Agenda

Solid Waste Advisory Group

November 3, 2016 – 5:30 p.m
Solid Waste Operations Center

1. Call to Order – Chair

2. Approve Meeting Summary
   September 16, 2016 – Chair, **Attachment**

3. Solid Waste Enterprise Fund Financial Planning (**Revised**) Final Report – Bob Dick, Project Manager and Ryan Duckett, Staff Engineer - SCS Engineers, PC, **Attachment**

   Note: September SWAG follow-up items are not yet complete will be distributed prior to the meeting.

4. Financial Plan – Options & Recommendations - Bonnie Hammersley, County Manager

5. Pending Matters
   a. County Waste Reduction Goal Setting – JD Freeman, Carrboro Public Works Director, Lance Norris, Chapel Hill Public Works Director, Ken Hines, Hillsborough Public Works Director and Gayle Wilson, County Solid Waste Director, BJ Tipton, UNC Solid Waste Program Manager, **Attachment**

6. Updates/Status Reports
   a. First Quarter FY 2016/17 Solid Waste Program Data Report – Cheryl Young, County Research & Data Manager
   b. Status of Eubanks Road Waste & Recycling Facilities Improvements – Gayle Wilson, County Solid Waste Director
   c. Waste Composition Study Update – Blair Pollock, County Solid Waste Planner
   d. Shred-a-thon Update – Blair Pollock, County Solid Waste Planner
   e. County Mattress Disposal Program – Gayle Wilson, Solid Waste Director, **Attachment**

7. Public Comment – Chair

8. Next Meeting – There are no additional meetings scheduled. Please bring your calendars.

9. Adjourn – Chair

Dinner will be provided

DRAFT

Solid Waste Advisory Group Meeting Summary

DATE: September 16, 2016

LOCATION: Solid Waste Administration Training Room

MEMBERS PRESENT: Hillsborough Commissioner Mark Bell, Carrboro Alderman Randee Haven-O'Donnell, UNC-Healthcare Representative Mel Hurston, UNC-Chapel Hill Representative Brad Ives, Orange County Commissioner Barry Jacobs, Carrboro Mayor Lydia Lavelle, Hillsborough Commissioner Brian Lowen, Chapel Hill Councilmember Michael Parker, Orange County Commissioner Penny Rich

MEMBERS ABSENT: Chapel Hill Mayor Pam Hemminger

STAFF PRESENT: OC Solid Waste Gordon Dively, OC Chief Financial Officer Gary Donaldson, OC Solid Waste Alex Gottschalk, County Manager Bonnie Hammersley, Hillsborough Public Works Director Ken Hines, OC Solid Waste Jennie Knowlton, OC Solid Waste Allison Lohrenz, Chapel Hill Public Works Director Lance Norris, OC Solid Waste Blair Pollock, Chapel Hill Solid Waste Wendy Simmons, , UNC-CH Solid Waste Program Manager BJ Tipton, OC Solid Waste Management Director Gayle Wilson, OC Solid Waste Cheryl Young

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Call to Order

- Introductions
  - Gordon Dively, new OC Solid Waste Operations Manager
  - Allison Lohrenz, new OC Solid Waste Recycling Programs Manager

Meeting Summary approval

- May 25, 2016 Meeting Summary approved

Solid Waste Enterprise Fund Financial Planning Final Report-Bob Dick, Project Manager and Ryan Duckett, Staff Engineer- SCS Engineers

- Donaldson states that report will be updated with recent revisions
- SCS Engineers present that the current financial structure is unsustainable
- Orange County has a premier, model program and SCS Engineers were unable to identify any obvious inefficiencies that would not correlate to a reduction in services.
  - Jacobs requests analyzing services provided from Solid Waste Fees in Durham and Chatham counties, also, counties that have a similar waste reduction rate
  - Lavelle asks when final report, with revisions, will be finished. Bob Dick suggests two weeks
  - Jacobs asks if Solid Waste Capital could be included in current Impact Fee Authority

County Mattress Disposal Program – Gayle Wilson

- Wilson provided a summary of recent mattress disposal program improvement options
- Jacobs suggests using a collection lock-box for collecting the mattress drop-off fee
- Jacobs suggests investigating the use of Orange Correctional inmates to handle mattress collection at Waste and Recycling Centers, insuring that they were paid a living wage

Pending Matters

- SWAG Priorities Update

DRAFT

- Wilson suggests assigning Town Public Works and Solid Waste Directors with establishing a plan for development of Local Waste Disposal Facility
    - Staff notes that $100,000 has been budgeted in FY 2016/17 for transfer station planning
- Jacobs requests that costs are assigned to Priorities List and Agenda Items added in the future
- Rich requests adding Alternative Waste Disposal Methods as Priority XIV

- County Waste Reduction Goal Setting
    - 61% Waste Reduction has been achieved, new goal is needed
    - Jacobs requests the staff discuss what goal would be reasonable, both overall and incrementally, before AOG

Updates/Status Reports

- Fourth Quarter FY 2015/16 Solid Waste Program Data Report
    - Data collection will be refined. RFID tags and readers efficiency will be improved
- Status of Rural Curbside Expansion
    - Cart delivery was completed in August
    - Collection schedule for approximately 700 residents in Urban area have changed
- Status of Eubanks Road Waste & Recycling Facilities Improvements
    - Bids are due next month
    - $3.17 million is the budget, including moving the scales
- Update on Carrboro Farmers Market Food Waste Collection
    - Lavelle requests statistics emailed to Carrboro staff
- UNC/County Solid Waste Collaboration Report
    - Report is going through internal review, some potential for future collaboration is possible
- Update on Storm Debris Management Site Search
    - The possible site on Mincey Road currently has constraining conservation easement. Request had been made for agreement to be formally amended so that in a declared emergency, area can be used as a temporary emergency storm debris site
- Waste Composition Study Update
    - Waste sorts scheduled for October 2016 and April 2017

Public Comment-None

Next Meeting- Next meeting date to be surveyed in September

- Will discuss how financial study should be presented at the AOG

Meeting adjourned at: 8:35pm
Name of Minute Taker: Jennie Knowlton

SCS ENGINEERS

Final Report

Financial Plan and Rate Study for Solid Waste Enterprise Fund

Prepared for:

ORANGE COUNTY
NORTH CAROLINA

Solid Waste Management Department
200 South Cameron Street
Hillsborough, NC 27278
(919) 732-8181

Prepared by:

SCS ENGINEERS, PC
15521 Midlothian Turnpike, Suite 305
Midlothian, Virginia 23113
(804) 378-7440

October 13, 2016
File No. 02216202.00

Offices Nationwide
www.scsengineers.com

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EXECUTIVE SUMMARY

In March 2016, Orange County, North Carolina (County) retained SCS Engineers (SCS) to conduct a solid waste cost of services and rate study (Study) and to develop a Financial Plan for the County's Solid Waste System (System). Based on data and information provided by County staff, a Pro Forma rate model (Rate Model) was developed, which enabled SCS to prepare projections of financial performance of solid waste and recyclable material collection and disposal for the selected planning period (FY 2016-17 through FY 2020-21) and model different possible rate structures.

PROJECT OBJECTIVES

The overall objective of a cost of service and rate study is to calculate the solid waste fees and assessments required to adequately recover the costs of providing solid waste and recycling services to the County's residents, businesses, and other institutions. Based on its solid waste industry experience, SCS developed a series of critical tasks that provided a foundation for the conduct of the Study and development of the Financial Plan. This methodology is discussed in **Section 2** of this report.

Enterprise Fund

The County has established the Solid Waste Enterprise Fund (Fund) to account for all Solid Waste Management Department (Department) solid waste and recycling program operations, which are financed and operated in a manner similar to private business enterprises. The Fund includes potential revenue from approximately 33 distinct sources (line items under the Budget Accounts), which can be associated with one or more of the four cost centers (Divisions) within the Department. The Fund includes potential expenses from approximately 47 distinct general sources (line items under the Budget Accounts) and five capital sources from five accounts, which can be associated with one or more of the Divisions within the Department.

The Solid Waste Program Fee is a single, county-wide fee assessed on each improved property within the County, including the municipalities and the portion of the Town of Chapel Hill located within Durham County. The current fee is $107.00 per parcel annually, but is adjusted annually as part of the Department's budgeting process based on estimated system expenditures, minus all revenue, and divided by the number of taxable parcels.

The table below (and also in **Section 2.1.3, Exhibit 11**) below shows the distribution of the Department's revenues and expenses for the past four fiscal years and the budget for current FY 2016-17 by division. As shown, annual expenses have increased from the previous to the current fiscal year with the Solid Waste Enterprise Fund running a net deficit each year since FY 2012-13.

The table also shows the amount and percentage of the revenues over the past 4 years that were made up of transfers from the General Fund and Appropriated Fund Balance. The final row of the exhibit shows the additional net revenues and deficits added to the amount transferred from the General Fund.

Distribution of Department's Operating Revenues and Expenses by Fiscal Year

	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16[1] Projected Budget	FY 2015-16[2] Preliminary Actuals	FY 2016-17[3]
Revenues by Division ($)						
Environmental Support	106,047	104,188	770,848	150,000	NA	6,607,163
Landfill Services	3,716,514	1,187,249	1,086,812	1,167,217	NA	500,290
Recycling Services	4,732,514	3,512,839	3,803,287	5,531,343	NA	997,743
Sanitation Services	2,262,285	3,217,411	4,297,213	4,602,133	NA	2,104,719
Other (Appropriated Fund Bal.)	NA	NA	NA	630,503	NA	1,780,040
Total Department Revenues	**10,816,933**	**8,021,688**	**9,958,160**	**12,081,196**	**10,078,956**	**11,989,955**
Amount that is Transfer from General Fund (Included Above)	1,594,226	1,869,496	1,856,543	1,718,018	1,718,018	2,004,719
Amount that is from Appropriated Fund Balance (Included Above)	NA	NA	NA	630,503	NA	1,780,040
Total Revenue Not Generated by Solid Waste Enterprise Fund	1,594,226	1,869,496	1,856,543	2,348,521	1,718,018	3,784,759
Portion of Revenue Not Generated by Solid Waste Enterprise Fund (%)	14.7	23.3	18.6	19.4	17.0	31.6
Expenses by Division ($)						
Environmental Support	2,098,096	2,268,392	2,487,479	2,169,700	NA	2,237,464
Landfill Services	2,218,634	3,032,197	2,347,938	1,410,322	NA	1,117,414
Recycling Services	2,752,628	4,875,031	4,291,804	5,594,727	NA	5,450,893
Sanitation Services	3,289,081	2,302,832	2,570,585	2,906,448	NA	3,184,184
Total Department Expenses	**10,358,439**	**12,478,452**	**11,697,806**	**12,081,196**	**10,790,064**	**11,989,955**
Net Revenues (+) / Deficits (-)	+458,494	-4,456,764	-1,739,646	0	-711,108	0

Notes:
1. Projected past budgetary figures provided by County staff to SCS.
2. Unaudited, preliminary actuals based on discussions with County staff (subject to change).
3. Approved budgetary figures.
4. This table reflects the resulting restructuring of expense and revenue allocations between the Divisions which occurred as a result of the closure of the Orange County Landfill in FY 2012-13.
5. The Solid Waste Programs Fee was reallocated for distribution from the Recycling Services Division to the Environmental Support Division in FY 2016-17.

RATE MODEL SCENARIOS

SCS developed two Rate Model scenarios to evaluate impacts to the Enterprise Fund financial situation over the 5-year planning period. Depending on the individual scenario, the Model assesses net revenue needs if the Program Fee, other revenues, and operating costs equal those in the Budget for FY 2016-17 with inflation factors applied, known capital items accounted for, and other adjustments made to specific line items as detailed in **Appendix C**:

- **Scenario 1** – Scenario 1 assumes status quo for the Department Solid Waste Program Fee ($107 per year). This scenario is intended to be used as a baseline or "Status Quo" scenario to enable comparison with Scenario 2.

- **Scenario 2** – This scenario serves as an assessment of the required increase in the Program Fee to balance projected operating expenses and revenues for solid waste and recycling services. Scenario 2 assumes the Program Fee balances the Fund's annual budget if other revenues and operating costs equal those projected in the Budget for FY 2016-17, dependent on the sub-scenario. This iteration serves as a "break-even" analysis.

Model Results

The table below (and also in **Section 2.1.8, Exhibit 12**) shows the Modeled Budgetary Gap for Scenario 1 and the break-even Program Fees for Scenario 2 for FY 2016-17 to FY 2020-21. Note that the Program Fee was back-calculated using an optimization algorithm. Complete financial model results highlighting the Fund's projected annual net revenue/deficits are presented in **Appendix F.**

Scenario Modeling Results

Scenario	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
1 – Status Quo Budgetary Gap with $107 Program Fee	($1,780,040)	($2,015,497)	($2,064,603)	($2,345,290)	($2,593,011)
2 – Break Even Program Fee with $0 Budgetary Gap	$137	$140	$141	$145	$148

Note: Negative values indicate a projected gap.

FINDINGS AND RECOMMENDATIONS

Our findings and recommendations, including revenue increase strategies, expense reduction strategies, and rate benchmarking from the Study are presented in **Section 5** and summarized below. SCS offers the following findings and recommendations for the County's consideration:

- As outlined in Scenario 1, the Fund's current financial structure is unsustainable and maintaining the current Program Fee amount ($107) along with the Status Quo program services will yield significant annual deficits over the next 5-year period, even with the current practice of General Fund contributions.

- The exercise of allocating monies from the Fund's balance ("Reserves") to cover the annual budget deficit each year will deplete the entire Fund balance in approximately 5 years at the current rate of spending.

- The Pro Forma Rate Model developed as part of this cost of service study should be updated annually and used for long-term financial forecasting of the Fund and to evaluate the likely impact of proposed Department operational changes.

- Based on a cursory review of the program, SCS did not identify any notable inefficiencies within the Department operations. SCS recommends the County conduct a more in-depth review of its program on a routine basis to identify opportunities for revenue increase and expense reduction.

1.0 INTRODUCTION

In March 2016, Orange County, North Carolina (County) retained SCS Engineers (SCS) to conduct a solid waste cost of services and rate study (Study) and to develop a Financial Plan for the County's Solid Waste System. Based on data and information provided by County staff, a Pro Forma rate model (Rate Model) was developed, which enabled SCS to prepare projections of financial performance of solid waste and recyclable material collection and disposal for the selected planning period (FY 2016-17 through FY 2020-21).

Orange County Solid Waste Management Department (Department) solid waste and recycling program operations are organized under the following cost centers, or Divisions:

- Environmental Support Services
- Landfill Services
- Recycling Services
- Sanitation Services

The Environmental Support Services Division consists of various Department support elements including planning and administrative functions, utilities, maintenance, education and outreach, and enforcement. The Landfill Services Division is responsible for the operation of the construction and demolition (C&D) landfill, scales and weighing, incoming waste materials inspections, maintenance and monitoring of the three closed landfills, oversight of temporary storm debris management sites, and general Eubanks Road site grounds maintenance and security. The Recycling Services Division manages a variety of recycling programs, services, and facilities. Finally, the Sanitation Services Division is responsible for Waste and Recycling Center operations, collection of waste from County buildings and schools, and the collection of bulky waste items.

1.1 PROJECT SCOPE OF WORK

The overall objective of a cost of service and rate study is to calculate the solid waste fees and assessments required to adequately recover the costs of providing solid waste and recycling services to the County's residents, businesses, and other institutions. Based on its solid waste industry experience, SCS developed a series of critical tasks that provided a foundation for the conduct of the Study and development of the Financial Plan. This methodology is discussed in **Section 2** of this report.

1.1.1 Data Collection and Review

The County provided historical and background information on operations and practices. This included:

- Detailed financial reports and budgets
- Solid waste and financial policies
- Historical waste and recyclable material flow
- Personnel rosters and organizational charts

- Vehicle improvement plans
- Vehicle maintenance plans and anticipated costs
- Solid waste agreements
- Planned and potential capital improvement projects
- Program fee drivers, memorandums, and other narratives

1.1.2 Staff Communications

SCS held a project kickoff teleconference to initiate the Study, which provided a forum to confirm the scope of services, discuss data needs, and identify key issues for County staff. During the course of the Study, SCS conducted a series of additional conference calls with County staff managing different facets of the overall System. These conference calls, along with routine email communications, gave SCS an opportunity to review Study progress, verify overall assumptions, and receive useful input from County staff. In addition, SCS representatives gave a presentation of initial Study findings at a County Manager's Meeting on 5/10/16 as well as a meeting of the Solid Waste Advisory Group (SWAG), a group of public and private solid waste stakeholders from various County and Town organizations on 5/25/16. SCS met with the County Manager and other County leaders again on 8/3/16 to review the financial analysis and conclusions and recommendations from the study.

1.2 SOLID WASTE ORDINANCES

Chapter 34 of the *County Code* contains the County's solid waste ordinances. Ordinances fall under three articles related to general solid waste topics, collection and disposal, and regulated recyclable material.

1.2.1 Regulated Recyclable Materials Ordinance

Of particular note is the Regulated Recyclable Materials Ordinance (RRMO), which went into effect on October 1, 2002. The RRMO requires that C&D projects have a waste management plan in place. It also mandates that certain bulky materials such as scrap metals, clean wood, pallets, and corrugated cardboard from commercial waste streams be recycled and not disposed of in a landfill. Applications for self-haul of recyclable material are available through the Department for a fee. There is also a charge of $25 per vehicle for a Collector's License which is applied to a vehicle used to haul C&D waste within the County with a Gross Vehicle Weight of greater than 9,000 pounds. Open burning of solid waste and C&D is prohibited within the County.

1.3 COLLECTION OF SOLID WASTE AND RECYCLABLE MATERIAL

Collection of solid waste and traditional recyclable material (bottles/cans, mixed paper, OCC, etc.) occurs through a variety of facets (curbside collection, staffed drop-off centers, 24-hour drop-off centers, etc.) within Orange County. Orange County is somewhat unique in the municipal world in that it operates municipal curbside recyclable material collection programs but not curbside solid waste collection. Communities in the United States tend to rely on private,

solid waste haulers to provide both of these collection services for their citizens. Many urban, metropolitan municipal solid waste departments continue to provide collection services using municipal employees. Nationally, a large majority of the remaining solid waste programs have transitioned to contracted private haulers, primarily as a cost and risk reduction opportunity.

1.3.1 County Solid Waste Collection Program

The County provides solid waste collection services to its residents through drop-off collection facilities and governmental institutions via direct collection. Commercial solid waste collection is provided through private enterprise within Orange County.

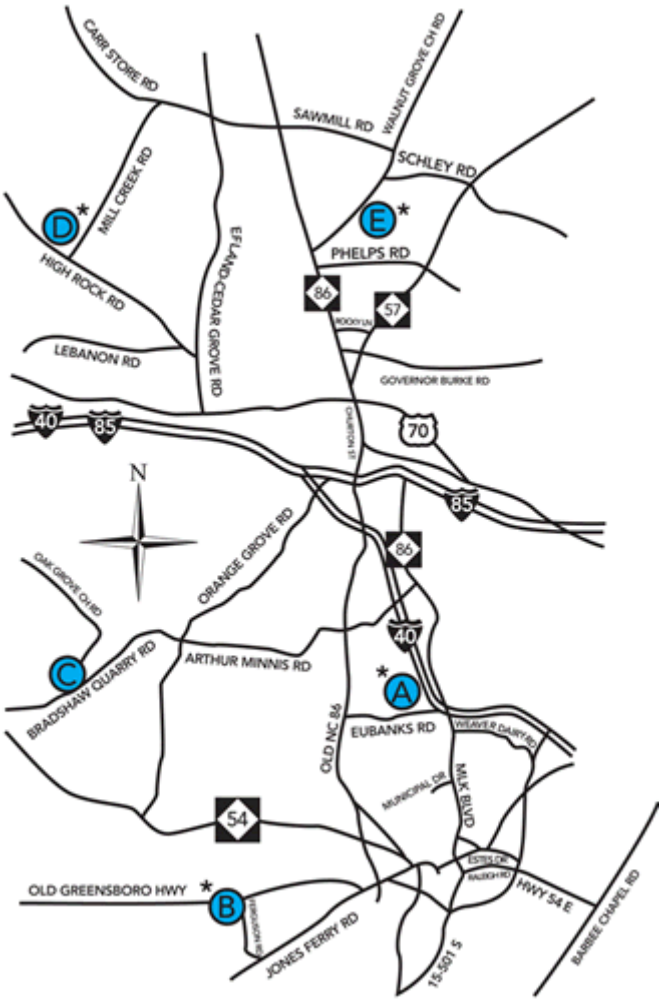
1.3.1.1 Residential

The Department does not provide curbside solid waste collection. Solid waste collection services are provided to County residents at the five drop-off Solid Waste and Recycling Centers located throughout Orange County (refer to **Exhibit 1** and **Exhibit 2**). Municipal Solid Waste (MSW), scrap tires, white goods, scrap metal, clean wood waste, yard waste, and bulky waste is handled by the Sanitation Services Division at these sites.

Exhibit 1. Solid Waste and Recycling Centers by Location and Customer Counts by Fiscal Year

Center	Letter	Address	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
Eubanks	A	1514 Eubanks Rd, Chapel Hill, NC 27516	154,760	158,637	161,128	126,405	121,467
Ferguson	B	1616 Ferguson Rd, Chapel Hill, NC 27516	94,535	88,535	89,867	71,200	72,151
Bradshaw	C	6705 Bradshaw Quarry Rd, Mebane, NC 27302	35,376	38,265	40,825	37,888	39,113
High Rock	D	7001 High Rock Rd, Efland, NC 27243	68,582	79,289	70,992	68,102	66,747
Walnut Grove	E	3605 Walnut Grove Church Rd, Hillsborough, NC 27278	154,238	117,743	133,054	142,485	134,829

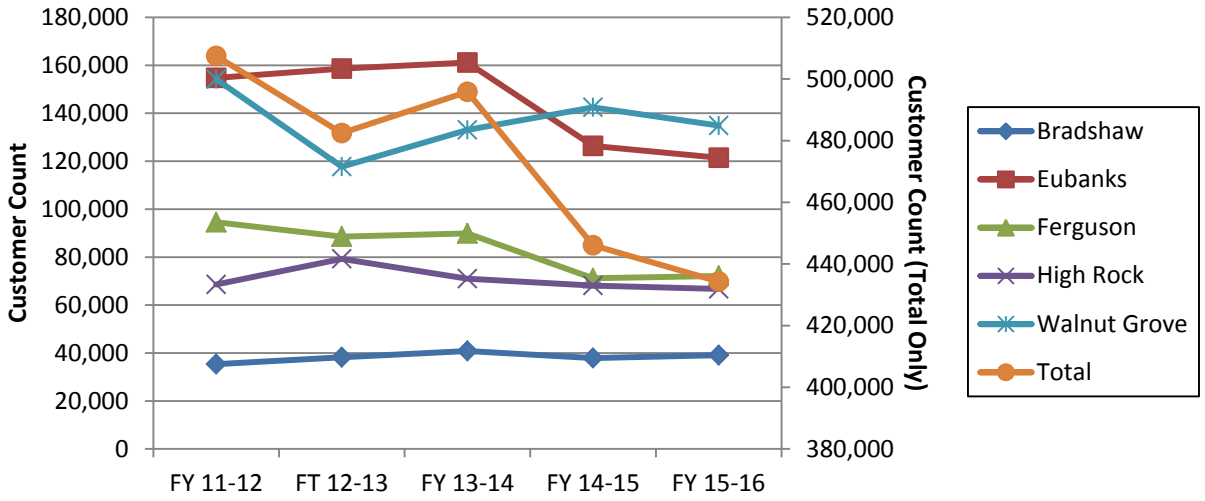
Exhibit 2. Solid Waste and Recycling Center Locations



Note that the Walnut Grove Church Road Center was modernized into a "District Center" in 2013 via paving as well as the installation of compactors, dual loading heights, household hazardous waste (HHW) collection, clothing drop off, plastic bag recycling, and food waste collection containers. Additional Solid Waste and Recycling Centers are being considered for future modernization, including the Eubanks Road Center which is slated for reconstruction into a District Center.

The Department collects data on Solid Waste and Recycling Center customer attendance through continuous customer counts. The customer counts are shown in tabular format in **Exhibit 1** and in graphical format in **Exhibit 3**.

Exhibit 3. Solid Waste and Recycling Center Customer Counts by Fiscal Year



1.3.1.2 Commercial

The County does not provide solid waste collection services for its commercial establishments. Commercial waste from businesses and multi-family residences (e.g., apartments and condominiums) is collected by a combination of national and regional private companies and billed directly to customers by these companies.

1.3.1.3 Institutional

Solid waste collection services are provided to County buildings by the County's Sanitation Services Division. The Division also collects waste from the Orange County schools and bulky waste from both the Orange County schools and Chapel Hill-Carrboro City schools for a fee. These contracts with the school systems account for a portion of the revenue into the Solid Waste System.

1.3.2 County Recyclable Material Collection Program

Recycling services are currently administered within the County by Orange County Recycling (OCR), a division of the Department. In 1997, Orange County and the incorporated municipalities of Chapel Hill, Carrboro, and Hillsborough each adopted a solid waste reduction goal of 61% per capita. The efforts of OCR have resulted in one of the top solid waste reduction rates in the state of North Carolina.

1.3.2.1 Residential

Orange County's first recycling program commenced in 1987 with the construction of five unstaffed drop-off sites which accepted glass bottles, aluminum cans, and newspapers. Since that time, recycling has expanded in the County to include additional recyclable material collection at the Solid Waste and Recycling Centers and curbside collection in both urban and rural areas.

Urban curbside collection began within the County in the Towns of Chapel Hill, Carrboro, and Hillsborough by a private contractor in 1988. Weekly urban curbside recyclables collection is now provided by OCR via a contracted private hauler in the three towns and the portion of Chapel Hill located in Durham County. Residential curbside service began in select rural areas of Orange County in 1993, and in 2015 the Department commissioned a collection route optimization study which also assessed the feasibility of implementing curbside recyclables collection in rural households which were not previously offered the service. The study concluded that the new households could be incorporated in a single phase and in 2016 the remaining 6,800 rural households which previously did not receive curbside recyclables collection service were added to the rural curbside program.

All County residents may drop off recyclable materials at the five Solid Waste and Recycling Centers located throughout the County or the five 24-Hour Recycling Drop-off Sites as shown in **Exhibit 4** and **Exhibit 5**.

Exhibit 4. 24-Hour Recycling Drop-off Sites by Location

Center	No.	Address
Cedar Falls Park	1	401 Weaver Dairy Road, Chapel Hill, NC 27516
University Mall	2	201 Estes Drive, Chapel Hill, NC 27514
Meadowmont	3	Hwy 54 East (behind Harris Teeter), Chapel Hill, NC 27517
Carrboro Plaza	4	104 NC 54, Carrboro, NC 27510
Hampton Pointe	5	625 Hampton Point Blvd, Hillsborough, NC 27278

Exhibit 5. 24-Hour Recycling Drop-off Site Locations

1.3.2.2 Commercial

Orange County took over commercial recyclables collection from a private contractor in 2000. County commercial recycling services are provided at no direct cost to participating businesses at select commercial recycling locations. The County provides carts and collection services to the participating businesses. Commercial establishments may also drop off old corrugated cardboard (OCC) for no charge at the five 24-Hour Recycling Drop-off Sites if they produce fewer than 50 boxes per week or at the Landfill where there is no limit.

County commercial establishments may also contract with private contractors for recyclable material collection. Orange County provides technical assistance to local businesses and other non-residential entities on request at no charge.

1.3.2.3 Institutional

Recyclable material collection services are provided by OCR to local, state, and government buildings; pedestrian containers located in area parks and downtown Chapel Hill, Carrboro, and

Hillsborough; convenience stores; and gas stations. OCR also collects recyclable material twice weekly from the Orange County schools (a service started in 2010) and Chapel Hill-Carrboro City schools (2011) for a fee. Contracts with the school systems and other municipal sources account for a portion of the revenue into the Solid Waste System.

1.3.3 OCR Recyclable Material Processing and Marketing

All collected recyclable material is consolidated at the recycling area of the Orange County Landfill. The recycling area consists of a large concrete pad (about 15,000 square feet) that is partially covered upon which collected recyclables are dumped from the collection vehicles.

Waste Industries, the private hauler contracted to collect recyclable material curbside from urban residences, delivers the recyclables to the recycling area at the Landfill. Prior to June 2012 a two-stream program strategy was employed in which fiber was transferred and sold to Sonoco in Durham, whereas commingled cans and bottles were transferred and sold to FCR/ReCommunity in Greensboro. Beginning in July 2012, the material has been delivered to the recycling area as a single-stream, inspected by County staff for contaminants, and loaded into walking floor trailers and transported to the Sonoco MRF in Raleigh where it is processed and sold. Electronics are transported to GEEP in Durham, NC, and rigid plastics are transported to Blueridge Plastics in Eden, NC; Sonoco in Raleigh, NC; or other plastics recyclers in the region depending on market value at the time of discard.

There is one (1) County employee that manages the quality control and loading of single stream material. Two (2) County employees transport single stream and rigid plastic to their respective destinations. The electronics recycling vendor currently collects the County-prepared electronic recycling material at the landfill property and transports the material to their property for further processing and sale to end users.

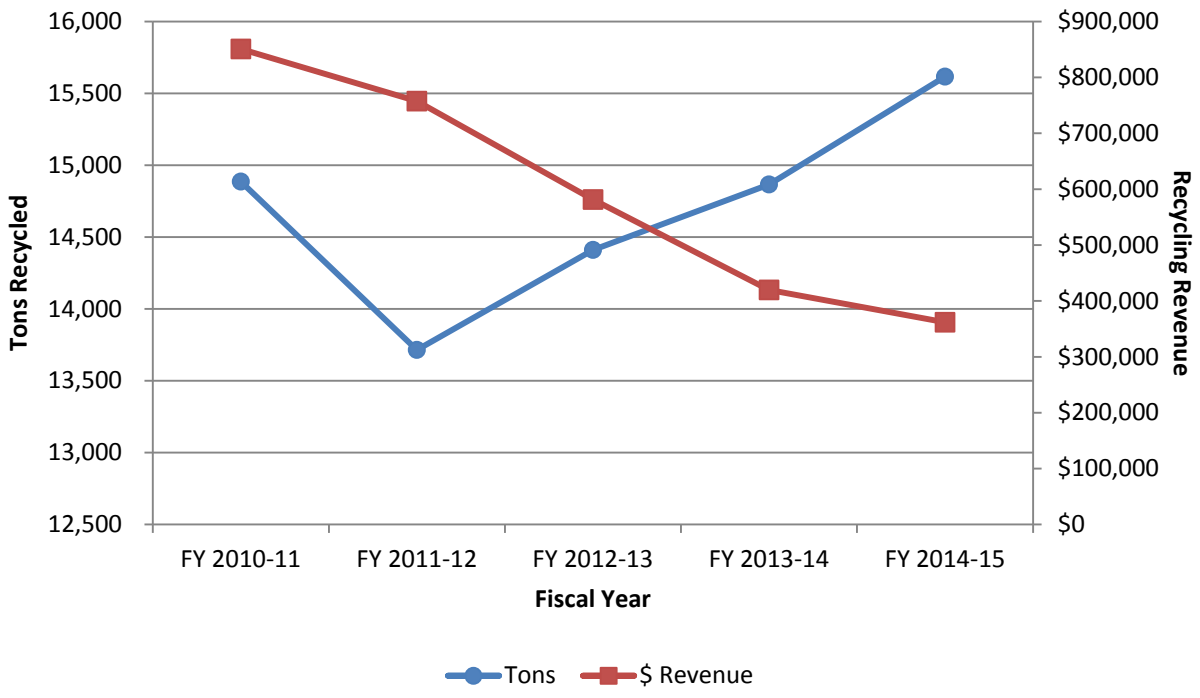
1.4 SOLID WASTE PROGRAMS FEE

The County charges all eligible properties an annual fee of $107.00 for the solid waste and recycling program services provided by the Department. This Solid Waste Program Fee is charged to cover the costs of collecting, handling, and disposing and/or recycling of the County's solid waste and recyclable material. The fee, which was implemented in 2015, is included with the annual tax bill levied on approximately 61,000 improved properties within the County. As noted in **Section 1.1**, one of the purposes of this Study is to estimate the appropriate Fee amount over the 5-year planning period to cover the costs of the County's solid waste and recycling programs. A 3-R fee and Waste and Recycling Center fee were implemented as user fees, both of which have since been replaced by the Solid Waste Programs Fee.

1.5 COLLECTED RECYCLABLE MATERIAL TONNAGE AND REVENUE

Exhibit 6 shows the last five fiscal years of recyclable material weight data and revenue. The data shows that recycling revenues in the County have been decreasing despite increased collection of recyclable material. This is primarily due to a decrease in the strength of the commodities market.

Exhibit 6. Recyclable Material Tonnages and Revenue



Source: Orange County, 2015-16

1.6 SOLID WASTE DISPOSAL

Municipal solid waste collected from the Solid Waste and Recycling Centers and County institutions is delivered to the City of Durham Transfer Station where the Department is charged $42.50 per ton. Yard waste is delivered by residents and the area Towns to the Landfill where it is mulched and sold to the community.

The County owns and operates a Construction and Demolition (C&D) Landfill at 1514 Eubanks Road. It is located at the site of the old Orange County MSW Landfill (Landfill) which closed on July 1, 2013, and two other co-located landfills (one C&D unit and one MSW unit). C&D debris, stumps, land clearing waste, mobile homes, mattresses/box springs (currently transported to Purpose Recycling), yard waste, clean wood waste, and stockpiled tires are accepted at the landfill and on-site collection center for various fees. Old corrugated cardboard (OCC), oyster shells, electronics, residential/commercial tires, large appliances, and scrap metal are accepted from residents for free.

Department staff strictly enforces the Regulated Recyclable Materials Ordinance at the C&D Landfill. Contaminated loads (loads containing both recyclable and non-recyclable C&D waste) brought to the C&D Landfill will be charged double the tipping fee of uncontaminated loads. Alternatively, the Department staff requires sorting of recyclable materials from contaminated loads upon arrival at the C&D landfill.

1.7 HOUSEHOLD HAZARDOUS WASTE AND ELECTRONICS RECYCLING

The Recycling Services Division operates Toxicity Reduction Improvement Programs (TRIP) to collect County residents' household hazardous waste (HHW) and electronics for disposal and/or recycling. Materials accepted at the five Solid Waste and Recycling Centers include:

- Electronics
- Automotive and Boat Batteries
- Household Batteries
- Oil Filters
- Motor Oil
- Kerosene, transmission fluid, gear oil, heating oil, Coleman fuel, and diesel fuel
- Antifreeze

The Walnut Grove Church Road Solid Waste and Recycling Center accepts HHW items not accepted at other Solid Waste and Recycling Centers. In addition to the Walnut Grove Center, Orange County operates a HHW collection center on the Eubanks Road Landfill, soon to be incorporated into the Eubanks Road Waste and Recycling Center to allow for extended hours of operation.

Materials accepted only at the HHW Collection Center and Walnut Grove Church Center include the following: cooking oil; lawn, garden, and pool chemicals; household cleaners and chemicals; paint, sealant, and solvents; partially-filled aerosol cans; automotive chemicals; automotive fluids such as gasoline, mixed gas, and brake fluid; fluorescent light bulbs, including tubes and compact fluorescent lightbulbs (CFLs); thermostats and thermometers containing mercury; helium tanks (up to 3-gallons); and propane tanks (1 gallon).

Commercial entities may also drop off their HHW if they produce less than 220 pounds per month at the Eubanks Road HHW Collection Center. Many painting contractors use this facility. Businesses with more than 75 pounds of HHW must set up an appointment prior to arriving at the collection center.

1.8 FOOD WASTE COLLECTION

According to a 2013 survey in the United States, there are more than 214 source-separated organics collection programs in operation and the effort to separately manage waste organics is gaining traction in recent years. That number is up from only 20 programs in 2005. Consequently, Orange County can be considered as an "early adopter."

The County contracts with a private hauler (currently Brooks Contracting of Gladstone, NC) to collect and compost food waste and other compostable organic material from select local businesses at no charge. This program accepts source-separated organic materials such as kitchen and produce department prep waste, post-consumer plate waste, and other compostable organic materials from local restaurants, grocery stores, and food service establishments for composting.

Residents may also drop-off their source-separated food waste into separate containers designated for composting at the Walnut Grove Church Road Solid Waste and Recycling Center. This is currently the only waste and recycling center that accepts residential food waste for composting, although wood waste composting will be incorporated into the Eubanks Road Waste and Recycling Center upon its completion. Orange County Solid Waste also sells compost bins for $50.00 apiece at the administration building on Eubanks road.

The compost produced by Brooks meets the Class "A" rating by the State of North Carolina, the highest regulatory ranking available for compost. The product is suitable for unrestricted use on agricultural crops, landscaping plants, turf, or ornamentals. It is sold at a cost of $30.00 per yard to residents. The County also maintains two outdoor composting demonstration sites for educational purposes, and instructional classes are held at the sites at least four times per year. Orange County Solid Waste can also help set up or teach composting programs for interested organizations. These programs are free to Orange County residents and businesses.

1.9 COUNTY SOLID WASTE MANAGEMENT DEPARTMENT STAFFING

The Department is responsible for the overall management of the County's solid waste program. It is currently staffed with approximately 64 total positions. As shown in **Appendix A**, from a personnel standpoint, the Department is subdivided into three sections (note this breakdown differs from the breakdown of administrative Divisions within the department):

- Environmental Support
- Solid Waste Operations
- Recycling Operations

Mr. Gayle Wilson serves as the Solid Waste Management Director. Additional managerial positions within the Department include Solid Waste Planner, Administrative Officer, Management and Program Specialist, Solid Waste Operations Manager, Solid Waste Engineer, Heavy Equipment Mechanic Supervisor, Solid Waste Collection Services Manager, Environmental Enforcement Supervisor, Recycling Programs Manager, Recycling Programs Supervisor, and Solid Waste Field Services Supervisor.

1.10 VEHICLES

The Department and its contractors provide collection services to residences and businesses within the County using a combination of trucks for recyclables, residential solid waste (from collection centers), institutional solid waste, yard waste, food waste, and bulky waste. The Department has a long-term fleet replacement plan. **Appendix B** lists the current Department fleet inventory by division.

The Department maintains a vehicle fleet separate from the main County fleet in regards to acquisition, maintenance, and utilization, the only department within the County government infrastructure to do so. A Fleet Management Review was conducted by Chatham Consulting, Inc., in 2012 which offered observations and recommendations to increase the efficiency of the operations of the Department fleet. Chatham observed that fleet operations are "Safe &

Economic" and that fleet vehicles are well maintained. The Department is preparing to commence an additional fleet study with CST Fleet Services to benchmark repair efforts and maintenance scheduling.

1.11 PUBLIC EDUCATION AND OUTREACH

The Department deploys a comprehensive environmental education and outreach services program, which provides information to the public on the range of services the Department provides, associated costs, and efficiency measures implemented. The Department's efforts includes providing classes, community talks, brochures, a Department web site (**Exhibit 7**), social media (**Exhibit 8**), and support of volunteer cleanup efforts.

Exhibit 7. Orange County Solid Waste Management Department Website

Exhibit 8. Orange County Solid Waste Management on Social Media

2.0 COST OF SERVICE ANALYSIS

Since the cessation of waste acceptance at the County's sanitary landfill in June 2013, the expenses associated with the County's existing solid waste management and recycling programs and facilities have exceeded the revenues generated by these programs and facilities. SCS reviewed historical program and facilities expenses (both operating and capital) as well as the historical revenues from various sources that have served to cover these expenses for the past several years. SCS projected the costs necessary to continue implementing these programs and operate existing facilities over the next 5 years (through FY 2020-21). SCS also projected the revenues likely to be realized during this timeframe in order to develop a "cost-of-service" analysis to identify potential funding deficits or surpluses. A brief overview of the Department's current budget and management practices, along with a description of SCS' assumptions and findings related to this cost-of-service analysis are discussed below.

2.1 BUDGET AND MANAGEMENT PRACTICES OVERVIEW

2.1.1 Enterprise Fund

The County has established the Solid Waste Enterprise Fund (Fund) to account for all Department solid waste and recycling program operations, which are financed and operated in a manner similar to private business enterprises. In other words, the County's intent is that the Fund be managed such that the costs of implementing these programs and facilities (operating and capital expenses, including depreciation) are covered by the monies in this Fund. Money is allocated to this Fund through user charges and revenues generated by the solid waste and recycling programs and facilities supported by the Fund, with limited revenue allocated from the General Fund.

The Fund includes potential revenue from approximately 33 distinct sources (line items under the Budget Accounts), which can be associated with one or more of the four cost centers (Divisions) within the Department. Most of these sources contribute revenue into only one of the Divisions. However, line items for some sources contribute revenue into multiple Divisions. For general reference purposes, SCS divided revenue sources into three categories or tiers of sources; primary, secondary, and ancillary. **Exhibit 9** displays the three tiers and core revenue streams associated with each.

Exhibit 9. Revenue Tier Streams and Associated Accounts

Tier	Definition	Example Revenue Accounts
Primary[1]	Greater than $1 Million per year	County Solid Waste Program Fee, County General Fund Contribution, Appropriated Fund Balance
Secondary	Greater than $100K per year but less than $1 Million	Contribution from Equipment Reserves, Landfill Fees, Recycling Tip Fees, Sanitation Waste Collections, Tire Tax Reimbursement, Sale of Recyclable Material, C&D License/Permit
Ancillary	Less than $100K per year	Sale of Fixed Assets, White Goods Reimbursement, Clean Metal and White Goods Recycling, Mulch Sales, Grants, LFG Recovery, Disposal Tax Reimbursement, Compost Sales, Mattress Disposal Fees, etc.

Note: 1. The Appropriated Fund Balance has historically been an Ancillary or Secondary Tier line item account; however, the FY 2016-17 Preliminary Budget relies on this line item account as a Primary Tier.

The Fund includes potential expenses from approximately 47 distinct general sources (line items under the Budget Accounts) and five capital sources from five accounts, which can be associated with one or more of the Divisions within the Department. The four largest contributors to expenses are Permanent Salaries (22%), Miscellaneous Contract Services (13.8%), Contribution to Equipment Reserves (11.1%), and Vehicles (6.6%).

Historically, the County General Fund has contributed to the Enterprise Fund budget, accounting for roughly 65 percent of the Sanitation Division budget following its transfer from the Public Works Department to the Solid Waste Management Department in FY 2007-08. The reduction of Enterprise Fund revenue over the past three years or so is attributed to the closure of the MSW Landfill and the decline of recyclable material prices in the commodities market.

2.1.2 Billing

The Solid Waste Program Fee is a single, county-wide fee assessed on each improved property within the County, including the municipalities and the portion of the Town of Chapel Hill located within Durham County. The current fee is $107.00 per parcel annually, but is adjusted annually as part of the Department's budgeting process based on estimated system expenditures, minus all revenue, and divided by the number of taxable parcels. A collaborative discussion by the Board of County Commissioners (BOCC) follows this exercise, at which time budgets are finalized. The Tax Administration Department manages billing and collection of tax payments for the County, including billing and collection of the Programs Fee. This service incurs charges by the General Fund to the Solid Waste Enterprise Fund.

The C&D Landfill accepts certain types of waste from commercial and residential customers for various fees depending on the material. A schedule of fees for various materials as well as other Program fees can be found in **Exhibit 10**. These charges are incurred by the customer upon disposal.

Exhibit 10. Commissioner Approved Fee Schedule – FY 2015-16

Department/ Program	Destination	Current Fee	Approved Fee Change*	Last Revision
Solid Waste Enterprise Fund				
	Solid Waste Programs Fee (30)	NA	$107.00	New
Landfill				2013
	Construction & Demo	$40.00/ton		2012
	Clean Wood/Vegetative Waste	$18.00/ton		2009
	Stumps & Land Clearing Waste	$40.00/ton		2012
	Disposal of Mobile Homes	$200.00/unit		2010
	Conventional Yard Waste Mulch	$25.00/3 cubic yard		2012
	Decorative Red Mulch &	$28/one cubic yard scoop		2009
	Tires (stockpiled tires/no state	$100.00/ton		1997
	Appliances (White Goods)	No charge		
	Scrap Metal	No charge		
	Cardboard	No charge		
	Mattress Recycling Fee	$10 per piece		2013
Environmental Support				
	Regulated Recyclable Materials	$25.00/vehicle		2002
	Regulated Recyclable Materials	$250.00/application		2002
	Regulated Recyclable Materials	10% of assessed building		2002
	Regulated Material Permit -	8% of Applicable Building		2008
	Regulated Material Permit -	5% of Applicable Building		2008
Sanitation - School Refuse Collection				
	6 cubic yard	$31.00		2010
	8 cubic yard	$33.00		2010
	Non-scheduled pick-up	$40.00		2010
Community Relations/Visitor's Bureau				
	Occupancy Tax Rate	3% of gross receipts		2008

Note: *Any fee changes will be included in this column; a blank beside each fee means there is no fee change in FY 2015-16.

2.1.3 Budget Overview

Exhibit 11 shows the distribution of the Department's revenues and expenses for the past four fiscal years and the budget for current FY 2016-17 by division. As shown, annual expenses have increased from the previous to the current fiscal year with the Solid Waste Enterprise Fund running a net deficit each year since FY 2012-13.

The exhibit also shows the amount and percentage of the revenues over the past 4 years that were made up of transfers from the General Fund and Appropriated Fund Balance. The final row of the exhibit shows the additional net revenues and deficits added to the amount transferred from the General Fund.

Exhibit 11. Distribution of Department's Operating Revenues and Expenses by Fiscal Year

	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16[1] Projected Budget	FY 2015-16[2] Preliminary Actuals	FY 2016-17[3]
Revenues by Division ($)						
Environmental Support	106,047	104,188	770,848	150,000	NA	6,607,163
Landfill Services	3,716,514	1,187,249	1,086,812	1,167,217	NA	500,290
Recycling Services	4,732,514	3,512,839	3,803,287	5,531,343	NA	997,743
Sanitation Services	2,262,285	3,217,411	4,297,213	4,602,133	NA	2,104,719
Other (Appropriated Fund Bal.)	NA	NA	NA	630,503	NA	1,780,040
Total Department Revenues	**10,816,933**	**8,021,688**	**9,958,160**	**12,081,196**	**10,078,956**	**11,989,955**
Amount that is Transfer from General Fund (Included Above)	1,594,226	1,869,496	1,856,543	1,718,018	1,718,018	2,004,719
Amount that is from Appropriated Fund Balance (Included Above)	NA	NA	NA	630,503	NA	1,780,040
Total Revenue Not Generated by Solid Waste Enterprise Fund	1,594,226	1,869,496	1,856,543	2,348,521	1,718,018	3,784,759
Portion of Revenue Not Generated by Solid Waste Enterprise Fund (%)	14.7	23.3	18.6	19.4	17.0	31.6
Expenses by Division ($)						
Environmental Support	2,098,096	2,268,392	2,487,479	2,169,700	NA	2,237,464
Landfill Services	2,218,634	3,032,197	2,347,938	1,410,322	NA	1,117,414
Recycling Services	2,752,628	4,875,031	4,291,804	5,594,727	NA	5,450,893
Sanitation Services	3,289,081	2,302,832	2,570,585	2,906,448	NA	3,184,184
Total Department Expenses	**10,358,439**	**12,478,452**	**11,697,806**	**12,081,196**	**10,790,064**	**11,989,955**
Net Revenues (+) / Deficits (-)	+458,494	-4,456,764	-1,739,646	0	-711,108	0

Notes:
1. Projected past budgetary figures provided by County staff to SCS.
2. Unaudited, preliminary actuals based on discussions with County staff (subject to change).
3. Approved budgetary figures.
4. This table reflects the resulting restructuring of expense and revenue allocations between the Divisions which occurred as a result of the closure of the Orange County Landfill in FY 2012-13.
5. The Solid Waste Programs Fee was reallocated for distribution from the Recycling Services Division to the Environmental Support Division in FY 2016-17.

2.1.4 Reserves

The unaudited ending balance for the Solid Waste Enterprise Fund is forecasted at $8,867,042 on June 30, 2016. This balance includes long-term commitments and $3,492,631 of Equipment Reserves balance. This amount represents the ending Fund balance without loan proceeds including those from building construction, rural expansion cart procurement, a rural truck purchase, Eubanks Road W&R Center loan, balance from closure of the Orange County Landfill, and another prior loan. The total estimated Fund balance is $12,751,990 when these additional loan proceeds are accounted for. Use of Fund balance has been required in order to balance the Department budget over the past several fiscal years including the current FY 2016-17. The goal of the Department is to enable the Fund to be structurally viable and sustainable without contributions from the General Fund or allocations from the Fund balance.

2.1.5 Rate Model

At the outset of the work effort, SCS developed a Microsoft Excel™ spreadsheet-based, pro-forma model (Rate Model) to assist in the completion of the financial analysis. This model includes the following facets:

- An analysis of operational expenditures (facility operation, staffing, recycling tonnages, tipping fees, etc.); refer to **Appendix E** for 5-year estimated Department expense projections.
- Analysis of capital outlays (equipment replacement and capital projects).
- Revenue analysis (annual revenue projections, net expenditures, and rate plan to provide sufficient revenues); refer to **Appendix D** for 5-year estimated Department revenue projections.
- Rate Benchmarking Analysis.

2.1.6 Methodology Overview

The following methods were utilized by SCS to conduct the cost of service analysis:

- **Collect Historical Actual Expenses and Revenues for the County System** – This task involved gathering available historical actual revenue and expense data for the Fund, compiling these into a financial database, and incorporating the data into the Rate Model.
- **Develop the "Test Year"** – The second task was the development of an annual revenue requirement for a "Test Year". The revenue requirement represents the total revenue for the System needed to recover all System costs. SCS worked with County staff to select a period that reflected a typical year for the System. Budgetary expenses for FY 2016-17 were used as the basis of the Test Year for the Study. SCS then worked with County staff to make these costs more representative of anticipated conditions during the upcoming 5-year financial planning horizon. The resulting Test

Year was used as the basis for forecasting expenses for the 5-year forecast (FY 2016-17 to FY 2020-21).

- **Develop Revenue Requirement Projection** – After developing the revenue requirement for the Test Year, SCS worked with County staff to project changes in anticipated costs due to inflation, labor increases, facility and vehicle maintenance, planning costs, etc. This resulted in a 5-year revenue requirement forecast for the entire sanitation program including collection, recycling, disposal of solid waste, public education, etc.

- **Revenue Offsets** – SCS worked with County staff to identify revenue sources and develop estimates for the sale of recyclables, C&D permit revenues, C&D tipping fees, mulch and compost sales, LFG recovery, etc.

- **Determination of the Number of Customer Units –** SCS worked with County staff to develop reasonable estimates of future number of customers over the next 5-year period.

- **Calculation of the Annual County Solid Waste Programs Assessed Fee** – SCS distributed the revenue needs across the four Divisions to estimate the cost of service and calculate the annual Program Fee needed to balance the budget.

Appendices D and **E** identify projected revenues and expenses, respectively, by service area used in the Model for the Department for FY 2016-17 through FY 2020-21.

2.1.7 Model Scenarios

SCS developed two Rate Model scenarios to evaluate impacts to the Enterprise Fund financial situation over the 5-year planning period. Depending on the individual scenario, the Model assesses net revenue needs if the Program Fee, other revenues, and operating costs equal those in the Budget for FY 2016-17 with inflation factors applied, known capital items accounted for, and other adjustments made to specific line items as detailed in **Appendix C**:

- **Scenario 1** – Scenario 1 assumes status quo for the Department Solid Waste Program Fee ($107 per year). This scenario is intended to be used as a baseline or "Status Quo" scenario to enable comparison with Scenario 2.

- **Scenario 2** – This scenario serves as an assessment of the required increase in the Program Fee to balance projected operating expenses and revenues for solid waste and recycling services. Scenario 2 assumes the Program Fee balances the Fund's annual budget if other revenues and operating costs equal those projected in the Budget for FY 2016-17, dependent on the sub-scenario. This iteration serves as a "break-even" analysis.

2.1.8 Model Results

Exhibit 12 shows the Modeled Budgetary Gap for Scenario 1 and the break-even Program Fees for Scenario 2 for FY 2016-17 to FY 2020-21, all of which reflect a continuance of the General Fund contribution. In addition to developing the Test Year revenue requirements, SCS forecasted the annual revenue requirement for FY 2016-17 to FY 2020-21 based on the projected annual expenses. The assumptions used to develop the forecast for Fund reserves and expenses are presented in **Appendix C**. These forecasted revenues and expenses were utilized with the Rate Model to calculate the Fund's potential annual net revenue/deficit or break-even Program Fee, depending on the scenario. Note that the Program Fee was back-calculated using an optimization algorithm. Complete financial model results highlighting the Fund's projected annual net revenue/deficits are presented in **Appendix F.**

Exhibit 12. Scenario Modeling Results – Projected Fund Budgetary Gap

Scenario	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
1 – Status Quo Budgetary Gap with $107 Program Fee	($1,780,040)	($2,015,497)	($2,064,603)	($2,345,290)	($2,593,011)
2 – Break Even Program Fee with $0 Budgetary Gap	$137	$140	$141	$145	$148

Note: Negative values indicate a projected gap.

2.1.9 Division Budgetary Leveling

SCS developed a methodology to present the net revenue and expense output by the Model as if the Program Fee contribution in the various Scenarios were disbursed across all four Department Divisions, rather than solely through the Environmental Services Division. Allocations to the respective Department Divisions were made proportionally based on the expenses of those divisions and were calculated with the net output of the Model. This "Division Budgetary Leveling" should be considered for clarity and reference purposes only and is not a financial recommendation.

3.0 POTENTIAL SOLID WASTE OPERATIONAL CHANGES

At the outset of the Study, the County expressed an interest in a brief review of the feasibility of future solid waste operations and financing options. The following discussion is intended to provide a description of the potential options to implement System operational changes intended to achieve the goals of revenue increase and expense reduction, in terms of potential advantages and disadvantages to the County. As County staff have noted, multiple small operations changes can aggregate into large impacts on Department effectiveness and efficiencies which could translate into reduced expenses. In this section SCS enumerates minor and miscellaneous cost saving and revenue generating items.

3.1 OPTIMIZE COLLECTION CENTER HOURS/DAYS OF OPERATIONS

One of the duties of collection center attendants is to record customer attendance on an hourly basis. The Eubanks and Walnut Grove waste and recycling centers received the most customers in FY 2015-16, with yearly customer counts of approximately 145,000 and 136,000, respectively. Note that these centers are open for a total of 59 hours per week, while the remaining three centers are only open for 27 hours per week. The Bradshaw center is the least used with approximately 38,000 customer visits in FY 2015-16.

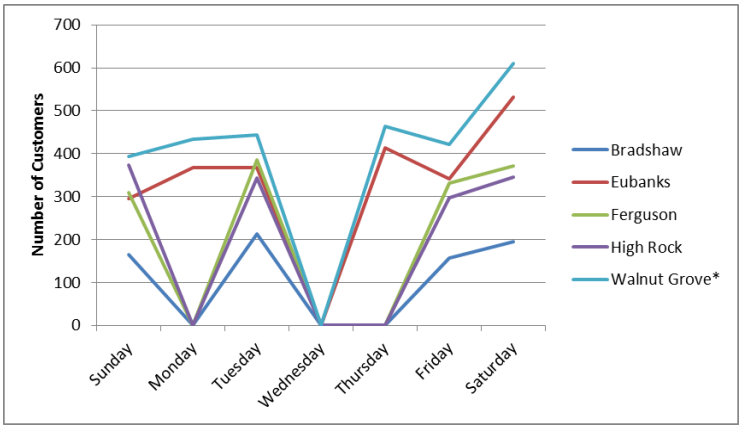
3.1.1 Collection Center Use by Month

Consider making monthly or seasonal adjustment to waste and recycling center times of operations based on customer participation. In general, time of year does affect collection center use, with more customer participation apparent in the summer and less in the winter.

3.1.2 Collection Center Use by Day of Week

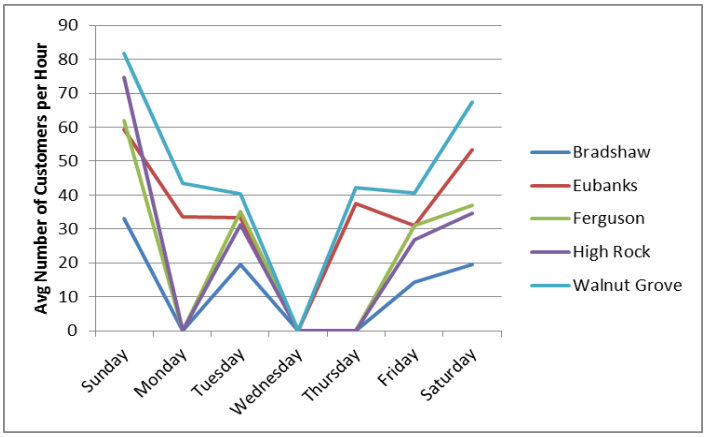
Peak customer attendance occurs on Saturdays, although there is also high attendance on Tuesdays. Peak customer "density" occurs on Sundays by far. The order of most customer visits by day of week to least visits by day of the week is as follows: Saturday, Tuesday, Friday, Sunday, Thursday, and Monday (there are no collection centers open on Wednesdays). The order of busiest or most customer-dense (as determined by most customer visits on a per open hour basis) day of week to least busy day of the week is as follows: Sunday, Saturday, Tuesday, Friday, Thursday, and Monday. If the County were to conduct collection center operations in order to minimize the ratio of operating cost to number of customers served, it should be done with consideration for the busy and less busy days. Customer visits by day of week is displayed in **Exhibit 13** and peak customer density is summarized in **Exhibit 14**.

Exhibit 13. Recycling Center Customers by Day of Week in FY 2015-16



Source: Orange County, 2015-16

Exhibit 14. Recycling Center Customers per Hour by Day of Week FY 2015-16

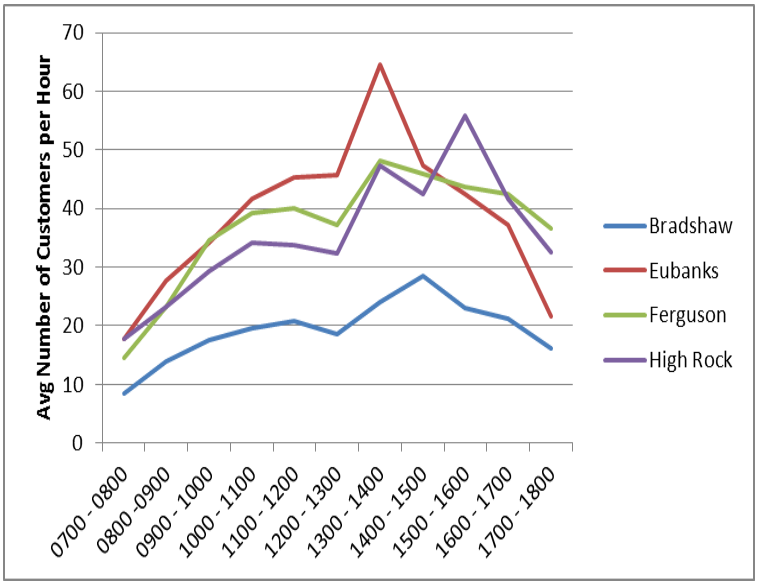


Source: Orange County, 2015-16

3.1.3 Collection Center Use by Time of Day

Current waste and recycling centers are free for use by the public during various periods between the hours of 0700 and 1800. The collection centers require an attendant to open and close the center at the beginning and end of every day. **Exhibit 15** shows that for each site, on average customer attendance steadily increases each hour in the morning until 1100 and then jumps up around lunch time. Counts steadily fall for the rest of the day starting around 1300 for Eubanks and Ferguson, 1400 for Bradshaw, and 1500 for High Rock. Note that hourly customer count data was unavailable for the Walnut Grove site. If the County were to alter the hours of operations of the collection centers, it would be best to open later in the morning (rather than close earlier in the afternoon) in order to maximize the number of customers served while minimizing costs.

Exhibit 15. Recycling Center Customers by Hour of Day in FY 2015-16



Source: Orange County, 2015-16

3.2 CONSIDER A REDUCTION IN CURBSIDE RECYCLABLES COLLECTION FREQUENCY

Orange County provides a high level of service in its collection of recycling. Currently it provides weekly collection service. Many communities across the nation have piloted less frequent collection service (e.g., every other week or monthly) as a means of reducing overall collection costs, while at the same time continuing a form of scheduled curbside collection service. These cost savings have to be balanced against lower recycling rates by customers. In areas where curbside service has been reduced, many communities continue to operate recycling collection centers. Many citizens would likely travel to the collection centers on at least a weekly basis to dispose of their solid waste and could recycle on the same trip.

3.2.1 Other Considerations

Orange County should consider evaluating its solid waste program on an ongoing basis internally and/or using third party entities. Examples of considerations could include:

1. Analyze and update collection fees for institutions.
2. Continually audit department staff job responsibilities.
3. Consider additional user charges for HHW/special material management/processing.
4. Evaluate/update fees and policies at the C&D landfill.

5. Based on fleet audit, assess the need for underutilized equipment and continue to encourage the sharing of equipment among different Divisions within the Department.

6. Continue to consider consolidation of additional resources between two or more Divisions within the Department.

7. Consider the additional sharing of resources of other municipalities and other public and private entities.

For example, salaries and other personnel benefits make up one of the largest source of expense throughout all four Divisions within the Department. Reducing the personnel force can have a large effect on Department expenses. The below chart calculates the per person costs for the 64 employees funded by the Department. SCS calculated that an average employee's total expenses within the Department equates to approximately $1 of the Program Fee (or approximately $61,000), as demonstrated in **Exhibit 16**.

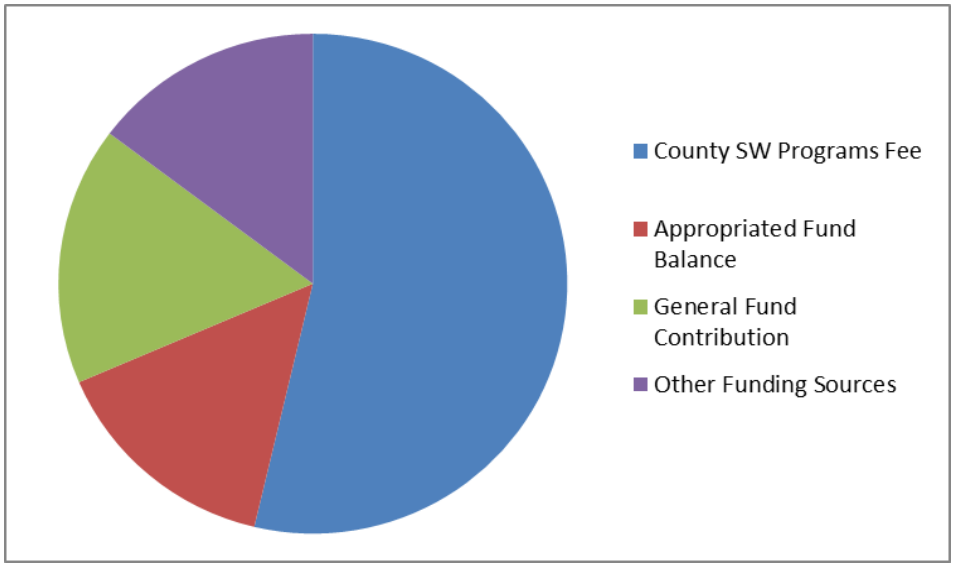
Exhibit 16. Average Personnel Direct-Cost per Person

Account Description	FY 2016-17 Expense ($)
Permanent Salaries	2,602,977
Overtime	42,277
Holiday Pay	37,006
Longevity	30,015
Temporary Personnel	129,694
Social Security	176,202
Medicare	41,209
Medical Insurance	571,099
Med Insurance Payment In Lieu	3,600
HSA Contribution	16,992
Dental Insurance	21,228
Life Insurance	6,571
Retirement	196,641
Non-Sworn 401(K)	45,046
Total Personnel Direct Costs	3,920,557
Total Personnel Direct Cost/Person	61,259

4.0 POTENTIAL SOLID WASTE PROGRAM FINANCING ALTERNATIVES

The use of the Appropriated Fund Balance as a consistent revenue component highlights the need for financing alternatives, as the Appropriated Fund Balance consists primarily of loans and other borrowed monies previously sequestered for other purposes. The Balance as a portion of total revenue budgeted for FY 2016-17 is shown in red in **Exhibit 17** below.

Exhibit 17. Budgeted Solid Waste Management Department Revenue Components as Portions of Total Revenue (FY 2016-17)



Additional Solid Waste Program financing alternatives are outlined below.

4.1 COLLECTIONS OF ASSESSED FEE

Currently, Orange County budgets for the successful collection of the Solid Waste Programs Fee from 97 percent of the 61,000 assessed properties. The losses from the additional 3 percent not collected translates to 1,830 delinquent properties, or $195,810 in lost revenue annually at a Fee rate of $107 per property. The Solid Waste Management Department could share resources with the Tax Administration Department to collect on the additional 3% of properties. Currently there is an Environmental Enforcement Supervisor and Solid Waste Enforcement Officer on the Solid Waste Staff, in addition to number administrative and managerial positions within the personnel hierarchy. These personnel assets could be utilized to collect additional assessed fee from delinquent property owners, potentially through an incentive system.

4.2 MODIFICATION OF ORGANICS COLLECTION PROGRAM FUNDING STRUCTURE

Commercial curbside collection and residential drop-off collection of food and other organic wastes currently cost the Department $80 per ton per its contract with Brooks Contracting. The Department could encourage residents to compost at home to reduce expenditure by the Department and keep the waste closer to its point of origin for direct reuse. The Brooks composting facility is located an hour southeast of the Town of Chapel Hill, approximately 36 miles away. Significant cost is incurred by the contractor to haul the material to the windrow composting site from the point of collection, and then back to the Orange County Landfill so the finished compost can be solid to residents. Efficiencies are to be gained by changing the approach to the commercial collection efforts and bolstering the home composting program already in place.

Additionally, the program funding structure could be changed to implement cost sharing by the largest utilizers of the commercial organics collections program, which could bear some or all of its costs. This would shift the burden of paying for the program from the Programs Fee or general fund to the entities that benefit most from the program. County businesses utilizing the program could pay a flat monthly fee or, alternatively, pay according to the quantity of organics disposed through the program.

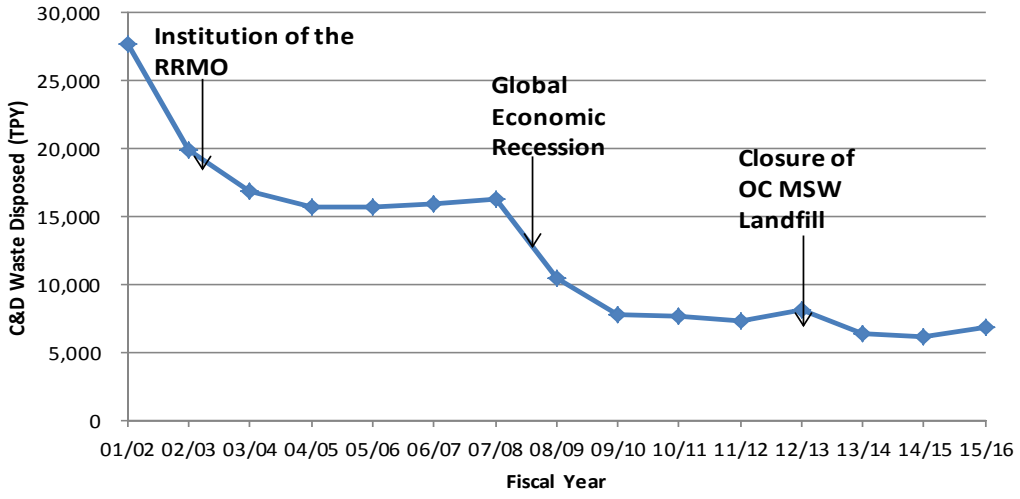
4.3 MAJOR WEATHER EVENT/STORM DEBRIS HANDLING

Currently the Department handles staging, clearing, and disposal operations for the cleanup of storm debris from major weather events such as tornados, hurricanes, ice storms, and major thunderstorms. Funding for these efforts is not provided via emergency allocations from the General Fund, and the Department generally absorbs the costs. Financial resources should be allocated for these non-routine events so that the cost burden is not transferred to the Department. Additional monies may be allocated into a hypothetical renewal and extension (R&E) fund to cover costs associated with unexpected weather or natural disaster events.

4.4 REGULATED RECYCLABLE MATERIALS ORDINANCE

The institution of the Regulated Recyclable Materials Ordinance (RRMO) in October 2002 may have had the unintended side effect of reducing the tonnage of material disposed at the C&D Landfill (without directing this material for recycling). It is possible that the sorting and permitting requirements of the RRMO coupled with the timing of the global economic recession may have caused a decrease in tonnages that has not rebounded as of FY 2015-16 as shown in **Exhibit 18.** Although the RRMO does produce additional revenue from contractor licensing fees, the tipping fee revenue and economies of scale lost from the decline in the tonnage of C&D waste disposed (from roughly 30,000 TPY to 6,000 TPY, an 80% decline that equals approximately $960K in lost revenue at the current tipping fee of $40/ton) outweighs the licensing fee revenue of $120K considerably.

Exhibit 18. Tons Disposed at Orange County C&D Landfill by Year



5.0 FINDINGS AND RECOMMENDATIONS

This findings and recommendations, including revenue increase strategies, expense reduction strategies, and rate benchmarking from the Study are presented below. SCS offers the following findings and recommendations for the County's consideration:

- As outlined in Scenario 1, the Fund's current financial structure is unsustainable and maintaining the current Program Fee amount ($107) along with the Status Quo program services will yield significant annual deficits over the next 5-year period, even with the current practice of General Fund contributions.
- The exercise of allocating monies from the Fund's balance ("Reserves") to cover the annual budget deficit each year will deplete the entire Fund balance in approximately 5 years at the current rate of spending.
- The Pro Forma Rate Model developed as part of this cost of service study should be updated annually and used for long-term financial forecasting of the Fund and to evaluate the likely impact of proposed Department operational changes.
- Based on a cursory review of the program, SCS did not identify any notable inefficiencies within the Department operations. SCS recommends the County conduct a more in-depth review of its program on a routine basis to identify opportunities for revenue increase and expense reduction.

5.1 REVENUE INCREASE STRATEGIES

Because such a large component of the County's System is correlated with urban and rural curbside recyclable material collection or drop-off, Orange County has historically relied heavily on receiving substantial revenue from the sale of recyclable material to secondary markets. SCS recommends the Department consider a long-term goal to set up an R&E fund to weather the fluctuations in the recyclable commodities market and level any market pricing fluctuations over extended timeframes. Other revenue increase strategies identified include:

- Increasing the collection of the Program Fee assessment
- Charging commercial entities for organics collection services
- Allocating funds from the General Fund to help cover the costs of storm event cleanup
- Making efforts to increase waste disposal at the C&D Landfill to capture economies of scale.

5.2 EXPENSE REDUCTION STRATEGIES

SCS performed a cursory overview of Department programs to identify opportunities to reduce expenses in order to reduce the quantity of General Fund monies to Enterprise Fund. Expense reduction strategies identified include:

- Commercial curbside collection and residential drop-off collection of food and other organic wastes currently cost the Department $80 per ton under its contract with Brooks Contracting. The Department could encourage residents to compost at home to reduce expenditure by the Department and keep the waste closer to its point of origin for direct reuse. Alternatively, the County could shift the costs of the program to its largest benefiters, business entities.

- Reduce debt servicing costs by continuing to contribute to an equipment reserve fund with which replacement equipment is purchased outright. Consider implementation of an R&E fund as a long-term objective to pay for unexpected costs outright, rather than relying on debt financing.

- Consider altering Waste and Recycling Center hours or days of operations to minimize down-time and reduce staff/maintenance costs per customer served.

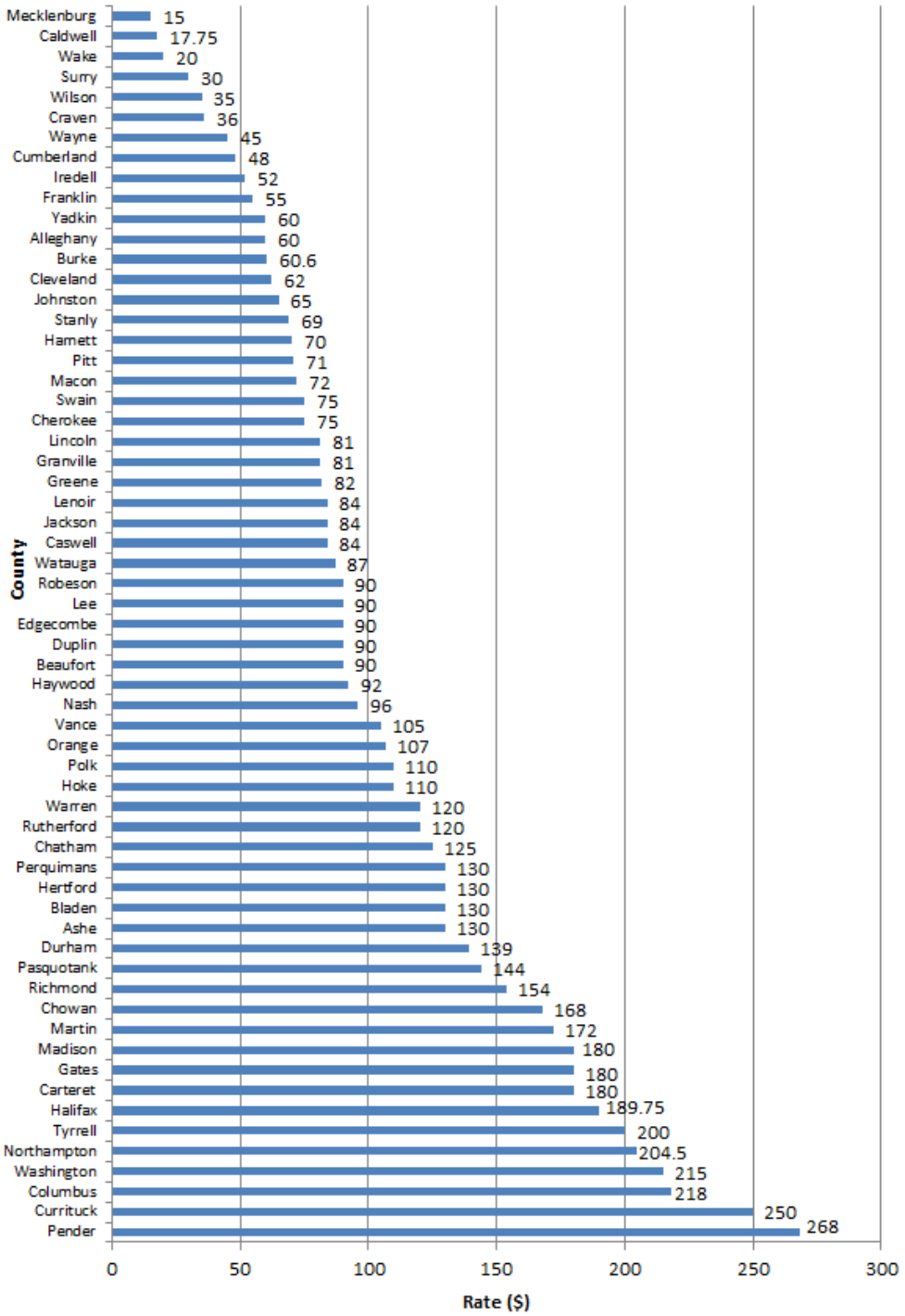
- Establish a long-term financial plan that provides a sustainable financial structure for the Fund. This plan should be formed as a result of a continued evaluation of Department programs to identify issues and inefficiencies (if any exist), optimize the structure of the Department, and find opportunities to further share resources among the four Divisions, in addition to other tasks to increase the effectiveness of the implementation of solid waste and recycling services.

5.3 RATE BENCHMARKING

Exhibit 19 graphically illustrates a comparison of the County's FY 2015-16 Program Fee of $107 with other North Carolina Counties' cumulative Solid Waste Fee rates. As shown, the annual solid waste fees for various municipalities range from a low of $15 to approximately $250. It is unclear what governmental subsidies exist for the communities with the lower fees or what services are provided for the corresponding fees. It is also important to consider the level of service offered by Orange County and the emphasis on environmental justice in regards to waste reduction and recycling, including the achievement of a 64 percent recycling rate. It is not likely to be matched by many, if any, of these jurisdictions.

Benchmarking of solid waste agencies is often difficult to accomplish since levels of service and internal charges and subsidies are often difficult to discern from one municipal system to another. As such, most benchmarking programs often deal with individual facilities (e.g., landfills, transfer stations, etc.). There is currently a lack of benchmarking data available in the solid waste industry. SWANA has conducted the most recent benchmarking studies, but these were focused on landfill operations.

Exhibit 19. Comparison of Annual Fees



Source: NCDEQ Division of Environmental Assistance and Customer Service, FY 2014-15

6.0 REFERENCES

1. Orange County, *Approved-Adjusted Budgets*, FY 2013 - 2016.

2. Orange County, Chapter 34, Solid Waste Management, *Code of Ordinances*, 2016.

3. Orange County, *Preliminary Solid Waste Program Fee Drivers*, February 2016.

4. Orange County, *Solid Waste Fund Revenues/Reserves FY 2015/2016*, March 15, 2016.

5. Orange County, *Summary of Report on Solid Waste Fees in Select NC Counties*, January 29, 2015.

6. Rogoff, Marc J., *Solid Waste and Recycling: Planning of Solid Waste Recycling Facilities and Programs*, Waltham, MA, William Andrew, 2013.

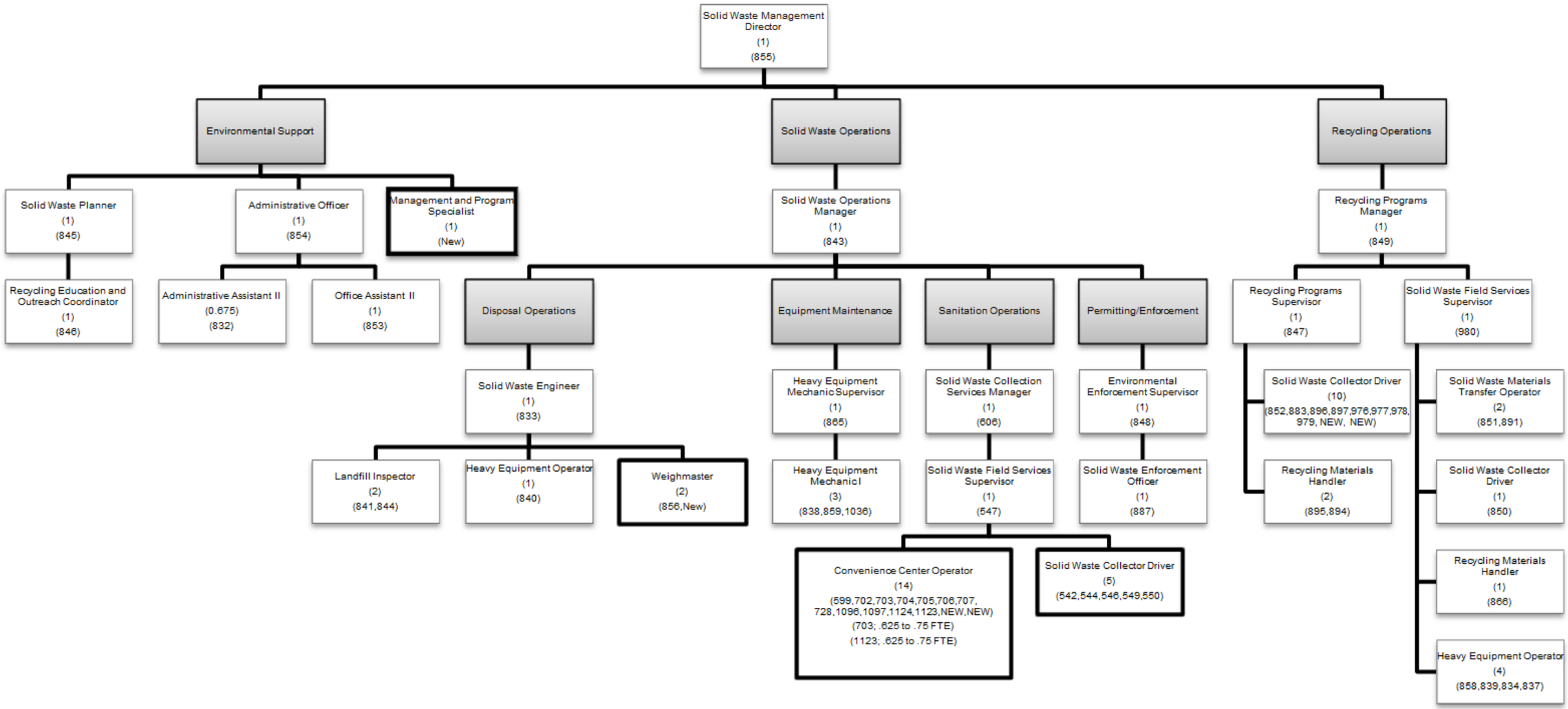
7. NCDEQ Division of Environmental Assistance and Customer Service, Solid Waste Fee Use in North Carolina (Draft Report), NC DENR Local Government Recycling Assistance Team, FY 2014-15.

8. Additional internal Orange County data and documents not listed here.

Appendix A

Department Organizational Chart

Table 1. Department Organizational Chart and Staffing



Appendix B

Department Fleet Asset List

Table 1. Department Fleet Asset List

Division	Type	ID(s)	Vehicle Description
Environmental Support - Enforcement	Vehicle	566	Dodge Durango SUV
Environmental Support - Administration	Vehicle	885	Dodge Grand Caravan Van
Environmental Support – Administration	Vehicle	683	Ford Taurus Sedan
Environmental Support - Enforcement	Vehicle	684	2006 Dodge Pickup
Environmental Support - Administration	Vehicle	848	Dodge Durango
Environmental Support – Vehicle Support	Vehicle	688	2006 Ford F-350 Service Truck
Environmental Support – Vehicle Support	Vehicle	689	2006 Ford F-350 Service Truck
Environmental Support – Vehicle Support	Vehicle	586	International 4200 Service Truck
Landfill	Vehicle	687	2006 Dodge 4X4 Pickup
Landfill	Vehicle	880	Ford F-250 4X4 Pickup
Landfill	Vehicle	854	Ford 4X4 Pickup
Landfill	Vehicle	685	2006 Dodge 4X4 Pickup
Landfill	Equipment (MSW)	227	New Holland T4030 Tractor
Landfill	Equipment (C&D)	TBD	CMI 3-75 Compactor
Landfill	Equipment (C&D)	TBD	CAT Articulating Truck
Landfill	Equipment (C&D)	TBD	CAT D6R Dozer
Landfill	Equipment (C&D)	TBD	CAT 325D Hydraulic Exvac
Recycling – Ordinance Area	Equipment	433	CAT 315 Excavator
Recycling	Equipment	460	CAT 924GZ Wheel Loader
Recycling – Ordinance Area	Equipment	435	Bobcat Skidsteer
Recycling – Ordinance Area	Equipment	490	Powerscreen 4026 Conveyor
Recycling – Ordinance Area	Equipment	452	CAT 963D Track Loader
Recycling – Ordinance Area	Equipment	463	PP Horizontal Grinder 7400
Recycling – Ordinance Area	Equipment	853	Landfill Rec-Pickup
Recycling – Ordinance Area	Equipment	451	Rosco Sweeper Pro
Recycling – Universal Services	Vehicle	855	Ford F-250 Pickup
Recycling – Universal Services	Vehicle	1779	Freightliner FL-120 Roll-off Truck
Recycling – Universal Services	Vehicle	1781	Peterbuilt/Heil Frontloader Truck
Recycling – Universal Services	Vehicle	1681	2007 Freightliner Roll-off Truck
Recycling – Universal Services	Vehicle	1486	Izsuzu NPR Glass Flatbed Truck
Recycling – Universal Services	Vehicle	851	Labrie Crane Carrier Recycling Truck
Recycling – Universal Services	Vehicle	1639	GWC W4500 Box Recycling Truck
Recycling – Universal Services	Vehicle	872	Peterbuilt/Heil Frontloader Truck
Recycling – Universal Services	Equipment	1776	Bobcat Skidsteer
Recycling – Universal Services	Equipment	450	Clark CMP25 REI Plastic Compactor
Recycling – Universal Services	Equipment	428	Clark CMP25 Off-road Fork Lift
Recycling – Universal Services	Vehicle	432	2006 Dodge 4X3 Pickup
Recycling – Universal Services	Vehicle	1637	Freightliner Multi-family Recycling Truck
Recycling – Universal Services	Equipment	897	Rudco RP-400 Stationary Compactor
Recycling – Universal Services	Equipment	581	WG SWCC OCC Compactor
Recycling – Universal Services	Equipment		WG SWCC SS Compactor
Recycling – Universal Services	Vehicle	930	Dodge 2500 Pickup Truck
Recycling – Universal Services	Vehicle	1491	Manac Walking Trailer
Recycling – Universal Services	Vehicle	887	Peterbuilt Road Tractor
Recycling – Universal Services	Vehicle	846	Freightliner Road Tractor
Recycling – Multifamily	Equipment	467	Bobcat Model 863 Skidsteer Multifamily
Recycling – Multifamily	Vehicle	942	Freightliner Commercial Recycling Truck
Recycling – Urban Curbside	Vehicle	1686	Dodge 1500 Pickup
Recycling – Rural Curbside	Vehicle	923	Labrie/Crane Carrier Top Select 1000 Recycling Truck
Recycling – Rural Curbside	Vehicle	924	Labrie/Crane Carrier Top Select 1000 Recycling Truck
Recycling – Rural Curbside	Vehicle		Recycling Truck (TBD)
Recycling – Rural Curbside	Vehicle		Recycling Truck (TBD)
Recycling – Rural Curbside	Vehicle	850	Transit Connect Van
Recycling – Rural Curbside	Equipment	429	CAT 906H Compact Loader
Recycling – Rural Curbside	Vehicle	431	2009 MAC 48' Walking Floor Trailer
Sanitation – Replacement	Vehicle	232	International Dump Truck
Sanitation – Replacement	Vehicle	679	Sterling Dump Truck
Sanitation – Replacement	Vehicle	919	Chevy Equinox
Sanitation – Replacement	Vehicle	852	Ford F250 Pickup
Sanitation – Replacement	Vehicle	TBD	Peterbuilt Front Loader
Sanitation – Replacement	Vehicle	881	Peterbuilt Front Loader
Sanitation – Change	Vehicle	780	Peterbuilt Front Loader to Roll-off
Sanitation – Change	Vehicle	844	International SwapLoader Roll-off
Sanitation – Replacement	Vehicle	922	Freightliner Roll-off
Sanitation – Replacement	Vehicle	927	Freightliner Roll-off
Sanitation - Replacement	Equipment	7060	Bobcat Skidsteer
Sanitation - Replacement	Equipment	7061	Case Skidsteer
Sanitation - Replacement	Equipment	7062	Bobcat Skidsteer
Sanitation - Replacement	Equipment	7063	Bobcat Skidsteer
Sanitation - Add	Equipment	7064	Bobcat Skidsteer
Sanitation – Replacement as Needed	Equipment	00-01	Hudson Trailer
Sanitation – Replacement as Needed	Equipment	7065	Contral Trailer
Sanitation	Equipment	C-5	Bakers Compactor Bulky Waste
Sanitation	Equipment	C-1	Bakers Compactor MSW
Sanitation	Equipment	C-2	Bakers Compactor MSW
Sanitation – Add	Equipment	TBD	Bakers Compactor Bulky Waste

Source: Orange County, 2016

Appendix C

List of Model Assumptions

LIST OF MODEL ASSUMPTIONS

GENERAL

- The County provided FY 2016-17 Budget values for revenues and expenses associated with the Enterprise Fund. SCS compared these values with the previous 3 years of "Past Actual" values for FY 2012-13, 2013-14, and 2014-15, as well as the FY 2015-16 Original Budget and Revised Budget values, to assess the reasonableness of the Budget. Obviously, certain revenues and expenses have been dramatically changed since the closing of the County's sanitary landfill in June 2013. Generally speaking, SCS concluded that the FY 2016-17 Budget values for the anticipated revenues and operating expenses that the County provided were appropriate and reasonable based on our understanding of the County's solid waste and recycling programs and facilities operating under each of the four divisions. Furthermore, SCS concluded that the FY 2016-17 Budget values for approximately 33 revenue line items and 50 operating expense line items were appropriate to serve as the baseline, or "Test Year" for projecting the subsequent four future fiscal year revenues and operating expenses. The exact manner in which these projections were accomplished is described below.

- Line item accounts that had a value of zero for the FY 2016-17 Budget were anticipated to be zero for all future years and, thus, were essentially excluded from the analysis. Only Revenue and Expense account line items with a value greater than zero were included in this analysis.

- Future projections for line items are escalated using the annual inflationary factor of 2.1%, which represents a calculated average of historical CPI.

- For purposes of characterizing annual deficits within the Enterprise Fund as being funded by revenue that would originate from potential increases to the County's property tax rate (per $100 of assessed value), SCS assumed that each $0.01 incremental increase to the tax rate yielded $1,655,660 in annual revenue.

REVENUES

- Future projections for the 33 revenue line item accounts for the four subsequent fiscal years (FY 2017-18, FY 2018-19, FY 2019-20, and FY 2020-21) are either maintained constant or escalated using the annual inflationary factor and the Test Year as the baseline, unless noted in the table below as being handled differently.

- **County Solid Waste Programs Fee:** The current fiscal year (FY 2015-16) is the first year in which this revenue line item account has been in effect and SCS understand it reflects the initial Program Fee of $107 applied to 60,178 parcels. Projections for the four future fiscal years were escalated by 1.1%, which is the projected annual population growth, to reflect the fee being assessed for additional parcels.

- **General Fund Contribution:** SCS understands that the County has established a precedent since FY 2007-08 of utilizing contributions from the General Fund as revenue into the Sanitation Services Division. SCS' analysis was structured to assume that the contribution from the General Fund for the Test Year and four subsequent fiscal years is maintained at approximately $2 million per year.

- **Appropriated Balance Fund:** SCS understands that the Appropriated Fund Balance line item account is used to balance the budget. It reflects load proceeds, Program Fee rounding, and other general fund transfers. While the County provided the value for the FY 2015-16 Budget as approximately $1.7 million, SCS opted to only account for known debt-financed endeavors in future fiscal years, which includes loans for convenience center construction costs in FY 2018-19 and FY 2020-21 ($804,784 and $904,255, respectively). No other loan proceeds or general fund transfers were included beyond the Test Year. Also note that the $345,432 loan portion of the FY 2016-17 Appropriated Fund Balance line item was included in the Revenues for both Scenarios for that year.

- **Contributions from Equipment Reserves:** Note that one of the largest revenue line item accounts is the Contributions from Equipment Reserves, which has historically varied significantly from year to year and will likely do so in future years. SCS utilized values that were provided by the County as projected revenues for this line item account for the four subsequent future fiscal years.

- **Landfill Gas Recovery Revenue:** SCS applied a deflationary factor of -3% to projected landfill gas recovery revenues to account for closure of the Orange County Landfill.

EXPENSES

- Future projections for the 50 operating expense line item accounts for the four subsequent fiscal years (FY 2017-18, FY 2018-19, FY 2019-20, and FY 2020-21) are escalated using the annual inflationary factor and the Test Year as the baseline, unless noted below as being handled differently.

- **Landfill Fees:** The solid waste collected by the County is currently hauled and tipped at the transfer station in Durham. SCS assumed that, in addition to escalating annual costs by an inflationary factor, the Landfill Fees operating expense line item account will be impacted by a $2/ton tipping fee increase (from $42.50 to $44.50) in FY 2018-19, which is a 4.7% increase.

- **Debt Service Principal/Debt Service Interest:** Debt servicing line items including debt service to principal and debt service to interest were escalated but kept in the same proportion.

- **Contributions to Equipment Reserves:** Note that one of the largest operating expense line item accounts is the Contributions to Equipment Reserves, which has historically varied significantly from year to year and will likely do so in future years. SCS

utilized values that were provided by the County as projected costs for this line item account for the four subsequent future fiscal years. SCS assumes the existing equipment reserve fund will be incorporated into any future R&E Fund.

- **Capital Expenses – IT Equipment and Furnishings:** The limited expenses of IT Equipment and Furnishings were assumed to be $5,000 and $1,000 annually in the four years succeeding the Test Year.

- **Capital Expenses – Equipment and Vehicles:** The costs for replacing the County's vehicles operated within the Solid Waste Department is expected to be financed through various mechanisms including the Equipment Reserves Fund and debt-servicing, thus, these line items are handled under separate line items in capital expenses as lump sum costs provided by the County.

- **Capital Expenses – Construction:** The costs for upgrades to the County's solid waste and recycling convenience centers that are anticipated to occur in FY 2017-18 and FY 2019-20 are expected to be debt-financed and, thus, are handled in capital expenses under the Construction line item account as lump sum costs with correlating amounts introduced into the revenues in the Appropriated Fund Balance line item account as loan proceeds.

OTHER ASSUMPTIONS

- Program Fee kept at $107/year and appropriated fund balance used to balance budget for status quo Scenario 1 for FY 2016-17 ONLY.

Table 1. Budget Revenue Accounts

Budget Revenue Accounts	Description	Projection Assumption
422050	C&D License/Permit	Apply Inflation Factor Only
439000	Sanitation Waste Collections	Apply Inflation Factor Only
460000	Interest On Investments	Apply Inflation Factor Only
470001	Sale Of Fixed Assets	Hold Constant Only
479051	Clean Metal And White Goods	Hold Constant Only
479052	Clean Wood Out	Hold Constant Only
479053	Occ (Municipal) Collections	Hold Constant Only
479058	Recycling Tip Fees	Hold Constant Only
479061	Tire Tax Reimbursement	Hold Constant Only
479062	White Goods Reimbursement	Hold Constant Only
479063	Mattress Fee	Hold Constant Only
479065	Sales Mulch	Hold Constant Only
479066	Sales Compost	Hold Constant Only
479068	Sales Of Recycling Material	Hold Constant Only
479073	Solid Waste Disposal Fee (NC)	Hold Constant Only
479074	Landfill Gas Recovery	Apply 3% Decrease Only
479079	State Electronics Mgmt Funds	Hold Constant Only
479080	Ncdeao Grant Funds	Hold Constant Only
479085	County Sw Programs Fee	Apply Population Growth Factor Only
479810	Disposal Tax Reimbursement	Hold Constant Only
489996	County Gen Fund Contribution	Hold Constant Only
489999	Contribution From Equip Resrvs	County Provided
499900	Appropriated Fund Balance	County Provided
499999	Miscellaneous Revenue	Apply Inflation Factor Only
499999	Landfill Fees	Hold Constant Only
682001	Landfill Fines (Penalty Surcharge)	Hold Constant Only

Table 2. Budget Expense Accounts

Budget Expense Accounts	Description	Projection Assumption
Capital Expenses		
510000	Permanent Salaries	Apply Inflation Factor Only
510100	Overtime	Apply Inflation Factor Only
510102	Holiday Pay	Apply Inflation Factor Only
510200	Longevity	Apply Inflation Factor Only
511000	Temporary Personnel	Apply Inflation Factor Only
511003	Student Interns	Apply Inflation Factor Only
520000	Social Security	Apply Inflation Factor Only
520001	Medicare	Apply Inflation Factor Only
520100	Medical Insurance	Apply Inflation Factor Only
520101	Medical Insurance Payment In Lieu	Apply Inflation Factor Only
520110	HSA Contribution	Apply Inflation Factor Only
520150	Dental Insurance	Apply Inflation Factor Only
520160	Life Insurance	Apply Inflation Factor Only
520200	Retirement	Apply Inflation Factor Only

Budget Expense Accounts	Description	Projection Assumption
Capital Expenses		
520305	Non-Sworn 401(K)	Apply Inflation Factor Only
530100	Training/Development	Apply Inflation Factor Only
530500	Personal Mileage	Apply Inflation Factor Only
540000	Telephone	Apply Inflation Factor Only
550000	Postage	Apply Inflation Factor Only
560000	Vehicle Maintenance	Apply Inflation Factor Only
570000	Building Repairs	Apply Inflation Factor Only
571000	Equipment Repairs	Apply Inflation Factor Only
581000	Equipment Rent	Apply Inflation Factor Only
590000	Duplicating	Apply Inflation Factor Only
591000	Printing	Apply Inflation Factor Only
600000	Advertising	Apply Inflation Factor Only
610000	Dues	Apply Inflation Factor Only
611000	Subscriptions	Apply Inflation Factor Only
620000	Departmental Supplies	Apply Inflation Factor Only
621000	Office Supplies	Apply Inflation Factor Only
621050	Vehicle Supplies	Apply Inflation Factor Only
630000	Prof. Contract Services	Apply Inflation Factor Only
630003	Misc Contract Services	Apply Inflation Factor Only
641000	Bonds & Insurance	Apply Inflation Factor Only
641005	Workers Compensation	Apply Inflation Factor Only
650000	Electricity	Apply Inflation Factor Only
651000	Water and Sewer	Apply Inflation Factor Only
652002	Propane Gas	Apply Inflation Factor Only
670000	Uniforms	Apply Inflation Factor Only
682000	Landfill Fees	Apply Inflation Factor and Increase by $2 to $44.50 in FY 2018-19
682004	NC Solid Waste Disposal Tax	Apply Inflation Factor Only
682005	Processing Fee	Apply Inflation Factor Only
690000	Charges By General Fund	Apply Inflation Factor Only
700100	Debt Service Principal	Proportion Based on County Provided (Total Debt Number * 63%)
700101	Debt Service Interest	Proportion Based on County Provided (Total Debt Number * 37%)
720015	Retiree Health	Apply Inflation Factor Only
910050	Contribution To Equip Reserves	County Provided
800000	Equipment	County Provided
800100	It Equipment	$5K in FY 2016-17; Inflation Factor Applied Thereafter
801000	Furnishings	$1K in FY 2016-17; Inflation Factor Applied Thereafter
802000	Vehicles	County Provided
880000	Construction	County Provided

Table 3. General Assumptions and Quantities

Item	Input Description	Quantity	Units/Description	Comments/Source
	GENERAL ASSUMPTIONS			
1	Consumer Price Index	2.1%	Annual CPI - 12 Year Average U.S. Department of Labor	SCS Provided
2	Vehicles/Equipment	Varies	County Provided Replacement Schedules	County Provided
3	Customer Growth Rate	1.10%	Estimated Growth Rate	" "
4	Number of Parcels	60,178	Parcels (97% of total assumed for budgeting purposes)	" "
5	Landfill Gas De-escalation Rate	-3.0%	Assumes decline in LFG sales revenue at closed Landfill	SCS Assumptions
6	Property Tax Revenue Generation Factor	$ 1,655,660.00	Property Tax revenue yearly per 1 cent rate increase	County Provided
	REVENUE			
7	Recyclables	Varies	per ton (~$140,000/year)	County Provided
8	Tipping Fee at Orange County LF:			
8.1	C&D	$ 40	per ton	County Provided
8.2	Vegative Waste/Clean Wood	$ 18	per ton ($20 planned FY 2016-17)	" "
8.3	Tires (stockpiled)	$ 100	per ton	" "
8.4	Pick-up Trailer	$ 22	per load	" "
8.5	Car	$ 10	per ton	" "
8.6	Mattress/Box Springs	$ 10	per piece	" "
9	Yearly Fees for Scenario Modeling:			
9.1	Yearly Fee - Status Quo: Scenario 1	$ 107.00	per parcel (~60,178 parcels in Test Year)	County Provided
9.2	Yearly Fee - Scenario 2: Break Even Scenario	Calculated	" "	
10	Transfer from General Fund	$ 2,004,719.00	~$2 Mil (~35% Net Expense; 65% of Sanitation Division)	County Provided
11	Default Appropriated Fund Balance Transfer	$ 1,680,040.00	~$1.7 Mil (loans, rounding, etc.; covers budget shortfall)	" "
	EXPENSES			
12	Tipping Fee :			SCS Assumptions
12.1	MSW Current	$42.50	City of Durham TS (~$565K FY 15-16, ~42 TPD)	County Provided
12.2	MSW Anticipated	$44.50	Projected City of Durham TS Starting FY 2018-19	" "

Appendix D

Estimated Department Revenue Projections

Table 1. Estimated Department Revenue Projections

Budget Accounts	Description	FY2016-17 BUDGET					FY2017-18 PROJECTED					FY2018-19 PROJECTED				
		Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Revenues	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Revenues	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Revenues
422050	C&D License/Permit	120,000				120,000	122,530				122,530	125,113				125,113
439000	Sanitation Waste Collections			98,500	70,000	168,500			100,577	71,476	172,053			102,697	72,983	175,680
460000	Interest On Investments	15,000				15,000	15,316				15,316	15,639				15,639
470001	Sale Of Fixed Assets	7,000		49,000	30,000	86,000	7,000		49,000	30,000	86,000	7,000		49,000	30,000	86,000
479051	Clean Metal And White Goods			50,000		50,000			50,000		50,000			50,000		50,000
479052	Clean Wood Out			9,000		9,000			9,000		9,000			9,000		9,000
479053	Occ (Municipal) Collections			12,000		12,000			12,000		12,000			12,000		12,000
479058	Recycling Tip Fees			210,000		210,000			210,000		210,000			210,000		210,000
479061	Tire Tax Reimbursement			150,000		150,000			150,000		150,000			150,000		150,000
479062	White Goods Reimbursement			55,000		55,000			55,000		55,000			55,000		55,000
479063	Mattress Fee			20,000		20,000			20,000		20,000			20,000		20,000
479065	Sales Mulch			47,500		47,500			47,500		47,500			47,500		47,500
479066	Sales Compost			21,450		21,450			21,450		21,450			21,450		21,450
479068	Sales Of Recycling Material			125,800		125,800			125,800		125,800			125,800		125,800
479073	Solid Waste Disposal Fee (NC)		12,400			12,400		12,661			12,661		12,928			12,928
479074	Landfill Gas Recovery		34,500			34,500		33,465			33,465		32,461			32,461
479079	State Electronics Mgmt Funds			8,000		8,000			8,000		8,000			8,000		8,000
479080	Ncdeao Grant Funds			35,000		35,000			35,000		35,000			35,000		35,000
479085	County Sw Programs Fee	6,439,046				6,439,046	6,509,876				6,509,876	6,581,484				6,581,484
479810	Disposal Tax Reimbursement		30,000			30,000		30,000			30,000		30,000			30,000
489996	County Gen Fund Contribution				2,004,719	2,004,719				2,004,719	2,004,719				2,004,719	2,004,719
489999	Contribution From Equip Resrvs	26,117	187,190	100,993		314,300	176,501	29,566	282,211		488,278	63,415	367,329	749,110	280,764	1,460,618
499900	Appropriated Fund Balance	NA	NA	NA	NA	1,780,040	NA	NA	NA	NA	804,784	NA	NA	NA	NA	0
499999	Miscellaneous Revenue			5,500		5,500			5,616		5,616			5,734		5,734
499999	Landfill Fees		235,600			235,600		235,600			235,600		235,600			235,600
682001	Landfill Fines (Penalty Surcharge)		600			600		600			600		600			600
	REVENUE SUM	**6,607,163**	**500,290**	**997,743**	**2,104,719**	**11,989,955**	**6,831,223**	**341,892**	**1,181,154**	**2,106,195**	**11,265,248**	**6,792,652**	**678,918**	**1,650,292**	**2,388,466**	**11,510,327**

Budget Accounts	Description	FY2019-20 PROJECTED					FY2020-21 PROJECTED				
		Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Revenues	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Revenues
422050	C&D License/Permit	127,751				127,751	130,445				130,445
439000	Sanitation Waste Collections			104,862	74,522	179,384			107,073	76,093	183,166
460000	Interest On Investments	15,969				15,969	16,306				16,306
470001	Sale Of Fixed Assets	7,000		49,000	30,000	86,000	7,000		49,000	30,000	86,000
479051	Clean Metal And White Goods			50,000		50,000			50,000		50,000
479052	Clean Wood Out			9,000		9,000			9,000		9,000
479053	Occ (Municipal) Collections			12,000		12,000			12,000		12,000
479058	Recycling Tip Fees			210,000		210,000			210,000		210,000
479061	Tire Tax Reimbursement			150,000		150,000			150,000		150,000
479062	White Goods Reimbursement			55,000		55,000			55,000		55,000
479063	Mattress Fee			20,000		20,000			20,000		20,000
479065	Sales Mulch			47,500		47,500			47,500		47,500
479066	Sales Compost			21,450		21,450			21,450		21,450
479068	Sales Of Recycling Material			125,800		125,800			125,800		125,800
479073	Solid Waste Disposal Fee (NC)		13,201			13,201		13,479			13,479
479074	Landfill Gas Recovery		31,487			31,487		30,543			30,543
479079	State Electronics Mgmt Funds			8,000		8,000			8,000		8,000
479080	Ncdeao Grant Funds			35,000		35,000			35,000		35,000
479085	County Sw Programs Fee	6,653,880				6,653,880	6,727,073				6,727,073
479810	Disposal Tax Reimbursement		30,000			30,000		30,000			30,000
489996	County Gen Fund Contribution				2,004,719	2,004,719				2,004,719	2,004,719
489999	Contribution From Equip Resrvs	0	0	858,781	359,832	1,218,613	0	0	807,473	521,904	1,329,377
499900	Appropriated Fund Balance	NA	NA	NA	NA	904,255	NA	NA	NA	NA	0
499999	Miscellaneous Revenue			5,855		5,855			5,979		5,979
499999	Landfill Fees		235,600			235,600		235,600			235,600
682001	Landfill Fines (Penalty Surcharge)		600			600		600			600
	REVENUE SUM	**6,804,601**	**310,888**	**1,762,249**	**2,469,073**	**12,251,065**	**6,880,823**	**310,222**	**1,713,275**	**2,632,716**	**11,537,036**

Appendix E

Estimated Department Expense Projections

Table 1. Estimated Department Expense Projections

ACCOUNT NUMBER	DESCRIPTION	PROJECTED BUDGET FY 2016-17 ($)					PROJECTED FY 2017-18 ($)					PROJECTED FY 2018-19 ($)				
		Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Expense	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Expense	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Expense
510000	Permanent Salaries	775,230	232,188	928,799	666,760	2,602,977	791,574	237,083	948,381	680,818	2,657,856	808,263	242,082	968,376	695,171	2,713,893
510100	Overtime	4,348	1,762	17,062	19,105	42,277	4,440	1,799	17,422	19,508	43,168	4,533	1,837	17,789	19,919	44,078
510102	Holiday Pay	1,912	2,468	18,720	13,906	37,006	1,952	2,520	19,115	14,199	37,786	1,993	2,573	19,518	14,499	38,583
510200	Longevity	16,533	1,331	8,412	3,739	30,015	16,882	1,359	8,589	3,818	30,648	17,237	1,388	8,770	3,898	31,294
511000	Temporary Personnel	8,983	2,688	45,217	72,806	129,694	9,172	2,745	46,170	74,341	132,428	9,366	2,803	47,144	75,908	135,220
511003	Student Interns	11,000				11,000	11,232	0	0	0	11,232	11,469	0	0	0	11,469
520000	Social Security	50,034	14,907	63,129	48,132	176,202	51,089	15,221	64,460	49,147	179,917	52,166	15,542	65,819	50,183	183,710
520001	Medicare	11,702	3,486	14,764	11,257	41,209	11,949	3,559	15,075	11,494	42,078	12,201	3,635	15,393	11,737	42,965
520100	Medical Insurance	119,839	48,552	214,895	187,813	571,099	122,366	49,576	219,426	191,773	583,140	124,945	50,621	224,052	195,816	595,434
520101	Med Ins Pmt In Lieu	1,200		1,200	1,200	3,600	1,225	0	1,225	1,225	3,676	1,251	0	1,251	1,251	3,753
520110	Hsa Contribution	4,248	2,124	7,788	2,832	16,992	4,338	2,169	7,952	2,892	17,350	4,429	2,215	8,120	2,953	17,716
520150	Dental Insurance	4,380	1,516	8,087	7,245	21,228	4,472	1,548	8,258	7,398	21,676	4,567	1,581	8,432	7,554	22,133
520160	Life Insurance	1,680	562	2,539	1,790	6,571	1,715	574	2,593	1,828	6,710	1,752	586	2,647	1,866	6,851
520200	Retirement	57,857	17,237	70,542	51,005	196,641	59,077	17,600	72,029	52,080	200,787	60,322	17,971	73,548	53,178	205,020
520305	NonSworn 401(K)	9,295	3,218	17,160	15,373	45,046	9,491	3,286	17,522	15,697	45,996	9,691	3,355	17,891	16,028	46,965
530100	Training/Development	21,011	6,240	6,358	4,648	38,257	21,454	6,372	6,492	4,746	39,064	21,906	6,506	6,629	4,846	39,887
530500	Personal Mileage				198	198	0	0	0	202	202	0	0	0	206	206
540000	Telephone	17,830		6,920	15,350	40,100	18,206	0	7,066	15,674	40,945	18,590	0	7,215	16,004	41,809
550000	Postage	39,210				39,210	40,037	0	0	0	40,037	40,881	0	0	0	40,881
560000	Vehicle Maintenance	9,000	6,900	236,100	128,640	380,640	9,190	7,045	241,078	131,352	388,665	9,384	7,194	246,160	134,122	396,860
570000	Building Repairs	18,315	2,405	13,000	35,414	69,134	18,701	2,456	13,274	36,161	70,592	19,095	2,507	13,554	36,923	72,080
571000	Equipment Repairs	6,900	59,000	114,800	47,875	228,575	7,045	60,244	117,220	48,884	233,394	7,194	61,514	119,692	49,915	238,315
581000	Equipment Rent	2,910	360	2,400	3,384	9,054	2,971	368	2,451	3,455	9,245	3,034	375	2,502	3,528	9,440
590000	Duplicating	1,000				1,000	1,021	0	0	0	1,021	1,043	0	0	0	1,043
591000	Printing	14,950		0	8,000	22,950	15,265	0	0	8,169	23,434	15,587	0	0	8,341	23,928
600000	Advertising	60,300				60,300	61,571	0	0	0	61,571	62,869	0	0	0	62,869
610000	Dues	4,630	8,542	675	863	14,710	4,728	8,722	689	881	15,020	4,827	8,906	704	900	15,337
611000	Subscriptions	165				165	168	0	0	0	168	172	0	0	0	172
620000	Departmental Supplies	40,278	25,927	127,320	54,834	248,359	41,127	26,474	130,004	55,990	253,595	41,994	27,032	132,745	57,171	258,942
621000	Office Supplies	2,500				2,500	2,553	0	0	0	2,553	2,607	0	0	0	2,607
621050	Vehicle Supplies	10,950	45,686	253,180	126,544	436,360	11,181	46,649	258,518	129,212	445,560	11,417	47,633	263,968	131,936	454,954
630000	Prof. Contract Services	5,175	442,574	60,000		507,749	5,284	451,905	61,265	0	518,454	5,396	461,433	62,557	0	529,385
630003	Misc Contract Services	27,708	26,300	1,571,592	11,160	1,636,760	28,292	26,854	1,604,726	11,395	1,671,268	28,889	27,421	1,638,559	11,636	1,706,504
641000	Bonds & Insurance	32,385				32,385	33,068	0	0	0	33,068	33,765	0	0	0	33,765
641005	Workers Compensation	47,273				47,273	48,270	0	0	0	48,270	49,287	0	0	0	49,287
650000	Electricity	37,500			28,313	65,813	38,291	0	0	28,910	67,201	39,098	0	0	29,519	68,617
651000	Water and Sewer				6,000	6,000	0	0	0	6,127	6,127	0	0	0	6,256	6,256
652002	Propane Gas	5,700		3,000		8,700	5,820	0	3,063	0	8,883	5,943	0	3,128	0	9,071
670000	Uniforms	2,974	1,722	8,500	7,851	21,047	3,037	1,758	8,679	8,017	21,491	3,101	1,795	8,862	8,186	21,944
682000	Landfill Fees				578,747	578,747	0	0	0	590,949	590,949	0	0	0	631,804	631,804
682004	NC Solid Waste Disposal Tax		12,400			12,400	0	12,661	0	0	12,661	0	12,928	0	0	12,928
682005	Processing Fee			140,000		140,000	0	0	142,952	0		0	0	145,966	0	
690000	Charges By General Fund	518,330				518,330	529,258	0	0	0	529,258	540,417	0	0	0	540,417
700100	Debt Service Principal	106,136		92,791	219,166	418,093	106,461	0	250,253	253,028	609,742	106,461	0	250,253	316,605	673,318
700101	Debt Service Interest	62,849			135,324	198,173	62,524	0	146,974	148,604	358,102	62,524	0	146,974	185,942	395,441
720015	Retiree Health	17,991	58,400	3,052	53,663	133,106	18,370	59,631	3,116	54,794	135,912	18,758	60,888	3,182	55,950	138,778
910050	Contribution To Equip Reserves	19,136	88,919	929,466	280,508	1,318,029	21,885	89,889	942,957	280,508	1,335,239	45,670	90,905	953,391	296,326	1,386,292
	Operating Expenses Subtotal	**2,211,347**	**1,117,414**	**4,987,468**	**2,849,445**	**11,165,674**	**2,256,752**	**1,140,068**	**5,388,995**	**2,943,275**	**11,586,139**	**2,324,093**	**1,163,225**	**5,484,791**	**3,136,076**	**11,962,220**
800000	Equipment*			17,000		17,000	0	0	0	0	0	0	318,542	0	0	318,542
800100	It Equipment*				20,000	20,000	5,000	0	0	0	0	5,105	0	0	0	5,105
801000	Furnishings*					0	1,000	0	0	0	1,000	1,021	0	0	0	1,021
802000	Vehicles*	26,117		446,425	314,739	787,281	176,501	29,566	282,211	252,592	740,870	63,415	48,787	749,110	280,764	1,142,076
880000	Construction*					0	0	0	0	804,784	804,784	0	0	0	0	0
	Capital Expenses Subtotal	**26,117**	**0**	**463,425**	**334,739**	**824,281**	**182,501**	**29,566**	**282,211**	**1,057,376**	**1,546,654**	**69,542**	**367,329**	**749,110**	**280,764**	**1,466,745**
SOLID WASTE	**Total Expenses**	**$2,237,464**	**$1,117,414**	**$5,450,893**	**$3,184,184**	**$11,989,955**	**$2,439,253**	**$1,169,634**	**$5,671,206**	**$4,000,651**	**$13,280,744**	**$2,393,635**	**$1,530,554**	**$6,233,901**	**$3,416,840**	**$13,574,930**
Leveling Factor		**19%**	**9%**	**45%**	**27%**		**18%**	**9%**	**43%**	**30%**		**18%**	**11%**	**46%**	**25%**	

ACCOUNT NUMBER	DESCRIPTION	PROJECTED FY 2019-20 ($)					PROJECTED FY 2020-21 ($)				
		Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Expense	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total Expense
510000	Permanent Salaries	825,304	247,186	988,793	709,828	2,771,111	842,705	252,397	1,009,640	724,793	2,829,535
510100	Overtime	4,629	1,876	18,164	20,339	45,008	4,726	1,915	18,547	20,768	45,957
510102	Holiday Pay	2,036	2,627	19,929	14,804	39,396	2,078	2,683	20,349	15,116	40,227
510200	Longevity	17,601	1,417	8,955	3,981	31,954	17,972	1,447	9,144	4,064	32,627
511000	Temporary Personnel	9,563	2,862	48,138	77,509	138,071	9,765	2,922	49,153	79,143	140,982
511003	Student Interns	11,711	0	0	0	11,711	11,957	0	0	0	11,957
520000	Social Security	53,266	15,870	67,207	51,241	187,583	54,389	16,204	68,624	52,321	191,538
520001	Medicare	12,458	3,711	15,718	11,984	43,871	12,721	3,789	16,049	12,237	44,796
520100	Medical Insurance	127,580	51,688	228,776	199,944	607,988	130,270	52,778	233,599	204,160	620,806
520101	Med Ins Pmt In Lieu	1,278	0	1,278	1,278	3,833	1,304	0	1,304	1,304	3,913
520110	Hsa Contribution	4,522	2,261	8,291	3,015	18,090	4,618	2,309	8,466	3,078	18,471
520150	Dental Insurance	4,663	1,614	8,609	7,713	22,599	4,761	1,648	8,791	7,876	23,076
520160	Life Insurance	1,789	598	2,703	1,906	6,995	1,826	611	2,760	1,946	7,143
520200	Retirement	61,594	18,350	75,099	54,300	209,343	62,893	18,737	76,682	55,444	213,756
520305	NonSworn 401(K)	9,895	3,426	18,268	16,366	47,956	10,104	3,498	18,654	16,711	48,967
530100	Training/Development	22,368	6,643	6,769	4,948	40,728	22,840	6,783	6,911	5,053	41,587
530500	Personal Mileage	0	0	0	211	211	0	0	0	215	215
540000	Telephone	18,982	0	7,367	16,342	42,690	19,382	0	7,522	16,686	43,590
550000	Postage	41,743	0	0	0	41,743	42,623	0	0	0	42,623
560000	Vehicle Maintenance	9,581	7,346	251,350	136,949	405,227	9,783	7,501	256,650	139,837	413,770
570000	Building Repairs	19,498	2,560	13,840	37,701	73,600	19,909	2,614	14,131	38,496	75,151
571000	Equipment Repairs	7,346	62,811	122,215	50,967	243,339	7,501	64,135	124,792	52,042	248,470
581000	Equipment Rent	3,098	383	2,555	3,603	9,639	3,163	391	2,609	3,679	9,842
590000	Duplicating	1,065	0	0	0	1,065	1,087	0	0	0	1,087
591000	Printing	15,916	0	0	8,517	24,432	16,251	0	0	8,696	24,948
600000	Advertising	64,195	0	0	0	64,195	65,548	0	0	0	65,548
610000	Dues	4,929	9,094	719	919	15,660	5,033	9,285	734	938	15,990
611000	Subscriptions	176	0	0	0	176	179	0	0	0	179
620000	Departmental Supplies	42,880	27,602	135,544	58,376	264,401	43,784	28,184	138,402	59,607	269,976
621000	Office Supplies	2,661	0	0	0	2,661	2,718	0	0	0	2,718
621050	Vehicle Supplies	11,657	48,637	269,534	134,718	464,546	11,903	49,662	275,216	137,558	474,340
630000	Prof. Contract Services	5,509	471,161	63,876	0	540,546	5,625	481,095	65,222	0	551,942
630003	Misc Contract Services	29,498	27,999	1,673,106	11,881	1,742,483	30,120	28,589	1,708,380	12,131	1,779,220
641000	Bonds & Insurance	34,477	0	0	0	34,477	35,204	0	0	0	35,204
641005	Workers Compensation	50,326	0	0	0	50,326	51,388	0	0	0	51,388
650000	Electricity	39,922	0	0	30,142	70,064	40,764	0	0	30,777	71,541
651000	Water and Sewer	0	0	0	6,388	6,388	0	0	0	6,522	6,522
652002	Propane Gas	6,068	0	3,194	0	9,262	6,196	0	3,261	0	9,457
670000	Uniforms	3,166	1,833	9,049	8,358	22,406	3,233	1,872	9,240	8,534	22,879
682000	Landfill Fees	0	0	0	645,124	645,124	0	0	0	658,726	658,726
682004	NC Solid Waste Disposal Tax	0	13,201	0	0	13,201	0	13,479	0	0	13,479
682005	Processing Fee	0	0	149,043	0		0	0	152,185	0	
690000	Charges By General Fund	551,810	0	0	0	551,810	563,444	0	0	0	563,444
700100	Debt Service Principal	106,461	0	250,253	316,605	673,318	106,461	0	250,253	364,161	720,874
700101	Debt Service Interest	62,524	0	146,974	185,942	395,441	62,524	0	146,974	213,872	423,371
720015	Retiree Health	19,153	62,172	3,249	57,129	141,704	19,557	63,483	3,318	58,334	144,691
910050	Contribution To Equip Reserves	52,259	158,150	1,019,502	311,906	1,541,817	52,259	158,150	1,042,330	332,832	1,585,571
	Operating Expenses Subtotal	**2,375,156**	**1,253,078**	**5,638,064**	**3,200,932**	**12,318,188**	**2,420,568**	**1,276,163**	**5,749,892**	**3,347,659**	**12,642,097**
800000	Equipment*	0	0	0	0	0	0	0	0	0	0
800100	It Equipment*	5,213	0	0	0	5,213	5,323	0	0	0	5,323
801000	Furnishings*	1,043	0	0	0	1,043	1,065	0	0	0	1,065
802000	Vehicles*	0	0	858,781	359,832	1,218,613	0	0	807,473	521,904	1,329,377
880000	Construction*	0	0	0	904,255	904,255	0	0	0	0	0
	Capital Expenses Subtotal	**6,256**	**0**	**858,781**	**1,264,087**	**2,129,124**	**6,388**	**0**	**807,473**	**521,904**	**1,335,765**
SOLID WASTE	**Total Expenses**	**$2,381,412**	**$1,253,078**	**$6,496,845**	**$4,465,019**	**$14,596,354**	**$2,426,955**	**$1,276,163**	**$6,557,365**	**$3,869,563**	**$14,130,047**
Leveling Factor		**16%**	**9%**	**45%**	**31%**		**17%**	**9%**	**46%**	**27%**	

*Varies widely from year to year

Appendix F

Model Output

Table 1. Scenarios 1 and 2

SCENARIO 1 - Status Quo: $107 Fee (Includes General Fund Contribution ~ $2 Million)[1]	PROJECTED BUDGET FY 2016-17					PROJECTED FY 2017-18					PROJECTED FY 2018-19				
	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total[2]	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total
Program Fee Revenue	1,201,600	600,092	2,927,330	1,710,024	6,439,046	1,195,659	573,324	2,779,878	1,961,015	6,509,876	1,160,497	742,053	3,022,360	1,656,574	6,581,484
Other Revenues	168,117	500,290	997,743	2,104,719	3,770,869	321,347	341,892	1,181,154	2,106,195	4,755,372	211,168	678,918	1,650,292	2,388,466	4,928,843
Total Revenues	1,369,717	1,100,382	3,925,073	3,814,743	10,209,915	1,517,006	915,217	3,961,031	4,067,210	11,265,248	1,371,665	1,420,972	4,672,651	4,045,040	11,510,327
Total Expenses	2,237,464	1,117,414	5,450,893	3,184,184	11,989,955	2,439,253	1,169,634	5,671,206	4,000,651	13,280,744	2,393,635	1,530,554	6,233,901	3,416,840	13,574,930
Net Revenues (Deficits)	($867,747)	($17,032)	($1,525,820)	$630,559	($1,780,040)	($922,248)	($254,417)	($1,710,175)	$66,559	($2,015,497)	($1,021,970)	($109,583)	($1,561,250)	$628,200	($2,064,603)
	Scenario 1: Budget Gap				($1,780,040)					($2,015,497)					($2,064,603)

SCENARIO 1 - Status Quo: $107 Fee (Includes General Fund Contribution ~ $2 Million)[1]	PROJECTED FY 2019-20					PROJECTED FY 2020-21				
	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total[2]	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total
Program Fee Revenue	1,085,588	571,227	2,961,646	2,035,419	6,653,880	1,155,432	607,559	3,121,849	1,842,233	6,727,073
Other Revenues	150,720	310,888	1,762,249	2,469,073	5,597,184	153,750	310,222	1,713,275	2,632,716	4,809,963
Total Revenues	1,236,308	882,115	4,723,895	4,504,492	12,251,065	1,309,182	917,781	4,835,124	4,474,948	11,537,036
Total Expenses	2,381,412	1,253,078	6,496,845	4,465,019	14,596,354	2,426,955	1,276,163	6,557,365	3,869,563	14,130,047
Net Revenues (Deficits)	($1,145,104)	($370,963)	($1,772,951)	$39,473	($2,345,290)	($1,117,773)	($358,382)	($1,722,241)	$605,385	($2,593,011)
	Scenario 1: Budget Gap				($2,345,290)					($2,593,011)

SCENARIO 2 - Break Even Scenario	PROJECTED BUDGET FY 2016-17					PROJECTED FY 2017-18					PROJECTED FY 2018-19				
	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total[2]	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total
Program Fee Revenue	1,533,776	765,985	3,736,574	2,182,751	8,219,086	1,565,842	750,829	3,640,544	2,568,157	8,525,372	1,524,544	974,834	3,970,470	2,176,239	8,646,087
Other Revenues	168,117	500,290	997,743	2,104,719	3,770,869	321,347	341,892	1,181,154	2,106,195	4,755,372	211,168	678,918	1,650,292	2,388,466	4,928,843
Total Revenues	1,701,893	1,266,275	4,734,317	4,287,470	11,989,955	1,887,189	1,092,721	4,821,698	4,674,352	13,280,744	1,735,711	1,653,753	5,620,762	4,564,705	13,574,930
Total Expenses	2,237,464	1,117,414	5,450,893	3,184,184	11,989,955	2,439,253	1,169,634	5,671,206	4,000,651	13,280,744	2,393,635	1,530,554	6,233,901	3,416,840	13,574,930
Net Revenues (Deficits)	($535,571)	$148,861	($716,576)	$1,103,286	$0	($552,064)	($76,913)	($849,508)	$673,701	$0	($657,923)	$123,198	($613,140)	$1,147,865	$0
	Scenario 2: Deficit/Surplus w/ General Fund				$0					$0					$0
	Scenario 2: Break-Even Program Fee w/ General Fund				$136.58					$140.13					$140.57

SCENARIO 2 - Break Even Scenario	PROJECTED FY 2019-20					PROJECTED FY 2020-21				
	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total2	Environmental Support (3500)	Landfill Services (3510)	Recycling Services (3520)	Sanitation Services (3530)	Total
Program Fee Revenue	1,468,225	772,567	4,005,536	2,752,843	8,999,170	1,600,803	841,749	4,325,194	2,552,338	9,320,084
Other Revenues	150,720	310,888	1,762,249	2,469,073	5,597,184	153,750	310,222	1,713,275	2,632,716	4,809,963
Total Revenues	1,618,945	1,083,456	5,767,784	5,221,915	14,596,355	1,754,554	1,151,971	6,038,469	5,185,053	14,130,047
Total Expenses	2,381,412	1,253,078	6,496,845	4,465,019	14,596,354	2,426,955	1,276,163	6,557,365	3,869,563	14,130,047
Net Revenues (Deficits)	($762,467)	($169,623)	($729,061)	$756,896	$0	($672,402)	($124,193)	($518,896)	$1,315,491	$0
	Scenario 2: Deficit/Surplus w/ General Fund				$0					$0
	Scenario 2: Break-Even Program Fee w/ General Fund				$144.71					$148.24

1. The FY 2016-17 Other Revenues are presented in a manner to be consistent with the County's preliminary budget. The four Projected Years include loan proceeds associated with two collection center construction projects under the Appropriated Fund Balance line item account. The four Projected Years also include contributions from equipment reserves as a separate line item account. Note that these items (loan proceeds and contributions from equipment reserves) were considered part of the Appropriated Fund Balance for FY 2016-17, which was set to zero, and therefore are effectively excluded as Other Revenues within the model for that year.

2. FY 2017-18 and FY 2019-20 "Other Revenues" and "Total Revenues" "Total" Column cells include loan proceeds for convenience center construction of $804,784 and $904,255, respectively. These figures do not appear in the individual Division columns.

3. As a budgetary leveling exercise, SCS developed a methodology to present the net revenue and expense output by the Model as if the Program Fee contribution in the various Scenarios were disbursed evenly across all four Department Divisions, rather than solely through the Environmental Services Division. The "Leveling Factors" used for this exercise can be seen in Appendix E.

Memorandum

To: Solid Waste Advisory Group

From: JD Freeman, Carrboro Public Director

Lance Norris, Chapel Hill Public Works Director, Wendy Simmons, Chapel Hill Solid Waste Services Manager

Ken Hines, Hillsborough Public Works Director

Gayle Wilson, County Solid Waste Director, Allison Lohrenz, County Recycling Programs Manager, Blair Pollock, County Solid Waste Planner, Cheryl Young, County Research & Data Manager

BJ Tipton, UNC-CH Solid Waste Program Manager

Date: November 3, 2016

Subject: SWAG Follow-up: County-wide Waste Reduction Goal

At the September 16, 2016 SWAG meeting the Group requested that staff discuss what waste reduction goals are possible/reasonable for the SWAG to consider, should the goal be incremental and should the goal be open-ended or defined by deadlines? Town and county staffs met and engaged in a wide-ranging discussion of the various issues related to setting a new goal. A general consensus was reached among staff and an overview of our discussions and conclusions is provided below.

1. Waste Reduction Definition and Calculation

Staff first confirmed what the waste reduction goal actually represents. It is the amount of waste per capita from a county that is currently calculated and reported by the State Division of Solid Waste Management as disposed in a landfill as compared to the amount of waste disposed per capita from a base year of 1991/92. For Orange County, 131,067 tons were reported as disposed in FY 1991/92 (1.36 tons per capita) versus 69,281 tons disposed for FY 14/15 (0.495 tons per capita) for a waste reduction rate of 64%.

2. Illustration of Additional Tonnage Reduction Necessary to Achieve Higher Goals

The amount disposed by Orange County residents, businesses, and construction projects throughout the county and UNC last year was 69,281 tons of waste in landfills. This averages out to 990 pounds per County resident, or a waste reduction rate per person of 64%. The waste reduction rate is compiled from data of the base of 1991-1992 when the average pounds disposed by resident was 2,720 pounds.

The table below shows the additional amount of waste that would have to be diverted from landfilling to achieve a 70%, 80% and 90% waste reduction rate.

Waste Reduction Rate desired	Additional Tons needed to be Diverted
70%	11,908
80%	30,799
90%	50,040

3. University Waste Reduction Objective

The University announced a zero waste initiative. Their goal as stated in the Gazette (10/12/16) is a targeted 95% reduction including cutting total incoming waste by 50% and then recover 90% of remaining waste through recycling and composting. No plans have been adopted or developed that communicate how such a policy would be implemented or the objective achieved and in what time period. The University's current recovery rate is 47%. Their per capita waste reduction to landfill rate from the base year of FY 1991-92 is 42% (not counting coal ash).

4. General Staff Observations

- Staff detects no perception from public or elected officials of interest in reducing or eliminating existing programs or services.
- Current programs are working at a commendable level of efficiency and cost-effectiveness.
- It is essential to resolve the current $2,000,000 budget gap and implement a new financial plan before seriously contemplating further investment in waste reduction programs.
- The "low hanging" waste reduction fruit has already been harvested; additional substantive waste reduction will be increasingly expensive and challenging and will require creativity and innovation.
- A careful and systematic process will be necessary to identify future direction of waste reduction programs and achieve more assertive goals.
- Any existing program or service reductions are likely to result in increased tons disposed and a decrease in local waste reduction goal attainment.

5. General Program Planning Components toward Achieving Additional Waste Reduction

- More education and outreach.
- New programs and services.
- Examine new and improved collection or processing methodologies.
- Improvements to existing programs and services.
- New or different regulations, ordinances, and potential enforcement.
- New and better markets for the sale of recyclables.
- Pursue new materials or focus on materials identified as available in larger amounts through waste composition study.
- Focus on or pursue new or currently underserved waste generation sectors (Commercial).
- New or improved expanded disposal or processing facilities.
- Consider enhanced influence or oversight of private waste collection services.

- Continued cooperation and collaboration between the Towns, County, University, and UNC Hospital.

6. <u>How to Identify Additional Reasonable Waste Reduction Opportunities</u>

- Examine waste characterization data
    - What potential recyclable materials remain in the waste stream, in what quantities and from which service sectors?
- Establish process to convert waste characterization data into new or improved program options
    - Determine recovery potential for these identified materials.
    - Develop programmatic means and methods for capturing targeted materials.
    - Identify facility improvements or new facilities that enable materials collection, processing and/or transfer.
    - Determine cost estimates for new or improved programs and availability of funding.
    - Confirm markets for these identified materials.
    - Consider public acceptance for potential program enhancements.
    - Conduct pilot studies of programs as necessary.
- Consider proven technologies that may aid in waste reduction progress.
- Examine how to make enforcement more effective and productive.

7. <u>Refine Process to Develop Strategies for Goal Identification and Implementation</u>

- Complete waste characterization study.
- With assistance of recycling consultant, staffs perform the analysis and construct a draft plan following the elements noted in section 6 above.
    - Analysis likely to take one to two years.
- Staff recommends a mix of program and service options and, based on estimated tonnage capture or reduction at the source, recommends a corresponding new waste reduction goal.
    - Includes funding requirements and source(s) that are consistent with adopted solid waste financial plan.
- Recycling Plan Adoption and Implementation (SWAG/Managers/Staffs/Jurisdictions elected bodies)
    - Include goal achievement timelines and deadline as/if desired (not required).
    - Propose new goal be established by additional tonnage diverted from disposal.
    - Conduct public workshops, forums or other outreach as necessary to obtain public input.
    - Assumes significant supporting education and outreach for public understanding and acceptance.
- Achieve new waste reduction goal – continue to lead state and region in waste reduction.

Note: This strategy does not include the necessary political process and represents only the more technical and operationally associated staff viewpoints. Should the SWAG agree with the staff approach a political and public input process would of necessity have to be established to guide, monitor and provide the necessary decision making.

Conclusion

The staffs' have reached a general consensus that a more deliberate solid waste reduction plan development process should be established. This is due to the potential budgetary impacts on the solid waste enterprise fund, the careful and methodical analysis necessary to formulate new cost-effective programs, services and policies, the examination of market risk and the need to develop realistic public and elected official waste reduction expectations. In staff's opinion, the development of a well thought-out strategic waste reduction plan is required that will inform the SWAG and the elected boards of what waste reduction objectives could be pursued and at what cost.

Following the completion of the waste composition study in April 2017, the staff's recommend devoting the next one to two years to preparing such a strategic plan, with the aid of a professional consultant as necessary. It is believed that a minimum of one year and probably longer would be required, which would also allow time for implementation of the new financial plan to be initiated, paving the way for consideration of additional investments in waste reduction and perhaps even opportunities for new revenue. Adoption of a new waste reduction goal and the careful examination of solid waste management regulatory, operational, market, policy, funding, public acceptance factors, coupled with waste composition data, are interdependent. Options for further waste reduction should be based on data and technical analysis, staff knowledge and experience and consultant technical expertise, while avoiding unnecessary financial risk for the enterprise fund.

In the interim, staffs' suggest maintaining the existing 61% waste reduction goal, or if the SWAG feels so inclined, adopt an interim goal of 65% that may be achieved by improved application of and/or enhanced education for current programs and services and limited additional expenditures.

Memorandum

To: Solid Waste Advisory Group

From: Gayle Wilson, Solid Waste Director

Subject: Mattress Collection/Disposal

Date: November 3, 2016

Following the previous discussion of mattress disposal by the SWAG at the September meeting, staff is providing follow-up information as requested.

Can the mattress collection program at Waste & Recycling (W&R) Centers be performed with the assistance of correctional center inmates who are paid a living wage?

Staff contacted the Orange Correctional Center in Hillsborough and spoke to the manager of the inmate work release program – Mr. Ashley. The criteria for utilizing these prisoners are:

- Pay at least minimum wage
- Guarantee a minimum of 35 hours/week
- Maintain workers compensation insurance on the workers
- Must be supervised at all times (supervisor must be pre-screened and approved by the Center)
- Transportation to the work area can be provided by the Center (who will charge the inmate)

It would appear that the criteria above could be met, with the exception of the supervisor requirement. Our W&R Centers do not have supervisors stationed on site; a single supervisor oversees all five centers and is not located at any one center. It may be possible to have a non-county supervisor (center operator) submitted and approved as a supervisor for this single purpose, if the center operator could pass the screening. Would such an employee receive additional pay for this new supervisory responsibility? Also, center operators are frequently rotated between centers and have days off, so more than one operator would have to meet the supervisor criteria.

One question raised by staff is whether there would be any risk (real or perceived) to the hundreds of customers/residents that enter the centers daily? Would there be a discomfort at the public having to interact with prisoners?

Staff believes that if the supervision issues could be resolved correctional center inmates might be able to perform the mattress collection and disposal tasks. With a living wage paid there would be no cost savings to previously discussed program options. Costs for obtaining containers and for hauling of the mattresses would still be necessary and proposed program costs would not be reduced by the use of these inmate laborers. Without the benefit of cost savings, staff would not recommend using inmate labor, given the supervisory hitch and potential negative public perception.

Could a locked drop-box be provided at the centers for residents to place their $10 per unit into on a voluntary basis to help offset the costs of the program? At the end of each day a sheriff's deputy could visit the two centers, remove the cash and deposit it.

Staff contacted the Sheriff's office to explore this issue and received the reply that this is not something that the sheriff's office would be interested in undertaking. Staff, for a host of reasons, would not recommend the drop-box approach.

Staff Suggestion

Should SWAG wish to make a recommendation to the Board of County Commissioners regarding improving the current mattress collection and disposal program, utilizing the District Waste & Recycling Centers, staff offers the following preferred option:

Provide a permanent mattress disposal option at both of the District Waste & Recycling Centers (W&R Center), in addition to the existing landfill location.

Details:

a. During existing landfill facility hours (7 am-3 pm weekdays and 8 am -noon Sat) mattresses/box springs would be received just as we do now (not at the Eubanks W&R Center) except that mattresses coming from residents will not be charged the fee even though they'll have to cross the scales; only non-residential mattresses (UNC or apartment management companies for example) will be charged $10/unit
b. When the landfill facility is closed (after 3 pm weekdays and noon on Saturdays; and Sundays) residents may bring mattresses to the Eubanks Rd. W&R Center
    i. Mattresses delivered to the landfill facility will be recycled as they are now if clean and dry
    ii. Mattresses delivered to the Eubanks W&R Center will be hauled to the transfer station
c. Walnut Grove would receive mattresses during all of its current operational hours and the units will be hauled to the transfer station and not recycled
d. Mattresses delivered to the Eubanks W&R Center during landfill facility hours will be redirected to the landfill facility (no charge)
e. Eubanks W&R Center will not accept mattresses until the new center is constructed and open for business
f. No fee will be charged to residents at either Eubanks or Walnut Grove W & R Centers or at the landfill location
g. Fee will be charged to non-residential customers at landfill location; non-residential customers are not authorized to use W&R Centers

Estimated Additional Operating Cost for FY 16/17: $35,566

Includes signage, advertising, additional hauling and tipping fees, increased non-permanent staffing

Capital Cost: $9,294

One time purchase of two (2) 30 yard roll-off containers

Staff wishes to emphasize that instituting an efficient and reliably functioning mattress collection and disposal service expansion will require appropriate resources and cannot be otherwise satisfactorily accomplished to Orange County's generally accepted public program performance expectations. Does the SWAG have a recommendation for the Board of County Commissioners regarding the mattress collection and disposal issue? Does the SWAG prefer to continue the current mattress collection and disposal program for the immediate future?