, and pricing of Fairfax County's recyclable markets:³

- 1. Virgin capacities and recycled capacities.* Prices and availability of recycled materials mirror changes in prices and availability of virgin commodities.
- 2. Geography.* The viability of Fairfax County recyclable markets varies on the basis of local manufacturer demand.
- 3. Transportation costs.* The distance to market is a significant factor in the pricing of commodities.
- 4. End product demand.* Recyclable material markets are driven by the demand for the end-products manufactured from the recyclable materials.

³ Michael Fickes, "Calculating Recycling Markets," *Waste Age*, December 1, 1997.

Needs

Development needs of the wider economic recycling market include:

- greater diversification of recyclables end-uses to increase the demand for recyclables and make recycling more economically viable for counties like Fairfax;
- research and development funding for investigating new and improved methods of recycling and recyclables materials reuse; and,
- improvement in the communication between recyclable collectors and end-users.

Potential Barriers

Potential barriers to recycling include:

- cheap landfill disposal costs in rural Virginia;
- public opposition (*NIMBY* - not in my backyard) to the siting of recycling facilities;
- the perception of some procurement officials that recycled products are lower in quality than virgin products;
- funding constraints for recycling programs;
- the marginal cost of recycling may increase with higher recycling rates;
- transportation costs, because few manufacturers are located in Fairfax County and end-users of some recyclables materials are too distant for economical transport of recyclables to them; and,
- undeveloped (or underdeveloped) markets for some recyclables, which may emerge if end-products satisfy consumer demand.

Assessment of Current and Future Recycling Needs

As discussed, the economic viability of recycling depends on a number of factors, including the prices for recyclable materials. Fairfax County does not have the market size necessary to affect the national market for recyclables. Although a Fairfax County “buy recycled” campaign may help the development of local markets somewhat, market development occurs at the national level.

Chapter 2 of this SWMP presents the projected quantities of MSW generated, recycled, and disposed in Fairfax County over the SWMP

planning period. The county developed four alternative MSW projections to address the probable range of variance in the future generation rates.

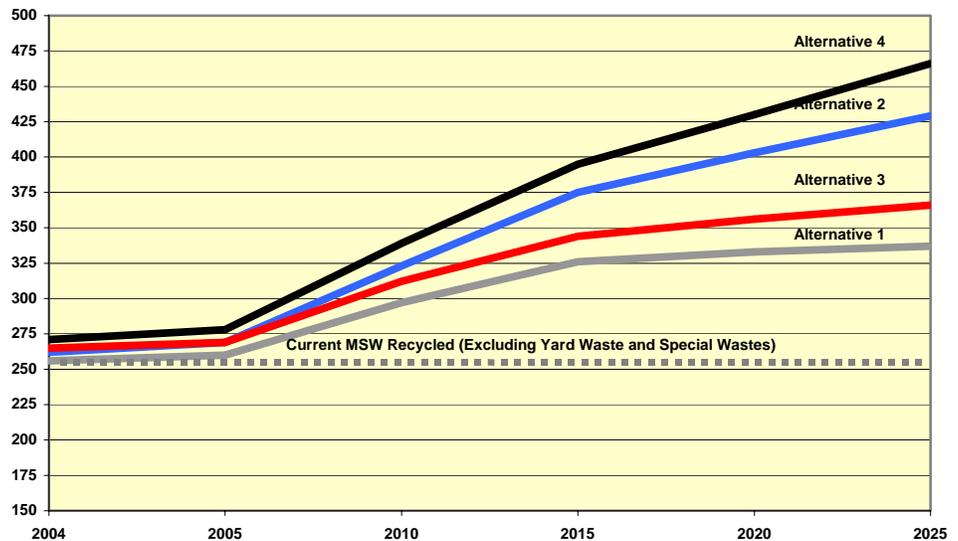
Fairfax County projects annual MSW recycling volumes (excluding yard waste and special wastes) will increase between 32 and 72 percent from 2004 to 2025, assuming continuation of current waste management practices.

As discussed in Chapter 2, the MSW projections assume the recycling rate will remain at the current rate (32 percent) until 2010, increase to 33.5 percent in 2010, and remain at 35 percent in 2015 and beyond. Table 6-6 and Figure 6-1 show the projected quantities of MSW recycled in the county over the SWMP planning period for the four projection alternatives. **(Note that these projections assume the continuation of the county's current management practices and conditions.)** These MSW recycling projections do not include yard waste and special wastes; the county evaluated the management for yard waste and special wastes separately in this SWMP. Fairfax County projects annual recycling volumes to increase between 32 and 72 percent from 2004 to 2025.

Table 6-6. MSW Recycling Projections (Excluding Yard Waste and Special Wastes) in Fairfax County, 2004–2025 (in thousands of tons)

Year	MSW Recycled (Excluding Yard Waste and Special Wastes)			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
2004	256	262	265	271
2005	260	269	269	278
2010	297	323	312	339
2015	326	375	344	395
2020	333	403	356	430
2025	337	429	366	466

Figure 6-1. MSW Recycling Projections (Excluding Yard Waste and Special Wastes) in Fairfax County 2004–2025 (in thousands of tons)



Fairfax County's SWM system must handle an additional 81,000 to 195,000 tons per year of MSW recyclables (excluding yard waste and special wastes) by 2025.

The county projects that the current MSW recycling system (excluding yard waste and special wastes) must handle an additional 81,000 to 195,000 tons per year by 2025. Therefore, the existing MSW collection system (municipal and private) will have to expand, by adding collection vehicles and labor, to meet the increased recycling quantities.

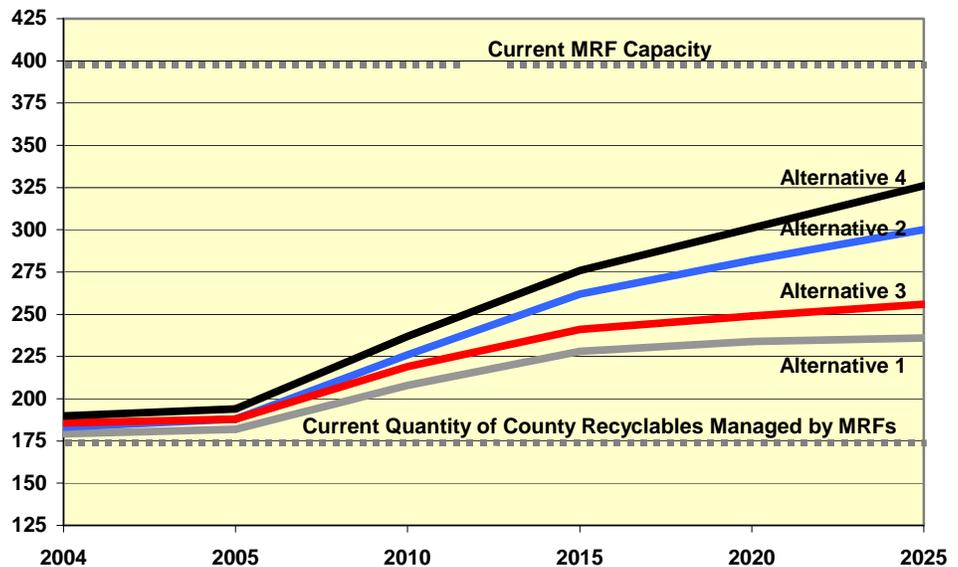
The projected increase in recycling quantities over the SWMP planning period may also impact the MRFs operating in the county. Table 6-7 and Figure 6-2 show the projected quantities of county MSW recyclables (i.e., paper and commingled recyclables) managed by county MRFs over the SWMP planning period. **(Note that these projections assume the continuation of the county's current management practices and conditions.)**

Table 6-7. Projections of MSW Recyclables Managed by MRFs in Fairfax County 2004–2025 (in thousands of tons)

Year	MSW Recycled							
	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Paper	Commingled ^a						
2004	151	26	153	26	150	25	152	26
2005	156	26	161	27	161	27	166	28
2010	178	30	193	33	187	32	203	34
2015	195	33	224	38	206	35	236	40
2020	200	34	241	41	213	36	257	44
2025	202	34	257	43	219	37	279	47

^a Commingled recyclables include glass, plastic and commingled bottles and cans.

Figure 6-2. Projections of MSW Recyclables Managed by MRFs in Fairfax County 2004–2025 (in thousands of tons)



Sufficient MRF capacity exists in Fairfax County over the SWMP planning period, assuming the continuation of the county's current management practices and conditions.

The current capacity of paper and commingled recycling processing at county MRFs is approximately 399,000 tons per year; the capacity for paper recyclables is 295,000 tons per year and for commingled recyclables is 104,000 tons per year. Therefore, sufficient MRF capacity exists in Fairfax County over the SWMP planning period for all four MSW alternatives, *assuming the continuation of the county's current management practices and conditions*. An increase in recycling resulting from planned SWMP actions may require expansion of MRF capacity during the next 20 years.

SWMP Actions

Table 6-8 shows Fairfax County's SWMP actions for MSW recycling. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county's current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 6-8. Fairfax County MSW Recycling SWMP Actions

MSW Recycling SWMP Actions
Promote public/private recycling programs
Improve public outreach and education to promote recycling
Increase business recycling by reducing commercial recycling thresholds
Expand curbside recyclables collected to include mixed paper, plastic bottles, and cardboard
Revise regulations to enhance recycling, including: <ul style="list-style-type: none"> • Expand recyclables collected at government buildings • Encourage increased MSW recycling in county schools • Increase MSW recycling inspections
Address suitable recycling alternatives for multiunit buildings
Explore additional waste exchange agreements to increase recycling and/or recycling plans
Support expansion of the capacity of existing MRFs, if quantities of recyclable materials warrants expansion

Collection

Collection and transfer of solid waste serve to facilitate solid waste management strategies. Although not actually in the hierarchy, collection and transfer activities are necessary to ensure that Fairfax County can implement the objectives of the solid waste management system.

Fairfax County DSWCR provides collection service to approximately 41,000 homes, about 11 percent of the county.

Residential Collection by the County

The Fairfax County DSWCR currently (2004) provides collection service to approximately 41,000 homes, about 11 percent of the county. Revenue is derived from the refuse collection fee charged to customers.



The DSWCR offers trash pickup once a week and contracts recycling services within sanitary districts to private firms. These contractors also manage the sale of all recyclables collected by the county (CARs, DOCs, and the sanitary district routes). They deliver all recyclables to MRFs under contract to the county, and profits generated from the sale of the recyclables are split with the county. This revenue partially offsets program expenditure requirements.

Special Collection (Community Benefit) Programs Paid from the General Fund

Fairfax County DSWCR currently operates four programs paid for out of the county's General Fund. These programs are considered to be community benefit programs since they provide for the collection of refuse that presents a hazard to the health, safety, and welfare of county citizens. The four programs are:

- *Health Department Referral Program* - provides removal of refuse from properties at the request of the county Health Department due to a potential hazard to county citizens.
- *Community Cleanup Program* - cleanup support services are provided to communities and civic organizations.
- *Court/Board Directed Cleanup Program* - executes requests by the Fairfax County Circuit Court or the Board of Supervisors for the removal of refuse from properties that are in violation of the county zoning ordinance
- *Evictions Program* - executes requests by the Sheriff's Department for the use of refuse collection equipment and personnel to dispose of materials left by evicted tenants.

The county sometimes collects revenue from these programs and uses the revenues to offset the overall cost to the General Fund. The Health Department Referral Program and the Court/Board Directed Cleanup Program may recover cleanup fees from property owners.

Residential Curbside Collection by Private Companies

In Fairfax County, private haulers and Fairfax County collect residential waste curbside. All private haulers are required to provide recycling pickup (curbside) along with trash service. Fairfax County code requires weekly collection of both trash and recyclables; some companies offer twice-weekly collection of trash. Private companies charge their customers various rates depending upon location, frequency of service, special collections and other factors.



Currently, 20 private haulers are licensed to provide residential trash and recycling collection in Fairfax County.

Currently (2004), 23 private haulers are licensed to provide residential trash and recycling collection in Fairfax County. The private hauling companies operate in the county with permits issued under Fairfax County Code, Section 109-4-1. While there are many private collection companies in the county, as a result of consolidations within the industry, one company currently serves about 70 percent of all county households. Of the remaining 30 percent of households, 11 percent are served by the county and 19 percent are served by the other 19 private companies.

Citizens' Disposal Facilities

Residents can take their trash directly to the citizens' disposal centers at the I-66 Transfer Station and I-95 Landfill Complex.



Residents can also take their trash directly to citizens' disposal centers at the I-66 Transfer Station and I-95 Landfill Complex. These facilities charge fees for disposal of trash and bulk loads on the basis of the number of bags (for smaller loads) or by weight (for larger loads). The county uses revenue from the operation of this program to fund the solid waste management program.

The I-66 Transfer Station and I-95 Landfill Complex citizens' disposal facilities also accept white goods—small and large appliances and other scrap metal (lawn chairs, grills, metal framing, etc.). A small fee is charged for appliances that have to have Freon removed and for waste tires. Special wastes, including used oil, antifreeze, batteries, and other household hazardous wastes are accepted free of charge. (Recycling of special wastes is detailed in Chapter 9.)

Recycling Drop Off Centers (DOCs)

Residents can take their recyclables directly to one of eight recycling DOCs.

Residents can take their recyclables directly to one of eight recycling DOCs. They are located throughout the county and provide citizens with a convenient addition to curbside collection. For example, DOCs accept mixed paper (cardboard, junk mail, catalogs, magazines) and plastics. Recycling at DOCs is free to county residents.



Commercial Collection



Commercial solid waste collection (businesses, institutions, and multiunit dwellings) in Fairfax County is managed by building owners/operators who contract with private refuse and recyclables collection firms in the county. Building owners/operators are responsible for

Currently, 23 private haulers are licensed to provide commercial trash and recycling collection in Fairfax County.

providing refuse and recyclables collection containers at their buildings; most commercial buildings use a series of dumpsters that are emptied using front-end trucks. Currently (2004), 23 private haulers are licensed to provide commercial trash and recycling collection in Fairfax County. Businesses pay their collectors a fee for collection and recycling services.

Businesses in Fairfax County that employ over 200 people or produce more than 100 tons of solid waste annually must recycle their “principal recyclable material.” For most county businesses, the principal recyclable material is office paper. The county also requires commercial building owners/operators and all collectors of recyclable materials to provide a recycling system for their tenants. Commercial building owners/operators typically contract with haulers for the collection of recyclables from dumpsters at the business location.

Smaller businesses in the county can take office paper, cardboard, aluminum cans, newspaper, or any other acceptable recyclable material to a local recycling drop-off center (such as the I-66 Transfer Station or I-95 Landfill Complex) or arrange for commercial collection.

Fairfax County’s CAR Program collects refuse from county agencies.

County Agency Collection

Fairfax County’s CAR program is responsible for the collection of refuse from county agencies and a small number of associated organizations. Revenue is derived from billings to county agencies on the basis of cubic yard capacity of the containers assigned to individual agencies. The cost per cubic yard is formula-driven and based on fiscal year operating requirements.

Issues Concerning Residential Collection Currently Provided by Private Companies

Customer Service

Over the past few years, county staff have received increasing numbers of complaints concerning customer service provided by private collection companies in the county. Complaints include:

- frequent missed collections of waste or recyclables
- long waits on the customer service line to report missed collections or talk with a customer service representative
- unjustified rate increases (i.e., rate increases significantly above the increases in tip fees paid at disposal facilities)
- extra charge for special collections
- no brush collection or special pickups following weather events

Typically private companies are not equipped to handle emergency services resulting from weather events such as hurricanes or tornadoes. During the recent hurricane (September 2003), county staff received countless calls from customers who could not get their collection company to dispose of the significant amounts of brush generated by the storm.

Air emissions

Fairfax County's current residential collection system is inefficient in that it allows multiple companies to serve each neighborhood. As a result, many different collection trucks travel each street daily.

In March 2003, EPA reclassified the Washington, DC area as a severe non-attainment area for ground-level ozone. Fairfax County solid waste collection operations may be adding to the ozone problem in the area by:

- multiple collection trucks serving neighborhoods daily
- high collection frequency such as twice weekly of MSW, once for yard waste and once for recyclables—all on different days
- collection vehicles not using special fuels, filters or less-polluting collection vehicles

Traffic

Similarly, with multiple collection vehicles on neighborhood streets daily, traffic impacts of Fairfax County solid waste collection operations include:

- increased traffic congestion
- safety concerns for children awaiting and departing buses
- unsafe practices by truck drivers such as speeding or zigzagging to collect on both sides of the street in order to meet high daily collection standards (some companies require about 1,200 households to be collected on a route)



Fairfax County projects annual MSW collection volumes (excluding yard waste and special wastes) will increase between 17 and 58 percent from 2004 and 2025, assuming continuation of current waste management practices.

Assessment of Current and Future Collection Needs

Chapter 2 of this SWMP presents the projected quantities of MSW generated, recycled, and disposed in Fairfax County over the SWMP planning period. The county developed four alternative waste projections to address the probable range in the future generation rates. A detailed discussion of the development of MSW waste projections is provided in Appendix C.

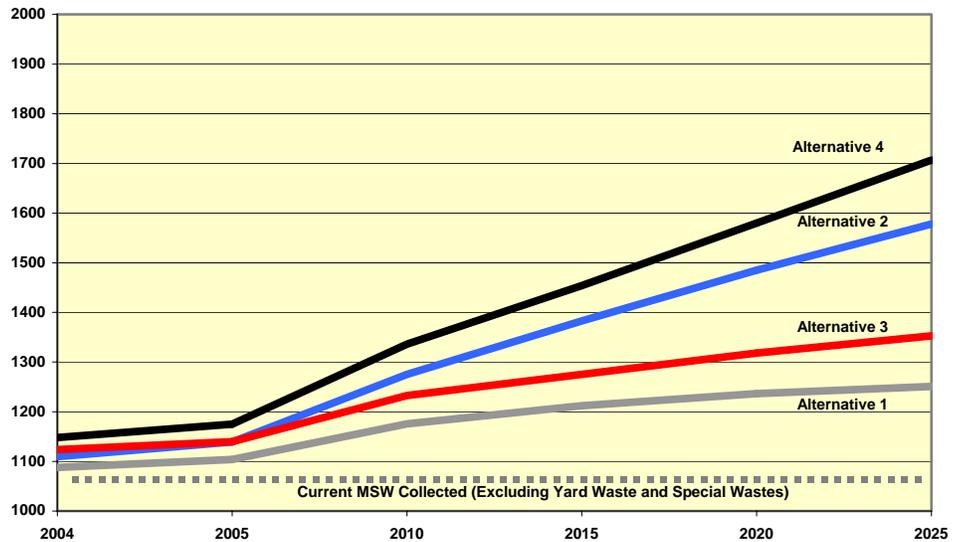
Collection of MSW includes both recyclable materials and waste destined for disposal. Table 6-9 and Figure 6-3 show the projected quantities of

MSW collected in the county over the SWMP planning period for the four projection alternatives (described in detail in Appendix C). These MSW collection projections do not include yard waste and special wastes. **(Note that these projections assume the continuation of the county’s current management practices and conditions.)** The county projects that the annual quantities of MSW collected in Fairfax County will increase between 17 and 58 percent from 2004 to 2025.

Table 6-9. MSW Collection Projections (Excluding Yard Waste and Special Wastes) in Fairfax County, 2004–2025 (in thousands of tons)

Calendar Year	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	MSW Recycling	MSW Disposal						
2004	256	819	262	828	265	816	271	824
2005	260	844	269	870	269	871	278	897
2010	297	879	323	952	312	921	339	997
2015	326	886	375	1,008	344	931	395	1,059
2020	333	904	403	1,082	356	962	430	1,150
2025	337	914	429	1,149	366	987	466	1,241

Figure 6-3. MSW Collection Projections (Excluding Yard Waste and Special Wastes) in Fairfax County 2004–2025 (in thousands of tons)



Fairfax County’s MSW collection system (excluding yard waste and special wastes) must handle an additional 163,000 to 559,000 tons per year by 2025.

The county projects that the current MSW collection system (excluding yard waste and special wastes) must handle an additional 163,000 to 559,000 tons per year by 2025. Therefore, the existing collection system will have to expand, by adding collection vehicles and labor, to meet the increased quantities.

SWMP Actions

Table 6-10 shows Fairfax County’s SWMP actions for the collection of MSW. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county’s current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 6-10. Fairfax County MSW Collection SWMP Actions

MSW Collection SWMP Actions
Partner with private waste collection companies and community stakeholders to improve residential collection service
Revise County Code to improve residential service
Promote use of special fuels, filters, and special vehicles for collection
Implement a collection and disposal strategy for emergencies

Transfer

Fairfax County transfer facilities include the I-66 Transfer Station and three privately-owned MRFs.

Fairfax County uses a single transfer station for handling waste materials, including MSW, known as the I-66 Transfer Station. There are also three MRFs in the county for handling MSW recyclables, which are discussed earlier in this chapter.

I-66 Transfer Station

Fairfax County operates a single transfer station, the I-66 Transfer Station, which is regulated under VDEQ Permit #387. The facility accepts, from public and private haulers operating throughout the county, MSW, yard debris, brush, CDD (from small businesses and homeowners), and white goods for transfer or processing. In addition, the county also operates a disposal collection facility for citizens and businesses at the I-66 Transfer Station that accepts residential MSW directly. (Above, see “Collection,” “Disposal Centers.”) The facility is located near the center of the county, at the site of the closed I-66 Landfill.



The I-66 Transfer Station has two main objectives: (1) managing MSW quantities disposed of at the E/RRF, and (2) minimizing solid waste disposal transportation requirements.

The operation of the E/RRF requires a constant feed of MSW, so Fairfax County must provide it with a contracted amount (930,750 tons annually). By consolidating the majority of MSW collection and transfer at the I-66 Transfer Station, the county is able to control the MSW volume delivered to the E/RRF. If MSW quantities entering the system are greater than the

E/RRF processing capacity, then the county can transport the “overflow” waste from the transfer station to sanitary landfills outside of the county.

The I-66 Transfer Station also enables the county to reduce MSW disposal transportation requirements, primarily for private and municipal haulers. First, haulers have the option of using the I-66 Transfer Station or hauling waste directly to the E/RRF, whichever provides the most convenient transportation solution. Typically, haulers in the northern and western portions of the county use the transfer station; others haul directly to the E/RRF.

Second, the county consolidates typically three to five smaller truckloads into a single trailer for transportation to the E/RRF and out-of-county landfills. Consolidation at the transfer station enables the county to reduce the truck traffic to the E/RRF.

The I-66 Transfer Station commenced operations in January 1983. In early 1991, the county began planning the expansion of the original transfer station, including a new area for residential recycling and disposal. The multi-year project cost approximately \$13.1 million and included the expansion of the number of disposal bays, as well as repairs to the original transfer station building. This project included the completion of the recycling and disposal facility in 1993 and the tipping building expansion in 1997.



The I-66 Transfer Station charges fees based upon the amount of MSW disposed.

The I-66 Transfer Station charges fees based upon the amount of MSW disposed. The fees vary based upon the type of waste and the category of the disposer. Haulers that enter into a contract with the county and meet specific eligibility requirements (such as obtaining proper county permits) are currently charged a lower fee. All fees finance the transport and disposal of the refuse at the E/RRF or landfill as well as costs for administration and other community benefit programs, such as recycling and household hazardous waste.

The facility operates with 52 transfer vehicles, 74 drivers, other operations staff, and contract hauling support. Drivers typically work on rotating shifts 10 hours a day for 4 days a week.

Incoming vehicles to the transfer station may include private haulers, municipal haulers, commercial cash customers, and residents.

Vehicle Processing

Incoming vehicles to the transfer station may include private haulers, municipal haulers, commercial cash customers, and residents.

Private and Municipal Haulers

All trash hauling vehicles entering the transfer facility have permits from Fairfax County. The permit types vary according to the size of the hauling

company, with large hauling companies invoiced monthly. The county requires hauling companies that are billed monthly to obtain a surety bond to cover outstanding debt and failures to perform waste collection requirements.

Each entering trash hauling vehicle must display its unique permit number. Upon entering, the facility retrieves information from the computer scale system, including tare weight and owner name and address. All trash hauling vehicles are weighed on an electronic scale, which records the date, time, weight, and charge. The system prints a waste receipt, including the vehicle owner's name and address, and the type of waste. The system tracks charges and bills owners monthly.



The I-66 Transfer Station is open for private and municipal haulers Monday through Friday from 5 A.M. to 6 P.M. and Saturdays from 5 A.M. to 2 P.M. The peak hours for incoming vehicles are 4 P.M. to 5 P.M. Other peak volumes are from 11 A.M. to 1 P.M. and 7:30 A.M. to 9 A.M.

Commercial Cash and Citizens

Small companies that do not desire a monthly invoice and generate waste as part of their regular work (landscaping, roofing or remodeling businesses, for example) may pay cash for disposal services (commercial cash program). They pay either a flat fee per visit or by weight for larger loads.

Residents of the county who use the facility pay for disposal on the basis of the number of bags (for smaller loads), by weight (for larger loads), or by item (white goods, tires). The county uses revenue from the operation of this program to fund the solid waste management program. The disposal center for citizens and commercial cash customers at the I-66 Transfer Station is also open Sundays, and has slightly different operation hours than the hours for collection and disposal vehicles.

Refuse Handling



After processing at either the main scales or commercial cash/citizens scales, the vehicles are directed to one of the 21 bays to discharge the waste (10 bays in one building and 11 bays in the adjacent building). Waste is emptied from the vehicles onto the floor of the bay; county operators in front-end loaders inspect the waste and move it toward the pits at the back of the bays. This type of facility is known as a direct-discharge non-compaction station.

Vehicles are randomly screened for non-combustible and prohibited wastes, including regulated medical waste (RMW) and hazardous wastes. Crane operators and other employees continuously screen refuse in the bays.

Waste is loaded into the waiting 18-wheel tractor-trailers beneath the floor through one of the six pits at the back of the bays. Cranes behind the pits assist in directing the waste into the trailers.

Outgoing Vehicles

After discharging their wastes, all vehicles leave the facility.

Transfer Operations

Once the transfer trailers are loaded, they pull out of the facility; the operator removes loose or hanging refuse from the trailer, closes the trailer top, and proceeds to the E/RRF or landfill. County vehicles are typically weighed when they arrive at the disposal facility rather than at the I-66 Transfer Station; drivers, however, may weigh their vehicles at the transfer station if they believe the load may be too heavy.

In 2002, the I-66 Transfer Station accepted 663,819 tons of material. The average daily refuse received was approximately 2,100 tons (based on operations 6 days per week). Table 6-11 shows the quantities of MSW received at the I-66 Transfer Station and destination for disposal from 2000 to 2002.

Table 6-11. I-66 Transfer Station, Tons of MSW Transferred, 2000–2002

Category	2000	2001	2002
Inbound MSW			
Haulers	579,437	646,298	635,825
Disposal for citizens	30,556	26,526	27,994
Outbound MSW			
E/RRF	560,965	595,853	628,348
Out-of-county landfills	49,028	76,971	35,471
Total	609,993	672,824	663,819

Roughly 75 percent of MSW destined for disposal in Fairfax County flows through the I-66 Transfer Station.

Most (roughly 75 percent) MSW destined for disposal in Fairfax County flows through the I-66 Transfer Station. MSW is also disposed directly at the E/RRF. Table 6-12 presents the amounts of county wastes received at the I-66 Transfer Station and E/RRF from 2000 to 2002.

Table 6-12. MSW Disposal Destination Amounts in Fairfax County, 2000–2002, tons

Year	MSW Handled at Transfer Station	MSW Sent Directly to E/RRF
2000	609,993	123,983
2001	672,824	157,997
2002	663,819	189,761

Fairfax County projects annual volumes of MSW handled at the I-66 Transfer Station (excluding yard waste and special wastes) will increase between 10 and 58 percent from 2004 and 2025, assuming continuation of current waste management practices.

Assessment of Current and Future Transfer Needs

Chapter 2 of this report presents the projected quantities of MSW generated, recycled, and disposed in Fairfax County over the SWMP planning period. The county developed four alternative MSW projections to address the probable range of variance in the future generation rates.

Future projections of MSW handled at the I-66 Transfer Station are dependent on three factors: (1) the percent of MSW recycled; (2) the projected amounts of MSW destined for disposal; and, (3) the percentage of those amounts sent directly to the E/RRF. Projected amounts of MSW destined for disposal over the SWMP planning period are presented in Chapter 2.

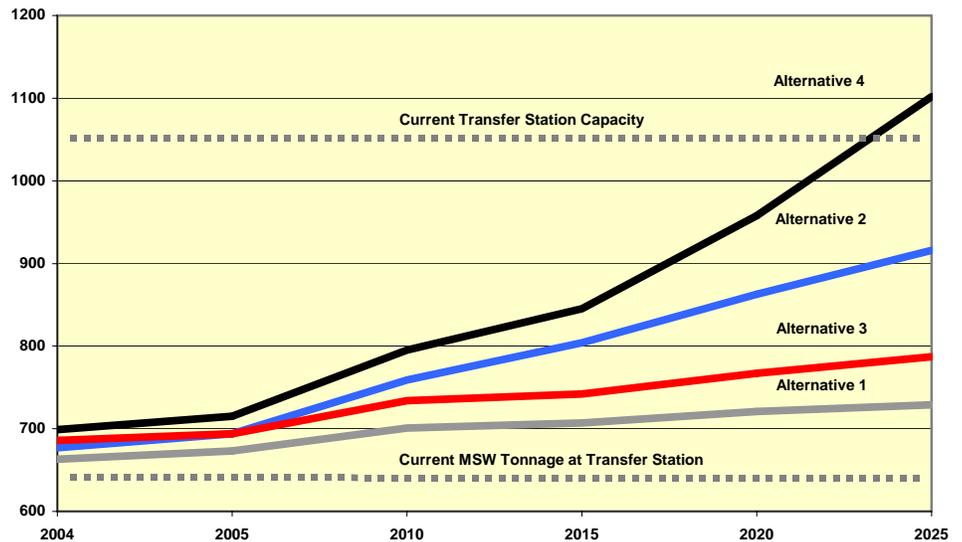
Historically, approximately 20 percent of MSW destined for disposal in Fairfax County went directly to the E/RRF. The county expects this percentage to remain constant in the future, as long as the E/RRF continues as the primary MSW disposal method. Note that, for calculating projections, this percentage only applies to county MSW amounts up to the capacity of the E/RRF (approximately 1,095,000 tons annually). All MSW in excess of the E/RRF capacity will be handled directly by the I-66 Transfer Station or a future transfer facility at the I-95 Complex.

Table 6-13 and Figure 6-4 show the projected quantities of MSW managed at transfer facilities in the county over the SWMP planning period for the four projection alternatives. **(Note that these projections assume the continuation of the county’s current management practices and conditions.)** The county projects that annual quantities of MSW managed at transfer facilities in Fairfax County will increase between 10 and 58 percent from 2004 to 2025.

Table 6-13. Projections of MSW Handled at I-66 Transfer Station or Sent Directly to the E/RRF, 2004–2025 (in thousands of tons)

Year	MSW Sent to Transfer Station				MSW Sent Directly to E/RRF			
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 1	Alt. 2	Alt. 3	Alt. 4
2004	663	677	686	699	168	172	174	177
2005	673	694	694	715	171	176	176	182
2010	701	759	734	795	178	193	186	202
2015	707	804	742	845	179	204	188	214
2020	721	863	767	958	183	219	195	193
2025	729	916	787	1,102	185	233	200	139

Figure 6-4. Projections of County MSW Handled at I-66 Transfer Station 2004–2025 (in thousands of tons)



Fairfax County’s MSW transfer system (excluding yard waste and special wastes) must handle an additional 66,000 to 403,000 tons per year by 2025.

The county projects that the I-66 Transfer Station must handle an additional 66,000 to 403,000 tons per year of MSW by 2025. The current I-66 Transfer Station capacity is roughly 3,500 tons per day (1,050,000 tons per year); capacity is based on the number of county transfer trucks, bays, and days of operation. Therefore, the county expects the I-66 Transfer Station to have sufficient capacity to handle these projections, with the exception of Alternative 4. For Alternative 4, MSW quantities will exceed the current I-66 Transfer Station capacity between 2020 and 2025.

SWMP Actions

Table 6-14 shows Fairfax County’s SWMP actions for the transfer of MSW. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps

between the county's current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 6-14. Fairfax County MSW Transfer SWMP Actions

MSW Transfer SWMP Actions
Continue using the current transfer system
Reconfigure or construct waste handling areas at the I-66 Transfer Station, including unloading areas for citizens and commercial cash customers (for increased safety and efficiency)
Add transfer capabilities to the I-95 Landfill Complex, if increases in transfer quantities or waste exchange agreements require it

Disposal

Fairfax County currently uses the E/RRF as its primary disposal method for MSW.

Current Programs

Fairfax County currently uses the I-95 Energy/Resource Recovery Facility (E/RRF) as its primary disposal method for MSW and uses out-of-county sanitary landfills to handle the “overflow” waste from the E/RRF. When MSW quantities in the county exceed the capacity of the E/RRF, the county diverts some trucks from the transfer station to out-of-county landfills rather than to the E/RRF. The county disposes of the ash generated from the E/RRF in the Area 3 Ash Landfill at the I-95 Landfill Complex.

Energy Resource Recovery Facility



The E/RRF is one of the largest “mass burn” waste-to-energy (WTE) facilities in the United States. It is located at the I-95 Landfill (which is presently used for ash disposal only). Covanta Fairfax, Inc. (CFI), a private firm, owns and operates the E/RRF under a long-term service agreement with the county.

Fairfax County endorsed the construction of a WTE facility in the mid-1980s to prolong the life of the I-95 Landfill and to provide a viable longer-term solid waste management alternative to landfilling for waste generated in the county. The construction of the E/RRF began in 1988 and operations commenced in June 1990.

Operating the E/RRF is an environmentally effective and economically efficient means to dispose of MSW. The current business model allows the county to charge a competitive MSW disposal fee for contract haulers. The tip fees paid to CFI are used to pay the bonds that financed the construction of the E/RRF. The capital cost of the facility, not including

“For every one million tons of refuse processed at our facilities, we offset the need to use about 1.67 million barrels of oil to generate the same amount of electricity. That also means offsetting the emissions that the oil would have created. In addition, because the process reduces the volume of refuse, we conserve valuable landfill space.”

financing charges, underwriting fees, and construction of utilities was \$195 million. The bonds were refinanced in 1998 and will be completely paid in 2011.

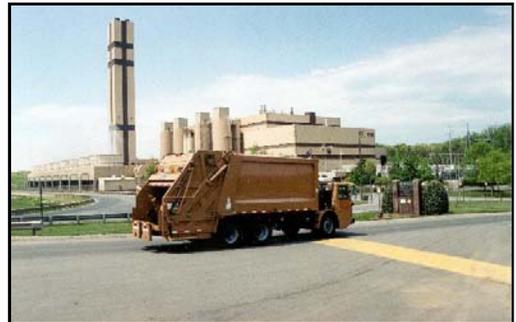
The E/RRF reduces the volume of solid waste by 90 percent. The byproducts of the combustion process, bottom and fly ash, are typically less than 28 percent by weight of the incoming refuse processed. In FY2003, ash residue was 24.9 percent by weight of waste combusted.

The E/RRF uses the waste to generate up to 91 megawatts of electricity; 11 megawatts are required to operate the facility and roughly 80 MW are sold to Virginia Power. This electricity powers about 70,000 homes in the area.

The facility also recovers and recycles ferrous and nonferrous metals; in 2003, 22,204 tons of ferrous metals and 318 tons of nonferrous metals were recovered, representing 2.5 percent of the total municipal waste combusted.

The E/RRF reduces disposal volume, recycles metal, generates electricity, and reduces landfill waste management concerns (leachate, capping, etc.) at a cost that is comparable with landfilling.

To limit the escape of odors from the process, the E/RRF building structure containing the receiving area, refuse storage pit, cranes, and hoppers is maintained at less than atmospheric pressure and a misting system near the doors is employed to reduce odors.



Steam from waste combustion is routed to two steam turbine-generators for power generation. A two-turbine design allows for improved reliability: the facility can continue to produce electricity in case one turbine is off-line for maintenance.

The E/RRF operates using mass burn technology, which involves the combustion of minimally processed or non-processed refuse. The facility is constructed with four 750-ton-per-day waterwall furnaces, each designed to operate independently. The facility design allows for the construction of a fifth furnace, if needed and permitted for future operations.

Pollution Control Equipment

The E/RRF manages many factors to maximize the combustion of the solid waste and to control the generation of byproducts, including boiler temperature, residence time in the boiler, and underfire and overfire air supply. For example, overfire air (air delivered to the boilers above the

The E/RRF is equipped with state-of-the-art pollution prevention technology.

feed table) assists in maintaining boiler temperatures between 1,800°F and 2000°F to ensure complete combustion of organic gases and carbon monoxide.

Air pollution equipment for each boiler unit consists of a semi-dry acid gas scrubber, carbon injection system, aqueous ammonia injection system, and fabric filter baghouse. In the scrubbers, atomized lime is sprayed into the flue gas stream to react with and neutralize acid gases (primarily sulfur dioxide and hydrogen chloride). The carbon injection system assists in the removal of mercury, and the aqueous ammonia injection system assists in controlling emissions of nitrogen oxides. A new system of inserting dolomitic lime into the ash further conditions the ash and binds heavy metals, such as lead and cadmium, to the ash residue, preventing the metals from leaching out once the ash is landfilled. The dolomitic lime system ensures that the pH of the ash remains between 8.0 and 11.0.

Particulate matter is removed from the flue gas stream by the baghouses. Each baghouse contains 2,520 bags: 12 compartments of 210 bags each. The baghouses are designed for full operation using 10 of the 12 compartments. The baghouses are over 99.9 percent effective in removing particulate matter. Fly ash from the air pollution control equipment is directed to the ash discharger (explained above) for quenching.

Continuous emissions monitors located in the stack flues record emissions of carbon monoxide, sulfur dioxide, nitrogen oxides, opacity (a measure of particulate matter), and oxygen.

Because of the continuous monitoring of all the gases and ash leaving the facility and the application of state-of-the-art pollution prevention technology, the facility remains in compliance with EPA and VDEQ permits and guidelines.

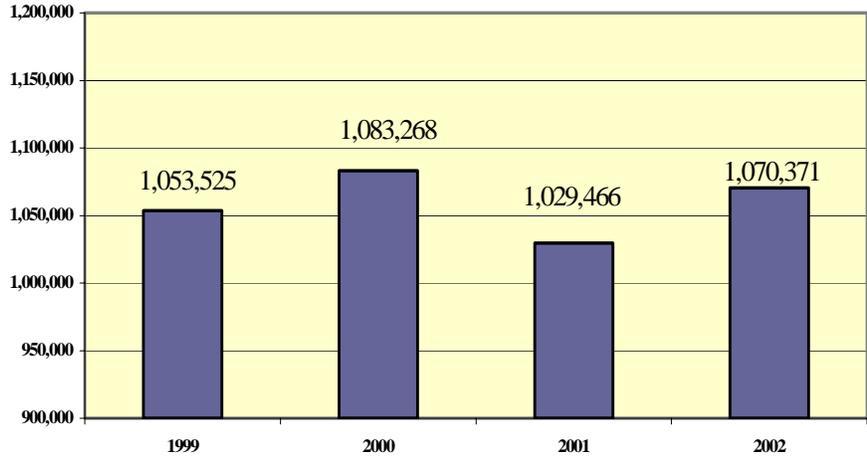
Past and Present Rate of Use

The E/RRF operates 24 hours per day and 365 days per year. The facility burns waste mostly from Fairfax County, but also takes limited amounts of waste from other jurisdictions as part of waste exchange or longstanding agreements. Figure 6-5 shows the tons of waste processed by the E/RRF between 1999 and 2002.

Recent air monitoring data confirmed the following percent removals:

Sulfur Dioxide—94.5%
Hydrogen Chloride—98.2%
Mercury—93.4%
Nitrogen Oxides—45%

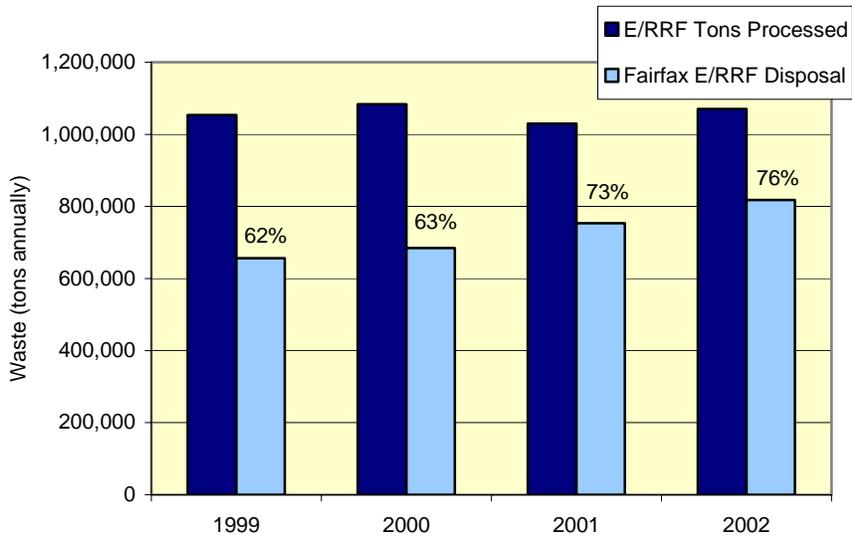
Figure 6-5. E/RRF, Tons of Waste Processed, 1999-2002



Fairfax County must provide a contracted amount of solid waste (930,750 tons per year) to the E/RRF, referred to as the Guaranteed Annual Tonnage (GAT).

Fairfax County must provide a contracted amount of solid waste (930,750 tons per year) to the E/RRF. As a result, Fairfax County has developed agreements and waste exchanges with other jurisdictions to accept MSW for disposal at the E/RRF. As presented in Figure 6-6, county-generated waste constituted between 62 and 76 percent of the waste processed by the facility from 1999 to 2002.

Figure 6-6. Fairfax County Portion of Waste Combusted at E/RRF, 1999-2002



Capacity and Availability

The E/RRF processing capacity is roughly 3,000 tons per day, with 15,000 tons of storage capacity.

The E/RRF storage capacity is approximately 15,000 tons in the refuse storage pit, which is equivalent to 5 days of continuous processing. E/RRF processing capacity is 3,000 tons per day of solid waste. If waste generation rates in Fairfax County exceed this amount, other waste disposal options may be required.

Operation of the E/RRF requires sufficient waste quantities to continuously feed the boilers. Fairfax County must manage MSW collection and disposal in order to keep the boilers operational. Fluctuations in waste volumes or temporary interruptions in waste collection (such as snow events or power outages) can shut down one or more boilers in the E/RRF and reduce the facility's operating capacity.

E/RRF Inventory Management

The primary emergency backups for the E/RRF are out-of-county landfills. The Area 3 Ash Landfill at the I-95 Landfill Complex is permitted to accept MSW in case of an emergency shutdown of the E/RRF. The landfill was closed to MSW in 1995; the ash landfill is not a viable long-term disposal option for Fairfax County when waste generation exceeds the processing capacity of the E/RRF.



Fairfax County uses out-of-county landfills to handle E/RRF overflow waste.

The primary option to handle “overflow” waste is to transport MSW to one of the contracted landfills outside of the county. Most of these have sufficient capacity to handle the current out-of-county landfill requirements over the next 20 years. Some, however, have quarterly permit limits that cap the MSW quantity accepted. Although these landfills may have sufficient capacity, they may not be available to accept MSW from the county in the quantities that are needed daily.

(See the “Sanitary (MSW) Landfills” section of this chapter for the annual tonnage, estimated years remaining, distance from the I-66 Transfer Station, and daily tonnage capacity of the largest private landfills in Virginia.)

Existing Contracts with Haulers and Municipalities

CFI and the county currently have a 20-year operating agreement, with the county guaranteeing at least 930,750 tons of waste each year to the facility until 2011. Fairfax County uses the I-66 Transfer Station and contracts with collection and disposal companies and local jurisdictions to manage the quantities of waste delivered to the E/RRF. The county uses the following efforts to provide the guaranteed annual tonnage (GAT) to the E/RRF:

- Agreement with Prince William County to exchange yard waste generated in Fairfax County for Prince William County MSW;
- Agreement with the District of Columbia to deliver waste to the E/RRF (this agreement may not be extended beyond its current expiration);

- Contracts with haulers operating in Fairfax County to deliver all waste collected in the county in exchange for a reduced disposal price; and,
- A spot market program to attract local, but out-of-county, MSW to the E/RRF.

Remaining Useful Life and Closure Requirements

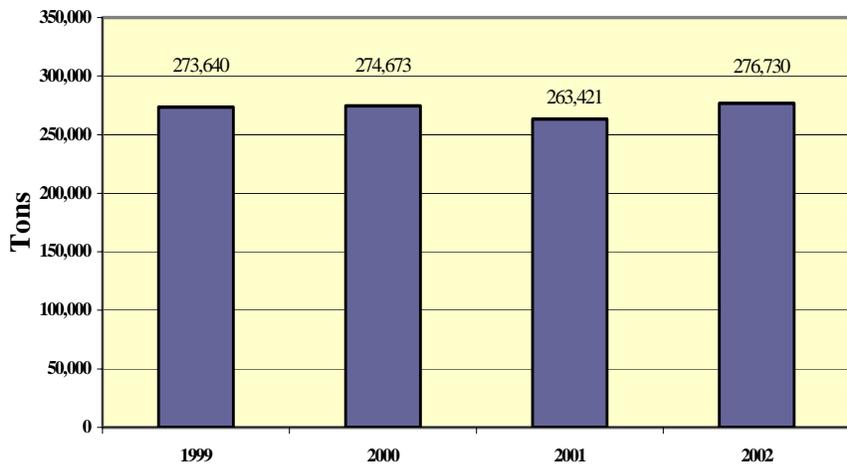
Typically, WTE facilities similar to the E/RRF have a useful life of approximately 40 years. Therefore, the E/RRF should not exceed its remaining useful life during the SWMP planning period. CFI owns the facility and operates it, with oversight of the Fairfax County Solid Waste Authority until the bonds are repaid in 2011. After that date, CFI is projected to remain in the current location until their lease on the E/RRF property expires in 2032.

Ash Disposal Plans

Ash from the E/RRF is disposed of at the nearby Area 3 Ash Landfill.

Ash generated at the E/RRF is hauled to the nearby landfill (referred to as the Area 3 Ash Landfill) for disposal. Fairfax County disposes of approximately 760 tons of ash from the E/RRF in the landfill daily. Figure 6-7 shows the tons of ash generated by the E/RRF in 1999 through 2002 and disposed of at the Area 3 Ash Landfill. (The “Area 3 Ash Landfill” section of this chapter contains more information about the operations of the ash landfill.)

Figure 6-7. E/RRF, Tons of Ash Generated, 1999–2003



The ash produced in the E/RRF comprises a number of residues. Collected ash is cooled and then passed through a “scalper screen,” which removes pieces larger than 10 inches. After this initial screening, ferrous and nonferrous metals are removed for sale (see the next subsection). The remaining ash is loaded into trucks for ultimate disposal at the Area 3 Ash Landfill.

Recovery and Sale of Metals

Ash and material that pass through the initial screen (described above) are fed by a conveyor to a rotating magnetic trommel, where ferrous metal is removed. Next, a rotating magnet recovers smaller ferrous metals that were not collected in the initial trommel. The ash then passes through a screen and eddy current separator, where brass, aluminum, copper, and other nonferrous metals are recovered. The recovered metals are stored in the ash building and sold to scrap recyclers. In FY2003, 22,204 tons of ferrous metals and 318 tons of non-ferrous metals were recycled.

Hazardous Materials

The E/RRF screens delivered materials to prevent burning unacceptable waste, including hazardous waste .

To prevent processing unacceptable waste, including hazardous waste, the facility has a screening program for delivered materials. Notices are posted at the point of entry to the facility, and trucks entering the facility are visually inspected.

The tipping floor manager visually inspects all loads for unusual physical properties; tipping floor screening procedures also include random checks of vehicles before unloading the waste. The tipping floor and crane personnel also visually observe the refuse after it is deposited in the pit.

The county is also in the process of designing and installing radiation detection equipment to identify and remove any radioactive material that may be brought for disposal.

Operating Permits

VDEQ requires a Solid Waste Incinerator and Energy Recovery Facility Permit for any owner or operator of incinerators and energy recovery facilities managing non-hazardous waste. The permit is required under Virginia Code § 10.1-1408.1, and Virginia Administrative Code 9 VAC 20-80-480 through 9 VAC 20-80-620.

Permit fees for all solid waste facilities are specified in 9 VAC 20-90-10 et seq. CFI, as the operator of the E/RRF, holds the operating permit and is responsible for compliance.⁴

Air Emissions

The E/RRF air permit includes emission limits for sulfur dioxide, carbon monoxide, nitrogen oxides, hydrochloric acid, particulate matter, dioxin/furans, and mercury. The facility consistently meets its emission limits. Table 6-15 shows 2003 emission testing results.

⁴ Virginia Waste Management Board, 9 VAC 20-90, "Solid Waste Management Facility Permit Fees."

Table 6-15. Results of June 2003 Emissions Testing at the E/RRF

Parameter	Permit limit	Average E/RRF result
Sulfur dioxide	29 ppm, or	8.8 ppm
	75% reduction	
Carbon monoxide	100 ppm	9 ppm
Nitrogen oxides	206.3 pph	193 pph
Hydrochloric acid	29 ppm, or	3.9275 ppm
	95% reduction	
Particulate matter	27 mg/dscm	5.1575 mg/dscm
Dioxin/furans	30 ng/dscm	0.688 ng/dscm
Mercury	80 ng/dscm, or	1.39125 ng/dscm
	85% reduction	

Note: ppm = parts per million; pph = pounds per hour; mg = milligram; ng = nanogram; dscm = dry standard cubic meter.

CFI Contract

CFI and the county have a 20-year operating agreement for the E/RRF that will expire in 2011.



As previously mentioned, CFI and the county have a 20-year operating agreement that will expire in 2011. The relationship with the facility past this date has yet to be determined. Negotiations must begin within 5 years of the

expiration of the current agreement (i.e., by early 2006).

Ash Disposal

In 1994, a section (100 acres) of the I-95 Sanitary Landfill was re-permitted for waste placement for the construction of a Subtitle D-type liner system. The county designated the site (referred to as the Area 3 Lined Ash Landfill) primarily for ash placement, but it can accept MSW in the event of an emergency shutdown at the E/RRF.



The Area 3 Ash Landfill was designed in four phases, totaling approximately 100 acres. Phase I of the Ash Landfill opened in 1995; its capacity of 26 acres was exhausted in 2001. While the Area 3 Ash Landfill is divided in four main phases, each phase is typically constructed in sub-phases for ease of construction. At the time of this SWMP, ash is currently being disposed of in Phase IIA. This section of the landfill is anticipated to be full in 2004, and Phase IIB is planned for construction in 2004. County staff coordinates construction of new phases to provide an uninterrupted service for disposal.

Ash Disposal Operations

The Area 3 Ash Landfill accepts ash generated at the E/RRF, the Alexandria/Arlington WTE facility, and the county wastewater treatment plant.



The Area 3 Ash Landfill accepts ash generated at the E/RRF as well as ash generated by the Alexandria/Arlington WTE facility through an interjurisdictional agreement, and sludge ash generated by Fairfax County's Noman M. Cole, Jr. Pollution Control Plant. Ash from these facilities

is hauled to the ash landfill daily. The ash landfill is located very close to the E/RRF, and vehicles from that facility travel on internal roads to access the site. The landfill only handles ash, and it is exempt from daily cover requirements as long as all slopes drain back into the landfill. External slopes are covered with a layer of soil for intermediate purposes, and will receive a synthetic membrane liner cover when ultimate capacity is reached.

Since ash is an inert material, no landfill gas is generated and no gas collection system is present or required.

A clay/HDPE composite liner underlays the landfill, and another HDPE liner and leak detection system above the bottom liner serve as an extra means of environmental protection. Leachate collected is conveyed to the Noman M. Cole, Jr. Pollution Control Plant through the sanitary sewer system.

Revenue for the ash landfill is computed on a per ton basis. Costs for ash disposal at the landfill are incorporated into the fees per ton for the E/RRF charged by CFI. These costs are recovered in the tipping fees charged by Fairfax County. In addition, Covanta of Alexandria/Arlington and the county's Noman M. Cole, Jr. Pollution Control Plant also pay landfill charges for disposal of their ash.

Capital costs for the construction of the first three phases of the ash landfill are estimated at \$34.9 million. Construction of Phase I and Phase IIA have been completed at a cost of \$18.4 million; an estimated \$7 million is required for Phase IIB and \$8.5 million for Phase IIIA.

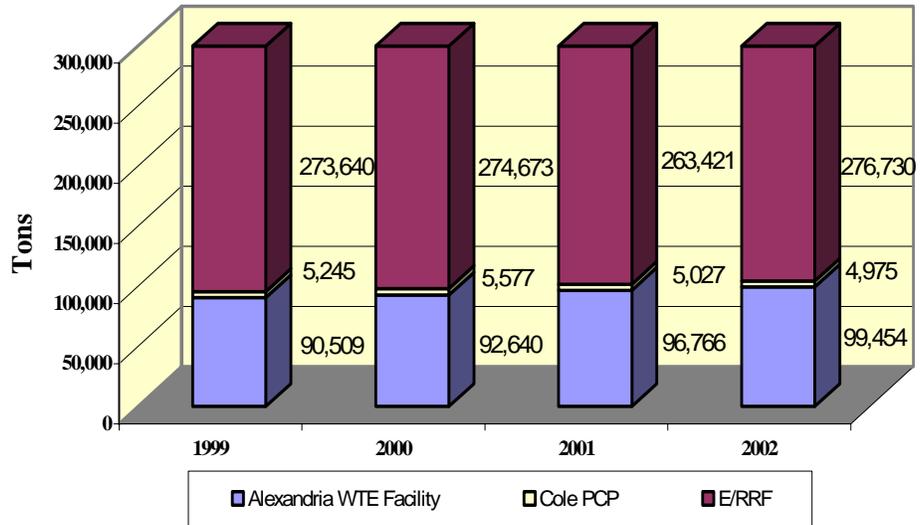
Present and Projected Rate of Use

The Area 3 Ash Landfill accepts an average of 1,034 tons of ash per day.

The Area 3 Ash Landfill accepts an average of 760 tons per day of ash generated from the E/RRF. It also accepts an average of 260 tons per day of ash generated by the Alexandria/Arlington WTE facility and 14 tons per day from the Noman M. Cole, Jr. Pollution Control Plant. These amounts vary on a daily basis, as the WTE facilities have control regarding the processing and storage of ash. However, as the processing capacity of the two WTE facilities is very constant, the amount of ash received on a yearly basis is subsequently consistent. For planning purposes and this report, the assumption is made that these amounts will remain consistent with past amounts. Ash from the E/RRF constitutes

approximately 75 percent of the ash disposed at the landfill. Figure 6-8 shows the tons of ash disposal at the landfill from these three sources from 1999 to 2002.

Figure 6-8. Tons of Ash Accepted at the Area 3 Ash Landfill, 1999–2002



In recent years, E/RRF ash generation has ranged from 25.4 to 26.0 percent of waste feed.

- E/RRF Ash.* Over the previous 3 years, the ash generation as a percentage of waste feed to the E/RRF has ranged from 25.4 to 26.0 percent (an average of 25.7 percent). The county expects the percentage of ash generation to the E/RRF to remain around this level over the lifetime of the facility. Therefore, the projected annual rate of ash generated by the E/RRF will likely range from 239,000 tons (on the basis of the E/RRF contract minimum) to 281,000 tons (E/RRF full capacity).
- Arlington/Alexandria WTE Facility Ash.* Fairfax County projects that ash generated by the Arlington/Alexandria WTE facility will remain constant over the next 20 years. As a result, the projected rate of ash generated by the facility will likely range from 90,000 to 100,000 tons per year.
- Noman M. Cole, Jr. Pollution Control Plant Ash.* Fairfax County projects that ash generated from Noman M. Cole, Jr. Pollution Control Plant will likely increase at the same rate as the projected population growth. As a result, the projected rate of ash generated by the facility will likely range from 5,000 to 6,400 tons per year.

The county expects the Area 3 Ash Landfill to have sufficient capacity to handle ash disposal needs through 2025.

Capacity and Availability

Ash is currently being disposed of in Phase IIA, which has a capacity of approximately 900,000 cubic yards and comprises 12 acres of the site. It is anticipated the Phase IIB of the Area 3 Ash Landfill will be constructed beginning in the spring/summer of 2004 and available to receive ash in late 2004, when the capacity of Phase IIA is exhausted. Phase IIB is estimated to have approximately 3 years of capacity. Together, all phases bring the total ash disposal unit size to approximately 100 acres of the 500 acre I-95 Sanitary Landfill. The county expects the facility to have sufficient capacity to handle estimated ash disposal needs through 2025.

State and Federal Regulation for Ash Landfills

The Area 3 Ash Landfill is part of the I-95 Sanitary Landfill and is part of that facility's permit and not regulated separately. The I-95 Sanitary Landfill is primarily regulated by the VDEQ, regarding air, water, and waste. The landfill holds many permits, and has a myriad of permit requirements that include groundwater sampling, landfill gas testing, surface water testing and other requirements. Landfill leachate is collected and treated at the Noman M. Cole, Jr. Pollution Control Plant.

Before land disposal, 40 CFR Section 268 (the RCRA land disposal regulations) requires that the ash be tested using the TCLP to determine whether it should be classified as a hazardous waste. The ash brought to the Area 3 Ash Landfill has always passed the TCLP test and is not classified as hazardous.

Backup Ash Disposal Options

As discussed previously, the county expects the landfill to have sufficient capacity to handle estimated ash disposal needs through the SWMP planning period. The county can send ash to sanitary landfills outside of the county if an emergency arises, however, significant additional expense would be borne by transportation of this heavy material and tip fees at other facilities.

Sanitary (MSW) Landfills

I-66 Closed Landfill

The I-66 landfill opened in 1962 and ceased operations in 1982. Although the landfill is closed, the I-66 Transfer Station operates on the site.

Processes are being explored to extract natural gas from the landfill, but otherwise all the activity at the landfill relates to the operation of the Transfer Station.

I-95 Landfill

The only permitted sanitary landfill in Fairfax County (the I-95 inactive sanitary landfill in Lorton) no longer accepts MSW. The I-95 landfill ceased accepting MSW for land placement in December 1995; the only waste product presently landfilled is ash from the E/RRF, which we discussed earlier in this chapter.

The I-95 Landfill Complex employs 38 personnel, including the technical support staff. Regulations require the landfill to have state-certified facility operators during operating hours.

Out-of-county Landfills

Fairfax County currently uses out-of-county sanitary landfills to handle the “overflow” capacity for the E/RRF. When MSW quantities in the county exceed the capacity of the E/RRF, the county diverts trucks from the Transfer Station to out-of-county landfills rather than to the E/RRF.

Currently (2004), the county primarily uses the landfills in Prince William County, King George County (operated by Waste Management), the National Waste Landfill in Luray, VA, and Shoosmith Brothers in Chester, VA. In some cases, the county disposes of waste at the Atlantic Waste Landfill in Waverly, VA, or the King and Queen County Landfill operated by Allied Waste.

Table 6-16 shows the tonnage of MSW Fairfax County shipped to out-of-county landfills from 2000 to 2002. The primary disposal method in Fairfax County is the E/RRF; MSW sent to out-of-county landfills has represented only a small percentage (<10 percent) of the total waste generated in Fairfax County.

Table 6-16. Fairfax County MSW Tonnage Sent to Out-of-County Landfills, 2000–2002

Year	Quantity (tons)
2000	49,028
2001	76,791
2002	35,471

Fairfax County currently uses out-of-county sanitary landfills to handle the “overflow” waste from the E/RRF.

Most sanitary landfills that Fairfax County uses have the capacity to handle current landfill requirements for the next 20 years.

Capacity and Availability

Most sanitary landfills that Fairfax County uses have the capacity to handle current out-of-county landfill requirements for the next 20 years. Some have quarterly permits that cap the MSW quantity accepted. Therefore, although these landfills may have sufficient capacity, they may not be available to accept MSW from the county.

Table 6-17 shows the annual tonnage, estimated years remaining, and distance from the I-66 Transfer Station for the largest landfills in Virginia. The shaded portions represent those landfills used by Fairfax County for MSW disposal.

Table 6-18 summarizes the daily tonnage capacity of the largest private landfills in Virginia. The darker shaded portions represent landfills used by Fairfax County for MSW disposal.

Table 6-17. Potential Overflow Capacity Landfills in Virginia

Landfill	City	Owner/operator	Annual tonnage	Remaining capacity	Years remaining	Distance (miles)
King George County Landfill	King George	King George County/Waste Management	1,643,731	18,500,000	11	60
Atlantic Waste Disposal Landfill	Waverly	Waste Management	1,580,034	7,140,200	4.5	150
Brunswick Waste Mgmt. Facility	Lawrenceville	Allied Waste	1,032,056	16,500,000	20	190
King and Queen County Landfill	Little Plymouth	Allied Waste	823,126	25,350,000	31	145
Old Dominion Landfill	Richmond	BFI	814,749	2,866,000	3.5	100
Shoosmith Sanitary Landfill	Chester	Shoosmith Brothers	676,622	7,671,065	11	120
SPSA Reg. Landfill	Suffolk	SPSA	651,375	3,050,000	4.7	190
Charles City Landfill	Charles City	Waste Management	535,339	16,629,323	31	130
Middle Peninsula Landfill	Glenns	Gloucester County/Waste Management	544,086	20,628,881	38	140
Prince William County Landfill	Manassas	Prince William County	506,178	5,800,000	12	20
Maplewood Rec. & Disposal Facility	Amelia Court House	Waste Management	327,693	19,763,689	60	140
Big Bethel Sanitary Landfill	Hampton	City of Hampton/Waste Management	482,861	55,960,000	116	170
National Waste Landfill	Luray	National Waste	242,919	1,885,000	7.8	80

Source: VDEQ, Solid Waste Managed in Virginia During Calendar Year 2002.

Note: SPSA = Southeastern Public Service Authority.

Table 6-18. Daily Capacities of Potential Overflow Capacity Landfills in Virginia (tons per day)

Landfill	Accepted	Capacity	Capacity limits
King George County Landfill	4,000	4,000	Host agreement
Atlantic Waste Disposal Landfill	4,600	10,000	No Limit
Shoosmith Sanitary Landfill	2,500	4,000	No Limit
Brunswick Waste Mgmt. Facility	3,000	3,000	No Limit
Maplewood Rec. & Disposal Facility	1,200	5,000	Host agreement
King and Queen County Landfill	2,000	4,000	Host agreement
Charles City Landfill	3,400	6,000	Host agreement
Middle Peninsula Landfill	2,000	2,000	Host agreement
Old Dominion Landfill	2,000	4,000	No Limit

Fairfax County projects annual MSW disposal quantities will increase between 10 and 42 percent from 2004 and 2025, assuming continuation of current waste management practices.

Assessment of Current and Future Disposal Needs

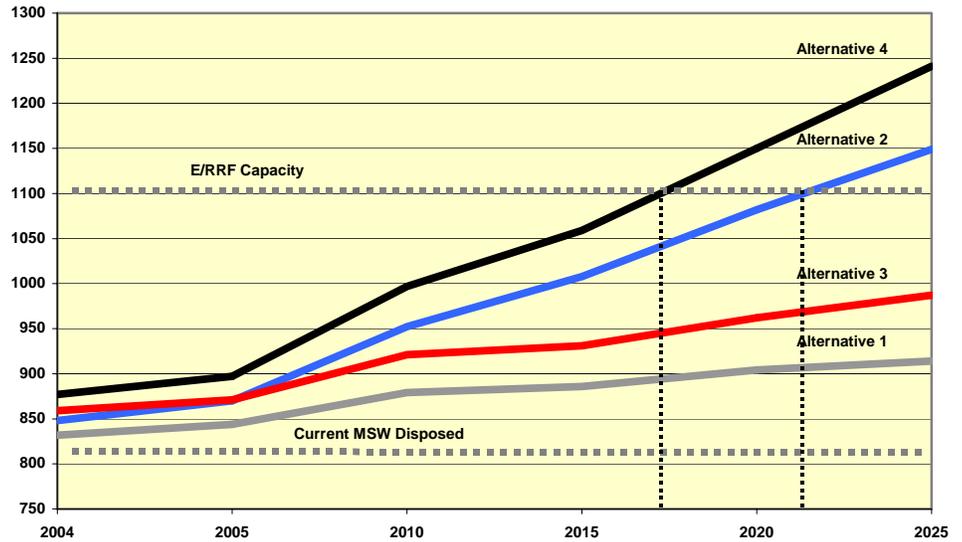
Chapter 2 of this SWMP presents the projected quantities of MSW generated, recycled, and disposed in Fairfax County over the SWMP planning period. The county developed four alternative MSW projections to address the probable range of variance in the future generation rates.

Table 6-19 and Figure 6-9 show the MSW disposal projections for Fairfax County over the SWMP planning period for the four projection alternatives. **(Note that these projections assume the continuation of the county's current management practices and conditions.)** The county projects annual MSW disposal quantities to increase between 10 and 42 percent from 2004 to 2025.

Table 6-19. MSW Disposal Projections in Fairfax County, 2004–2025 (in thousands of tons)

Year	MSW Disposed			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
2004	832	848	859	877
2005	844	870	871	897
2010	879	952	921	997
2015	886	1,008	931	1,059
2020	904	1,082	962	1,150
2025	914	1,149	987	1,241

Figure 6-9. MSW Disposal Projections in Fairfax County, 2004–2025 (in thousands of tons)



Currently, the primary facility for the disposal of the county’s MSW is the E/RRF. The maximum daily capacity of the E/RRF is 3,000 tons; a 15,000-ton refuse storage pit spreads the E/RRF maximum capacity to five days. Currently, spikes in daily feed volumes to the E/RRF require that roughly five percent of the annual MSW disposal volume must be instead disposed in out-of-county landfills.

The theoretical maximum annual capacity of the E/RRF is 1,168,000 tons (based on FY2001 annual tonnage of 1,067,224 tons and boiler availability of 91.36%)⁵. However, in practice, boiler availability of 90 percent is considered indicative of good operations and maintenance practices. Based on an availability of 90 percent, the county estimates the practical capacity of the E/RRF to be 1,095,000 tons per year.

Until 2011, the county is under contract with CFI to supply at least 930,750 tons of MSW per year to the E/RRF. The county has consistently exceeded this requirement, historically operating the E/RRF facility near its maximum practical capacity of roughly 1,095,000 tons of MSW per year. When the volume of MSW generated in Fairfax County is not sufficient to meet the 930,750 tons operating requirement, the county accepts other MSW for disposal at the E/RRF.

As MSW disposal requirements in Fairfax County increase over the next 20 years, the additional county MSW is expected to replace out-of-county waste feed to the E/RRF. Therefore, the volume of out-of-county waste accepted at the E/RRF is projected to decrease by the same amount as county waste increases.

⁵ Dvirka and Bartilucci Consulting Engineers and Solid Waste Services, LLC. *I-95 Energy/Resource Recovery Facility, Annual Operations Monitoring Report, Fiscal Year 2001*. October 2001.

Figure 6-10 presents the projected percentage of MSW feed to the E/RRF representing waste generated in Fairfax County, for the four alternatives over the SWMP planning period. Figure 6-11 presents the expected percent of out-of county waste for the four alternatives until 2025.

Two of the four MSW projection alternatives suggest Fairfax County MSW disposal will exceed E/RRF capacity sometime after 2015.

Two MSW disposal projection alternatives (alternatives 2 and 4) suggest that MSW disposal requirements in Fairfax County will exceed the capacity of the E/RRF before 2025. For these alternatives, Fairfax County must find other MSW disposal alternatives for the excess MSW. In alternative 2, the county expects Fairfax County MSW disposal to exceed the E/RRF capacity between 2020 and 2025. In alternative 4, county MSW disposal is expected to exceed the E/RRF capacity between 2015 and 2020. In both of these alternatives, the county projects a steadily reducing percentage of out-of-county waste combusted at the E/RRF.

In alternatives 1 and 3, Fairfax County projects county MSW disposal rates to remain below the capacity of the E/RRF over the SWMP planning period. In alternative 1, the county projects the Fairfax County percentage waste combusted at the E/RRF to be roughly 83 percent in 2025 compared to 76 percent today. In alternative 3, the county projects a greater increase to roughly 90 percent of the waste combusted at the E/RRF.

Figure 6-10. Fairfax County MSW Disposal Projections as Portion of Waste Combusted at E/RRF, 2004-2025

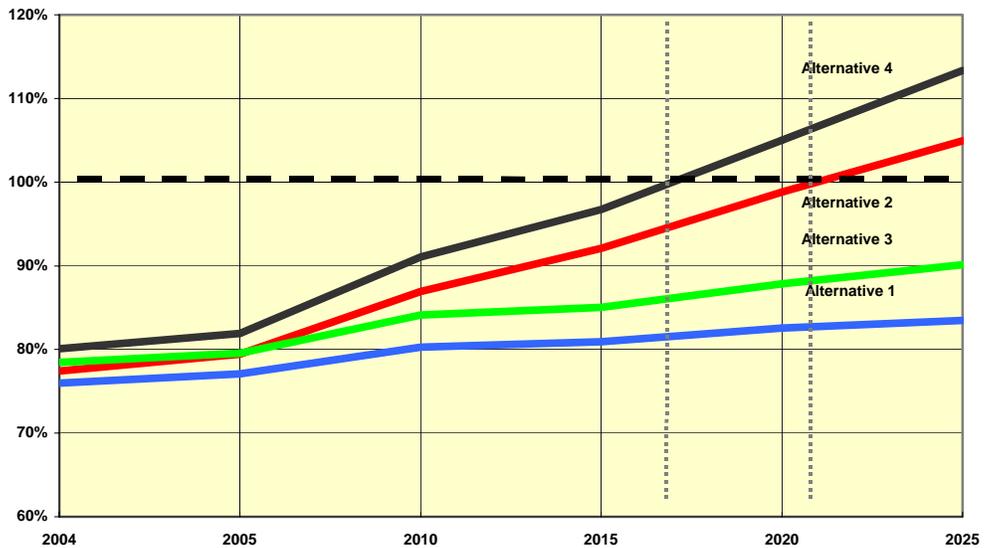
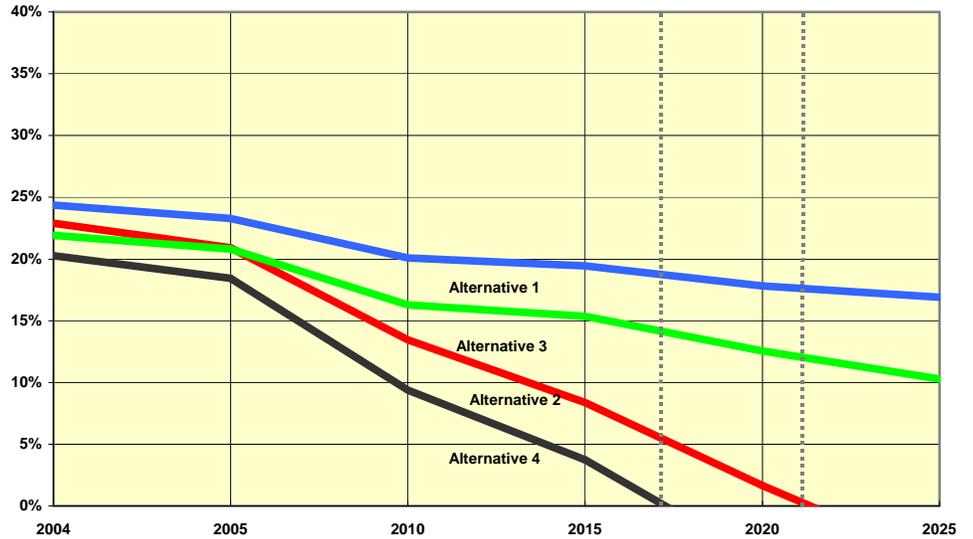


Figure 6-11. Projected Out-of-County Percentage of Waste Combusted at I-95 E/RRF, 2004-2025



SWMP Actions

Table 6-20 shows Fairfax County’s SWMP actions for the disposal of MSW. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county’s current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 6-20. Fairfax County MSW Disposal SWMP Actions

MSW Disposal SWMP Actions
Continue using the current disposal system (as the preferred alternative)
If negotiations with Covanta Fairfax, Inc. are unsuccessful, the county will use only out-of-county landfills for MSW disposal