

# City of Key West, Florida

## Solid Waste Master Plan

### Executive Summary

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The City of Key West (City) retained Kessler Consulting, Inc. (KCI) to assist in developing a Solid Waste Master Plan (Plan). The purpose of the Plan is to analyze the City's existing solid waste system, contracts, and operations; determine the composition of residential and commercial waste delivered to the City's Transfer Station; and evaluate and recommend policies, programs, and facilities to maximize recycling and put the City on a pathway toward Zero Waste. This Plan addresses these items in light of the City's unique geographic location and community dynamics.

In fiscal year (FY) 2011, City residents and businesses generated approximately 59,000 tons of solid waste, yard waste, and recyclables – enough to fill a Conch Tour train stretching the entire length of the Florida Keys. About 80% of these materials flowed through the City's Transfer Station, while the other 20% was handled by two private construction and demolition debris (C&D) facilities. The City recycled about 7% of the materials delivered to the Transfer Station and the private C&D facilities recycled about 23% of the waste they received, for an overall recycling rate of 10%.

In 2008, the Florida Legislature increased the State's recycling goal from 35% to 75% by 2020. In 2010, interim goals also were established: 40% by 2012, 50% by 2014; 60% by 2016; and 70% by 2018. The City also set the bar high by stating one of the objectives of this Plan is to establish a pathway toward Zero Waste. Either goal is a huge leap from the City's current recycling rate of 10%. If the status quo is no longer acceptable, establishing a pathway toward maximizing recycling will require commitment and determination.

## 1.1 Existing Solid Waste Contracts

One of the first activities was to analyze the City's Collection Agreement and Transport and Disposal Agreement, both of which are with Waste Management, Inc. (WM). Reports regarding these agreements, the services provided, and service fees were provided to the City in July 2011 (Appendix A) and December 2010 (Appendix B).

KCI identified elements of these contracts that warranted change. As stated early on in the planning process, KCI's intent was not only to develop a Solid Waste Master Plan, but also to assist the City in bringing about change during the planning process if feasible. Therefore, meetings and calls with WM were initiated in July 2011 to try to bring about several changes; the primary ones are listed below. No resolution was reached on either item.

- To create a financial incentive for businesses to recycle, adjust commercial recycling collection fees to be equal to or less than commercial garbage collection fees (not including disposal). It should be noted that in the original contract these rates were the same and City staff believes that contractually they are required to be the same.
- Provide a revenue share to the City for its recyclables. Many Florida communities currently receive \$50-\$70 per ton for their inbound recyclable materials (i.e., recyclables as delivered for processing). This revenue generally fluctuates monthly based on market prices.

Revenue received by some jurisdictions has at times exceeded \$80 per ton during the past year. Despite the hauling distance to WM's processing facility, KCI believes the City should be receiving revenue based on an industry-accepted market index.

In addition, during 2009 collection contract negotiations, WM committed to certain changes. Listed below are specific commitments that either have not been met or no measurable results have been achieved in the three years since the contract was extended:

- Mechanisms designed to make recycling more convenient for families and businesses, including increased promotional efforts along with a recycling incentive program.
- Research into the feasibility of a new composting program.
- Creating an e-waste collection program.
- Creating a monthly Household Hazardous Waste (HHW) collection program within the City limits.

During a May 2012 public meeting, KCI presented a summary of preliminary recommendations that would be included in this Plan. After that meeting, the City Utilities Director, Jay Gewin, sent WM a letter requesting cooperation with implementing several of these recommendations, at no additional cost to the City, including those listed below.

- Convert to recycling carts, with the City purchasing the carts.
- Convert to weekly collection of garbage and weekly collection of segregated yard waste.
- Transport and process yard waste, preferably by composting it.

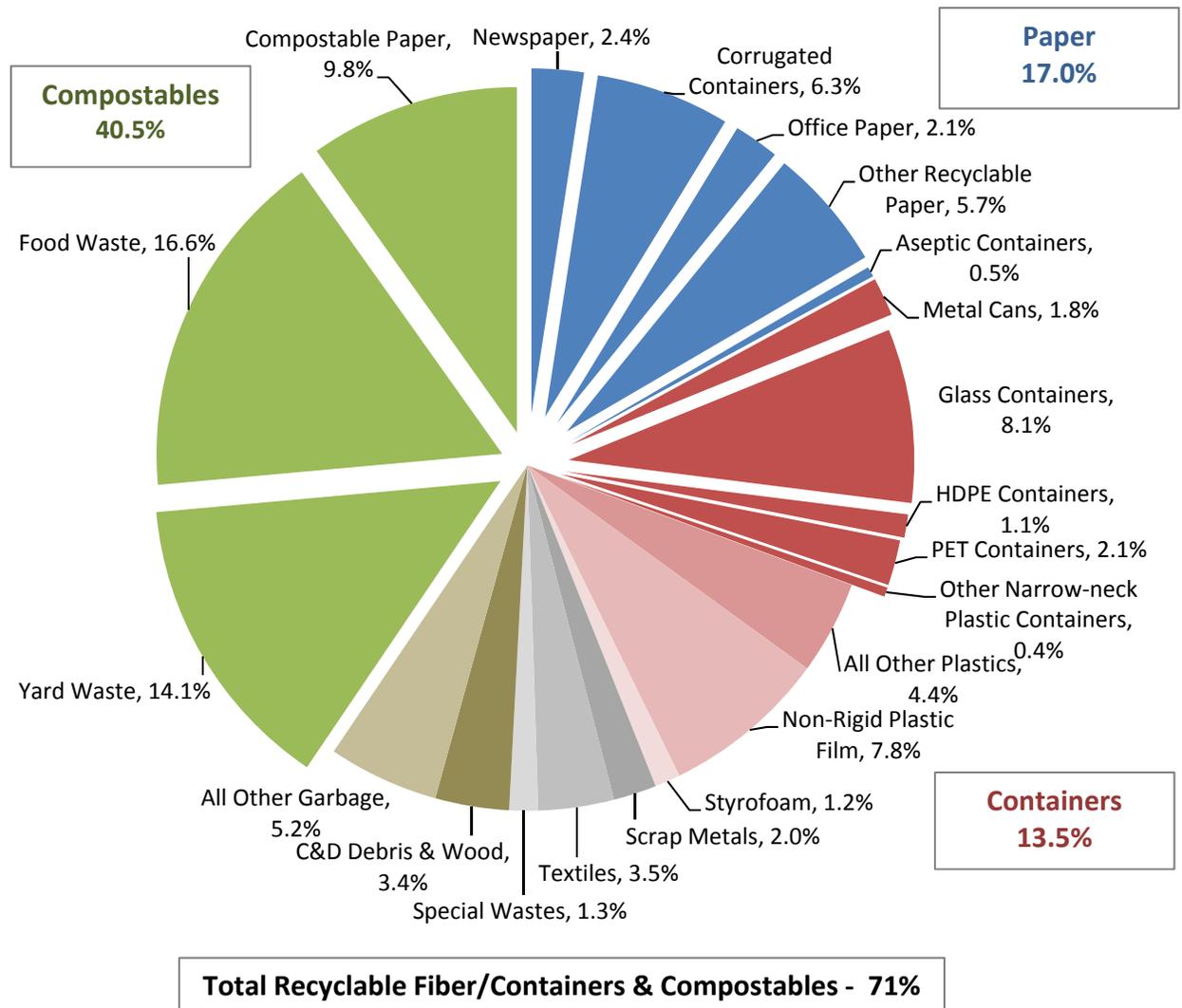
KCI again assisted the City in trying to negotiate these and previous modifications to the City's contracts with WM. While progress was made on certain items, no agreement was reached on the fundamental issue of sharing recycling revenue.

In addition to the items outlined above, this Plan contains numerous recommendations that will require a cooperative partnership between the City and its solid waste contractor. If resolution of these items cannot be reached with WM in short order, including the provision of fair revenue for recyclables, KCI recommends the City initiate a competitive procurement for the services it seeks. The existing contracts allow for termination with 180-day advance notice.

## 1.2 Waste Composition

Results of the waste composition study demonstrate that substantial quantities of recyclable or compostable materials are available in the City’s waste stream. Figure 1.1 depicts the overall composition of waste delivered by WM to the City’s Transfer Station. Recyclable paper (dark blue) comprises 17% of the waste stream, recyclable containers (dark red) nearly 13.5%, and compostable materials (dark green) another 40.5%. Combined, these recyclable and compostable materials comprise 71% of the waste stream.

**Figure 1.1: Composition of Waste Disposed at City’s Transfer Station (% by weight)**



## 1.3 Policy Recommendations

The first step in bringing about change is to establish a set of policies, which will lay the foundation for the future of the City's solid waste management system. Policies provide the guiding principles by which City staff will develop solid waste programs and manage solid waste operations and contracts. Provided below is a set of policies that support and complement the program and facility recommendations included in this Plan. Further discussion of these policies is provided in Section 4. KCI recommends the City Commission immediately adopt, through resolution, the policies below to give City staff direction for moving forward.

**Recommended Solid Waste Policy Statement**

To develop an environmentally and economically sustainable solid waste management system that maximizes waste diversion and minimizes waste disposal, the City Commission of Key West hereby adopts the following policies and directs staff to implement these policies:



1. Hire a full-time Recycling Program Manager to provide the technical, educational, and oversight support necessary to implement effective recycling programs.
2. Adopt a tiered recycling goal starting at 25%, followed by 40%, and then 75%.
3. Establish a program to collect and process yard waste separate from other solid waste.
4. Receive compensation for City recyclables that are resources having value.
5. Become a Green City through programs that lead by example, including waste reduction, reuse, recycling, and environmentally preferable procurement (EPP) programs.
6. Establish public-private partnerships with companies that will help carry out these policies.
7. Provide periodic updates to City Commissioners and the public regarding the status of activities and accomplishments toward meeting these policies.

## 1.4 Program Recommendations

Programs are the systems by which recyclable and compostable materials are diverted for recovery instead of disposal. Program recommendations are organized by the following sectors: residential, commercial, special events, public areas, household hazardous waste, and construction and demolition debris. Residential and commercial program initiatives are organized in phases that align with the three-phase recycling goal. The Phase 2 and 3 initiatives may need to be implemented over time to achieve higher recycling rates. Details are provided in Section 5.

PROGRAMS		
	RESIDENTIAL	COMMERCIAL
PHASE 1	<ol style="list-style-type: none"> <li><b>Carted collection of recyclables</b> – convert to carted curbside collection of recyclables; add materials to the program, such as rigid mixed plastics.</li> <li><b>Separate yard waste collection; weekly collection of garbage (1-1-1)</b> – implement separate yard waste collection in place of one of the garbage collection days each week (i.e., 1-1-1 collection in which garbage, yard waste, and recyclables are each collected once per week separate from each other).</li> <li><b>Multi-family recycling</b> – implement a comprehensive multi-family recycling program; residents pay for this service, which they should be receiving.</li> <li><b>Comprehensive public outreach</b> – implement a strategic, comprehensive public outreach program.</li> </ol>	<ol style="list-style-type: none"> <li><b>Lower cost recycling service</b> – set commercial recycling collection fees that are equal to or less than waste fees (collection only, not including disposal).</li> <li><b>Expanded recycling service</b> – require collection of full range of recyclables, commingled fibers and containers (i.e., single stream).</li> <li><b>Monitor commercial recycling</b> – require contractor to provide monthly reports.</li> <li><b>Green City Program</b> – lead by example by ensuring all City facilities and public schools have effective waste reduction, reuse, recycling and EPP programs.</li> <li><b>Business outreach</b> – implement an outreach program to businesses.</li> <li><b>City Ordinance</b> – amend to require new developments to provide for recycling as required by State law.</li> <li><b>Local use of glass</b> – continue to investigate opportunities to utilize source-separated commercial glass in the Lower Keys.</li> </ol>
PHASE 2	<ol style="list-style-type: none"> <li><b>Pilot source separated, curbside organics composting program</b> – once a viable composting infrastructure is established, pilot the collection and processing of other compostables (i.e., food waste and non-recyclable paper) along with yard waste. This has the potential to divert up to another 17% of residential waste from disposal.</li> <li><b>Incentive program</b> – revisit Pay-As-You-Throw or other incentive program if desired recycling rates are not achieved.</li> </ol>	<ol style="list-style-type: none"> <li><b>Toolkit and education</b> – develop materials to assist businesses with establishing waste diversion programs.</li> <li><b>Technical assistance</b> – provide hands-on assistance to businesses.</li> <li><b>Incentive program</b> – promote the Green Business Partnership program.</li> <li><b>Business group networking</b> – partner with business groups to encourage recycling.</li> <li><b>Organics program</b> – establish a commercial organics program.</li> </ol>

RESIDENTIAL		COMMERCIAL
<b>PHASE 3</b>	<ol style="list-style-type: none"> <li><b>Enforcement of mandatory recycling</b> – if other efforts have not sufficiently increased residential waste diversion, consider enforcing mandatory residential recycling program.</li> <li><b>Monitor innovative diversion opportunities, such as mixed waste or wet/dry processing</b> – if such a facility is established in Southeast Florida, evaluate feasibility of delivering City waste; this option does not need to wait until Phase 3.</li> </ol>	<ol style="list-style-type: none"> <li><b>Mandatory commercial recycling</b> – if other efforts have not sufficiently increased commercial recycling waste diversion, consider establishing a mandatory program.</li> <li><b>Monitor innovative diversion opportunities, such as mixed waste or wet/dry processing</b> – see residential recommendation.</li> <li><b>Monitor opportunities to partner with Monroe County</b> – s</li> </ol>
<b>SPECIAL EVENTS</b>		
<ol style="list-style-type: none"> <li><b>Amend City Ordinance</b> – to require special events to establish recycling programs; consider a tiered security deposit with a higher deposit for larger events.</li> <li><b>Special Event Recycling Guide</b> – utilize revised guide with checklist and reporting forms.</li> <li><b>Website improvements</b> – revise special event website to be consistent with permit application and to prominently display a link to the Special Event Recycling Guide or a dedicated Special Events Recycling Program webpage.</li> <li><b>Program branding</b> – use a consistent program logo and slogan to brand the recycling program.</li> <li><b>Monitoring and reporting</b> – track the recycling achieved at special events to evaluate the success of the program and to better assist event organizers in the future.</li> <li><b>Technical assistance</b> – provide direct technical assistance to event recycling coordinators or conduct workshops to provide event organizers with useful tools.</li> <li><b>Work with service providers</b> – work with the service providers to ensure that sufficient service and appropriately labeled recycling containers are provided.</li> <li><b>Turn-key containers, signage, and collection service</b> – develop a turn-key system where event organizers can obtain containers, signage, and collection service from one source, possibly the City or a City contractor.</li> <li><b>Volunteer network</b> – enlist volunteers willing to assist with recycling at a variety of special events.</li> <li><b>Fantasy Fest</b> – continue to work with Market Share Company and other Fantasy Fest event organizers to implement the specific recommendations outlined for the Duval Street Fair and Parade and other Fantasy Fest events.</li> </ol>		

### **PUBLIC AREAS**

1. **Clear and branded labeling** – improve labels on the recycling cans to ensure they clearly state and depict the types of recyclables that can be placed in the can.
2. **Additional recycling cans** – place recycling cans adjacent to additional trash cans in the most highly trafficked parts of the City.
3. **Program promotion** – partner with the City Parks Department and local sports leagues to promote recycling.
4. **Monitor contamination** – work with the collection service provider and City staff to identify areas with the highest contamination and determine what additional steps, e.g., education, signage, labels, etc., could help reduce this contamination.
5. **Lower City costs** – include servicing these public containers as a no-cost service in future contracts.

### **HOUSEHOLD HAZARDOUS WASTE (HHW) AND ELECTRONICS (E-WASTE)**

1. **Regular HHW/E-waste collection events** – within 60 days, collection contractor should begin providing monthly drop-off events at an accessible location; City should monitor events and adjust frequency if warranted.
2. **Public Outreach** – advertise events through multiple media, including newspaper, radio PSAs, and the City’s website; network with homeowner associations and organizations such as GLEE to advertise the events.

### **CONSTRUCTION AND DEMOLITION DEBRIS (C&D)**

1. **Encourage recycling by private C&D firms** – initiate a dialogue with the two private C&D companies to identify potential opportunities to increase their recycling efforts.
2. **Enforce anti-scavenging ordinance** – enforce existing anti-scavenging ordinance to increase the flow of scrap metals through permitted facilities, which not only supports these local businesses, but also enables these materials to be counted as part of the City’s recycling rate.

## 1.5 Facility Recommendations

Facilities provide the infrastructure for the solid waste system. Recommendations are provided for operational improvements at the City-owned Transfer Station. In addition, the Plan addresses establishing an organics recovery program and the feasibility of developing an organics processing facility in the Lower Keys. Further details are provided in Section 6.

FACILITIES
<b>TRANSFER STATION</b>
<ol style="list-style-type: none"> <li>1. <b>Overhead door</b> – investigate procuring overhead door maintenance services; investigate alternatives to these slow and maintenance-prone doors.</li> <li>2. <b>Loader</b> – equip main loader with a waste handler bucket to enhance speed and efficiency of loading; equip spare loader with a grapple if needed to handle bulky materials.</li> <li>3. <b>Material inventory management on Transfer Station floor</b> – implement a managed inventory process; improve tractor-trailer loading time; discuss with WM plans to improve transfer services by providing sufficient trailers, equipment, and personnel at all times.</li> <li>4. <b>CFC-containing devices</b> – review handling processes for CFC-containing devices; develop written handling procedures and train Transfer Station staff on proper management; require WM to mark all devices once CFCs have been removed.</li> <li>5. <b>General operational and safety recommendations</b> – assign spotter responsibilities to loader operator; establish tipping floor safety policies; require personal protective equipment while on tipping floor; implement formal traffic control procedures; implement lock-out/tag-out procedures for equipment; prohibit City/contractor staff from sitting in/on the trailers during loading; explore safer option to allowing self-haul customers on the tipping floor.</li> <li>6. <b>Scale system</b> – consider limiting payments to credit cards or established credit accounts to reduce potential liability of handling cash/checks; more fully utilize the capabilities of WasteWorks, the scale house software; consider an unattended scale house system.</li> <li>7. <b>Staffing and operating hours</b> – consider altering operating hours and staffing to save money on personnel costs.</li> </ol>
<b>ORGANICS FACILITY</b>
<ol style="list-style-type: none"> <li>1. <b>Utilize with existing yard waste processing facility</b> – to initiate separate yard waste collection as quickly as possible, transfer yard waste to an existing processing facility.</li> <li>2. <b>Conduct a competitive procurement for organics processing</b> – to allow private sector vendors to offer potential organics composting solutions; include co-composting of yard waste, food waste and biosolids.</li> <li>3. <b>Explore opportunities to work with the County</b> – continue to monitor the County’s progress in establishing composting facilities and explore opportunities to partner depending on location, timing, and cost.</li> <li>4. <b>Continue to encourage backyard composting</b> – encourage and educate residents about backyard composting.</li> </ol>

## 1.6 Funding Recommendations

The overall financial impact of increasing waste diversion should be positive to the City and its residents and businesses. However, the City's existing disposal-based revenue model for its solid waste system is not sustainable as the City strives to maximize waste diversion. The City funds many non-disposal costs (e.g., administrative expenses and the transfer of funds to the General Fund) through its tipping fees at the Transfer Station. As less waste is disposed, tipping fee revenue and disposal costs will decrease, but these other fixed costs will not. Therefore, the following recommendations are offered to establish a more sustainable solid waste business model. Additional details are provided in Section 7.

### FUNDING

1. **Recycling revenue** – The City should be receiving revenue for its recyclables. Many Florida communities currently receive \$50-\$70 per ton for their recyclables. A number of these jurisdictions, including Broward, Polk, and Seminole counties and the cities of Lakeland and Sarasota, contract with WM. According to WM, it costs approximately \$40 per ton to transport recyclables to its processing facility in Broward County. Even deducting that full amount from the revenue received in many other Florida jurisdictions, the City reasonably should expect to receive \$20-\$30 per ton for its recyclables in today's commodity marketplace.
2. **Alternative revenue source** – The City should develop a revenue source that does not rely predominantly on disposal. For example, the City could adjust its tipping fee to cover only those costs directly related to disposal (e.g., transport and disposal contractor fees, transfer station operating costs to manage garbage, and renewal and replacement costs). A separate solid waste management fee could equitably be distributed among customers to cover other system costs not directly related to disposal or not covered by collection service fees (e.g., administrative expenses, transfer of funds to the General Fund, transfer station operation costs to manage recyclables, and landfill post-closure costs). This would more closely align fees with the services provided and would ensure the City generates sufficient revenue to cover fixed system costs.

## 1.7 Waste Diversion Targets

This Plan outlines policies, programs and facilities intended to help the City substantially increase waste diversion and its recycling rate. Because of the large gap between the City’s existing recycling rate of 10% and its intended goals, a three-tiered recycling goal is recommended. It will provide milestones by which the City can measure its progress.

- Phase 1 (25% Goal), which KCI recommends initiating immediately, focuses on basic changes to the residential program, voluntary actions, and education.
- Phase 2 (40% Goal) will place greater emphasis on commercial program improvements, technical assistance to businesses, and expanding organics recovery.
- Phase 3 (75% Goal) will require capturing the vast majority of recyclables and organics in the waste stream. Accomplishing this likely will require some form of mixed waste or wet/dry processing system or enforcing recycling mandates.

Table 1.1 matches the three-phase recycling goal with a suggested timeline and target recycling rate increases that will be necessary to achieve each phase of the goal. In addition to the residential and commercial program initiatives included in the table, the other policy, program, and facility recommendations outlined in this report and summarized in this section will also play a role if these goals are to be achieved.

**Table 1.1: Phased Program Initiatives and Target Increases in Recycling Rate**

Program Recommendations	Residential	Commercial
 <b>Phase 1</b> (1-2 yrs) 25%	<ul style="list-style-type: none"> <li>• Recycling carts</li> <li>• Yard waste; 1-1-1</li> <li>• Multi-family</li> <li>• Outreach &amp; education</li> </ul> 11%	<ul style="list-style-type: none"> <li>• Recycling collection \$ = SW collection \$</li> <li>• All recyclables</li> <li>• Green the City</li> <li>• Outreach</li> </ul> 4%
 <b>Phase 2</b> (3-5 yrs) 40%	<ul style="list-style-type: none"> <li>• Organics</li> <li>• Pay-As-You-Throw/ incentive program</li> </ul> 6%	<ul style="list-style-type: none"> <li>• Toolkit &amp; education</li> <li>• Technical assistance</li> <li>• Incentive program</li> <li>• Organics</li> </ul> 9%
 <b>Phase 3</b> (5-10 yrs) 75%	<ul style="list-style-type: none"> <li>• Mixed waste processing</li> <li>• Enforcement</li> </ul> 13%	<ul style="list-style-type: none"> <li>• Mixed waste processing</li> <li>• Mandates &amp; enforcement</li> </ul> 22%

The City will not appreciably increase its recycling rate by continuing with the status quo and existing staffing levels. Change will be needed and a first step toward making that change is implementing the policies and Phase 1 recommendations outlined in this Plan.