

Key West, Florida

Summary of Existing Solid Waste Management

1.1 System Overview

The City of Key West (City), Florida is one of the most unique cities in the United States. With a resident population of approximately 23, 230,¹ tourism adds more than 1 million overnight visitors and another 1 million day trippers and cruise ship passengers annually.² The City occupies an island located at the southernmost end of U.S. Highway 1, more than 150 miles from the mainland, which adds to the challenges of managing solid waste.

Residential and commercial solid waste and residential recyclable materials are collected by the City's franchise service provider, Waste Management of Florida, Inc. (WM). Non-franchised collection services that are open market to all licensed haulers include construction and demolition (C&D) debris, yard waste, and commercial recyclables.

The City owns and operates a Transfer Station, which is located on Rockland Key at MM 9 on U.S. Highway 1, for receipt of solid waste and recyclables collected by the City's franchisee, as well as any other individuals or private companies wishing to use the facility. In FY 2009/10, the City received 45,402 tons of solid waste and 3,607 tons of recyclables at the Transfer Station (see Table 1). This equates to a recycling rate of 7 percent (not including materials that may have been recycled elsewhere). Figure 1 provides a comparison of the quantities of materials received monthly during FY 2009/10. Figure 2 depicts the quantities of inbound and outbound materials, as well as the final disposition of these materials.

Table 1: Transfer Station Inbound Materials, FY 2009/10

Material	Tons	% of Total Tons
FOR DISPOSAL		
Trash/Garbage	42,668.58	87.1%
Yard Waste	1,433.19	2.9%
Residential Bulk Waste	711.66	1.5%
Burnable C&D Debris	464.44	0.9%
Tires	80.41	0.2%
Non-burnable C&D Debris	43.91	0.1%
Total for Disposal	45,402.19	92.6%
FOR RECYCLING		
Recyclables Delivered by WM	2,938.38	6.0%
Recyclables Self-Hauled	334.26	0.7%
Metals	195.09	0.4%
White Goods	139.39	0.3%
Total for Recycling	3,607.12	7.4%
	49,009.31	100.0%

¹ University of Florida Bureau of Economic and Business Research, *Interim 2010 Population Estimates*.

² Monroe County Tourist Development Council: Smith Travel Research.

Figure 1: Transfer Station Inbound Tonnage by Month, FY 2009/10

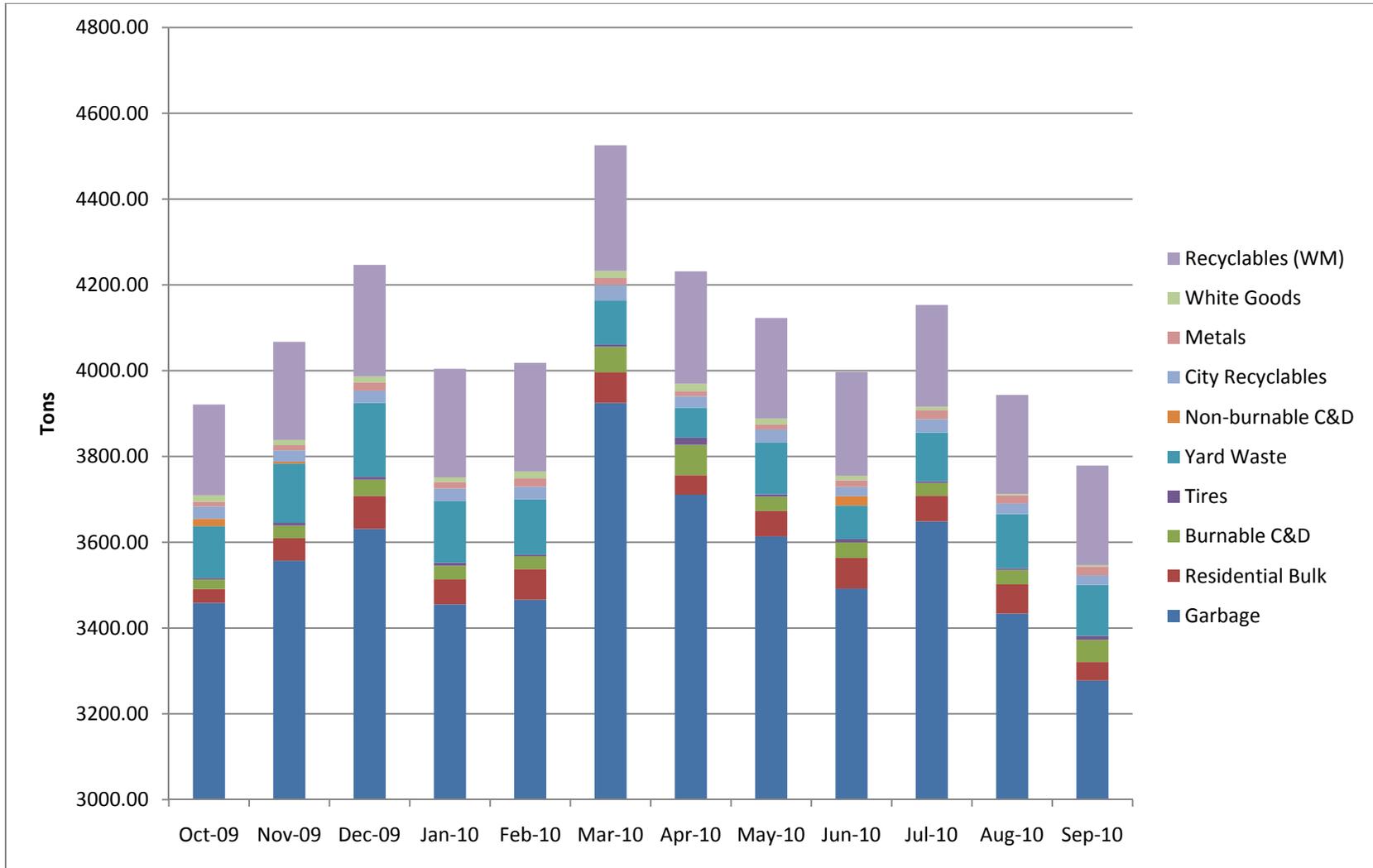


Figure 2: Transfer Station Waste Flow Diagram, FY 2009/10

Pursuant to the Collection Agreement, WM also transports, processes, and markets recyclable materials. Currently, WM transports metals and white goods to Sun Recycling in Miami and processes all other recyclables at its Reuters facility in Broward County.

Under a separate agreement with the City, WM transports and disposes of solid waste received at the Transfer Station. Currently, WM disposes of waste that can be incinerated at its Wheelabrator North waste-to-energy (WTE) facility located in Pompano Beach. Solid waste that is not processable in a WTE facility is disposed of in WM's Central Landfill in Broward County.

1.2 Collection

The City entered into an exclusive Collection Agreement with WM for residential and commercial solid waste and residential recycling collection on January 1, 2000. The Agreement does not give WM the exclusive right to collect yard waste, C&D debris, or commercial recyclables, nor does it preclude the U.S. Navy from collecting solid waste on its facilities located within the City.

The City and WM renewed the Agreement in 2005 and again in 2009, each for additional five-year terms. The Agreement expires on December 31, 2014, but also has a clause that allows termination for convenience with a 180-day written notice.

During the 2009 extension negotiations and according to a Memorandum from Jay Gewin, Utilities Director, dated November 3, 2009, WM agreed to negotiate with the City on the following concepts if the five-year extension was approved:

- Mechanisms designed to make recycling more convenient for families and businesses, including increased promotional efforts along with a recycling incentive program.
- Improved customer service and response, including a local call center.
- Research into the feasibility of a new composting program.
- The incorporation of Best Management Practices.
- Creating an e-waste collection program.
- Creating a monthly Household Hazardous Waste (HHW) collection program within the City limits.
- Feasibility of incorporating a pay-as-you-throw solid waste customer billing system.

1.2.1 Residential Collection

The uniform, or base, level of residential service is twice per week garbage collection, once per week recyclable materials collection, and once per week bulk waste collection. Residents are provided wheeled carts (either 64-gallon or 95-gallon) for garbage collection, but may also place additional bags or cans of garbage or yard waste curbside for collection at no additional charge. The Agreement calls for collection of an unlimited amount of residential solid waste. Collection of bulk waste, such as furniture, white goods (appliances), tires (off the rim), and wood, is included in the uniform service; residents must call in advance for pickup.

WM's CY 2011 monthly fees are \$10.24 per residential unit for solid waste collection and \$2.29 for recycling, for a combined fee of \$12.53 per month. This covers collection services only.

Yard waste is not collected separately, but is commingled with garbage for disposal. The Agreement (Section 4.B.3(ii)) does require WM to develop a procedure for the separation of yard waste if the City begins a composting program. Pursuant to the City's Code of Ordinances (Chapter 58, Article II), residents may set out an unlimited amount of containerized yard waste with their garbage for no additional fee. Residents may also set out non-containerized yard waste on the right-of-way for collection; however, the property owner is responsible for making arrangements directly with WM or a non-franchised hauler for a special collection of loose yard waste. WM's CY 2011 fee for loose yard waste is \$85.00 for the first 5 cubic yards and \$22.65 for each additional cubic yard.

The City currently bills 14,264 residential units \$26.60 per month on their utility bills for solid waste and recycling services, including 1,143 Navy housing units. The City remits \$12.53 per residential unit to WM for collection services and retains the \$14.07 to cover the tipping fee. For multi-family residences that receive commercial-type service, the City bills them the residential rate per unit and WM bills them any difference in price between the residential rate and the commercial rate for the type of service they receive.

The City previously estimated that each residential unit generates 1.21 tons of solid waste annually. Multiplied by the current tipping fee (\$165.97), the disposal cost per residential unit would be \$200.82 annually or \$16.74 per month. The current billing fee falls short of this amount by \$2.67 per month, indicating a need to review the billing structure and annual rate adjustments. A comparative analysis of the contractor's fee and the City's billing rate will be provided under separate cover.

C&D debris is not part of the Agreement; therefore, residents must contract for pickup of C&D debris, such as lumber, plywood, dry wall, tiles, concrete, fencing, cabinets, etc.

1.2.2 Commercial Collection

The Collection Agreement also gives WM the exclusive right to collect commercial solid waste. Commercial collection services vary depending upon on the needs of each individual business, but collection must be provided at least once per week. Commercial businesses, with the exception of at-home businesses, must demonstrate they subscribe for solid waste collection before they are able to obtain a business license (tax receipt) from the City.

WM is required to provide the City a monthly computer list of commercial accounts billed. The list includes the address and account number of each customer receiving service, the size and number of containers, and the number of pickups.

Commercial service fees are based on the size of the collection container and frequency of collection. WM bills commercial customers directly for both collection and disposal. WM retains the collection portion and remits the disposal portion to the City. This disposal portion is based on a waste density of 163 pounds per cubic yard for non-compaction containers and is calculated as noted below. The waste density for compaction containers is assumed to be triple that of non-compaction, or 489 pounds per cubic yard.

Disposal Fee = Container Size (cy) X # Pick-ups/Month X 163 lbs/cy X 1 ton/2000 lbs X
\$165.97/ton

A discussion and comparative analysis of the commercial service fees for solid waste and recycling will be provided under separate cover.

1.2.3 Public Areas

WM also services garbage and recycling containers located along public sidewalks. WM currently services 350 containers daily at a fee of \$1.16 per container per collection. During periods of peak tourism activity, containers in high traffic areas along Duval Street are serviced twice per day.

City crews service trash and recycling cans at City parks and ballfields, and deposit the materials in dumpsters that are then serviced by WM.

1.2.4 Household Hazardous Waste and Electronic Waste

Household hazardous waste (HHW) and electronic waste (e-waste) can be taken to locations designated by Monroe County (County), the closest one to the City being the County's Cudjoe Key Transfer Station at MM 21.5. HHW is accepted at this location the first and third Wednesdays of each month from 8:00 a.m. to 4:00 p.m., and e-waste is accepted Monday through Saturday during those same hours.

There is no charge for County residents to drop off HHW and e-waste at the designated facilities. Businesses are charged a fee of \$.06 per pound and \$.50 per fluorescent bulb. Contaminated gasoline is accepted for a fee of \$.60 per pound whether delivered by a resident or business.

Provided below is a list of the types of HHW and e-waste accepted by the County:

- Paints, stains, and strippers
- Wood preservatives
- Roof tar and patching compounds
- Adhesives, putty, and caulk
- Auto/marine maintenance/care products
- Fiberglass and epoxy resins
- Solvents (acetone, mineral spirits, etc.)
- Hydraulic fluids, anti-freeze, and gasoline
- Corrosives (muriatic acid, lye, etc.)
- Pesticides, fertilizers, and weed killer
- Household and drain cleaners
- Pool cleaning products
- Lighter Fluid and/or lighters with fluid
- Televisions, monitors, and computers
- FAXES, printers, and copiers
- Cell phones, radios, and speakers
- Discs, video cassettes, and DVD/VCRs
- Fluorescent bulbs

1.3 Recycling and Waste Reduction

Source separated recyclable materials comprise approximately 7 percent of the materials received at the City's Transfer Station. They are delivered primarily by WM, as well as Latitude 24 Recycling and individuals and businesses that self-haul their recyclables. Metals and white

goods are received from WM, the Naval Air Station, Key West Housing Authority, various City departments, individuals, and private companies.

1.3.1 Residential Recycling

In January 2009, the City began mandating residential recycling. Per ordinance (Article IV, Section 58-83), each owner, occupier, caretaker or tenant of a residential dwelling unit is to separate all designated recyclable materials from other refuse; however, this requirement is not actively enforced.

As part of the Collection Agreement, WM collects residential recyclables curbside once per week. Acceptable recyclables include the following:

- Aluminum cans and clean aluminum foil
- Steel/tin cans
- Glass containers (flint, amber, and green)
- Plastic containers #1-#7
- Aseptic containers (milk and juice cartons)
- Cardboard
- Newspaper
- Magazines, catalogs, and phone books
- Paper bags
- Office paper, file folders, and printer paper
- Chipboard/paperboard, such as cereal boxes and beverage cartons
- Paper towel and toilet paper cores
- Junk mail

WM provides residents with a 18-gallon bin and collects these materials in a single stream, i.e., containers and paper may be placed in the same recycling bin. Residents may also use other containers for recycling as long as they weigh less than 50 pounds when full. Recycling stickers to label such containers for recycling are available at City Hall.

WM tips residential recyclables at the Transfer Station where they are loaded by City staff into transfer trailers and transported by WM to its Reuter Materials Recovery Facility (MRF) in Pembroke Pines, Florida for processing and marketing. The Reuter MRF is approximately 162 miles from the City. Pursuant to the Collection Agreement, there is no charge for the transport of recyclables and no revenue share to the City.

The value of recovered materials fluctuates over time. In late 2007/early 2008, market values for most commodities reached the highest they had been in more than a decade, but subsequently dropped during the economic downturn. They have since climbed back to levels that many industry experts believe are more sustainable, although future fluctuations are inevitable. Table 2 provides the market values of the various recovered commodities included in the City's program as of June 2011 according to an industry-accepted index. Based on the make-up of a typical load of residential recyclables, the overall market value of this material is in the range of \$150 to \$180 per ton. This is an indicator of the value of these materials; given the size of its recycling division, WM likely receives higher revenue than the index on most materials with the exception of glass.

Table 2: Recovered Commodity Market Values, June 2011

Material	Paper Stock Industry Grade Description	Market Value (\$/ton) *
Newspaper	PS8 - Special De-ink Quality News	\$147.50
Corrugated cardboard	PS11 - Corrugated Containers	\$172.50
Mixed paper	PS1 - Soft Mixed Paper	\$130.00
Aluminum cans	Aluminum Cans (sorted, baled, delivered)	\$1,960.00
Steel cans	Steel Cans (sorted, densified, delivered)	\$117.50
PET	Plastics PET (baled, picked up)	\$660.00
Natural HDPE	Plastics Natural DHPE (baled, picked up)	\$810.00
Colored HDPE	Plastics Colored HDPE (baled, picked up)	\$630.00
Flint glass	Glass Flint (\$/ton delivered)	\$17.50
Amber glass	Glass Amber (\$/ton delivered)	\$7.50
Green glass	Glass Green (\$/ton delivered)	\$3.50

* Market values are based on the first published price in June 2011 for the Southeast USA (regional average) on the Waste & Recycling News' Secondary Fiber Pricing and Secondary Material Pricing website.

The fee WM pays Bulk Express to haul materials up to facilities in Broward County fluctuates monthly based on fuel, but as of May 2011, WM was paying \$37.32 per ton. The typical cost to process single stream recyclables is in the range of \$40 to \$60 per ton; however the City's recyclables are likely incremental tonnage to WM's MRF in Broward County, with the capital costs of that facility fully covered by Broward County tons. Therefore, the value of these commodities more than offset WM's cost to transport and process them.

1.3.2 Commercial Recycling

Per Florida Statute (Section 403.7046 (3), F.S.), a local government may not give any company the exclusive right to collect commercial recyclables. Therefore, commercial recycling is open market. The City accepts commercial recyclables at its Transfer Station at no tipping fee and no revenue share. Commercial recyclables are also transported by WM pursuant to the Collection Agreement as noted above.

WM appears to provide the majority of commercial recycling that is currently occurring within the City. A comparative analysis of WM's service fees for commercial recycling will be provided under separate cover. Since minimal commercial recycling appears to be occurring, this segment offers an opportunity to substantially increase recycling rates.

1.3.3 Metals and White Goods

WM also transports metals and white goods (appliances) received at the Transfer Station to Sun Recycling in Miami for recycling. Pursuant to the Collection Agreement, the City pays WM \$21.60 per ton for this service. According to the Secondary Materials Pricing index,³ the current market value of white goods in the southeast U.S. is about \$150 per ton.

³ <http://www.wasterecyclingnews.com/smp/smp.html>.

1.3.4 Outreach and Education

WM produced a flyer on single stream recycling that informs residents and businesses of what materials are accepted. The City posts WM's single stream recycling flyer on its website, as well as the following information:

- Recycle Center location and hours of operation.
- Maps of garbage and recycling pickup days.
- *How to Recycle Properly, What Can't You Recycle, and Why Recycle?* fact sheets.
- Sample special event recycling plans for small, medium, and large events.

According to WM, the company also produces and runs print ads in local periodicals; advertises at trade shows, lodging establishments and with the Key West Chamber of Commerce; gives 15-minute presentations at schools; and has supplied a recycling education curriculum for students throughout Monroe County.

A non-profit, volunteer-based organization, Florida Keys Green Living and Energy Education (GLEE), also educates residents and businesses about recycling. GLEE hosts a website (www.KeysGLEE.com), participates in public events, and has gone door-to-door to promote recycling. To many individuals in the community, GLEE has become the "go-to" organization for information pertaining to recycling.

GLEE held a Green Living Expo at the Botanical Gardens in November 2010. City staff distributed more than 100 backyard composting bins to City residents, and Extension Service staff provided training on backyard composting.

1.3.5 Special Events

Special event organizers are required to submit an adequate recycling plan as part of their application for a special event permit. A recycling deposit of \$1,000 is charged and refunded when the event organizers provide a recycling report at the end of the event. The City has developed sample recycling plans for small, medium, and large special events.

City staff reviews submitted plans and reports, but the effectiveness of the overall program has not yet been evaluated. During Fantasy Fest 2010, the largest public event in the City, Coca-Cola provided recycling containers. Anecdotal information regarding this event indicates the containers were not ideal for the size of the recyclable containers generated during the event and a sufficient number of recycling containers were not provided for the volume of recyclables.

An opportunity exists to make improvements in special events recycling through appropriate and easily recognizable containers, an established fee structure, and increased education.

1.4 Transfer and Disposal

The City owns and operates the Solid Waste Transfer Station located on Rockland Key. The facility is permitted to handle a maximum of 350 tons per day. In FY 2009/10, an average of 163 tons per day of solid waste and recyclables were received at the facility.

The Transfer Station is staffed with a manager, mechanic, two scalehouse attendants, loader operator, and spotter. The operating hours are from 6:00 a.m. to 4:00 p.m. weekdays and from 6:00 a.m. to 2:00 p.m. Saturdays. Waste is accepted until 3:00 p.m. weekdays and 1:30 p.m. Saturdays.

The FY 2010/11 tipping fee at the Transfer Station is \$165.97 per ton, which covers the costs of transfer and disposal, as well as other operating and administrative costs. Recyclables are tipped at no fee.

All solid waste collected pursuant to the Collection Agreement with WM is delivered to the Transfer Station; however, WM does not pay the actual tipping fee. Residential disposal fees are included in the monthly bills to residential units and commercial disposal fees are calculated based on the container size and frequency of service as discussed in Section 1.2.2.

In FY 2009/10, the City collected approximately \$1.99 million in disposal fees from residents and received \$4.31 million in commercial disposal fees from WM. WM delivered 41,493 tons of residential and commercial solid waste to the Transfer Station during that period, which equates to about \$152 per ton. Based on this analysis, the billing structure did not cover the posted FY 2009/10 tipping fee of \$161.26 per ton. Further analysis of the billing structure is warranted.

The City contracts with WM to transport and dispose of solid waste received at the Transfer Station. The Transportation and Disposal (T&D) Agreement was awarded in 2004, with an initial term of seven years, a renewal term of seven years, and a second renewal term of six years (total of 20 years).

Per the T&D Agreement, WM transports the solid waste to either of its two WTE facilities. Alternatively, WM is allowed to divert waste to one of its landfills, if necessary, for no more than two consecutive weeks without City approval. According to WM, all burnable City waste was disposed in a WTE facility in FY 2009/10.

In FY 2009/10, WM transported and disposed of more than 44,000 tons of the City's solid waste and was paid \$66.02 per ton for this service. WM requested a one-time extraordinary circumstances rate increase due to the rising cost of fuel. City staff negotiated with WM to reach an increase agreeable to both parties, which was approved by the City Commission in February 2011. The adjusted FY 2010/11 fee for transport and disposal, which was retroactive to October 1, 2010, was set at \$67.70 per ton. Contractually, the rates are adjusted quarterly based to account for fuel price fluctuations. As of April 1, 2011 the transfer and disposal fee increased to \$70.42 per ton.

1.5 Construction and Demolition Debris

The City does not control the collection or disposal of C&D debris. Collection of C&D debris is open to any hauler that has an appropriate City occupational license. C&D debris may be disposed at a facility of the hauler's choosing. C&D debris comprises only about 1 percent of the solid waste received at the City's Transfer Station, likely because of the high tipping fee.

WM owns and operates a C&D transfer station, which is located on Rockland Key near the City's Transfer Station. The tipping fee at WM's facility is \$22.00 per cubic yard. According to WM, metals and concrete are pulled out of the C&D debris at the transfer station before it is transported to Homestead, where wood waste is pulled out for recycling and the remainder is landfilled. WM also accepts vegetative waste at its transfer station, which is shipped to the company's Central Landfill in Broward County to be ground for daily landfill cover.

1.6 Financial Summary

As noted in Figure 3, nearly half of the City's solid waste revenue comes from residential service fees and the other half from commercial tipping fees. Figure 4 provides a breakdown of solid waste expenditures in FY 2009/10. The largest expenditures were to WM for transport and disposal of solid waste and residential solid waste collection. Further analysis of revenue and expenditures will be included in future tasks.

Figure 3: Estimated Actual Solid Waste Revenue, FY 2009/10

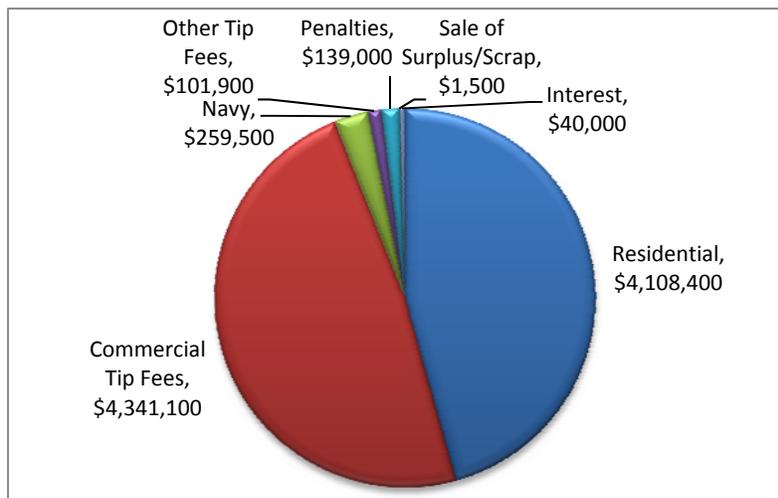


Figure 4: Estimated Actual Solid Waste Expenditures, FY 2009/10

