

City of Coral Springs Solid Waste & Recycling Strategic Plan Report

**Prepared for:
City of Coral Springs**



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Appendix A: Phase 1 Deliverables

- Baseline Report Including Waste Composition Results
- Best Practices Case Studies

Appendix B: Phase 2 Deliverables

- PAYT Benchmark Memorandum
- Focus Group Meetings Presentations
- Customer Survey Results Memoranda

Appendix C: Example Education and Outreach Materials

Executive Summary

ES.1 Background and Purpose

In its 2011 Business Plan, the City of Coral Springs (City) adopted a goal of achieving a city-wide 75% recycling rate by 2020. This goal was driven in part by the State of Florida's 75% recycling goal established by the State Legislature in 2008 as part of House Bill 7135 (Energy, Climate Change, and Economic Security Act). The City desired to be a leader in reaching the new recycling goal established by the State.

In addition, with the City's existing franchise collection contract for residential and commercial waste set to expire on December 31, 2013, the City wanted to begin identifying strategies that would most efficiently and effectively assist the City in reaching its recycling goal, so that elements of those strategies could be incorporated into the new collection procurement process, and potentially into the new franchise collection contract.

With these things in mind, the City contracted with HDR Engineering, Inc. (HDR) in May 2011 to assist in the development of a Solid Waste and Recycling Strategic Plan (Plan) that would allow the City to provide quality solid waste and recycling services for the next 10 years, increase recycling to reach its 75% goal by 2020, and develop new and innovative strategies for managing solid waste services. The project was conducted in three phases:

- Phase 1 - developed an understanding of what is in the City's waste stream that could be recycled; established a baseline of what is currently being recycled; and identified best practices and innovative strategies for reaching the recycling goal.
- Phase 2 - conducted stakeholder outreach (focus group meetings and customer surveys); further analyzed selected strategies; developed an implementation timeline for the selected strategies; and provided collection procurement assistance.
- Phase 3 - provided education and outreach examples that can be used for residential and commercial customers; and developed of the final Plan.

Key findings and recommendations from each of the phases are summarized below.

ES.2 Recycling Baseline Results

Figure ES-1 shows the percent of waste generated by sector (single-family residential, multi-family residential, and industrial/commercial/institutional) within the City. As illustrated, single-family homes generate nearly half of all waste in the City, and multi-family homes account for a third of waste generated in the City.

Figure ES-1: Waste Generation

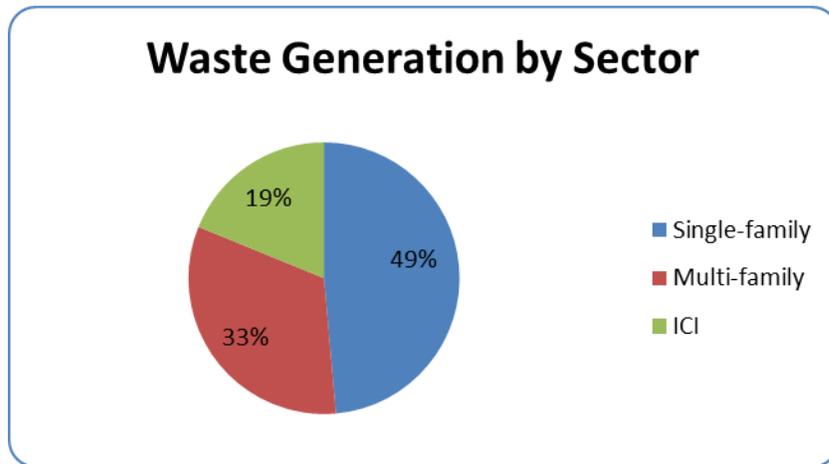


Table ES-1 presents the City’s baseline recycling rates by sector for FY 2010. It also contains the city-wide recycling rate for that year based on total tons generated and total tons recycled. Based on the methodology used by the State to calculate recycling rates, which includes a waste-to-energy (WTE) credit, the City’s baseline city-wide recycling rate in FY 2010 was 56.5%.

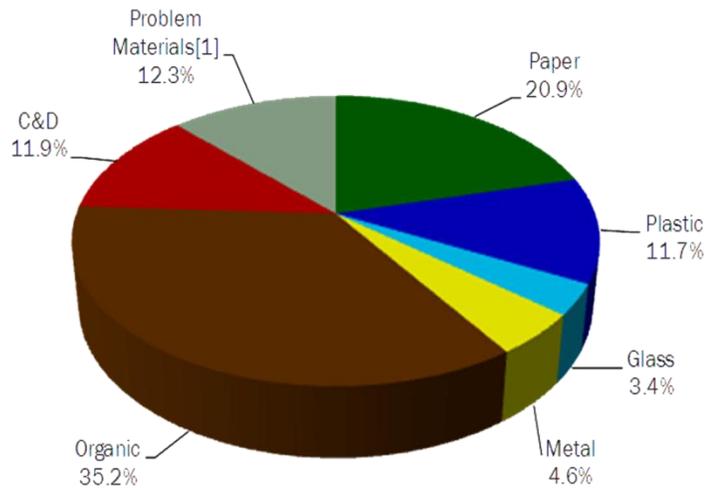
Table ES-1: Baseline Recycling Rates

Program	FY 2010 Recycling Rate
Single-family residential	14.0%
Multi-family residential	5.7%
Commercial	22.6%
Yard waste	0.0%
Construction & demolition	20.9%
Organics	0.0%
City-wide recycling rate (traditional reporting)	12.9%
City-wide recycling rate (with WTE credit)	56.5%

ES.3 Waste Composition Study Results

Figure ES-2 illustrates the breakdown of major material groups for the aggregate city-wide municipal solid waste stream (encompassing single-family, multi-family, and ICI wastes). Results are shown as a percentage of disposed wastes. As shown, organics is the largest material group at just over 35 percent, followed by paper at almost 21 percent.

Figure 2-1: Aggregate Waste Composition



ES.4 Stakeholder Feedback

The following is a brief summary of feedback received from each of the sectors through surveys and a series of focus group meetings.

Single-Family Residential

- Residents want twice a week garbage collection
- Willingness to support cart-based collection of garbage and recyclables, but wanted to consider manual collection in the procurement process as well
- Limited support for Pay-As-You-Throw (PAYT) system
- Desire to maintain side-door collection as an optional/subscription service
- 64-gallon garbage cart and 64-gallon recycling cart provides sufficient capacity for most homes

Multi-Family Residential

- 84% of respondents have access to on-site recycling
- Among those with on-site recycling:
 - 90% utilize the service
 - 65% said they recycle 25% or more of the waste they generate
 - 55% said containers provided are not of sufficient size to contain all recyclables
- Among those without access to on-site recycling:
 - 71% would be likely to utilize it if available

Commercial

Majority of respondents:

- Are already recycling (to some degree)
- Would support a mandatory recycling ordinance for traditional recyclables
- Would support a construction and demolition (C&D) debris diversion ordinance
- Were supportive of the City's 75% recycling goal

ES.5 Recommended Strategies

The following strategies to be considered for implementation by the City were developed based on HDR's analysis, best practices research, industry knowledge, feedback from focus groups and customer surveys, and input from the City Commission. The strategies are presented by sector and each strategy is identified as either short-term (implementation by 2015) or long-term (implementation by 2020).

Single-Family Residential

- Expand the list of recyclables accepted curbside (short-term)
- Cart-based collection services (short-term)
- Recycling incentive program (short-term)
- Bulk waste recycling (short-term)
- Food scrap recycling (long-term)

Multi-Family Residential

- Bin or reusable bags for residents (short-term)
- Education for management and residents (ongoing - short-term and long-term)
- Technical assistance (ongoing - short-term and long-term)
- Enforcement of mandatory recycling (ongoing - short-term and long-term)
- On-site cardboard recycling (short-term)
- Landscapers recycling requirement (short-term)
- Food scraps recycling (long-term)

Commercial

- Mandatory recycling ordinance (short-term)
- Mandatory construction and demolition debris (C&D) recycling ordinance (short-term)
- Technical assistance (ongoing - short-term and long-term)
- Landscapers recycling requirement (short-term)
- Food scraps recycling (long-term)

ES.6 Projected Recycling Rates

Table ES-2 presents the projected recycling rate by sector and for the City overall assuming each of the strategies recommended above is implemented.

Table ES-2: Projected Recycling Rates

	Base Year (2010)	Short Term (2015)	Long Term (2020)
Single-Family			
Traditional Rate	14%	52%	60%
Rate with WTE credit	57%	76%	80%
Multi-Family			
Traditional Rate	6%	21%	29%
Rate with WTE credit	53%	61%	65%
Commercial			
Traditional Rate	23%	48%	54%
Rate with WTE credit	61%	74%	77%
City-Wide			
Traditional Rate	13%	41%	49%
Rate with WTE credit	56%	71%	75%

1. Introduction

In its 2011 Business Plan, the City of Coral Springs (City) adopted a goal of achieving a city-wide 75% recycling rate by 2020. This goal was driven in part by the State of Florida's 75% recycling goal established by the State Legislature in 2008 as part of House Bill 7135 (Energy, Climate Change, and Economic Security Act). This bill created Section 403.7032, of the Florida Statutes (FS), which included the State recycling goal of 75% by 2020, and directed the Florida Department of Environmental Protection (FDEP) to develop a plan for achieving the goal. After a series of public workshops, FDEP finalized the plan to achieve this aggressive goal in January of 2010, and provided it to the State Legislature. The Legislature eventually adopted an amended bill (HB 7243) which was signed into law in May 2010.

HB 7243, which took affect July 1, 2010, amends several chapters in the FS (see Appendix A for complete text). Among other things, Chapter 403.706, subsection 2(a) provides a stated recycling goal for each county including: 40% solid waste recycled by 2012; 50% by 2013; 60% by 2016; 70% by 2018; and 75% by 2020. It also includes a statement encouraging counties and municipalities to form cooperative arrangements for implementing recycling programs.

While the State recycling goal and responsibility for meeting the goal falls on county governments, the City desired to be a leader in supporting Broward County's efforts to reach the new recycling goal established by the State.

In addition, with the City's existing franchise collection contract for residential and commercial waste set to expire on December 31, 2013, the City wanted to begin identifying strategies that would most efficiently and effectively assist the City in reaching its recycling goal, so that elements of those strategies could be incorporated into the new collection procurement process, and potentially into the new franchise collection contract.

With these things in mind, the City contracted with HDR Engineering, Inc. (HDR) in May 2011 to assist in the development of a Solid Waste and Recycling Strategic Plan (Plan) that would allow the City to provide quality solid waste and recycling services for the next 10 years, increase recycling to reach its 75% goal by 2020, and develop new and innovative strategies for managing solid waste services. The project was conducted in three phases.

It was first important to understand what and how much the City is recycling today, which was accomplished in Phase 1, the baseline task, which served to determine the City's overall recycling rate, as well as the recycling rates for each generator sector: single-family, multi-family, and Industrial/Commercial/Institutional (ICI). A summary of Phase 1 is provided below and the entire baseline report is included in Appendix A.

Phase 2 of the effort included stakeholder outreach, including customer surveys for residential and commercial customers, the forming of a focus group that met three times during the course of Phase 2, benchmarking, and collection procurement assistance. A summary of Phase 2 efforts is provided in Section 3 below, and deliverables associated with Phase 2 are included in Appendix B.

Phase 3 of the effort included providing examples of education and outreach materials included in Appendix C, and development of this Plan document.

The remainder of this Plan provides summaries of the work completed as part of this effort, and implementation considerations for the recommended strategies for reaching the 75% recycling goal by 2020.

2. Phase 1 - Baseline Summary

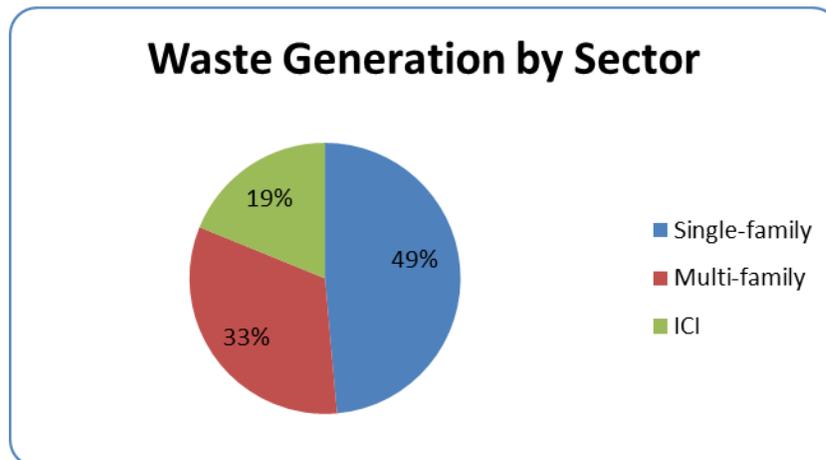
The City provides for residential and commercial garbage collection through an exclusive franchise agreement. Residential (single-family and multi-family) recyclables collection services are also provided through the exclusive franchise, as well as commercial construction and demolition debris (C&D debris) collection service. Commercial recyclables collection service, which cannot be made a part of an exclusive franchise per State Statute, is provided by private haulers licensed by the City. In 2011, there were nine licensed commercial recyclables haulers in the City, and residential C&D collection services were provided by two private haulers licensed by the City. Note that the baseline information included in the report in Appendix A uses calendar year 2010 data.

Once an understanding of which waste streams are source separated, by whom the materials are collected, and where the materials are processed or disposed was developed, HDR was able to determine the generation and recycling rates for the City, which are summarized below.

2.1. Generation Results

Figure 2-1 below shows the percent of waste generated by sector. As shown, single-family homes generate nearly half of waste generated in the City, and multi-family homes account for a third of waste generated in the City.

Figure 2-1: Waste Generation



2.2. Single-Family Sector Results

Single-family residents in the City generated a total of 47,690 tons of waste (3,933 lbs. per household per year) and diverted 4,353 of those tons (359 lbs. per household per year) for recycling in FY 2010. This resulted in a single-family recycling rate of 9.1% in FY 2010.

2.3. Multi-Family Sector Results

Multi-family residents in the City generated a total of 31,985 tons of waste (2,906 lbs. per household per year) and diverted 1,825 of those tons (166 lbs. per household per year) for recycling in FY 2010. This resulted in a multi-family recycling rate of 5.7% in FY 2010.

2.4. ICI Sector Results

The commercial sector in the City generated a total of 18,487 tons of waste (8,121 lbs. per business per year) and diverted 4,183 of those tons (1,838 lbs. per business per year) for recycling in FY 2010. This resulted in a commercial recycling rate of 22.6% in FY 2010.

2.5. C&D Debris Results

Of the City's overall estimated generation of C&D debris, 20.9% of the material was recycled in FY2010. Because there are only two C&D haulers in the City, for confidentiality purposes, specific tonnage data is not reported.

2.6. City-Wide Recycling Rate

Using the data described above, a City-wide recycling rate was calculated. Table 2-1 below shows the recycling rates by sector. Table 2-1 also shows the City-wide recycling rate based on total tons generated and total tons recycled.

Table 2-1: Baseline Recycling Rates

Program	FY 2010 Recycling Rate
Single-family residential [1]	14.0%
Multi-family residential	5.7%
Commercial	22.6%
Yard waste	0.0%
Construction & demolition	20.9%
Organics	0.0%
City-wide recycling rate (traditional reporting)	12.9%
City-wide recycling rate (with WTE credit)	56.5%

[1] A change in State law allowing for yard trash mulched and used as daily cover to be counted as recycled occurred after the baseline report was delivered; thus the single family recycling rate is revised to 14%, the city-wide recycling rate is revised to 12.9%, and the city-wide recycling rate with the WTE credit is revised to 56.5%.

3. Phase 2 - Outreach Summary

3.1. Pay-As-You-Throw (PAYT) Benchmark

Pay-As-You-Throw (PAYT) benchmarking efforts provided an overview of the costs, practices and policies of the five cities selected for the benchmarking effort as compared to the system in the City. HDR worked with City staff to identify the following five cities, which have residential PAYT programs in place, for comparison in this benchmarking task:

- Austin, TX
- Diamond Bar, CA
- Gainesville/ Alachua County, FL
- Pasadena, CA
- Rancho Palos Verdes, CA

The services provided in each city were documented and included in the PAYT Benchmark memorandum included in Appendix B. Each of the five benchmarked cities charges households a monthly rate for solid waste and recycling collection and disposal services. Monthly rates range from a low of \$12.75 per month to a high of \$30.95 per month depending on the City and the size of the garbage cart selected by the resident. The following table presents a summary of rates by city and cart size.

Table 3-1: PAYT Benchmark City Rates

	Mini-cart/21-gallon	35-gallon	64-gallon	96-gallon
Gainesville, FL	\$15.25	\$19.75	\$24.50	\$30.50
Rancho Palos Verdes, CA	-	\$18.09	\$23.27	\$28.46
Diamond Bar, CA	-	\$18.95	\$23.34	\$28.02
Austin, TX	\$12.75	\$13.50	\$18.75	\$30.95

Note: Current rates for the City of Pasadena, CA were not available.

For the three cities (Gainesville, Pasadena, and Austin) where data was available on the percentage of customers that subscribe to each size of garbage cart, the largest percentage of customers (between 43-61%) in each of those cities chose the 64-gallon cart.

The City of Coral Springs' FY 2012 annual assessment for residential solid waste and recycling service is \$233.64. For comparison purposes, this represents a monthly cost of \$19.47 per household. This rate is within the same general range as the monthly rates for once a week, 64-gallon service in the benchmark cities. It should be noted, however, that the City's collection contract is set to expire on December 31, 2013, and rates will be lower under the new franchise agreement effective January 1, 2014.

The full PAY-T Benchmark memorandum report is included in Appendix B.

3.2. Focus Group Meetings Summary

With direction from the City Commission, the City assembled a focus group made up of approximately 30 people from the single-family, multi-family and commercial sectors, as well as haulers. The focus group members were asked to participate in three meetings, and provide input on issues and strategies being considered as part of the project. The first focus group meeting was held on December 15, 2011, and provided an overview of current solid waste and recycling collection services, the 75% recycling goal, the Solid Waste and Recycling Strategic Plan project, Phase 1 results, as well as what was expected from the focus group efforts. Participants were also asked to provide input on the customer surveys before the surveys were conducted.

The second focus group meeting was held on May 24th, 2012 and mainly focused on residential curbside services, a review of the PAYT Benchmark results, and the potential changes that could be considered to increase recycling in the City. The third focus group meeting was held on June 14, 2012 and focused on looking for consensus on residential curbside service changes, as well as multi-family, commercial and construction and demolition debris recycling strategies.

The PowerPoint presentations used for each focus group meeting are provided in Appendix B.

3.3. Residential Customer Survey Summary

The residential survey was developed by HDR with input from City staff and the stakeholder group for this project. The purpose of the survey was to gather information from single-family and multi-family residents in Coral Springs regarding their current solid waste and recycling practices, as well as their opinions and attitudes related to possible future changes in residential solid waste and recycling services. The final survey consisted of 35 questions, which were customized to the individual respondent based on their responses to certain key questions (i.e. whether they lived in a single-family or multi-family home; whether or not they currently participate in curbside or on-site recycling programs).

The survey was conducted via an online survey. A link to the survey was placed on the homepage of the City's website and postcards notifying residents of the survey and its location were mailed to a random sample of 4,000 households within the City (2,080 single-family and 1,920 multi-family). The City also promoted the survey opportunity at various community meetings and through City publications. In addition, an informational email with a link to the survey was sent to approximately 480 members of the City's various advisory boards and committees. Online survey responses to the residential survey were collected from February 15, 2012 to May 15, 2012. Over a three month period, a total of 387 responses to the survey were received, exceeding the targeted number of responses.

Some of the key findings from the residential survey include:

- The vast majority of respondents rated the current curbside collection services for garbage, recycling, bulk waste, and yard waste as either excellent or good.
- Ninety-five percent of the single-family respondents indicated that they currently participate in the City's curbside recycling program.
- Among those respondents indicating that they currently participate in the City's curbside recycling program, 96% indicated that they set-out recyclables for collection once a week.
- Among those respondents indicating that they currently participate in the City's curbside recycling program, plastic containers were the most commonly recycled items with 99% of respondents stating that they commonly recycle plastics. Aseptic containers (such as cartons and drink boxes) and cardboard were the least commonly recycled items at 76% and 79% respectively.
- Seventy percent of respondents indicated that they currently recycle 25% or more of the household waste they generate (by volume).
- Fifty-seven percent of respondents indicated that their current recycling bin is not large enough to hold all of the recyclables that their household typically accumulates in a week.
- When asked what (if anything) would make respondents recycle more than they currently do, 56% indicated that a larger container with wheels would cause them to recycle more. Fifty-one percent of respondents also indicated that accepting a wider variety of materials would cause them to recycle more, and approximately one-third of respondents indicated that factors such as better education regarding acceptable materials, the ability to earn rewards for recycling, and the ability to reduce their solid waste collection costs would also encourage them to recycle more.
- The majority of respondents (54%) indicated that they would be very willing to support the utilization of a wheeled cart for garbage and a wheeled cart for recycling. Only 12% of respondents indicated that they would not be willing to support a change to cart-based service.
- Among those multifamily respondents with access to and participating in on-site recycling, 65% indicated that they currently recycle 25% or more of the household waste they generate (by volume).
- Among those multifamily respondents with access to and participating in on-site recycling, 55% indicated that the recycling containers provided in their community were not large enough to hold all of the recyclables generated.
- Among those multifamily respondents without access to on-site recycling, 71% indicated that they would be likely to utilize this service if it was available to them.

The full Residential Survey Results memorandum report is included in Appendix B.

3.4. Commercial Customer Survey Summary

The commercial survey was developed by HDR with input from City staff and the stakeholder group for this project. The purpose of the survey was to gather information from businesses in Coral Springs regarding their current solid waste and recycling practices, as well as their opinions regarding possible future changes to solid waste and recycling services and requirements within the City. The final survey consisted of 13 questions, including several questions to help us identify the type and size of businesses responding to the survey.

The City provided HDR with a spreadsheet containing information from its business license database, including names and contact information for the approximately 6,900 licensed businesses located within the City's jurisdiction. This information was used in the administration of the survey which is explained in greater detail in the Administration section below.

The survey was conducted in part via telephone calls placed to commercial businesses within the City during the three week period of February 15 to March 9, 2012. An email inviting businesses to complete the survey online was also sent to all businesses that had an email address on file with the City in the business license database. Online survey responses to the commercial survey were collected from March 14 to April 13, 2012. Over a two month period, a total of 394 responses to the survey were received, exceeding the targeted number of responses.

Some of the key findings from the commercial survey include:

- Sixty percent of the businesses surveyed indicated that they currently engage in some type of recycling, either frequently (35%) or occasionally (25%).
- The majority of businesses surveyed indicated that they currently recycle less than 10% of the waste they generate. However, there was also a significant percentage (26%) that indicated that they recycle more than 50% of the waste they generate.
- Among the businesses indicating that they currently recycle, the vast majority (91%) indicated that they do so out of concern for the environment or the need to preserve natural resources. Eleven percent indicated they recycle because of a company directive, and 9% indicated they recycle because of cost savings.
- Among the businesses that do not currently recycle, the largest percentage (39%) indicated that the reason they do not recycle is a lack of access to, or lack of control over, the garbage and recycling services they have available to them. Many businesses indicated that they are located in a building where the garbage and recycling services offered are determined by a property management company and recycling services are not currently provided.
- The other most common reasons cited for not recycling included: a low volume of recyclable waste (23%), uncertainty about how to get started or what can be recycled (21%), and a lack of convenience (13%).

- Fifty-seven percent of respondents said they would support a mandatory recycling ordinance that requires all businesses to recycle at least one or two of the recyclable materials that they generate the most. Another 26% of respondents indicated that they might support such an ordinance depending on the specific requirements, while 17% indicated that they would not support a mandatory recycling ordinance.
- The majority of respondents (54%) also indicated that they would support a mandatory recycling ordinance that required constructing an enclosure to hide the recycling containers or dumpsters.

The full Commercial Survey Results memorandum report is included in Appendix B.

3.5. Results of Outreach Efforts

Table 3-2 summarizes input received regarding curbside garbage collection. There was wide support for a cart-based system and eliminating side door service as part of the standard service, though subscription based side door service was supported. There was very little support for a PAYT system or once per week garbage collection.

Table 3-2: Summary of Stakeholder Feedback for Curbside Garbage Collection

	Survey Results	Stakeholder Feedback
Collection Frequency	Residents want twice a week collection	Confirmed desire for twice a week collection; once a week only an option at significantly reduced cost
Cart-Based Collection	Majority willing to support cart-based collection	Confirmed willingness to support cart-based collection, but want to consider manual collection as well
Pay-As-You-Throw	Limited support for PAYT system	PAYT system could be an option if it would offer the opportunity for customer cost savings
Side-Door Collection	Broad support for eliminating side-door collection	Desire to maintain side-door collection at least as an optional/subscription service
Cart Size	64-gallon garbage cart sufficient for most homes	Confirmed 64-gallon garbage cart sufficient for most homes

Table 3-3 summarizes input received regarding curbside recycling collection. There was wide support for keeping once per week collection and changing to a cart-based system.

Table 3-3: Summary of Stakeholder Feedback for Curbside Recycling Collection

	Survey Results	Stakeholder Feedback
Collection Frequency	Once a week is sufficient	Confirmed that once a week is sufficient
Cart-Based Collection	Majority willing to support cart-based collection	Confirmed willingness to support cart-based collection
Cart Size	64-gallon recycling cart sufficient for most homes	Confirmed 64-gallon recycling cart sufficient for most homes

Table 3-4 summarizes input on curbside bulk waste collection. While most residents only use bulk waste collection four times per year, a quarterly collection program was not supported. Residents prefer to have the option to set out bulk waste at least once per week.

Table 3-4: Summary of Stakeholder Feedback for Curbside Bulk Waste Collection

	Survey Results	Stakeholder Feedback
Collection Frequency	Quarterly bulk waste collection would meet the needs of most households	Once a week bulk collection would be sufficient: could consider on-call service 4 or more times a year; some would prefer to keep twice a week
Recycling Requirements	N/A	Support for requiring hauler to recycle some defined percentage of bulk waste collected

Regarding multi-family residents, issues that deter recycling include:

- Lack of space in the home to collect recyclables separately from other waste
- Contamination in recycling bins
- Not enough bins provided for recyclables at collection point

Strategies to improve access and participation in multi-family recycling that were supported by those who provided feedback include:

- Enforcement of mandatory recycling
- Education for management and residents
- Technical assistance to management
- Bin or reusable bag provided to residents

Regarding businesses, feedback provided demonstrated that a majority of businesses:

- Were supportive of the City's 75% recycling goal
- Are already recycling (to some degree)
- Would support a mandatory recycling ordinance for traditional recyclables
- Would support a construction and demolition debris (C&D) diversion ordinance

Among the 25 respondents to the commercial survey that identified themselves as being in the construction industry, over half (52%) would support a C&D recycling ordinance and another 26% might support it depending on the specifics.

4. Implementation Planning for Recommended Strategies

Based on results of the previous efforts to research strategies for increasing recycling and diversion, and with feedback from the focus groups, customer surveys, and the City Commission, strategies to be considered for implementation were developed. These strategies were incorporated into a diversion model, which contains projections for tons of waste disposed, by sector, and shown by material type based on the results of the waste composition study completed during Phase 1 of the project. The following subsections review the strategies, including a general description, administrative considerations, policy/regulatory considerations, activities and timing anticipated for implementation, as well as estimated diversion impacts and resulting projected recycling rates.

For the purpose of this section, the term City's Solid Waste Ordinance refers to the City's Code of Ordinances, Chapter 8 - Property Maintenance, Article 1 - Garbage Collection and Recycling Service. "Short term" strategies refer to strategies recommended for implementation by 2015. "Long term" strategies refer to strategies recommended for implementation between 2015 and 2020. The specific year in which strategies are implemented, if at all, will be up to the City.

4.1. Single-Family Sector

The City provides curbside waste and recycling services through an exclusive franchise with a private hauler. The current franchise agreement expires in December of 2013. The current franchise agreement includes unlimited set out of garbage cans or bags twice per week, twice per week bulk waste collection, and once per week recyclables collection in 20-gallon bins. There is no separate yard trash collection service, though it can be set out for bulk waste collection. Residents may also use the City transfer station to drop off yard trash.

A collection procurement conducted during Phase 2 of the project resulted in changes in style of collection as well as service provider. The exclusive franchise agreement that will take effect January 1, 2014 includes twice per week automated garbage collection using 65-gallon carts, once per week automated recycling collection using 65-gallon carts, and once per week bulk waste collection with a 6 cubic yard limit. The transfer station operations will expand to include certain household hazardous waste items collection on a monthly basis.

The single-family sector is estimated to generate approximately 49% of the overall waste stream, and the traditional recycling rate for the sector in the base year was estimated to be 14%.

4.1.1. Expand the List of Recyclables Accepted Curbside (Short Term)

A strategy to increase diversion with minimal impact on the customer is to increase the types of materials that can be placed in the recycling container. This strategy depends on which materials can be processed at the processing facility with which the City contracts.

4.1.1.1. Administrative Considerations

The main efforts associated with this strategy include working with the contracted processor as well as the contracted hauler, to determine additional materials that can be included in the curbside program, and then educating residents regarding the additional materials accepted.

4.1.1.2. Policy/Regulatory Considerations

Because the definition of recyclable materials included in the City's Solid Waste Ordinance allows for any materials that are included in the City's agreement with the City's hauler, there is no anticipated policy or regulatory impacts that would result from adding materials to the current curbside recycling program.

4.1.1.3. Implementation Activities Schedule

The timing of adding materials to the curbside recycling program can be flexible; however, it would be wise to aim for a start date of January 1, 2014, the same day that cart collection for residential customers goes into effect. Education material that will be needed to promote the additional recyclables can be included in the materials shared with residents about carts in general. Implementation activities include:

- Discussion with processor to determine what is feasible
- Include hauler in discussions with processor in order to understand collection issues, if any, and to include the items in an exhibit in the collection franchise agreement
- Include a description of the additional allowable recyclables in the education material developed to educate residents

4.1.2. Cart Based Collection Services (Short Term)

As part of the City's collection procurement issued and awarded in 2013, for a service start date of January 1, 2014, the City included an option for changing from manual, unlimited collection to automated cart collection using 65-gallon carts, for garbage collection. The City also included an option to use automated 65-gallon carts for recyclables collection. The selection committee recommended, and the City Commission approved, the use of 65-gallon carts for both garbage and recyclables.

It has been shown in other communities that switching from a manual, unlimited, garbage collection system to an automated cart collection system can increase the amount of recyclables

collected regardless of how recyclables are collected. This is likely due to the limited amount of waste that will fit in a 65-gallon cart, which creates an incentive to recycle more. It has also been shown in other communities that changing from a bin system (typically 18 or 20-gallon bins) to a cart system (typically 65 or 95-gallon carts) for recyclables collection can significantly increase the amount of recyclables collected.

4.1.2.1. Administrative Considerations

The administrative considerations for changing to automated carts are those associated with administering the new collection franchise agreement. Because the carts themselves and education of the residents are included in the collection franchise agreement, no additional administrative considerations on the part of the City are necessary.

4.1.2.2. Policy/Regulatory Considerations

The City's Solid Waste Ordinance contains definitions that should be modified to align with the new collection franchise agreement. The definition of "garbage can" should be modified to describe the carts specified in the agreement; and definitions containing "garbage can" should be changed to "garbage cart". The definition of "curb service" may need to be modified to read that carts should be placed within two feet of the paved surface and at least three feet away from obstructions such as mail boxes and parked cars.

4.1.2.3. Implementation Activities Schedule

The timing of implementing cart based collection for residential curbside customers will occur in accordance with the schedule included in the new collection franchise agreement. These activities are described in Section 5 of the collection franchise agreement.

4.1.3. Recycling Incentive Program (Short Term)

A pilot study for a recycling incentive program for residential curbside customers is included in the new collection franchise agreement. The City has also retained the right to fully implement a recycling incentive program for residential curbside customers, depending on the outcome of the pilot study. More information about the pilot study and potential resulting ongoing program can be found in Section 25 and Exhibit 10 of the new collection franchise agreement.

4.1.3.1. Administrative Considerations

Similar to the switch to automated carts, the administrative considerations associated with the recycling incentive program are largely borne by the franchised hauler. The City will need to evaluate the effectiveness of the pilot study, once completed, in order to determine whether to continue with the incentive program for the additional fee to residents included in the franchise agreement rates.

4.1.3.2. Policy/ Regulatory Considerations

Because the incentive program is described in the collection franchise agreement, approved by the City Commission, it is not anticipated that additional policy or regulatory actions are necessary.

4.1.3.3. Implementation Activities Schedule

As described in the collection franchise agreement, the pilot study will occur for a six month period beginning on March 1, 2014 and ending on August 31, 2014. The timing of the pilot study will allow residents two months (January and February) to get accustomed to the carts before the incentive program begins. This will also allow the City to determine how much the increase in recyclables collected is due to the carts themselves, and how much is due to the incentive program.

4.1.4. Bulk Waste Recycling (Short Term)

Bulk waste, as defined in the collection franchise agreement, includes white goods, furniture, household goods, materials resulting from home improvement projects, fixtures, sinks, toilets, ladders, electronic equipment, and carpet. Bulk waste also includes yard trash. The City has elected to send bulk waste, including yard trash, to a processing facility that has contractually agreed to recycle at least 75% of the material received at the facility.

4.1.4.1. Administrative Considerations

As with some of the other strategies for the single-family residential sector, the administrative considerations associated with bulk waste recycling are largely borne by the franchised hauler, and ultimately by the bulk waste processor. The City will be able to monitor tonnage delivered to the processing facility through reports from the processor.

4.1.4.2. Policy/ Regulatory Considerations

Because bulk waste recycling was agreed upon in a processing/ disposal agreement approved by the City Commission, there is no additional policy or regulatory considerations anticipated for the City.

4.1.4.3. Implementation Activities Schedule

The recycling of bulk waste will begin when the bulk waste begins to be delivered to the processing facility, which under the new collection franchise agreement, begins January 1, 2014.

4.1.5. Food Scraps Recycling (Long Term)

Based on the waste composition study performed in 2011 (see Appendix A – Baseline Report), organics make up 44.3% of residential waste disposed. While the waste composition study found that a majority of organic material in the waste stream is yard trash (24.5% of organics), food scraps are the second largest contributor to this category at 9.8%. Yard trash recycling is a

short term strategy included in the bulk waste recycling strategy discussed in Section 4.1.4. Food scraps would be the next step in organics recycling.

This strategy is recommended for implementation in the long term, due to the need for appropriate infrastructure to be developed. While it would be a significant challenge to offer food scrap collection from residential customers in today's market, more attention is being placed on food scrap diversion. As the markets develop, and if appropriate infrastructure in close proximity develops, the City should consider adding food scraps to a separate organics collection. Depending on the type of infrastructure that may develop, it may be possible to collect food scraps along with yard trash.

4.1.5.1. Administrative Considerations

Depending on how the market for food scraps develops, the City may need to amend the collection franchise agreement (or include in a new franchise agreement) to include the separate collection of organics using carts. A majority of the administrative considerations, such as cart delivery and education and outreach, would be borne by the franchised hauler at that time.

4.1.5.2. Policy/Regulatory Considerations

Because the collection of food scraps would likely be included in a collection franchise agreement approved by the City Commission, no other policy or regulatory considerations would be anticipated.

4.1.5.3. Implementation Activities Schedule

It is anticipated that a food scrap strategy would not begin implementation until the proper infrastructure is in place. The City should work with its franchised hauler to monitor the food scrap processing capabilities in and around the City, and determine if food scraps could be processed with yard trash or if food scraps would need to be collected separately. At such time as the City, its hauler, and its potential organics processor determines it is feasible to collect food scraps from residential customers, the City should conduct customer outreach to determine if the residential customers would be willing to participate in such a program. The costs associated with such a program would need to be researched and conveyed in the customer outreach. If enough of the residents would support such a program, and the infrastructure is in place, the City could amend its collection franchise agreement, or wait for the next collection franchise agreement procurement and include the additional organics collection service requirement in a future Request for Proposals. A modification to, or new agreement with, an organics processor would need to occur concurrently, to ensure the material has a viable facility to which it can be delivered.

4.1.6. Diversion Estimates for Single-Family Sector Strategies

Table 4-1 shows the tonnage impacts and diversion impacts over the base year (2010) estimated to occur by implementing each of the strategies discussed in Sections 4.1.1 through 4.1.5. The cumulative effect of implementing the recommended strategies results in an estimated 42.6%

decrease in tons disposed by 2015, compared to the base year of 2010. The long term strategy of additional organics recycling results in an additional 9.1% in estimated tons diverted, for a 51.7% decrease in tons disposed compared to the base year.

Table 4-1: Diversion Estimates for Single-Family Sector Strategies

		Base Year	Short Term		Long Term	
	Waste Composition Results (2011)	2010 Actual Tons	2015 Projected Tons	2015	2020 Projected Tons	2020
Material Group	Percent of Waste Stream	Tons Disposed	Tons Disposed After Short Term Strategies Implementation	Percent Change from Base Year	Tons Disposed After Long Term Strategies Implementation	Percent Change from Base Year
Paper	19.4%	7,953	5,589	-29.7%	5,734	-27.9%
Plastic	11.4%	4,674	4,092	-12.5%	4,198	-10.2%
Glass	3.4%	1,394	931	-33.2%	955	-31.5%
Metal	3.7%	1,517	892	-41.2%	915	-39.7%
Organics	44.3%	18,162	9,379	-48.4%	5,278	-70.9%
C&D	11.8%	4,838	497	-89.7%	510	-89.5%
Problem Materials [1]	6.0%	2,460	2,150	-12.6%	2,205	-10.3%
Total	100%	40,997	23,530	-42.6%	19,796	-51.7%

[1] Problem materials include electronics, bulky items, tires, diapers/sanitary products, other inorganic, and household hazardous waste.

4.1.7. Single-Family Sector Projected Recycling Rates

As shown in Table 4-2, the City’s residential recycling rate was estimated to be 14% by traditional means, which includes curbside collection of traditional recyclables in the City’s bin system, and yard trash delivered by residents to the City’s transfer station in calendar year 2010. The State of Florida’s recent legislation regarding a 75% recycling goal by 2020 provides for credit for materials delivered to a waste-to-energy (WTE) facility. Communities using WTE facilities may count one ton per megawatt hour of energy produced, according to Florida Statute Chapter 403.706. With the WTE credit applied to the City’s base year data, the single-family recycling rate for that year is 57%.

The City has been using, and will continue to use, the Wheelabrator WTE facility for its residential garbage disposal. Under the new disposal agreement between Broward County and Wheelabrator, Wheelabrator has contractually agreed to ensure the users of its facility a half ton credit per ton disposed. In the short term, it is estimated the City will reach a 52% traditional recycling rate in the single family sector by implementing the recommended strategies. Adding the WTE credit is estimated to result in a 76% recycling rate for the single family residential sector. The long term recycling rates for single family residential sector is estimated to be 60% without the WTE credit, and 80% with the WTE credit.

Table 4-2: Single-Family Sector Projected Recycling Rates

Projected Single-Family Recycling Rates			
	Base Year (2010)	Short Term (2015)	Long Term (2020)
Tons Generated	47,690	48,784	50,032
Tons Recycled	6,693	25,292	30,251
Traditional Rate	14%	52%	60%
WTE Credit	20,499	11,746	9,890
Rate	57%	76%	80%

4.2. Multi-Family Sector

4.2.1. Summary of Current Services

The City provides collection services to multi-family dwelling units through the same exclusive franchise with a private hauler that is used for single family residential customers. The current franchise agreement expires in December of 2013. The current and future franchise agreement includes garbage collection from mechanical containers (dumpsters) at least twice per week, and recyclables collection from recycling carts or recycling containers at least once per week.

The multi-family sector is estimated to generate approximately 33% of the overall waste stream, and the traditional recycling rate for the sector in the base year was estimated to be 6%. There are challenges to recycling in the multi-family sector that differ from single-family, including a lack of convenience for use of a recycling program for the resident, and logistics for the recycling containers on the premises.

4.2.1. Bin or Reusable Bags for Residents (Short Term)

In order to address the convenience issue for multi-family residents, it is recommended that the City perform a pilot study on the use of individual bags or bins for recyclables at each residential unit. The bags could be canvas bags, similar to reusable bags sold at grocery stores, which allow the resident a separate place to store recyclables and then take recyclables to the recycling containers on the premises. The canvas bags also allow some flexibility for storage in the multi-family unit. Smaller recycling bins, preferably with a handle, could also be used. If the pilot study yields positive results for participation and is economically feasible, the City should expand the program to more multi-family properties.



4.2.1.1. Administrative Considerations

The City should work with property managers and the City's exclusive hauler to perform the pilot study and track the impacts on recycling participation in multi-family units. The bags/bins would have to be purchased, distributed to residents, and participation tracked. It may be possible to ask multi-family residents participating in the pilot study to "self report" how often they use the recycling program once the individual bags/bins are distributed. It may also be possible to ask the exclusive hauler to track tonnage increases at those properties participating in the pilot program, either in addition to or instead of, asking residents to self report.

4.2.1.2. Policy/ Regulatory Considerations

Because multi-family recycling collection service is provided through an exclusive franchise agreement approved by the City Commission, no other policy or regulatory considerations are anticipated for the City to perform a pilot study of the bins/bags at individual multi-family units.

4.2.1.3. Implementation Activities Schedule

The pilot program for bins/bags could be undertaken at any time. In order to plan for a pilot program, the City would need to identify two or three representative apartment complexes willing to participate; potentially representing large, medium and small complexes. The City's exclusive hauler may be able to help identify willing participants for the pilot program. Enough recycling bins or bags would need to be purchased to deliver to each unit at each participating complex. Educational materials about the pilot program should be left with property management and delivered to each unit along with the bins or bags. Monitoring methods should be determined prior to beginning the pilot program so monitoring information can also be included in the education materials. If individuals would be asked to self report, a description of how they can self report should be included. If the exclusive hauler will be asked to track volume or weight from the participating complexes, the method should be decided prior to implementing the pilot program and described in the education materials.

4.2.2. Education for Management and Residents (Ongoing - Short Term and Long Term)

While results of the customer survey performed in Phase 2 showed that 84% of multi-family residents who responded to the survey have access to onsite recycling, and 90% of those who responded to the survey said they participate in the program, a 6% recycling rate in the multi-family sector indicates that those who responded to the survey may have been more likely to recycle than the general population of multi-family residents in the City.

An education campaign aimed at management and residents of multi-family properties is recommended. Education materials should demonstrate the potential cost savings on garbage collection and disposal if more materials are recycled, which could be shown as a cost per ton comparison. The education materials should also indicate what materials can be recycled. It is recommended that a multimedia approach be used in order to reach as many residents as possible; this could include flyers and door hangers, posters for the property management office, and online resources. This strategy may be most effectively implemented in conjunction with the technical assistance program described in Section 4.2.3.

4.2.2.1. Administrative Considerations

The City should work with property managers, the City's public information office, and the City's exclusive hauler to provide the most effective education materials. The City's public information office may be able to determine the most effective approaches to reaching both

property managers and residents. The City's exclusive hauler can assist in determining what the message should be, and may be able to distribute the educational materials.

4.2.2.2. Policy/Regulatory Considerations

Because multi-family recycling collection service is provided through an exclusive franchise agreement approved by the City Commission, no other policy or regulatory considerations are anticipated for the City to provide additional education and outreach to the multi-family sector.

4.2.2.3. Implementation Activities Schedule

Education and outreach efforts should begin as soon as possible. With a new franchise agreement taking effect, the City should work with the new exclusive hauler in the time leading up to the service start date of January 1, 2014, to develop and distribute the materials, as the hauler will be contacting property owners to swap out containers at multi-family properties. This strategy should be considered an ongoing effort, with periodic outreach to management and residents.

4.2.3. Technical Assistance (Ongoing - Short Term and Long Term)

This program would provide enhanced technical assistance to multi-family, commercial, institutional and public agency generators in order to encourage them to initiate or expand recycling and waste reduction practices. The program would publicize the availability of technical assistance and encourage multi-family and commercial generators to use this free service to increase recycling and diversion wherever feasible, and at the same time lower their disposal costs.

Technical assistance would include conducting on-site waste assessments to identify target materials for recycling, diversion and waste reduction, providing contact information for securing collection services, and distributing appropriate outreach materials describing best practices for setting up or expanding recycling services for different types of businesses or institutions. Technical assistance would help to minimize or overcome various obstacles to recycling faced by commercial customers (space constraints, labor and sorting requirements, lack of information or training, etc.). Technical assistance provided by the program would encourage more multi-family and commercial customers to set up effective recycling and diversion programs that are suited to each customer's site, whether it be a large office complex, bar, restaurant, warehouse, shopping center, small retail business or other type of site.

The emphasis of the program could be to notify generators of the requirements (through letters and collection bill inserts), to offer technical assistance and training, and to follow up with site visits and extra support for generators who are not in compliance.

4.2.3.1. Administrative Considerations

Additional staff, perhaps 1 full-time equivalent employee, would be needed to work directly with multi-family and commercial generators in order to assist them in setting up recycling and

diversion programs tailored to their needs. Key program features to enhance multi-family and commercial technical assistance include:

- Dedicated staff resources with specific expertise in multi-family and commercial recycling and organics diversion;
- Provision of free internal containers for source-separation;
- Provision of recycling and organics diversion signs that can be customized for each generator; and
- Education and outreach tasks and techniques.

4.2.3.2. Policy/ Regulatory Considerations

This strategy assumes mandatory recycling ordinances for both the multi-family and commercial sectors. Section 4.2.4 discusses the mandatory recycling ordinance already in place for multi-family customers, and Section 4.3.2 discusses the strategy of implementing a mandatory commercial recycling ordinance. A decision about how to more aggressively ensure compliance can be made once the mandatory program has been in effect for a period of time (two to three years).

4.2.3.3. Implementation Activities Schedule

The timing of initiating the technical assistance program is not dependent on other programs or strategies, though adequate resources would need to be in place before initiating the technical assistance. As the City does not yet have a mandatory commercial recycling ordinance, the enforcement aspects of this strategy would not be relevant to the commercial sector until, or if, the City decides to implement the mandatory commercial recycling ordinance described in Section 4.3.2. However, technical assistance for the commercial sector should be offered whether recycling is mandatory or not.

The City's exclusive hauler may be a resource for technical assistance and therefore working with the new exclusive hauler in the time leading up to January 1, 2014 may be helpful. Once the necessary resources are in place, the strategy can be initiated. This strategy would be an ongoing effort. A reasonable timeframe for compliance with mandatory recycling is provided below.

- Year 1 - Education and Outreach - Explain requirements of the mandatory program, where to obtain resources and technical assistance, and how to comply.
- Year 2 - Notification - Notify multi-family and commercial generators that do not have recycling service of the requirement to recycle. Explain the consequences of non-compliance (citations, fines).
- Year 3 - Reinforcement - Target largest or most egregious generators. Conduct site visits. If the generator will not comply, refer to code enforcement.

4.2.4. Enforcement of Mandatory Recycling (Ongoing - Short Term and Long Term)

As stated in relevant part in Section 8.3 (f) of the City's Solid Waste Ordinance, "Every property owner, tenant, resident, firm or corporation shall use the services of contractor for the collection of recyclable materials upon the approval, the resolution, of the recycling program by the city, and it shall be the responsibility of the owner to pay for such service. Such compulsory service shall include a minimum of one (1) pickup per week."

Because multi-family customers are considered residential, recycling service can be required of property managers. It is recommended that the City work with its exclusive hauler to identify any multi-family properties not currently offering recycling collection, determine if it is a hardship for the property to provide space for recycling containers, and if reasonably feasible, require the property owner to provide recycling containers.

4.2.4.1. Administrative Considerations

The City should work with its exclusive hauler to identify those multi-family properties not currently providing recycling containers. Under the new agreement effective January 1, 2014, each property would have the option of using a dumpster rather than carts for recyclables. For some properties, allowing one dumpster, rather than a series of carts, may enhance the logistics for recycling collection. The City could task its hauler with identifying and informing the property managers of the requirement, and work to set up recycling programs.

4.2.4.2. Policy/Regulatory Considerations

Because the relevant section of the City's Solid Waste Ordinance is already in place, this strategy recommends enforcing the existing ordinance. No additional policy or regulatory considerations are anticipated.

4.2.4.3. Implementation Activities Schedule

With a new franchise agreement taking effect, the City should work with the new exclusive hauler in the time leading up to the service start date of January 1, 2014, to develop a plan for enforcing the mandatory recycling ordinance. As the new exclusive hauler is working with multi-family customers to coordinate swapping of garbage containers, discussions could occur regarding appropriate recycling containers.

4.2.5. On-Site Cardboard Recycling (Short Term)

The results of the waste composition study (see Appendix A – Baseline Report) showed that approximately 7% of the multi-family waste stream is cardboard, compared to only 3% of the single family waste stream. This is likely due to the higher volume of residents moving in and out of multi-family residences versus single family. The City could work with the exclusive hauler and apartment complex property management to determine if a separate dumpster specifically for cardboard could be placed on-site at larger apartment complexes. These dumpsters can vary in size and typically include a special lid that only allows flattened cardboard to be placed inside.

4.2.5.1. Administrative Considerations

The City should work with its exclusive hauler to identify those multi-family properties not large enough to potentially accommodate an additional dumpster dedicated to cardboard. Under the new agreement effective January 1, 2014, each property would have the option of using a dumpster rather than carts for recyclables.

4.2.5.2. Policy/Regulatory Considerations

No policy or regulatory considerations are anticipated.

4.2.5.3. Implementation Activities Schedule

The City should work with the new exclusive hauler in the time leading up to the service start date of January 1, 2014, to develop a plan not only for enforcing the mandatory recycling ordinance, but also to determine which properties may be willing and able to accommodate an additional cardboard only dumpster. As the new exclusive hauler is working with multi-family customers to coordinate swapping of garbage containers, discussions could occur regarding appropriate recycling containers.

4.2.6. Landscapers Recycling Requirement (Short Term)

While yard trash left at the curb by residents may be recycled under the new franchise agreement, it is not currently known what landscapers that haul away yard trash are doing with the material. The City could implement a policy to require landscapers to recycle the yard trash. Requiring the landscapers to report, perhaps annually as part of a business license renewal, the amount of tons or cubic yards delivered to a compost or other organics recycling facility, will also assist the City with tracking how much material generated in the City is actually recycled.

4.2.6.1. Administrative Considerations

Administrative considerations for implementing this strategy would include identifying how many landscapers are licensed to do business in the City. Once the number of landscapers is identified, the City may wish to discuss processing versus disposal with landscapers to find out what is commonly occurring with the yard trash hauled away by landscapers. If the City determines that adoption of a policy requiring the recycling of yard trash is necessary, the City would also need to consider enforcement options. Enforcement of such a policy could be handled through self-reporting by the landscapers and random audits by the City, which will minimize the need for code enforcement efforts.

4.2.6.2. Policy/Regulatory Considerations

Policy and regulatory considerations associated with requiring landscapers to recycle yard trash would require adoption of the policy, as well as changes to the licensing procedure in order to enforce the requirement.

4.2.6.3. Implementation Activities Schedule

The timing of this strategy is not dependent on other variables, and could occur at any time. The steps associated with this strategy include:

- Identify landscapers in the City
- Identify the common disposal or processing locations for those landscapers
- Determine whether a policy requiring the recycling of yard trash is necessary, and if so, adopt the policy
- Regardless of whether a formal requirement to recycle yard trash is implemented, the City may wish to modify business license requirements for landscapers in order to better track yard trash that may already be recycled.

4.2.7. Food Scraps Recycling (Long Term)

Based on the waste composition study performed in 2011 (see Appendix A – Baseline Report), organics make up 28.9% of multi-family residential waste disposed. The waste composition study found that 8.6% of the organic material in the waste stream is food scraps and 8.5% of organic material in the waste stream is yard trash.

Much like the single-family discussion on separate organics collection in Section 4.1.5, this strategy is recommended for implementation in the long term, due to the need for appropriate infrastructure to be developed. While it would be a significant challenge to offer food scrap collection from multi-family customers in today’s market, more attention is being placed on food scrap diversion. As the markets develop, and if appropriate infrastructure in close proximity develops, the City should consider adding food scraps to a separate organics collection for multi-family residents.

4.2.7.1. Administrative Considerations

Depending on how the market for food scraps develops, the City may need to amend the collection franchise agreement (or include in a new franchise agreement) to include the separate collection of organics, most likely using carts. A majority of the administrative considerations, such as cart delivery and education and outreach, would be borne by the franchised hauler at that time.

4.2.7.2. Policy/Regulatory Considerations

Because the collection of food scraps would likely be included in a collection franchise agreement approved by the City Commission, no other policy or regulatory considerations would be anticipated.

4.2.7.3. Implementation Activities Schedule

As with single-family residential food scrap diversion discussion in Section 4.1.5, it is anticipated that a food scrap strategy would not begin implementation until the proper infrastructure is in place. The City should work with its franchised hauler to monitor the food

scrap processing capabilities in and around the City, and determine if food scraps could be processed with yard trash or if food scraps would need to be collected separately. At such time as the City, its hauler, and its potential organics processor determines it is feasible to collect food scraps from multi-family residential customers, the City should conduct customer outreach to determine if the customers would be willing to participate in such a program. The costs associated with such a program would need to be researched and conveyed in the customer outreach. If enough of the customers would support such a program, and the infrastructure is in place, the City could amend its collection franchise agreement, or wait for the next collection franchise agreement procurement and include the additional organics collection service requirement in a future Request for Proposals. A modification to, or new agreement with, an organics processor would need to occur concurrently, to ensure the material has a viable facility to which it can be delivered.

4.2.8. Diversion Estimates for Multi-Family Sector Strategies

Table 4-3 shows the tonnage impacts and diversion impacts over the base year (2010) estimated to occur by implementing each of the strategies discussed in Sections 4.2.1 through 4.2.7. The cumulative effect of implementing the recommended strategies results in an estimated 14.3% decrease in tons disposed by 2015, compared to the base year of 2010. The long term strategy of food scraps recycling, in addition to continued technical assistance and outreach, results in an additional 6.6% diversion, for an estimated 20.9% decrease in tons disposed compared to the base year.

Table 4-3: Diversion Estimates for Multi-Family Sector Strategies

		Base Year	Short Term		Long Term	
	Waste Composition Results (2011)	2010 Actual Tons	2015 Projected Tons	2015	2020 Projected Tons	2020
Material Group	Percent of Waste Stream	Tons Disposed	Tons Disposed After Short Term Strategies Implementation	Percent Change from Base Year	Tons Disposed After Long Term Strategies Implementation	Percent Change from Base Year
Paper	17.3%	5,218	3,448	-33.9%	3,393	-35.0%
Plastic	12.2%	3,680	3,484	-5.3%	3,543	-3.7%
Glass	3.9%	1,176	754	-35.9%	740	-37.1%
Metal	5.6%	1,689	1,612	-4.5%	1,645	-2.6%
Organics	28.9%	8,716	6,589	-24.4%	4,328	-50.3%
C&D	7.1%	2,141	2,202	2.8%	2,259	5.5%
Problem Materials [1]	25.0%	7,540	7,752	2.8%	7,953	5.5%
Total	100.0%	30,160	25,841	-14.3%	23,861	-20.9%

[1] Problem materials include electronics, bulky items, tires, diapers/sanitary products, other inorganic, and household hazardous waste.

4.2.9. Multi-Family Sector Projected Recycling Rates

As shown in Table 4-4, the City’s multi-family recycling rate was estimated to be 6% by traditional means, which includes cart-based collection of traditional recyclables. The State of Florida’s recent legislation regarding a 75% recycling goal by 2020 provides for credit for materials delivered to a waste-to-energy (WTE) facility. Communities using WTE facilities may count one ton per megawatt hour of energy produced, according to Florida Statute Chapter 403.706. With the WTE credit applied to the City’s base year data, the multi-family recycling rate for that year is 53%.

The City has been using, and will continue to use, the Wheelabrator WTE facility for its garbage disposal. Under the new disposal agreement between Broward County and Wheelabrator, Wheelabrator has contractually agreed to ensure the users of its facility a half ton credit per ton disposed. In the short term, it is estimated the City will reach a 21% traditional recycling rate in the multi-family sector by implementing the recommended strategies. Adding the WTE credit is estimated to result in a 61% recycling rate for the multi-family residential sector. The long term recycling rate for multi-family residential sector is estimated to be 29% without the WTE credit, and 65% with the WTE credit.

Table 4-4: Multi-Family Sector Projected Recycling Rates

Projected Multi-Family Recycling Rates			
	Base Year (2010)	Short Term (2015)	Long Term (2020)
Tons Generated	31,985	32,697	33,668
Tons Recycled	1,825	7,011	9,807
Traditional Rate	6%	21%	29%
WTE Credit	15,080	12,843	11,930
Rate	53%	61%	65%

4.3. Commercial Sector

4.3.1. Summary of Current Services

The City provides garbage collection services to commercial customers through the same exclusive franchise with a private hauler that is used for single family and multi-family residential customers. The current franchise agreement expires in December of 2013. The current and future franchise agreement includes garbage collection from mechanical containers (dumpsters) at least twice per week, but does not include recycling collection from commercial customers, as State Statute does not allow recovered materials from businesses to be a part of exclusive franchises. There are nine recovered material haulers licensed by the City from which commercial customers can choose for recycling collection.

The commercial sector (also referred to as “ICI” for industrial, commercial, and institutional) is estimated to generate approximately 19% of the overall waste stream in the City, and the traditional recycling rate for the sector in the base year was estimated to be 23%. Recycling collection service is not currently mandatory in the City. However, results of the commercial survey performed in Phase 2 showed that 60% of the businesses surveyed indicated that they currently engage in some type of recycling.

4.3.2. Mandatory Recycling Ordinance (Short Term)

As shown in the Best Practices Case Study Memorandum (See Appendix A), Lee County, Florida implemented mandatory commercial recycling in 2008, via County Code of Ordinance, Chapter 17, Section 283, “Business Recycling Requirements”. If the City were to implement something similar, the ordinance would require all businesses in the City to participate in recycling. The program would allow for businesses on minimum service to be exempt. The ordinance also could require that new businesses comply within 14 days of starting waste service. The businesses would be required to recycle at least one material type from a list of materials included in the ordinance. As State law states that commercial recyclables cannot be made a part of an exclusive franchise, the City can require businesses to recycle and can require their exclusively franchised haulers to offer recyclables collection, but cannot require businesses to contract with the exclusively franchised hauler. The exclusively franchised hauler in the City can, however, provide recyclables collection service.

The commercial customer survey (see Appendix B - Customer Survey Results Memoranda) performed in Phase 2 revealed that 57% of commercial survey respondents would support a mandatory recycling ordinance that requires all businesses to recycle at least one or two of the recyclable materials that they generate the most. Another 26% of respondents indicated that they might support such an ordinance depending on the specific requirements, while 17% indicated that they would not support a mandatory recycling ordinance.

4.3.2.1. Administrative Considerations

The initial administrative consideration for implementing a mandatory commercial recycling ordinance would be to verify what types of businesses are in the City, what service those businesses are currently receiving, and who is providing the service. Enforcement of the mandatory ordinance would be an ongoing administrative activity. As described in Section 4.2.3 for the technical assistance program, a reasonable timeframe for compliance with mandatory recycling is provided below.

- Year 1 – Education and Outreach – Explain requirements of the mandatory program, where to obtain resources and technical assistance, and how to comply.
- Year 2 – Notification – Notify commercial generators that do not have recycling service of the requirement to recycle. Explain the consequences of non-compliance (citations, fines).
- Year 3 – Reinforcement – Target largest or most egregious generators. Conduct site visits. If the generator will not comply, refer to code enforcement.

The City could develop a master data base that is exchanged monthly with the licensed recovered material haulers to confirm what services businesses are receiving. This would allow the City to identify all the businesses that are using a private hauler, and monitor the services those businesses are receiving. The recovered material haulers could be required to notify the City of any business account service changes.

4.3.2.2. Policy/Regulatory Considerations

Policy and regulatory considerations for implementing a mandatory commercial recycling ordinance include taking the necessary steps to adopt the ordinance. Policy decisions would also need to be made regarding enforcement of the ordinance.

4.3.2.3. Implementation Activities Schedule

The timing of this strategy is not dependent on other variables, and could occur at any time. The recommended steps associated with this strategy include:

- Stakeholder outreach to determine the acceptability of a mandatory ordinance
- Development of the ordinance language
- Adoption of the mandatory recycling ordinance
- Promotion of the requirement to recycle
- Enforcement of the requirement to recycle

4.3.3. Mandatory Construction and Demolition Debris (C&D) Recycling Ordinance (Short Term)

For this strategy, the City would adopt an ordinance that requires certain demolition and/or construction projects to divert at least 50% of waste through recycling, salvage, or deconstruction. Because the City controls commercial C&D through its exclusive franchise, the

City can require commercial C&D material to be delivered to a processing facility. Residential C&D, however, is not a part of the exclusive franchise, and recycling of residential C&D material could be required through ordinance. The City could implement a mandatory C&D recycling policy either through the licensing procedure for C&D haulers or through the permitting procedure for construction and demolition projects.

Based on what has been seen in other communities, covered projects could be set at different thresholds to meet the recycling requirement. In the case of Pasadena, CA (see Appendix A - Best Practices Case Study Memorandum) the City includes residential additions of at least 1,000 ft², tenant improvements of at least 3,000 ft², new structures of at least 1,000 ft², and demolition of at least 1,000 ft². If the City opted to work through the permitting procedures in the City, and a project would be covered under the C&D recycling ordinance, the applicant would first complete and submit a C&D waste management plan prior to issuance of the permit. The applicant could then pay a performance security deposit as well as an administrative review fee. During the project, the applicant could be required to submit monthly C&D management reports and, upon project completion, submit a C&D waste management final report. If the requirements are met, the performance security deposit could be returned to the applicant.

The commercial customer survey (see Appendix B - Customer Survey Results Memoranda) performed in Phase 2 revealed that 48% of businesses would support a construction and demolition debris (C&D) recycling ordinance that requires new construction, renovation or demolition projects to pay a deposit based on the type and size of the project in order to receive a building permit from the City (with the deposit refunded based on the percentage of C&D material recycled). Another 25% of respondents indicated that they might support such an ordinance depending on the specific requirements, while 27% indicated that they would not support a C&D recycling ordinance.

4.3.3.1. Administrative Considerations

Prior to adopting a mandatory C&D recycling ordinance, the City should conduct workshops with local contractors and C&D haulers to discuss the program goals, objectives, and requirements, and solicited input from the affected stakeholders on the draft ordinance, and appropriate thresholds to require recycling. The City should also provide training to building permitting staff to facilitate the review and approval of the C&D applications, management plans and project documentation. The City would need to provide forms to the applicants that contain data for estimating the types and quantities of materials that are typically generated from construction and demolition projects. Many cities that have adopted similar ordinances have initially established higher thresholds (larger square footage and/or valuation of construction) for the covered projects, and gradually lowered the thresholds as staff and customers adjusted to the requirements.

4.3.3.2. Policy/ Regulatory Considerations

Policy and regulatory considerations for implementing a mandatory C&D recycling ordinance include taking the necessary steps to adopt the ordinance. Policy decisions would also need to be made regarding thresholds for requiring recycling and enforcement procedures.

4.3.3.3. Implementation Activities Schedule

The timing of this strategy is not dependent on other variables, and could occur at any time. The recommended steps associated with this strategy include:

- Consider acceptance of affected parties (contractors, haulers, customers) through stakeholder outreach
- Consider administrative burden and enforcement issues for the City
- Determine whether viable and verifiable processing sites exists

4.3.4. Technical Assistance (Ongoing – Short Term and Long Term)

See Section 4.2.3.

4.3.4.1. Administrative Considerations

See Section 4.2.3.1.

4.3.4.2. Policy/ Regulatory Considerations

See Section 4.2.3.2.

4.3.4.3. Implementation Activities Schedule

See Section 4.2.3.3.

4.3.5. Landscapers Recycling Requirement (Short Term)

See Section 4.2.6.

4.3.5.1. Administrative Considerations

See Section 4.2.6.1.

4.3.5.2. Policy/ Regulatory Considerations

See Section 4.2.6.2.

4.3.5.3. Implementation Activities Schedule

See Section 4.2.6.3.

4.3.6. Food Scraps Recycling (Long Term)

Based on the waste composition study performed in 2011 (see Appendix A – Baseline Report), organics make up 23.7% of commercial waste disposed. The waste composition study found that 8.9% of the organic material in the waste stream is food scraps.

Much like the single-family and multi-family discussion on separate organics collection in Section 4.1.5 and 4.2.5, this strategy is recommended for implementation in the long term, due to the need for appropriate infrastructure to be developed. The City's transfer station operator and Publix Super Markets Inc. currently have permission to conduct a pilot project for food scrap recycling at the facility; however this project has not yet resulted in a common practice for food scraps recycling. Food scraps recycling in the commercial sector would not be as challenging as in the residential sector due to the difference in collection style and frequency. The City could consider listing food scraps as one of the materials commercial customers could choose from in the mandatory commercial recycling ordinance strategy discussed in Section 4.3.2, so that commercial customers such as restaurants and grocery stores could comply with the mandatory recycling ordinance with a food scraps recycling program.

4.3.6.1. Administrative Considerations

The City, with input from the City attorney or outside counsel, should confirm that food scraps separated for recycling in the commercial sector would fall under the exclusive franchise agreement. If it is determined that it would be a part of the exclusive franchise, food scraps collection in the commercial sector should be added to the agreement. If it is determined that it may not be included in the exclusive franchise, food scraps could be added to the mandatory recycling ordinance and collected by licensed haulers, non-exclusively.

4.3.6.2. Policy/Regulatory Considerations

The City could allow food scraps to be an item on the list of materials included in the mandatory recycling ordinance, discussed in Section 4.3.2, depending on whether food scraps would remain in the City's exclusive franchise or not. A food scraps recycling program could be promoted as part of the technical assistance program discussed in Section 4.2.3. Otherwise, no other policy or regulatory considerations are anticipated.

4.3.6.3. Implementation Activities Schedule

The timing of this strategy is dependent on appropriate infrastructure and determination of whether food scraps would remain a part of the exclusive franchise or not. The recommended steps associated with this strategy include:

- Determine whether viable and verifiable processing sites exists
- Determine whether food scraps would remain a part of the exclusive franchise
- Either amend the franchise agreement, or include food scraps in the mandatory recycling ordinance described in Section 4.3.2

4.3.7. Diversion Estimates for Commercial Sector Strategies

Table 4-5 shows the tonnage impacts and diversion impacts over the base year (2010) estimated to occur by implementing each of the strategies discussed in Sections 4.3.1 through 4.3.6. The cumulative effect of implementing the recommended strategies results in a 31.0% decrease in tons disposed by 2015, compared to the base year of 2010. The long term strategy of food scraps recycling, in addition to continued technical assistance and outreach, results in an additional 6.7% diversion, for a 37.8% decrease in tons disposed compared to the base year.

Table 4-5: Diversion Estimates for Commercial Sector Strategies

		Base Year	Short Term		Long Term	
	Waste Composition Results (2011)	2010 Actual Tons	2015 Projected Tons	2015	2020 Projected Tons	2020
Material Group	Percent of Waste Stream	Tons Disposed	Tons Disposed After Short Term Strategies Implementation	Percent Change from Base Year	Tons Disposed After Long Term Strategies Implementation	Percent Change from Base Year
Paper	30.3%	4,334	2,979	-31.3%	3,014	-30.5%
Plastic	11.2%	1,602	1,498	-6.5%	1,533	-4.3%
Glass	2.7%	386	261	-32.5%	239	-38.1%
Metal	5.3%	758	696	-8.2%	712	-6.1%
Organics	23.7%	3,390	2,730	-19.5%	1,657	-51.1%
C&D	20.2%	2,889	739	-74.4%	758	-73.8%
Problem Materials [1]	6.6%	944	966	2.3%	991	4.9%
Total	100.0%	14,304	9,868	-31.0%	8,903	-37.8%

[1] Problem materials include electronics, bulky items, tires, diapers/sanitary products, other inorganic, and household hazardous waste.

4.3.8. Commercial Sector Projected Recycling Rates

As shown in Table 4-6, the City's commercial recycling rate was estimated to be 23% by traditional means, which includes collection of traditional recyclables by City-licensed recovered material haulers. The State of Florida's recent legislation regarding a 75% recycling goal by 2020 provides for credit for materials delivered to a waste-to-energy (WTE) facility.

Communities using WTE facilities may count one ton per megawatt hour of energy produced, according to Florida Statute Chapter 403.706. With the WTE credit applied to the City’s base year data, the commercial recycling rate for that year is 61%.

The City has been using, and will continue to use, the Wheelabrator WTE facility for its garbage disposal. Under the new disposal agreement between Broward County and Wheelabrator, Wheelabrator has contractually agreed to ensure the users of its facility a half ton credit per ton disposed. In the short term, it is estimated the City will reach a 48% traditional recycling rate in the commercial sector by implementing the recommended strategies. Adding the WTE credit is estimated to result in a 74% recycling rate for the commercial sector. The long term recycling rate for the commercial sector is estimated to be 54% without the WTE credit, and 77% with the WTE credit.

Table 4-6: Commercial Sector Projected Recycling Rates

Projected Commercial Recycling Rates			
	Base Year (2010)	Short Term (2015)	Long Term (2020)
Tons Generated	18,487	18,848	19,396
Tons Recycled	4,183	9,039	10,529
Traditional Rate	23%	48%	54%
WTE Credit	7,152	4,905	4,434
Rate	61%	74%	77%

4.4. City-wide Projected Recycling Rates

As shown in Table 4-7, the City’s overall recycling rate was estimated to be 13% by traditional means, which includes collection of traditional recyclables from each sector, yard trash from the City’s transfer station that is used as daily cover at a landfill, and some construction and demolition debris reported as recycled by licensed C&D haulers in the City. The State of Florida’s recent legislation regarding a 75% recycling goal by 2020 provides for credit for materials delivered to a waste-to-energy (WTE) facility. Communities using WTE facilities may count one ton per megawatt hour of energy produced, according to Florida Statute Chapter 403.706. With the WTE credit applied to the City’s base year data, the overall recycling rate for that year is 56%.

The City has been using, and will continue to use, the Wheelabrator WTE facility for its garbage disposal. Under the new disposal agreement between Broward County and Wheelabrator, Wheelabrator has contractually agreed to ensure the users of its facility a half ton credit per ton disposed. In the short term, it is estimated the City will reach a 41% traditional recycling rate overall by implementing the recommended strategies. Adding the WTE credit is estimated to

result in a 71% recycling rate for the City. The long term recycling rate overall is estimated to be 49% without the WTE credit, and 75% with the WTE credit.

Table 4-7: Overall City-Wide Projected Recycling Rates

Projected Overall City-Wide Recycling Rates			
	Base Year (2010)	Short Term (2015)	Long Term (2020)
Tons Generated	98,163	100,329	103,095
Tons Recycled	12,702	41,341	50,587
Traditional Rate	13%	41%	49%
WTE Credit	42,731	29,494	26,254
Rate	56%	71%	75%

Appendix A
Phase 1 Deliverables

- Baseline Report
- Best Practices Case Studies

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- Appendix B**
Phase 2 Deliverables
- PAY-T Benchmark Memorandum
 - Focus Group Meetings Presentations
 - Customer Survey Results Memoranda

Appendix C
Example Education and Outreach Materials