Florida and the 2020
75% Recycling Goal

Volume 2 - Appendices

Prepared by the Department of Environmental Protection
for the Florida Senate and the Florida House of Representatives

Appendix A -

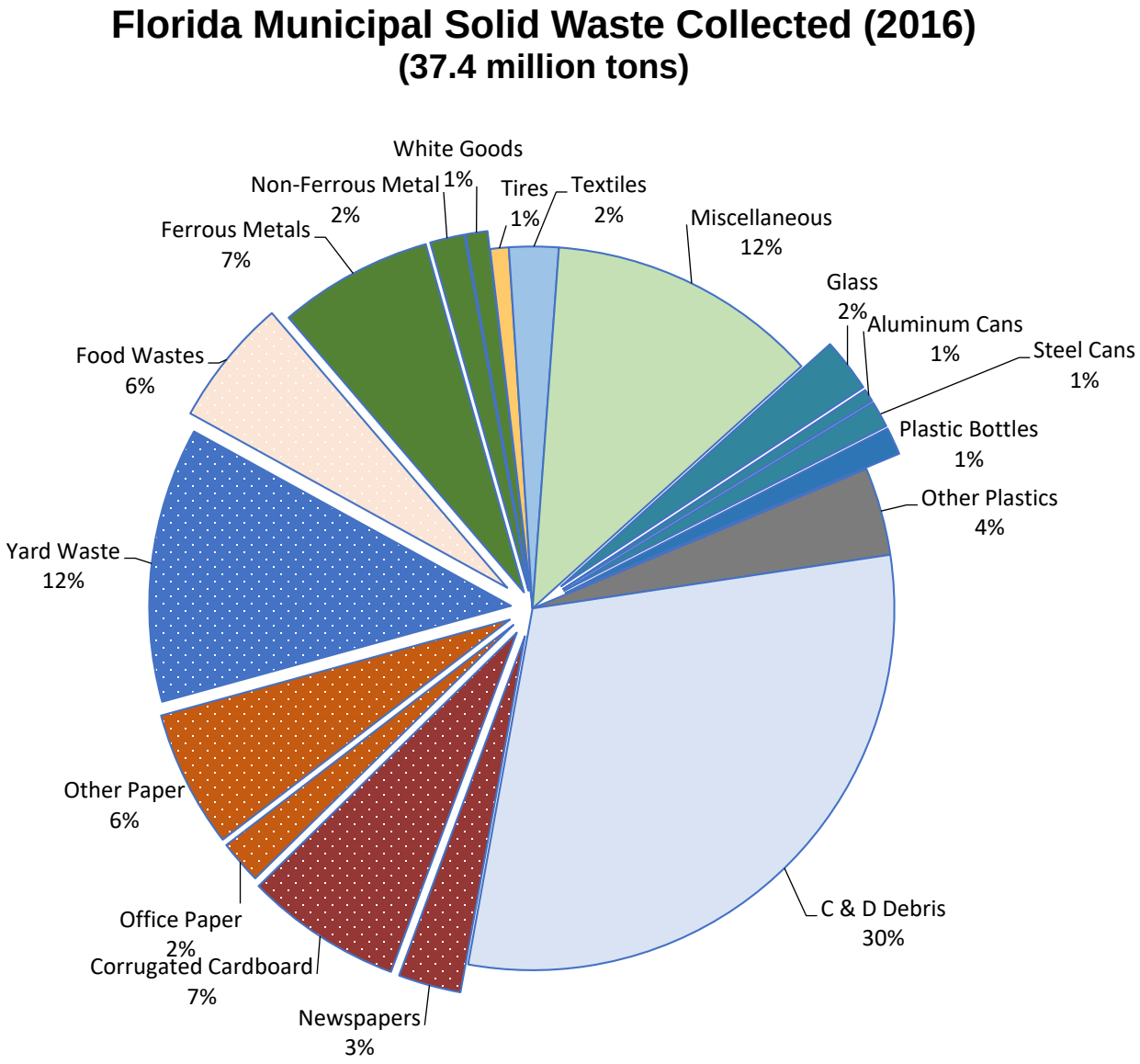
Charts and Graphs -

Table 6A
Summary of Recycling Credits (2016)
By Descending Population

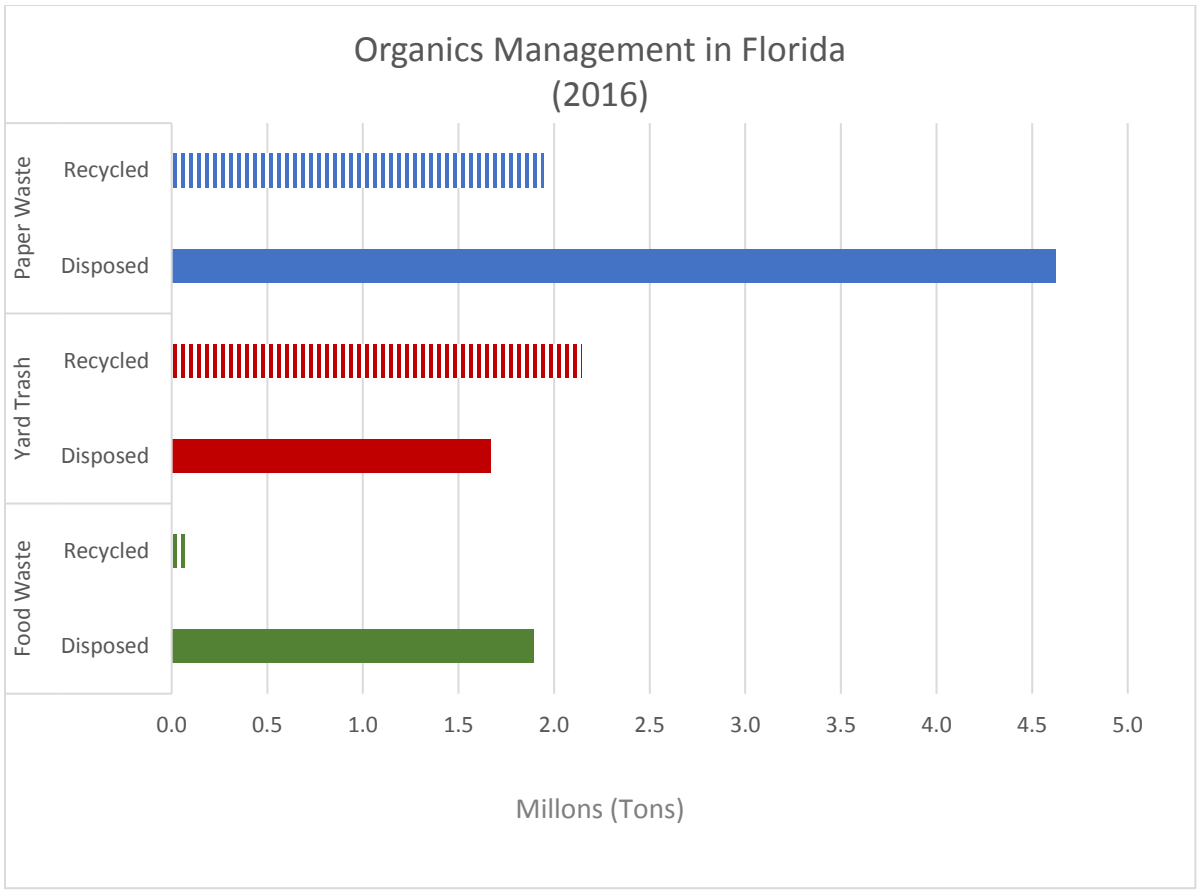
(1)	(2)	(3)	(4) Traditional Recycing Credits (Excludes renewable energy and yard trash disposed in a landfill beneficially using landfill gas for something other than electricity)			(5) Renewable Energy Recycling Credits 1 Mwh = 1 Ton (1 mwh = 1.25 tons if column 4(c) = or > 50%)		(6) Yard Trash Disposed in a Landfill Benefially Using Landfill Gas (for something other than electricity)		(7) Total Recycling Credits (columns 4a + 5a + 6a)/ column 3		
County	Population	Total MSW Collected	(a) Tons	(b) Unadjusted %	(c) Adjusted %	(a) Tons	(b) %	(a) Tons	(b) %	(a) Tons	(b) Unadjusted %	(c) Adjusted %
Miami-Dade	2,700,794	4,389,704	1,467,925	33%	33%	437,974	10%	0	0%	1,905,899	43%	43%
Broward	1,854,513	3,598,692	1,206,934	34%	34%	484,126	13%	32,084	1%	1,723,144	48%	48%
Palm Beach	1,391,741	3,101,065	1,395,342	45%	45%	828,381	27%	0	0%	2,223,723	72%	72%
Hillsborough[1]	1,352,797	2,379,846	1,300,200	55%	55%	643,009	27%	0	0%	1,943,209	82%	82%
Orange[1]	1,280,387	2,164,434	1,300,094	60%	60%	260,483	12%	0	0%	1,560,577	72%	72%
Pinellas[1]	954,569	2,015,378	1,095,772	54%	54%	553,158	27%	0	0%	1,648,930	82%	82%
Duval[1]	923,647	2,142,504	1,061,724	50%	50%	46,323	2%	0	0%	1,108,047	52%	52%
Lee	680,539	1,392,221	644,166	46%	46%	376,020	27%	0	0%	1,020,186	73%	73%
Polk	646,989	1,164,632	380,598	33%	33%	0	0%	0	0%	380,598	33%	33%
Brevard[1]	568,919	1,507,729	836,232	55%	55%	80,353	5%	0	0%	916,585	61%	61%
Volusia	517,411	1,061,885	444,149	42%	42%	0	0%	0	0%	444,149	42%	42%
Pasco	495,868	825,451	319,720	39%	39%	224,895	27%	0	0%	544,615	66%	66%
Seminole	449,124	549,467	163,658	30%	30%	21,790	4%	0	0%	185,448	34%	34%
Sarasota[1]	399,538	877,697	529,728	60%	60%	45,276	5%	0	0%	575,004	66%	66%
Manatee[1]	357,591	798,377	395,797	50%	50%	30,168	4%	5,041	1%	431,006	54%	54%
Collier[1]	350,202	926,237	542,095	59%	59%	64,691	7%	0	0%	606,786	66%	66%
Marion	345,749	413,235	198,263	48%	48%	30,818	7%	0	0%	229,081	55%	55%
Lake	323,985	372,869	63,396	17%	17%	16,952	5%	0	0%	80,348	22%	22%
Osceola	322,862	166,928	46,446	28%	28%		0%	0	0%	46,446	28%	28%
Escambia	309,986	566,936	245,304	43%	43%	25,482	4%	0	0%	270,786	48%	48%
St. Lucie[1]	292,826	451,278	250,640	56%	56%	12,306	3%	0	0%	262,946	58%	58%
Leon[1]	287,671	461,951	242,329	52%	52%	12,908	3%	0	0%	255,237	55%	55%
Alachua[1]	257,062	565,890	298,874	53%	53%	9,263	2%	0	0%	308,137	54%	54%
St Johns	220,257	422,095	89,351	21%	21%		0%	0	0%	89,351	21%	21%
Clay	205,321	207,715	51,837	25%	25%		0%	0	0%	51,837	25%	25%
Okaloosa	192,925	212,409	46,436	22%	22%	5,286	2%	0	0%	51,722	24%	24%
Hernando	179,503	192,986	56,085	29%	29%	12,501	6%	0	0%	68,586	36%	36%
Bay	176,016	393,853	110,644	28%	28%	52,924	13%	0	0%	163,568	42%	42%
Charlotte[1]	170,450	601,025	413,429	69%	69%	18,084	3%	0	0%	431,513	72%	72%
Santa Rosa	167,009	264,732	39,349	15%	15%		0%	0	0%	39,349	15%	15%
Martin[1]	150,870	328,914	182,505	55%	55%	78	0%	0	0%	182,583	56%	56%
Indian River[1]	146,410	419,888	212,568	51%	51%	9,866	2%	0	0%	222,434	53%	53%
Citrus[1]	143,054	131,913	66,618	51%	51%	442	0%	0	0%	67,060	51%	51%
Sumter	118,577	253,882	160,809	63%	63%		0%	0	0%	160,809	63%	63%
Flagler	103,095	161,003	18,668	12%	12%		0%	0	0%	18,668	12%	12%
Highlands	101,531	123,823	21,314	17%	17%		0%	0	0%	21,314	17%	17%
Nassau	77,841	173,296	37,738	22%	22%	31	0%	0	0%	37,769	22%	22%
Monroe[1]	76,047	353,658	200,845	57%	57%	71,579	20%	0	0%	272,424	77%	77%
Putnam[1]	72,972	144,982	82,642	57%	57%	531	0%	0	0%	83,173	57%	57%
Columbia	68,566	92,333	24,489	27%	27%	241	0%	0	0%	24,730	27%	27%
Walton	62,943	113,671	11,800	10%	10%	3,576	3%		0%	15,376	14%	14%
Jackson	50,345	62,578	5,653	9%	9%	2,719	4%	0	0%	8,372	13%	13%
Gadsden	48,486	46,934	9,412	20%	20%		0%	0	0%	9,412	20%	20%
Suwannee	44,349	141,396	17,032	12%	12%		0%	0	0%	17,032	12%	12%
Okeechobee	40,806	197,219	12,025	6%	6%		0%	0	0%	12,025	6%	6%
Levy	40,553	33,135	3,371	10%	10%		0%	0	0%	3,371	10%	10%
Hendry	38,370	59,648	17,607	30%	30%	20,973	35%	0	0%	38,580	65%	65%
DeSoto	35,141	65,944	24,964	38%	38%		0%	0	0%	24,964	38%	38%
Wakulla	31,599	31,853	11,120	35%	35%	547	2%	0	0%	11,667	37%	37%
Hardee	27,637	21,138	1,587	8%	8%		0%	0	0%	1,587	8%	8%
Bradford	27,440	25,747	8,193	32%	32%		0%	0	0%	8,193	32%	32%
Baker	26,965	20,770	2,855	14%	14%		0%	0	0%	2,855	14%	14%
Washington	24,888	22,173	2,132	10%	10%	621	3%	0	0%	2,753	12%	12%
Taylor	22,478	21,876	3,671	17%	17%		0%	0	0%	3,671	17%	17%
Holmes	20,003	5,528	1,038	19%	19%	193	3%	0	0%	1,231	22%	22%
Madison	19,238	13,304	4,913	37%	37%		0%	0	0%	4,913	37%	37%
Gilchrist	16,848	9,537	1,105	12%	12%		0%	0	0%	1,105	12%	12%
Dixie	16,773	10,463	241	2%	2%		0%	0	0%	241	2%	2%
Gulf	16,628	13,211	790	6%	6%	1,124	9%	0	0%	1,914	14%	14%
Union	15,887	9,276	835	9%	9%		0%	0	0%	835	9%	9%
Hamilton	14,665	13,923	2,067	15%	15%		0%	0	0%	2,067	15%	15%
Calhoun	14,580	23,676	1,123	5%	5%	1,017	4%	0	0%	2,140	9%	9%
Jefferson	14,498	12,084	720	6%	6%		0%	0	0%	720	6%	6%
Glades	13,047	18,300	673	4%	4%		0%	0	0%	673	4%	4%
Franklin	11,916	24,817	5,973	24%	24%		0%	0	0%	5,973	24%	24%
Liberty	8,736	6,660	510	8%	8%		0%	0	0%	510	8%	8%
Lafayette	8,621	3,618	273	8%	8%		0%	0	0%	273	8%	8%
State	20,148,654	37,401,392	16,396,396	44%	44%	4,406,707	12%	37,125	0%	20,840,228	56%	56%

[1] County receives 1.25 renewable energy credits for reaching 50% traditional recycling rate.

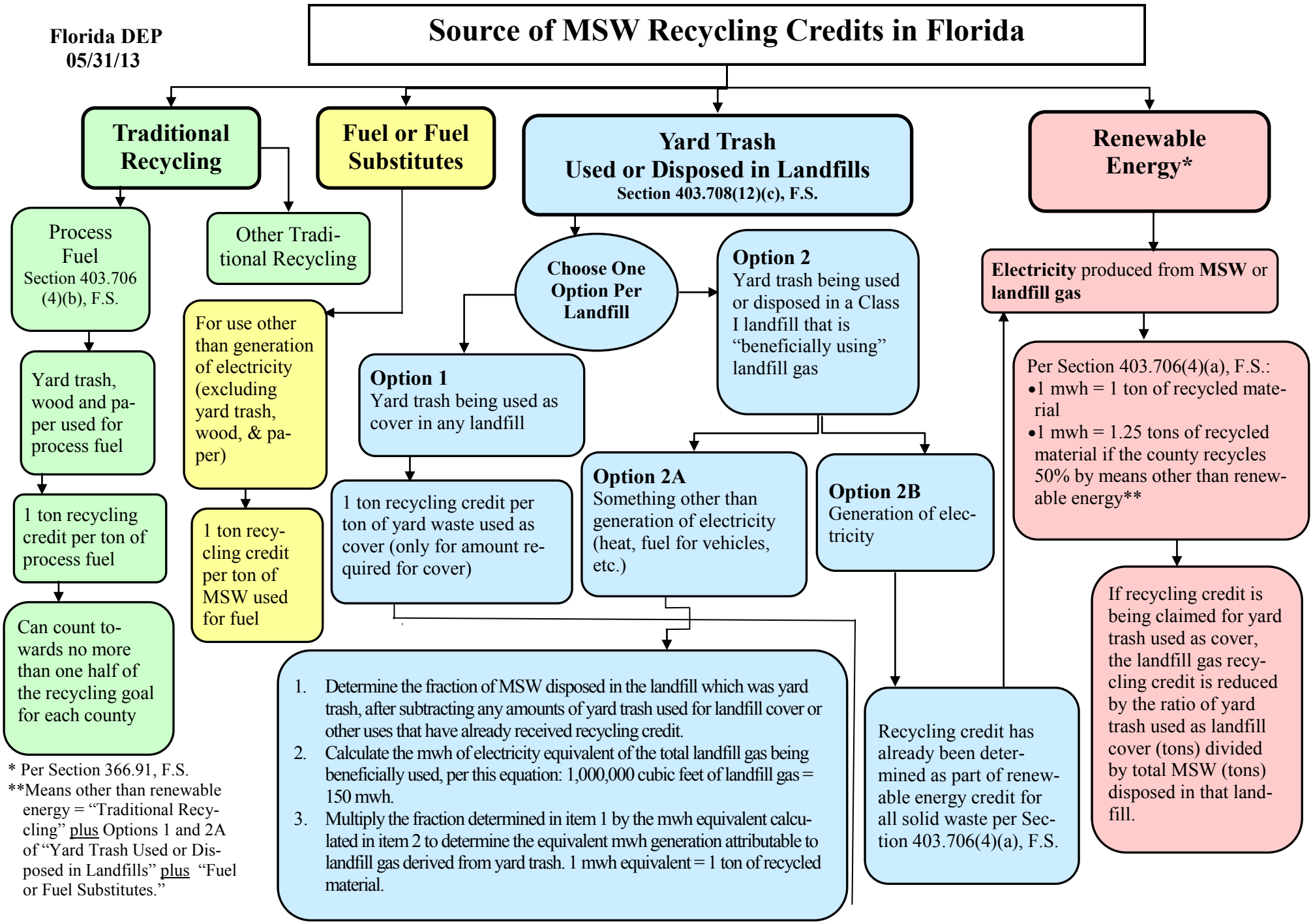
Appendix A, Figure 2



Appendix A, Figure 3



Appendix A, Figure 4



Appendix B -
Presentations

Contamination: A Growing Challenge to Reaching Florida's 75% Recycling Goal (December 2015)

Florida Department of Environmental Protection

Waste Reduction/Recycling

Contamination: A Growing Challenge to Reaching Florida's 75% Recycling Goal

December 16, 2015

Karen Moore

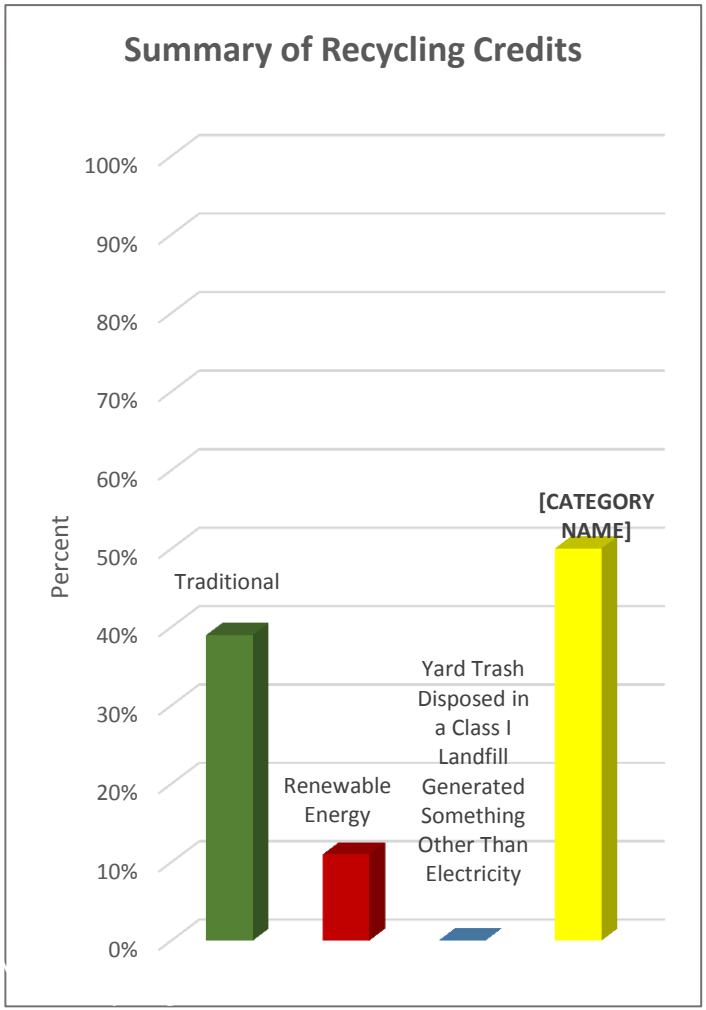




Florida's 2014 Recycling Rate

- The statewide **<u>overall</u> recycling rate**, which **<u>includes</u> renewable energy* recycling credits**, **increased** from **49% (2013) to 50% (2014)**.
  - The Legislature set an interim benchmark recycling goal of 50% for calendar year 2014 and 60% for calendar year 2016.
- The statewide <u>traditional</u> recycling rate, which <u>excludes</u> renewable energy recycling credits, increased from 38% (2013) to 39% (2014).

*Electricity produced from MSW or landfill gas



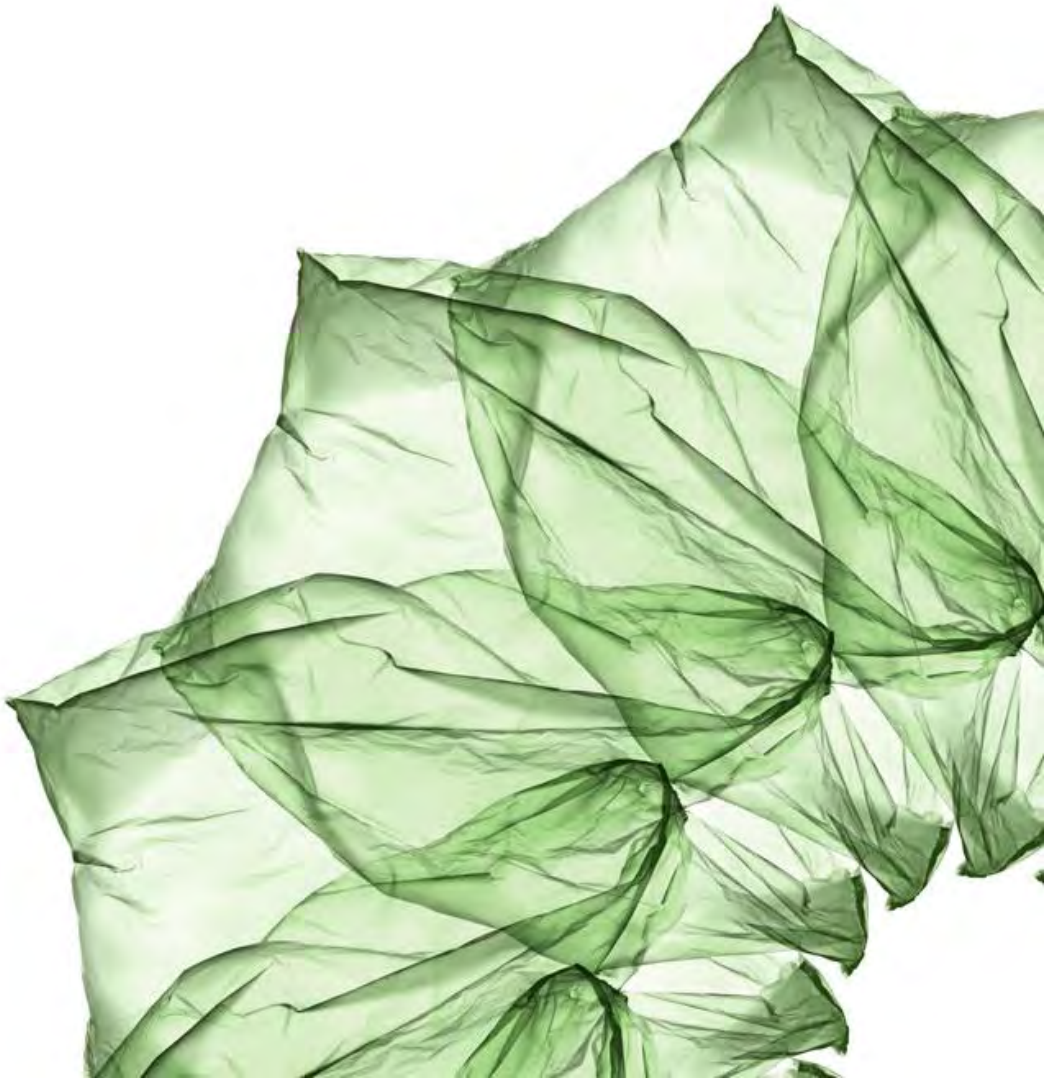
Single Stream Recycling: Challenge to Reaching Florida's 75% Recycling Goal

Why Programs Are Using Single Stream:

- All accepted recyclables are placed in a single large cart
  - Increased participation due to convenience
  - Increased tonnage of recyclables
- Efficient collection = Reduction in Costs
  - Single Compartment Collection Truck
  - Automated
  - Fewer staff
- Over 50% of Florida's Population Has Single Stream Service

Recycling Industry Report

The Challenges of Contamination



FDEP Webinar

Dawn McCormick

Communications Director

Waste Management

December 16, 2015

WASTE MANAGEMENT

WM Recycling Services

- WM handled over 15 million tons of recyclables in 2014
- WM handles more residential recyclables than any other company in North America

WM Recycling Facts

- **110 Material Recovery Facilities (MRFs) including:**
  Single-stream, C & D, and organics facilities
- Closed 8 recycling plants over the past year; more could cease operations.

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Recycling Report Card: Industry Challenges

Waste Management CEO David Steiner:

- Processing cost are going UP
- Contamination is UP
- Commodity prices are Down
- Costing more to process a ton of recyclables, and dispose of the contamination, than receiving from commodity markets

“To be sustainable overtime, recycling operations must make economic sense” – David Steiner

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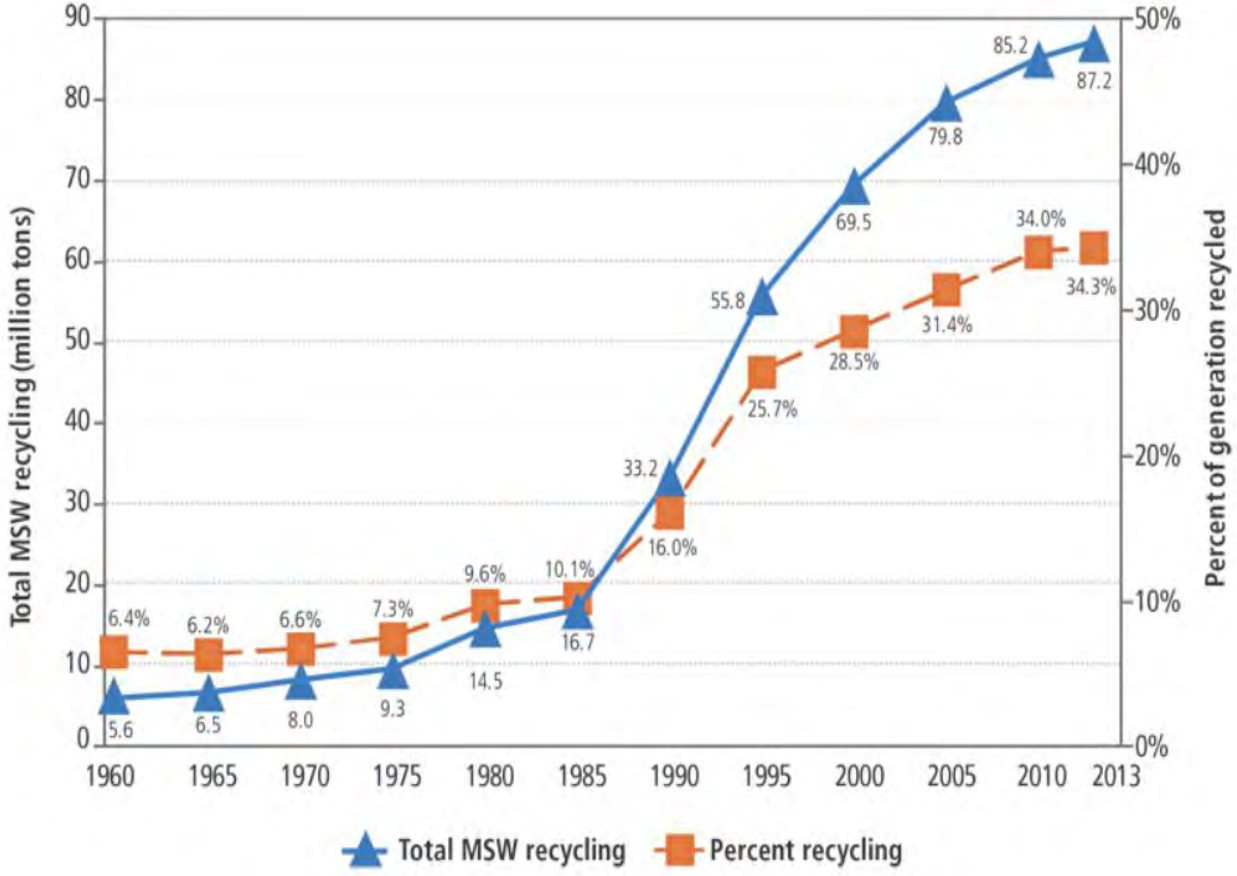
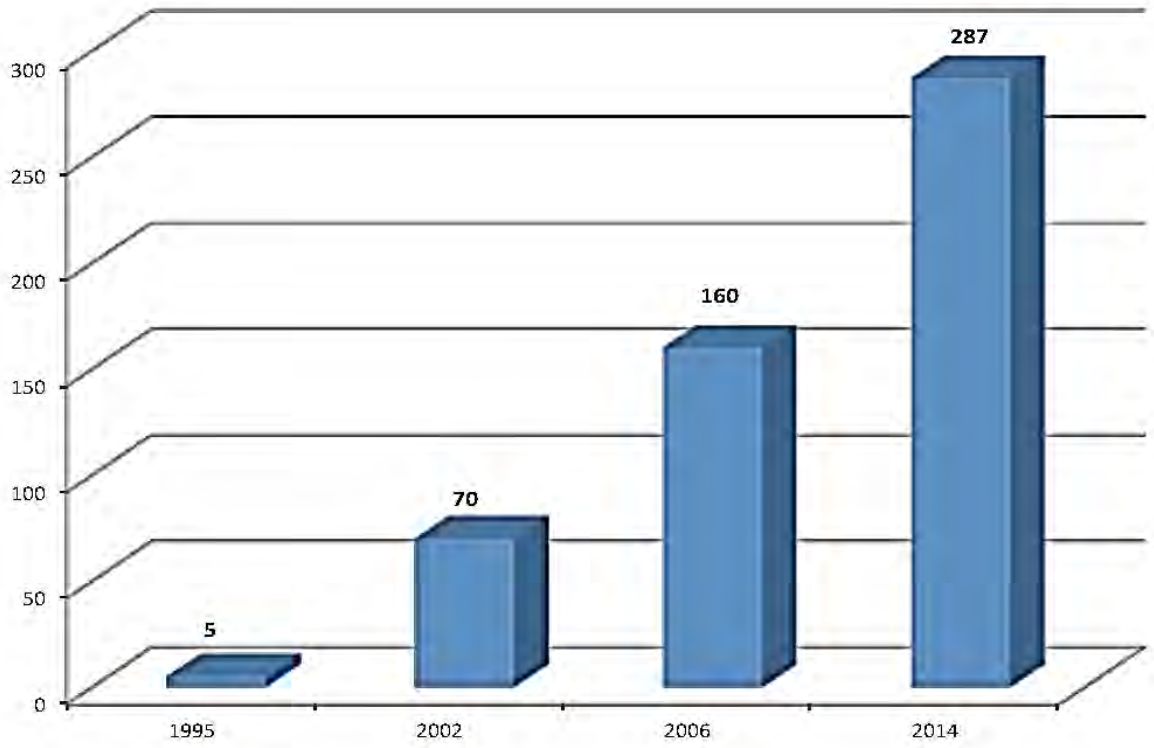
Recycling is a Young, Evolving Industry
MSW Recycling Rates, 1960-2013



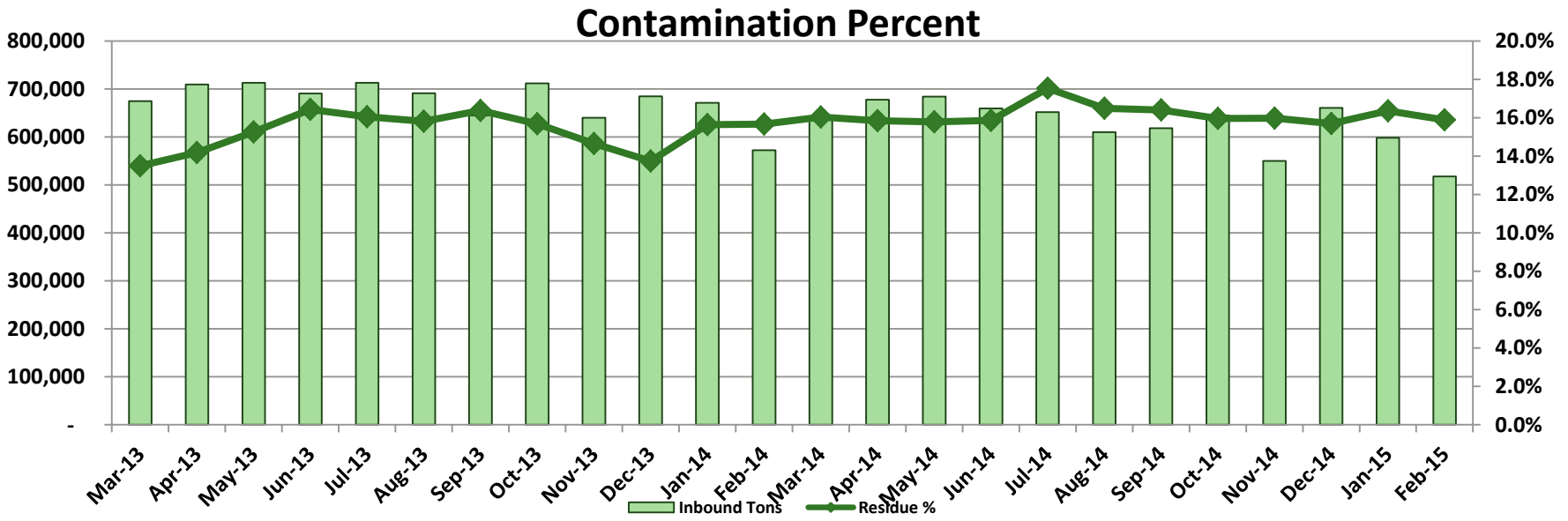
Source: US Environmental Protection Agency http://www3.epa.gov/epawaste/nonhaz/municipal/

Number of Single Stream MRFs



Source: Resource Recycling magazine; January 2015

Increasing contamination WM facilities companywide



- Contamination of loads is an ***average*** of 16% of inbound tons.
- Contamination can be up to 50% of incoming loads.
- Contamination cost an average of over $125 per ton.
- Processing costs continue to increase as markets demand reduced contamination. This drives up cost to customers.

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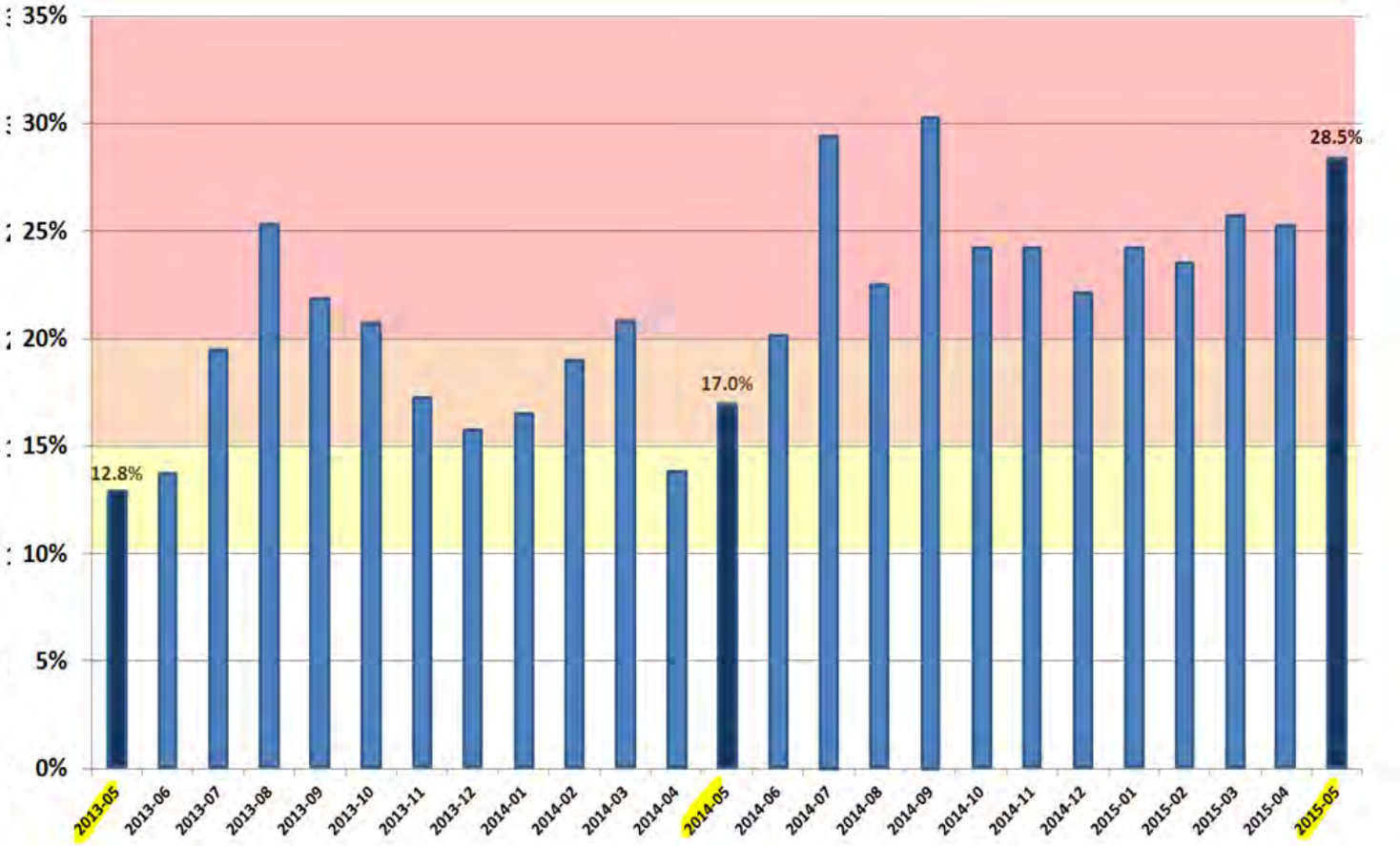
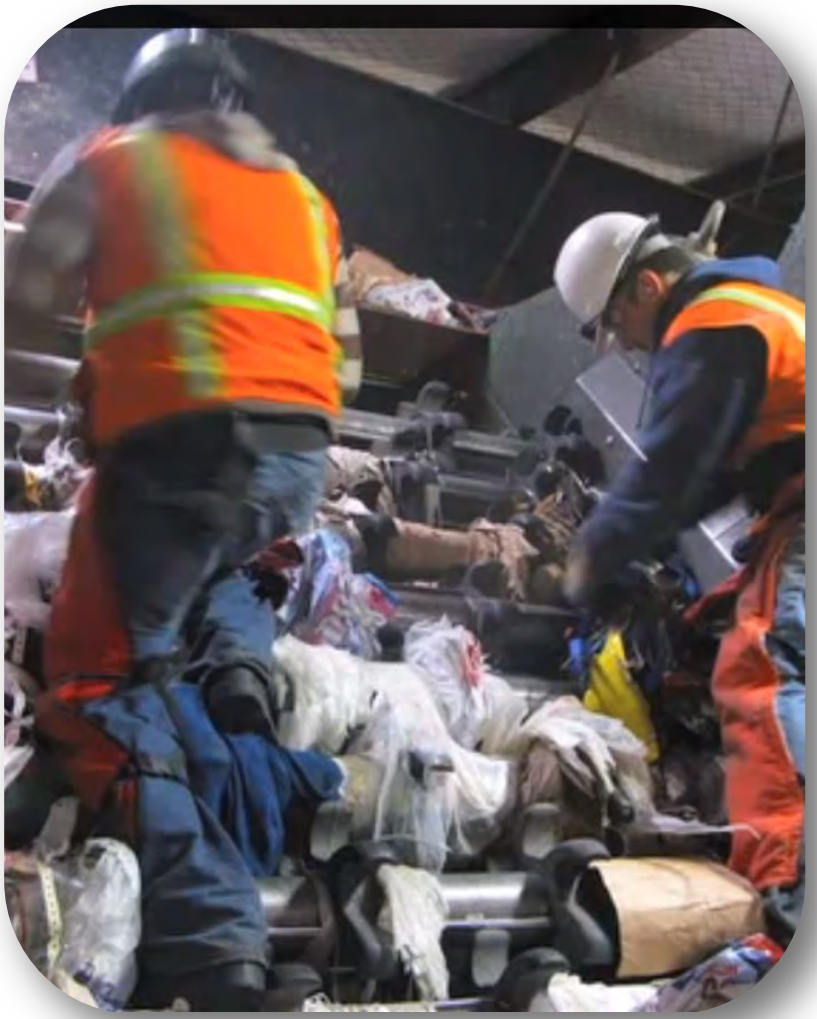
Increasing Levels of Contamination: Reuter Recycling



Contamination Challenges

Film Plastics in Disc Screens



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HOME AND GARDEN

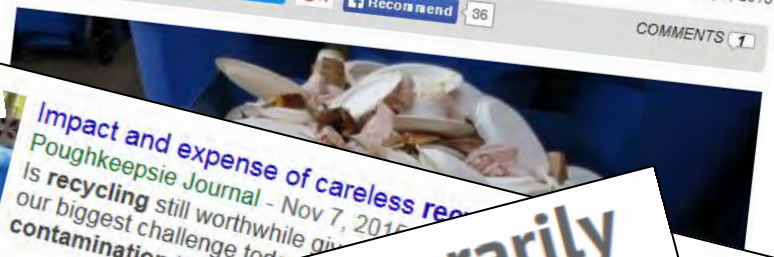
Contamination causes most recyclables to end up in the landfill

Tips for Tackling Contamination in Recycling Streams

Chrissy Kadleck | *Waste360 Recycling Summit*

EMAIL SHARE Tweet G+1 Recommend 36 COMMENTS 1

Aug 6, 2015



Impact and expense of careless rec...
Poughkeepsie Journal - Nov 7, 2015
Is **recycling** still worthwhile gi...
our biggest challenge tod...
contamination in ...

County to pay for recycling program temporarily

First Posted: 12:29 pm - November 12th, 2015 Updated: 12:29 pm - November 12th, 2015.

By Chris Cooper - ccooper@newsdemocratleader.com

Is Recycling Dead in T...

...ood.

...ssed into recycling streams that are the bane of ...e country.

...a problem in that it clogs recycling systems or ruins what were ...salvageable materials. That cuts into the commodity stream at the back end of ...

...t's never been simple to turn trash into gold.

T... ...print of recycling programs, paired with falling p...
rec... ...ials (such as aluminum) has led Jonathan Greenspan (former o...
Resource Recovery Transfer Station Park recycling center in Illium that closed...
declare that "Recycling is dead in America."

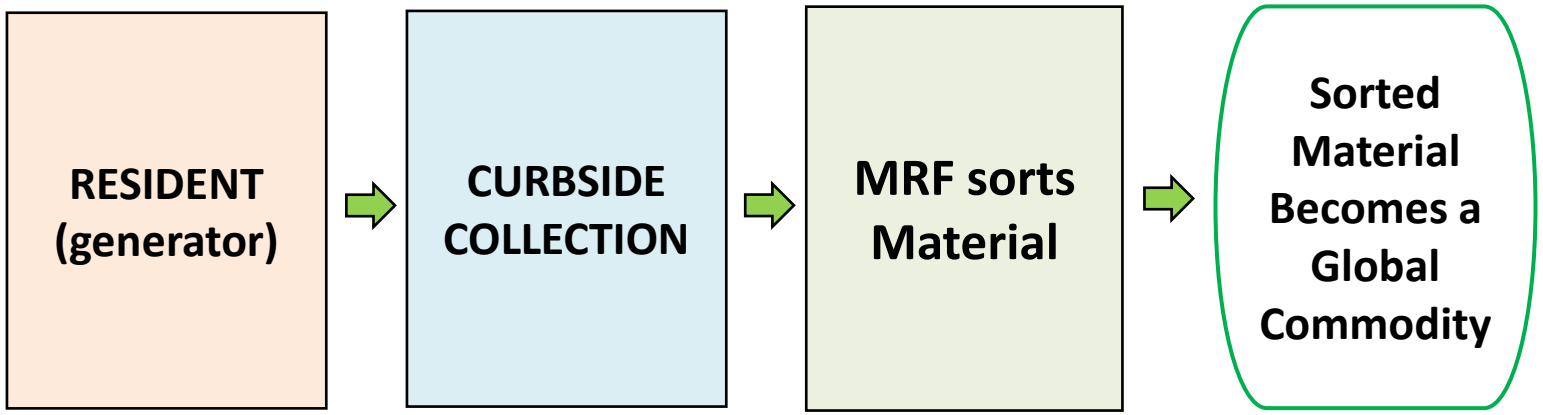
Greenspan is not alone in his pessimistic outlook for the future of recycling. In...
recycling boom *New York Times* journalist John Tierny was critical of the cond...
"Mandatory recycling programs aren't good for posterity. They offer mainly short-term benefits to a few groups –

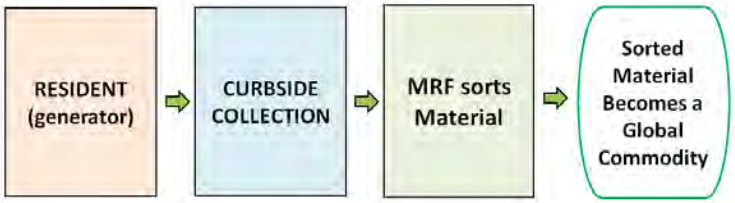
Tucson **recycling** rate is high, but so is **contamination**
Waste Dive - Oct 12, 2015
The high **recycling** rate in Tucson, AZ — 90% of residents in the city and 92% outside where Waste Management provides the service — is ...

Tucsonans are above average with **recycling**, but there's room to ...
Arizona Daily Star - Oct 10, 2015

Single Stream Residential Recycling Process.
What Goes Wrong?
What Process Controls are Needed?

Recycling process simplified





What goes wrong?

Residents

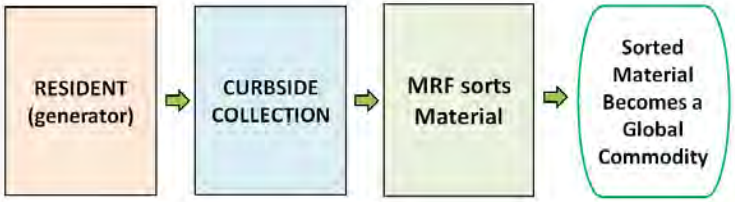
- Resident makes wrong decision, includes non-recyclable item
- Garbage in recycling container
- Missing lids on carts

Collector

- Wrong material in right truck
- Right material in wrong truck
- Truck not cleaned out properly

Processor

- Cross-contamination at MRF
- Poor recovery rates



Process Controls in Recycling Contracts

Residents

- Residents are educated on recycling right
- Residents have access to ongoing information
- Residents comply with rules

Collector

- Drivers are trained to identify and handle material; leave material if not recyclable
- Conditions for rejection of material are defined and enforced

County/City:

Proper steps for notification of non-compliant households are followed; consequences enforced

Processor

- Auditing of inbound tons and continuous monitoring
- Control of inefficiencies in process

Material Composition Auditing

WASTE MANAGEMENT

Aggregated Customer Audit Report

Thursday, December 03, 2015
10:01:38 AM

Location Reuters MRF

Sample Confidence 95%

Shift

From 1/1/2015

To 12/3/2015

Customer Metro Dade County, Naples TS- Collier County, WM Delta Hialeah, WM Delta Recycling Homestead, WM Delta

Status	# of Audits	Total Audit Time (hr.min)	Avg Audit Time (hr.min)	Total Weight (lbs)	Avg Weight (lbs)
Complete	124	341.40	2.75	26159.9	211.0

Material	Sub Type	Shape	Color	Min (lbs)	Max (lbs)	Avg (lbs)	Sum (lbs)	% of Total
Fiber	OCC			11.6	109.1	38.4	4758.50	18.2%
Fiber	ONP			25.0	128.4	65.3	8100.70	31.0%
Fiber	Mixed Paper			0.0	0.6	.0	.60	0.0%
Fiber	Aseptic-Gable To			0.0	2.6	.9	111.10	0.4%
Fiber	Wet Fiber			0.0	26.3	1.7	215.10	0.8%
Plastic	1 PET	Bottle		0.0	13.7	8.0	994.80	3.8%
Plastic	2 HDPE	Bottle	Natural	0.8	5.2	2.7	328.30	1.3%
Plastic	2 HDPE	Bottle	Colored	0.0	8.4	3.4	423.80	1.6%
Plastic	2 HDPE	Container	Natural	0.0	0.0	.0	.00	0.0%
Plastic	2 HDPE	Container	Colored	0.0	0.0	.0	.00	0.0%
Plastic	Plastic 3-7			0.0	3.5	1.2	150.50	0.6%
Plastic	Bulky Rigid Plasti			0.0	7.3	.3	27.60	0.1%
Metal	Aluminum	UBC		0.0	4.2	2.0	251.20	1.0%
Metal	Aluminum	NonUBC		0.0	2.2	.0	2.20	0.0%
Metal	Scrap Aluminum			0.0	4.6	.1	6.40	0.0%
Metal	Tin	Can		0.0	5.4	2.8	350.90	1.3%
Metal	Scrap Steel			0.0	8.5	.4	39.20	0.1%
Glass	Three Mix Glass >			12.2	62.2	32.1	3983.00	15.2%
Residue	Residue			23.4	97.1	51.7	6416.00	24.5%
				Total Sample Weighed			26,159.9	100.0%

NOTE: Values calculated by hand will differ due to rounding.

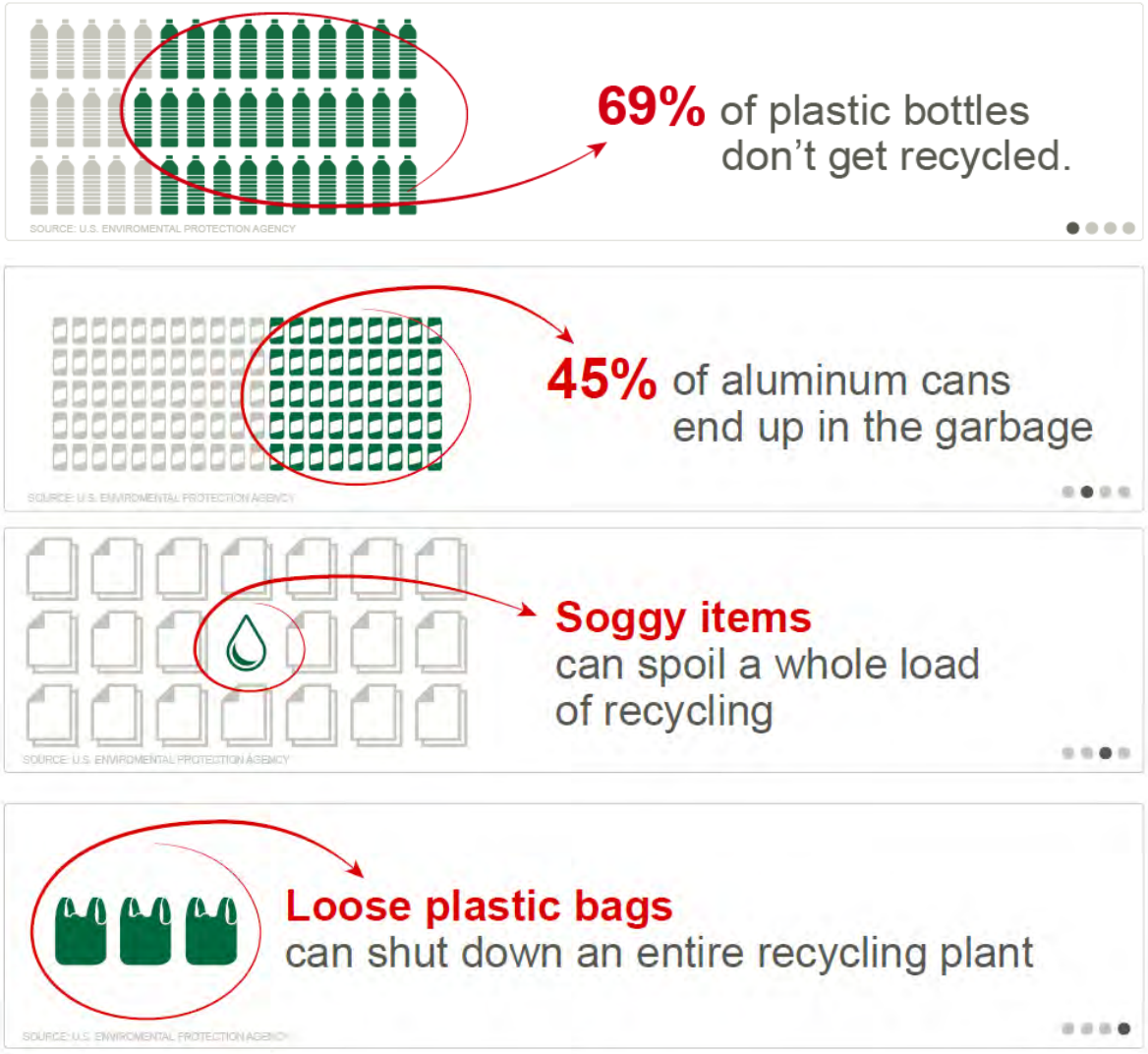
Back to the Basics:
Public Education and Outreach for Recycling

Recycle Often. Recycle Right.℠

The Path to Sustainable Profitable Recycling

WASTE MANAGEMENT

Its's Important to Recycle Often and Recycle Right



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Simple Messages

Recycle all my empty bottles, cans and paper.

Keep food and liquids out of my recycling.

Keep loose plastic bags out of my recycling.

Simplifying the Message

- Focus on 3 simple behaviors that could greatly impact recycling in Florida and nationally

WASTE MANAGEMENT

What About Glass?

- Glass markets have historically been problematic – however they have moved to a critical phase with the closure of a key processor. Some regions of the U.S. have no market for their glass.

- Waste Management is working with its customers to develop solutions for glass. Our goal is to meet our customers' needs while ensuring that we are fairly compensated for the costs of managing glass.

- In new contracts, we are offering prices with glass recycling (higher cost) and without glass recycling.

WASTE MANAGEMENT

Sustainable recycling requires multi-stakeholder support

1. Recycling goals must be realistic.

2. Policies and contract terms must support these goals.

3. Contamination must be reduced to under 10% of the recycling stream to ensure operationally and economically sustainable recycling programs.

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954-984-2041

Reducing Contamination in Single-Stream Recycling

Travis Barnes, MPA, LEED AP

Recycling Coordinator

Hillsborough County

Solid Waste Management Division

Office Phone: 813-209-3085

Email: barnest@hillsboroughcounty.org

Recycling Program Overview

- Once a week single-stream collection implemented in October of 2013
- Approximately 261,000 households served via 211 automated recycling routes
- Using 65 gallon recycling carts (95 and 35 gallon carts available upon request)
- 3 franchised haulers collecting from 5 competitively bid districts (Progressive Waste Solutions, Waste Management, and Republic Services)
- Single-stream doubled tonnage collected to ≈ 63,000 tons annually
- Recycling composition study found contamination/residue to be 19.21%.

Cleaner. Greener.
That's How We Roll!
Automated Recycling Collection

Hillsborough County Florida

Preparing to Transition to Single-Stream

- Work with your MRF to identify which recyclables can be successfully recovered and marketed
- Focus initial messaging to public on what items are accepted in your curbside program
- Consider paying the extra cost to embed targeted program recyclables on the lid of your new carts
- Before cart distribution ensure staff are educated on what items are accepted in your curbside program so they can help provide consistent messaging to the public
- Share information about what items are accepted in single-stream program with community partners so they can help distribute accurate information
- Provide residents with information about what items are accepted in your program along with the recycling cart delivery

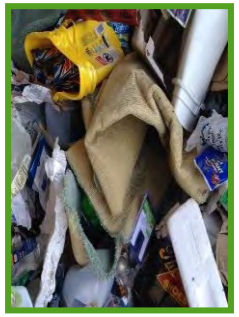
Hillsborough County Florida

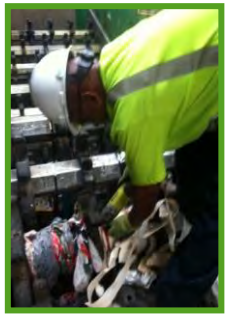
Tools to Identify and Reduce Contamination

- Perform a composition study of your recycling stream
  - Establishes a contamination baseline to measure progress over time
  - Identifies the most common types of contamination entering your system and where it is originating
- Evaluate your current communication and outreach efforts
- Focus your message on what items can be recycled in your curbside program as opposed to general information about why recycling is important or good for the environment
- Explain the sorting process at MRFs so residents better understand why certain items can't be recycled curbside
  - Simply stating an item is not accepted is not enough
  - Provide a justification for why items can't be recovered
  - It's okay to tell people what NOT to do
- Use data to guide your program

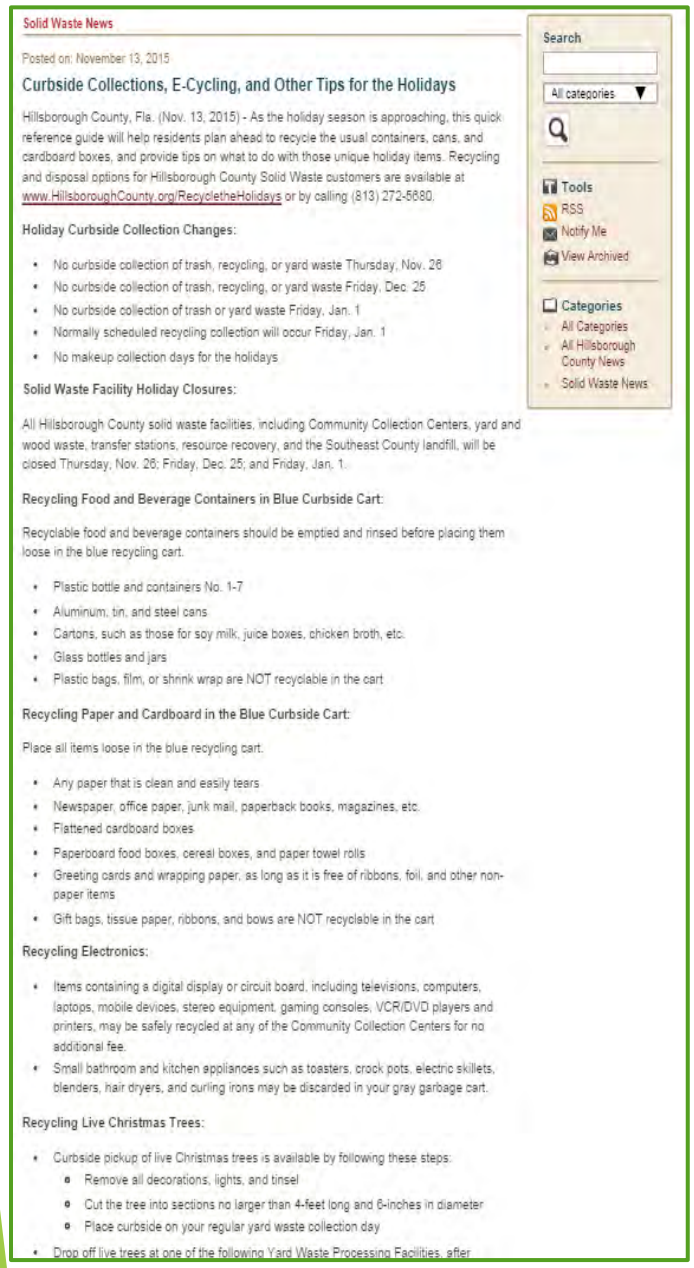
County Efforts to Reduce Contamination

- Developing a comprehensive public communication and outreach campaign
  - To include traditional media, social media, advertising, public meetings, events, etc.
  - Considering using focus groups to hone our message and receive public feedback
- Updating our website to be more user-friendly
- Updating recycling handouts to list common items we don't want in the recycling cart
- Utilizing our community partners (cooperative extensions, local universities and community colleges, adjacent municipalities, public schools, neighborhood newsletters, Keep America Beautiful affiliates, environmental groups, etc.)






Example of Website Changes



Solid Waste News

Posted on: November 13, 2015

Curbside Collections, E-Cycling, and Other Tips for the Holidays

Hillsborough County, Fla. (Nov. 13, 2015) - As the holiday season is approaching, this quick reference guide will help residents plan ahead to recycle the usual containers, cans, and cardboard boxes, and provide tips on what to do with those unique holiday items. Recycling and disposal options for Hillsborough County Solid Waste customers are available at www.HillsboroughCounty.org/RecycletheHolidays or by calling (813) 272-5680.

Holiday Curbside Collection Changes:

- No curbside collection of trash, recycling, or yard waste Thursday, Nov. 26
- No curbside collection of trash, recycling, or yard waste Friday, Dec. 25
- No curbside collection of trash or yard waste Friday, Jan. 1
- Normally scheduled recycling collection will occur Friday, Jan. 1
- No makeup collection days for the holidays

Solid Waste Facility Holiday Closures:

All Hillsborough County solid waste facilities, including Community Collection Centers, yard and wood waste, transfer stations, resource recovery, and the Southeast County landfill, will be closed Thursday, Nov. 26; Friday, Dec. 25; and Friday, Jan. 1.

Recycling Food and Beverage Containers in Blue Curbside Cart:

Recyclable food and beverage containers should be emptied and rinsed before placing them loose in the blue recycling cart.

- Plastic bottle and containers No. 1-7
- Aluminum, tin, and steel cans
- Cartons, such as those for soy milk, juice boxes, chicken broth, etc.
- Glass bottles and jars
- Plastic bags, film, or shrink wrap are NOT recyclable in the cart

Recycling Paper and Cardboard in the Blue Curbside Cart:

Place all items loose in the blue recycling cart.

- Any paper that is clean and easily tears
- Newspaper, office paper, junk mail, paperback books, magazines, etc.
- Flattened cardboard boxes
- Paperboard food boxes, cereal boxes, and paper towel rolls
- Greeting cards and wrapping paper, as long as it is free of ribbons, foil, and other non-paper items
- Gift bags, tissue paper, ribbons, and bows are NOT recyclable in the cart

Recycling Electronics:

- Items containing a digital display or circuit board, including televisions, computers, laptops, mobile devices, stereo equipment, gaming consoles, VCR/DVD players and printers, may be safely recycled at any of the Community Collection Centers for no additional fee.
- Small bathroom and kitchen appliances such as toasters, crock pots, electric skillets, blenders, hair dryers, and curling irons may be discarded in your gray garbage cart.

Recycling Live Christmas Trees:

- Curbside pickup of live Christmas trees is available by following these steps:
  - Remove all decorations, lights, and tinsel
  - Cut the tree into sections no larger than 4-feet long and 6-inches in diameter
  - Place curbside on your regular yard waste collection day
- Drop off live trees at one of the following Yard Waste Processing Facilities, after

Search

All categories

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Categories
All Categories
All Hillsborough County News
Solid Waste News

Holiday Trash Schedule and Recycling

-Recycle the Holidays with Hillsborough County-

Tis' the season to recycle your leftover trash from the holidays. Click on the icons for information on holiday collection schedules, tips on how to dispose of unique holiday items, recycling options and more.

Holiday Collection Days and Facility Closings

Live Christmas Trees

Electronics

Holiday Lights

Cooking Oil

Wrapping Paper and Cards

Holiday Ornaments and Decorations

Styrofoam Packaging

Cardboard Boxes

Plastic Bags

Food and Beverage Containers

Excess Trash

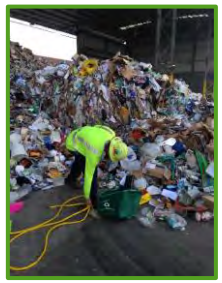
Hillsborough County Florida

County Efforts to Reduce Contamination…

- Getting creative with our public outreach efforts to draw attention to the recycling process and how contamination negatively impacts the process
- Educating more staff on what items are accepted in the recycling program and why
  - Providing a list of frequently asked questions and stock responses
  - Work with other departments that perform community outreach
- Working with our haulers:
  - Help educate recycling drivers about what items are accepted
  - Developing cart contamination notification stickers to provide immediate feedback to households
  - Seeking feedback from drivers on what routes are the most contaminated

Target Your Efforts Where Most Needed

- Identify what data is available to you
  - Grading inbound recycling loads at the MRF
  - Working to develop exception reports within Sonrai RFID system to identify households that receive contamination stickers and follow-up with direct correspondence to these customers
  - Identifying cart set-out rates on each route to measure participation
  - Calculating average lbs per household along each route to measure participation
- Track and measure progress over time
- Sustain and improve our efforts over time as the problem is never “solved”

Santa Rosa County Florida
Environmental Department
6065 Old Bagdad Highway
Milton, FL 32583
850-981-7135
Ron Hixson, Environmental Manager
ronh@santarosa.fl.gov

SANTA ROSA COUNTY RECYCLING

33

PAST RECYCLING ACTIVITIES

- County Operated Recycling Facility
- Dual Stream with 19 Drop Sites
- Residential, Schools & County Offices
- Primary Items
  - Cardboard
  - Office & Mixed Paper
  - Metals
  - Limited Plastics
  - Glass

OVERVIEW

- APPROXIMATELY 53 DUAL STREAM DROP BOXES
- LOW TECH – "KICK AROUND THE FLOOR SORTING"
- FOCUSED ON PROCESSING MATERIAL WITH REGIONAL MARKETS
  - CARDBOARD – LOCAL END USER
  - METALS – LOCAL METAL RECYCLERS
  - PLASTICS
  - MIXED PAPER

- CONTAMINATION AT DROP SITES – RESIDENTS USED AS GARBAGE BINS
- LIMITED CAPACITY TO HANDLE COUNTY SINGLE STREAM
- LOW REVENUE
- TRANSPORTATION COST & COST TO UPGRADE FOR CURBSIDE RECYCLING COLLECTIONS

- FOR PROFIT, WEST FLORIDA RECYCLING, CONVINCED BOCC THEY COULD DO CHEAPER AND PRODUCE MORE REVENUE

CONTRACTING OUT RECYCLING

WEST FLORIDA RECYCLING (WFR), FIRST ATTEMPT AT OUTSOURCING

- **FUNDED BY INVESTORS, NO COST TO COUNTY**
- **PROVIDED COLLECTIONS AND TRANSPORTATION FOR DROP SITES**
- **PROCESSED ALL RECYCLABLES COLLECTED IN COUNTY**
- **OPERATIONS SUPPORTED BY SALE OF RECYCLABLES**

OPERATED 2011 TO 2013

- **FAILURE CONTRIBUTED TO LOW MARKET REVENUE**
- **NON-RECYCLABLES IN THE RECYCLE STREAM**
- **OVERLOADED WITH MATERIAL**
- **CONTAMINATION OF END PRODUCT**

OPERATIONS AFTER WFR

TWO PARTY OPERATION, SECOND ATTEMPT AT OUTSOURCING

- **RECYCLABLES COLLECTED BY FRANCHISE HAULERS IN CURB SIDE SINGLE STREAM COLLECTIONS AND DELIVERED TO SANTA ROSA COUNTY CENTRAL LANDFILL AT NO-TIP**
- **EMERALD COAST UTILITIES TRANSPORTS ALL RECYCLABLES COLLECTED BY HAULERS TO IREP MONTGOMERY FOR PROCESSING**
- **ECUA PAID IREP MONTGOMERY $28.10 / TON FOR PROCESSING**
- **REBATE OF $38.10 / TON ON SELL OF RECYCLABLES**
- **NO COST TO COUNTY BUT ALSO NO REVENUE FROM SELL OF RECYCLABLES**

CURRENT RECYCLING OPERATIONS

FRANCHISED COLLECTIONS COUNTY WIDE

- **THREE WASTE HAULERS**
  - **EMERALD COAST UTILITIES AUTHORITY (ECUA)**
  - **WASTE PRO**
  - **WASTE MANAGEMENT**

- **CURRENT HOUSEHOLDS IN FRANCHISES – 40,000 households**

- **SERVICES**
  - **TWICE A WEEK GARBAGE**
  - **ONCE A WEEK RECYCLING**
  - **EVERY OTHER WEEK YARD WASTE**
  - **BULK, E-WASTE ON DEMAND**

RECYCLABLES COLLECTED CURBSIDE

- **APPROXIMATELY 830 TONS/MONTH**

RECYCLABLES COLLECTED

- GLASS, ANY COLOR
- MAGAZINES & CATALOGS
- PHONE BOOKS
- ALUMINUM CANS & LIDS
- BUBBLE WRAP
- CARDBOARD EGG CARTONS
- PLASTIC MILK JUGS
- NEWSPAPER & INSERTS
- JUNK MAIL & ENVELOPES
- COLOR PAPERS
- TIN/STEEL CANS & LIDS
- TIN FOIL & PIE TINS
- PLASTIC CUPS, PLATES ETC
- PLASTIC PRODUCE CLAMSHELLS
- CARDBOARD
- PAPER BAGS
- PIZZA BOXES
- CEREAL BOXES
- METAL POTS & PANS
- JUICE BOXES / BAGS
- PET FOOD CANS
- CRACKER BOXES
- PLASTIC & METAL HANGERS

MATERIALS NOT COLLECTED

- PLASTIC BAGS
- POLYSTYRENE
- WAXY / PAPER FOOD CONTAINERS
- GARBAGE / YARD WASTE
- AEROSOL CANS

IREP CLOSED OCTOBER 2015

- LOW REVENUE FROM SELL OF RECYCLABLES
- OPERATIONAL EXPENSES EXCEEDED ESTIMATES
- LACK OF CAPITAL TO CONTINUE OPERATIONS
- NON-RECYCLABLES IN THE INCOMING RECYCLE STREAM
- POSSIBLE CONTAMINATION OF END PRODUCT

AFTER IREP MONTGOMERY

RECYCLABLES GOING TO TARPON RECYCLING IN ALABAMA

	OUTBOUND	CLASS I	
OCTOBER	684/TONS	146	$4,672
NOVEMBER	427/TONS	403	$12,896

- DECEMBER 10 ECUA TERMINATES HAULING CONTRACT WITH SRC DUE TO COST (TRANSPORTATION + TIPPING FEE AT TARPON)

- ALL RECYCLABLES ARE DIVERTED TO THE CLASS I - $26,560 / MONTH

FUTURE OPERATIONS ?

RIGHT NOW – WORKING TO RESTART RECYCLING WITH ECUA / TARPON SHORT TERM FIX

- **COUNTY WOULD PAY ECUA AROUND $26.50 / TON TO COVER TRANSPORTATION PLUS TIPPING FEE AT TARPON**
- **TARPON WOULD ACCEPT APPROXIMATELY 75 -100 TONS / WEEK OF SANTA ROSA COUNTY RECYCLING OVER NEXT 6 MONTHS**
- **ABOUT 400 – 500 TONS/MONTH TO CLASS I**
- **ESTIMATED COST TO COUNTY $83,000 TO $102,000 OVER 6 MONTHS**

LONG TERM – REGIONAL RECYCLING FACILITY

- **ESCAMBIA COUNTY & ECUA WORKING ON A TEMPORARY FACILITY**
- **EXPECTED TO OPEN JUNE – JULY 2016**
- **EXPECTED TIP $20 - $30 / TON**

HOW TO RESCUE RECYCLING IF POSSIBLE ??

- CHARGE COLLECTION / TIPPING / PROCESSING FEES FOR RECYCLING
- RECYCLE ONLY MATERIALS THAT HAVE REGIONAL MARKETS (NOT CHINA)
- EDUCATIONAL - "MARKET BASED RECYCLING" ("YES, EVERYTHING CAN BE RECYCLED BUT NOT EVERYTHING SHOULD BE RECYCLED")
- ELIMINATE MATERIALS THAT CONTAMINATE SELLABLE PRODUCTS
  - GLASS, FOOD CONTAINMATED BOXES (PIZZA), MATERIALS WITH LOW / NON-EXISTANANT VALUE

SHOULD MOVE TO "MARKET BASED RECYCLING" – ONLY COLLECT MATERIALS WITH A KNOWN LOCAL OR REGIONAL MARKET

Single Stream Recycling: Challenge to Reaching Florida's 75% Recycling Goal

Recommendations to consider for Single Stream

- Education
  - Many residents are confused about what can be recycled
    - Focus on the top 4 or 5 recyclables
      - Highlight the do's and don'ts about your program
      - Provide directions on what items are suitable to be placed in the bin for recycling
    - Consider tags or stickers on carts to let homeowner know what is not accepted
- Contract Renegotiation between counties and the recycling processing companies
    - Look for provisions for route auditing and enforcement
    - Review the inbound material coming into the MRF
      - Set limits for contamination of 10% or less
    - Accept risk sharing
      - Understand that "never to pay" conditions are becoming unworkable
- Assistance from the State
  - Provide training and guidance to Counties

Karen Moore
Environmental Administrator
Waste Reduction/Recycling
850-245-8864
Karen.S.Moore@dep.state.fl.us

Questions?

Thank you to our partners…

Increasing Construction and Demolition Debris Recycling (November 2016)

Florida Department of Environmental Protection

Waste Reduction/Recycling

Increasing Construction and Demolition Debris Recycling

November 17, 2016

Housekeeping

50% by 2015
60% by 2017
70% by 2018
75% by 2020

- All attendees are in “listen-only” mode
- Please use the “Questions” tab to submit a question
- Questions will be answered at the end of the presentation
- The presentation and other material are available in the “Handouts” tab
- This session is being recorded and will be available on the DEP website for sharing
- Please complete the survey after the webinar

Florida Department of Environmental Protection

Waste Reduction/Recycling

Keyna Cory

Executive Director

Florida Recycling Partnership

Agenda

50% by 2015
60% by 2017
70% by 2018
75% by 2020

- Shannan Reynolds
  - Florida DEP
- Cory Dilmore
  - Florida DEP
- Suzanne Boroff
  - Florida DEP
- Steve Smith
  - US EPA
- Dr. Timothy Townsend
  - University of Florida

Florida Department of Environmental Protection

Waste Reduction/Recycling

Shannan Reynolds

Environmental Consultant

Florida DEP

Florida Department of Environmental Protection

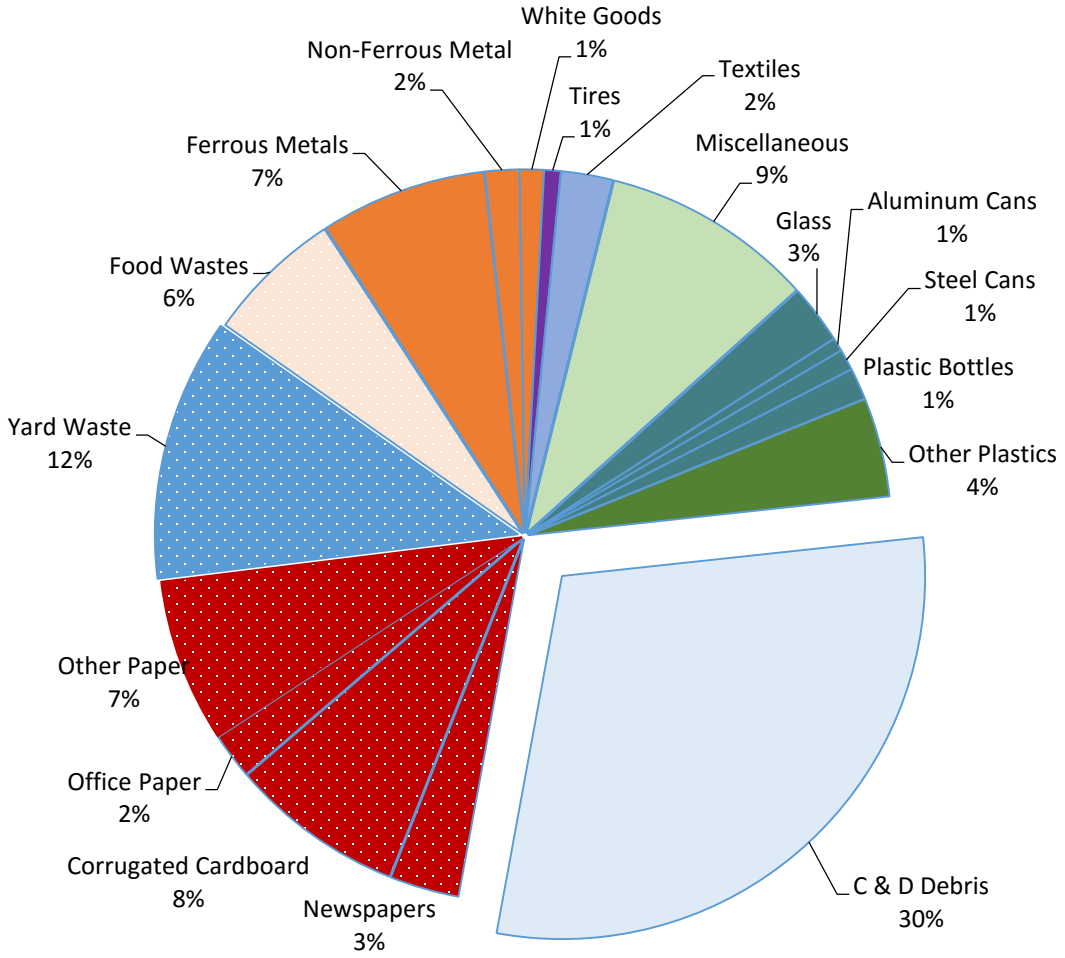
Why focus on Construction and Demolition Debris?





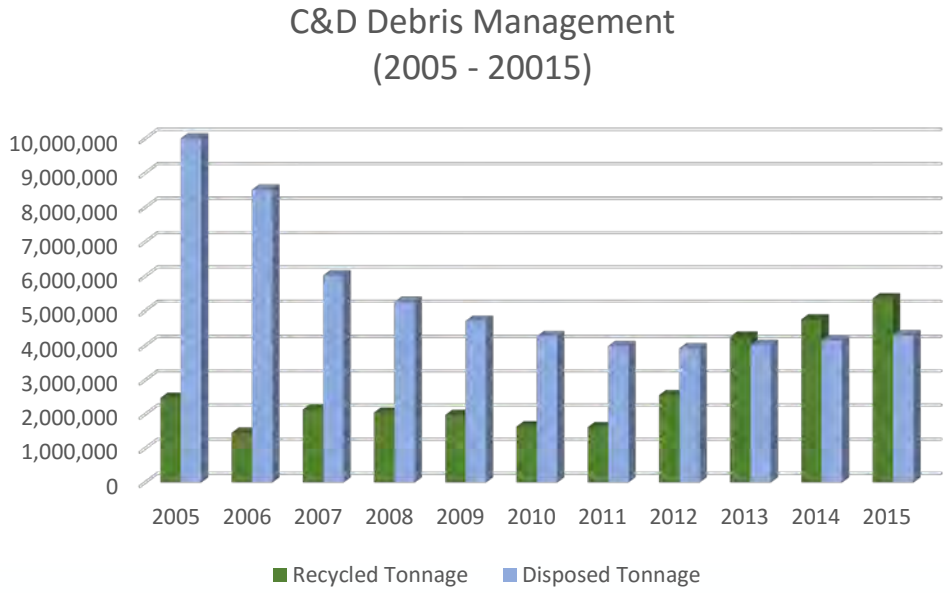
Florida Municipal Solid Waste Collected (2015)
(32.5 million tons)

- C&D makes up 30% of Florida's waste stream or 8.9 million tons
- Currently 55% or 5.3 million tons of Florida's C&D is recycled
- 4.2 million tons of C&D was disposed in C&D disposal sites



Impacts of Increasing C&D Recycling Efforts

- Increasing the recycling rate of C&D to:
  - 60% yields a State Recycling Rate of **55%**
  - 70% yields a State Recycling Rate of **58%**
  - 75% yields a State Recycling Rate of **59%**
  - 80% yields a State Recycling Rate of **61%**



Florida Department of Environmental Protection

Waste Reduction/Recycling

Cory Dilmore

Environmental Administrator

Florida DEP

Chapter 62-701 Solid Waste Management Facilities

Cory Dilmore, Environmental Administrator

Solid Waste Section

Permitting and Compliance Assistance Program

November 17, 2016

TOPICS

- 62-701.730 Construction and Demolition Debris Disposal and Recycling
- 62-701.900 Forms

62-701.730 Construction and Demolition Debris Disposal and Recycling

- Rule 62-701.730, F.A.C., establishes requirements governing construction and demolition debris disposal and processing for recycling.
- Subsection 403.707(9), F.S., directs the Department to adopt rules to require that, to the extent economically feasible, all construction an demolition debris be processed prior to disposal, either at a permitted materials recovery facility or at a permitted disposal facility.
- Requires use of new form

62-701.900 Forms

- Rule 62-701.900 F.A.C., adopts forms used by the Department in the solid waste program.
- Amended to include a new form(DEP Form 62-701.900(36)), titled “Certification of Economic Feasibility to Process C&D Debris Prior to Disposal”
- To be completed at least annually following initial certification.

- Contact

Cory.dilmore@dep.state.fl.us

Florida Department of Environmental Protection

Waste Reduction/Recycling

Suzanne Boroff

Environmental Operations
Florida DEP

Reporting Authority

- Section 62-701.730(12), Florida Administrative Code
  - C&D Debris recycled and disposed must be reported in tons by county of origin .
- Florida DEP Business Portal.
  - Reports are due to DEP on February 1 of each year.

DEP Reporting Form 62-701.900(7), F.A.C.

Reset Form | Print Form

DEP Form # 62-701.900(7), F.A.C.
Form Title: Annual Report for a Construction and Demolition Debris Facility
Effective Date: January 6, 2010
Incorporated in Rule: 62-701.730(8)(b), F.A.C.

Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road, MS 4555
Tallahassee, Florida 32399-2400

Annual Report for a Construction and Demolition Debris Facility

NOTE: Use one of these forms for each county from which the facility received materials

1. Company Name: _____ Year of data: _____
2. Name of Facility: _____ ☐ Landfill ☐ MRF ☐ TS
3. Physical Address: _____
4. Mailing Address: _____
5. County Location: _____
6. Debris County of Origin: _____
7. Company Contact: _____
   (the individual responsible for this information)
8. Phone Number: _____ E-Mail: _____

MATERIAL TYPES	MATERIALS RECOVERED	TOTAL TONS RECYCLED (SHIPPED)
ASPHALT	Used for	Subtotal Asphalt
CONCRETE	**Source: Roads, Bridges, Sidewalks, Curbs** **Source: Building Construction/Demolition:** Used for fill (lake or land) Used for Road base Other Use	Subtotal Concrete
FINES / RECOVERED SCREEN MATERIALS	Used for	Subtotal Fines / RSM
WOOD	Daily/Intermediate Cover Waste-to-Energy fuel (see pg.2 for facility list) Other processed fuel Mulch, compost Final cover Other Use	Subtotal Wood
LAND CLEARING DEBRIS	Daily/Intermediate Cover Waste-to-Energy fuel (see pg.2 for facility list) Other processed fuel Mulch, compost Final cover Other Use	Subtotal Land Clearing Debris
DRYWALL	All	Subtotal Drywall
SHINGLES/ROOFING	How used?	Subtotal Shingles/Roofing
		Subtotal Page 1 Subtotal Page 2

9. **TOTAL TONS OF C&D DEBRIS RECYCLED** *(add subtotals page 1 & 2 above)*: _____
10. **TOTAL TONS OF C&D DEBRIS DISPOSED** *(all debris landfilled)*: ☐ **on-site** ☐ **off-site** _____

Signature (authorized Representative) _____ Title _____ Date _____
Print Name _____

OVER PLEASE!!
Page 1 of 2

MATERIAL TYPES	MATERIALS RECOVERED	TOTAL TONS RECYCLED
PAPER	Old Corrugated Containers (OCC) Other Paper	Subtotal Paper
PLASTIC	Plastic containers/buckets All other plastic	Subtotal Plastic
METALS	Aluminum Other Non-Ferrous (brass, copper, etc.) Steel Other Ferrous	Subtotal Metals
TEXTILES	Miscellaneous/carpet	Subtotal Textiles
		Subtotal Page 2

Waste to Energy Facilities

- Bay County Resource Recovery
- Broward County N. Resource Recovery
- Broward County S. Resource Recovery
- Dade County Resource Recovery
- Hillsborough County SWE Recovery
- Lake County Resource Recovery
- Lee County SW Resource Recovery
- McKay Bay Refuse to Energy Project
- Southernmost WTE Facility
- North County Regional Resource Recovery
- Pasco County SW Resource Recovery
- Pinellas County Resource Recovery

Processed wood/land clearing debris that goes to any facility for fuel other than above is considered "Other Processed Fuel".

Mail completed form to:

Florida Department of Environmental Protection
Bureau of Solid & Hazardous Waste
2600 Blair Stone Road, MS 4555
Tallahassee, Florida 32399-2400

DEP FORM 62-701.900(7)
Effective January 6, 2010

Page 2 of 2

C&D Debris: What Counts Towards the 75% Recycling Goal

What Counted THEN	What Counts NOW
Concrete from residential/commercial buildings construction or demolition used for: • Road Base • Pipe Bedding • Drain Fields • Septic Tanks • Landfill Cell Drainage & Stabilization • Artificial Reefs Wood & Land Clearing Debris used for: • Mulch • Compost Final Cover Wood & Land Clearing Debris sent to: • Processed Fuel/Biomass Facilities	Concrete from residential/commercial buildings construction or demolition used for: • Road Base • Pipe Bedding • Drain Fields • Septic Tanks • Landfill Cell Drainage & Stabilization • Artificial Reefs Wood & Land Clearing Debris used for: • Mulch • Compost Final Cover Wood & Land Clearing Debris sent to: • Processed Fuel/Biomass Facilities Concrete from: • Roads • Bridges • Sidewalks • Curbs • Storm/Sewer Pipes • Culverts Concrete from building construction or demolition used for: • Lake Fill • Land Fill Wood & Land Clearing Debris • WTE Fuel • Daily Cover • Intermediate Cover • Landfill Roads Within a Cell Wood& Land Clearing Debris sent to • WTE Facilities • Renewable Energy Facilities (other than WTE) Asphalt (not being directly reused)

***Effective in 2012, the red text represents additional materials and/or uses that now count towards the recycling goal.**

***Effective in 2012, the red text represents additional materials and/or uses that count towards the recycling goal.**

C&D Rules and Statutes to Know

Section 62-716.480, F.A.C. Methods and Criteria for Calculating County Recycling Rates

- (3) Criteria.
  - (a) Municipal solid waste includes only that waste that is, or if not otherwise recycled, may normally be collected through a public or private solid waste management service. Such services can include garbage collection services, recycling collection services, and remediation services. All construction and demolition debris shall be considered municipal solid waste for the purposes of this section. Automobiles, including scrap metal or shredder residue, are not considered municipal solid waste. Asphalt or other byproducts from road building or maintenance that are directly reused as part of an associated works project are also not considered municipal solid waste
  - (d)Recycling does not include any process that is a use that constitutes disposal, even if that process does have some beneficial use. For example, the use of municipal solid waste as fill material in a manner that constitutes disposal, such as filling a borrow pit with unprocessed construction and demolition debris, would not be considered recycling for the purpose of calculating county recycling rates. The use of processed clean debris as fill material, or the use of other processed municipal solid waste authorized by the department pursuant to a permit or other order issued under Part IV of Chapter 373, Chapter 378, or Chapter 403, F.S., for use as fill material, is not considered a use that constitutes disposal, as long as such use is integral to a land improvement project (including environmental land reclamation or restoration) or is necessary for the construction of appurtenant structures or facilities as part of a real property improvement.

C&D: Rules and Statutes to Know

Section 403.706(2) Florida Statutes

- **Local government solid waste responsibilities –**
- (2)(a) Each county shall implement a recyclable materials recycling program that shall have a goal of recycling recyclable solid waste by 40 percent by December 31, 2012; 50 percent by December 31, 2014; 60 percent by December 31, 2016; 70 percent by December 31, 2018; and 75 percent by December 31, 2020. Counties and municipalities are encouraged to form cooperative arrangements for implementing recycling programs.
- (b)In order to assist counties in attaining the goals set forth in paragraph (a), the Legislature finds that the recycling of construction and demolition debris fulfills an important state interest. Therefore, each county must implement a program for recycling construction and demolition debris.

Reporting Hurricane Debris

- Hurricane Debris is considered an Anomaly
- The reporting form helps with normalizing the data.

Hurricane Debris Report
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
2600 Blair Stone Road, MS 4570, Tallahassee, FL 32399-2400

1. **County:**
2. **Mailing Address:**
3. **County Contact:**
4. **Contact Phone Number:** **Fax Number:**
5. **Contact E-mail address:**

MATERIAL TYPES	MATERIALS RECOVERY METHOD	TOTAL TONS RECYCLED
ASPHALT	Sent to a Recycling/Clean Debris Facility Other*	Subtotal Asphalt
CONCRETE	Sent to a Recycling/Clean Debris Facility Other*	Subtotal Concrete
ALUMINUM	Sent to a Recycling Facility Other*	Subtotal Aluminum
STEEL	Sent a to Recycling Facility Other*	Subtotal Steel
VEGETATIVE MATERIAL	Sent a to Recycling Facility Other*	Subtotal Vegetative
MIXED WASTE	Sent a to Recycling Facility Other*	Subtotal Mixed Waste
TOTAL RECYCLED		

*If the material was not sent to a recycling or clean debris facility, where was it sent or how was it recovered/used? Please note that any material used for lake fill, land fill or burned in a county waste-to-energy plant is considered as disposal. Vegetative material sent to a co-generation plant (other than a county waste-to-energy facility) is considered as recycled.

6. **TOTAL TONS OF C&D DEBRIS RECYCLED**
7. **TOTAL TONS OF DEBRIS DISPOSED** *(all debris landfilled)* **Class I**
8. **TOTAL TONS OF DEBRIS DISPOSED** *(all debris landfilled)* **Class III**
9. **TOTAL TONS OF DEBRIS DISPOSED** *(all debris landfilled)* **C&D**
10. **TOTAL TONS OF DEBRIS DISPOSED** *(used as lake/land fill, WTE)*
11. **TOTAL TONS OF DEBRIS BURNED**

TOTAL DISPOSED (Lines 7-11)

Signature (authorized Representative) Title Date

Print Name

Contact Info

Suzanne Boroff

850-245-8933

Suzanne.Boroff@dep.state.fl.us

Glad to be back and looking forward to working with you!

Florida Department of Environmental Protection

Waste Reduction/Recycling

Steve Smith

US Environmental Protection Agency

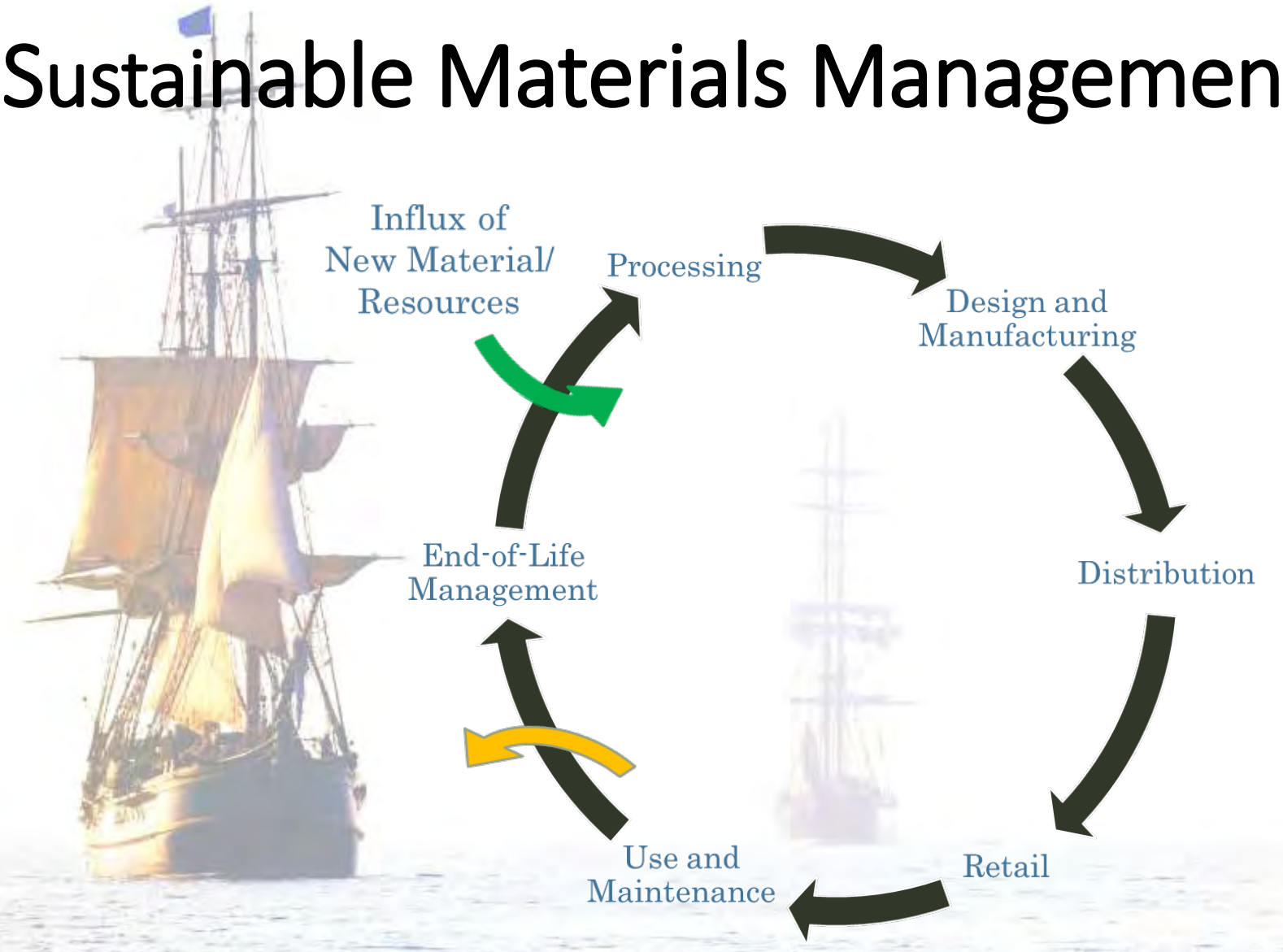
EPA's SMM Strategic Plan: Advancing SMM in the Built Environment

EPA Region 4

Steve Smith

United States Environmental Protection Agency

Sustainable Materials Management (SMM)

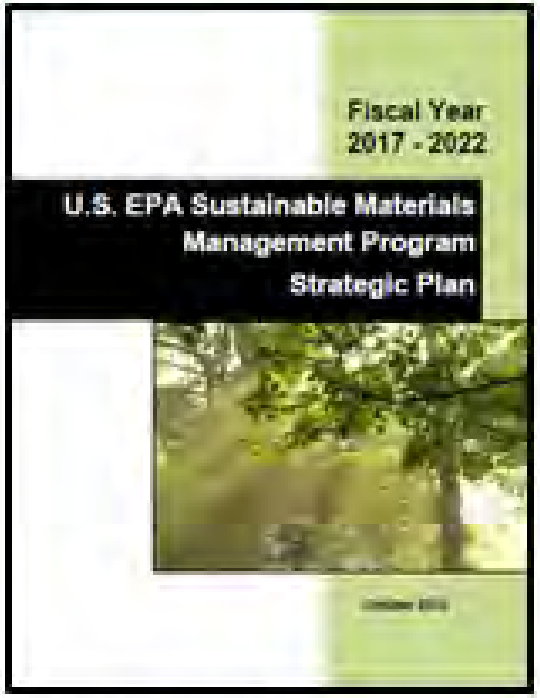


Goal of EPA's SMM program is to reduce the life cycle environmental impacts of materials.

United States Environmental Protection Agency

SMM Strategic Plan for FY2017 – FY2022

3 Strategic Priority Areas



The Built Environment
(buildings, roads, bridges, infrastructure)

Sustainable Management of Food

Sustainable Packaging

Additional Emphasis Areas: Sustainable Electronics Management; Lifecycle Assessment; Measurement; and International Efforts

The Built Environment

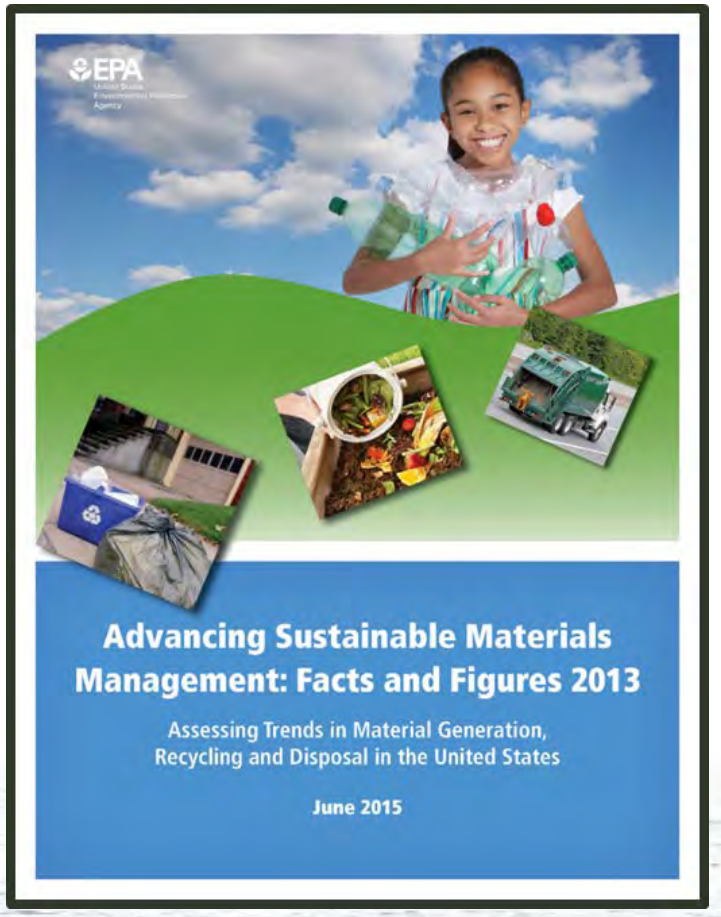
- Incorporate life cycle SMM concepts into the built environment marketplace.
- Support & advance climate adaptation and community resilience efforts.
- Improve and enhance data and measurement of C&D and industrial byproduct materials.

Single-Family Home Life Cycle Impact Analysis

- Identifies materials, products, and services used in single-family homes that cast the greatest environmental impacts.
- Quantifies the life cycle environmental savings associated with example changes.
- Shows that increasing the recovery and reutilization of select building materials at the demolition of single-family homes can notably offset the life cycle impact of single-family homes.

C&D Debris Measurement and Data

- Included information on C&D debris generation in 2012 and 2013, in the U.S in the 2015 Advancing Sustainable Materials Management: Facts and Figures.
- Plan to continue to provide estimates for C&D debris generation.
- Estimates for C&D debris generation in 2014 are included in the new Facts and Figures report.



Thank You!

Steve Smith
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United States Environmental Protection Agency

Florida Department of Environmental Protection

Waste Reduction/Recycling

Dr. Timothy Townsend

University of Florida



Florida Department of Environmental Protection, Recycle Florida Today, and the Florida Recycling Partnership Webinar Series

The State of Construction and Demolition Debris in Florida

Timothy G. Townsend, PhD, PE
Department of Environmental Engineering Sciences
Engineering School for Sustainable Infrastructure and Environment
University of Florida

November 17, 2016

ttown@ufl.edu
http://pages.ees.ufl.edu/townsend/




Sustainable Materials Management

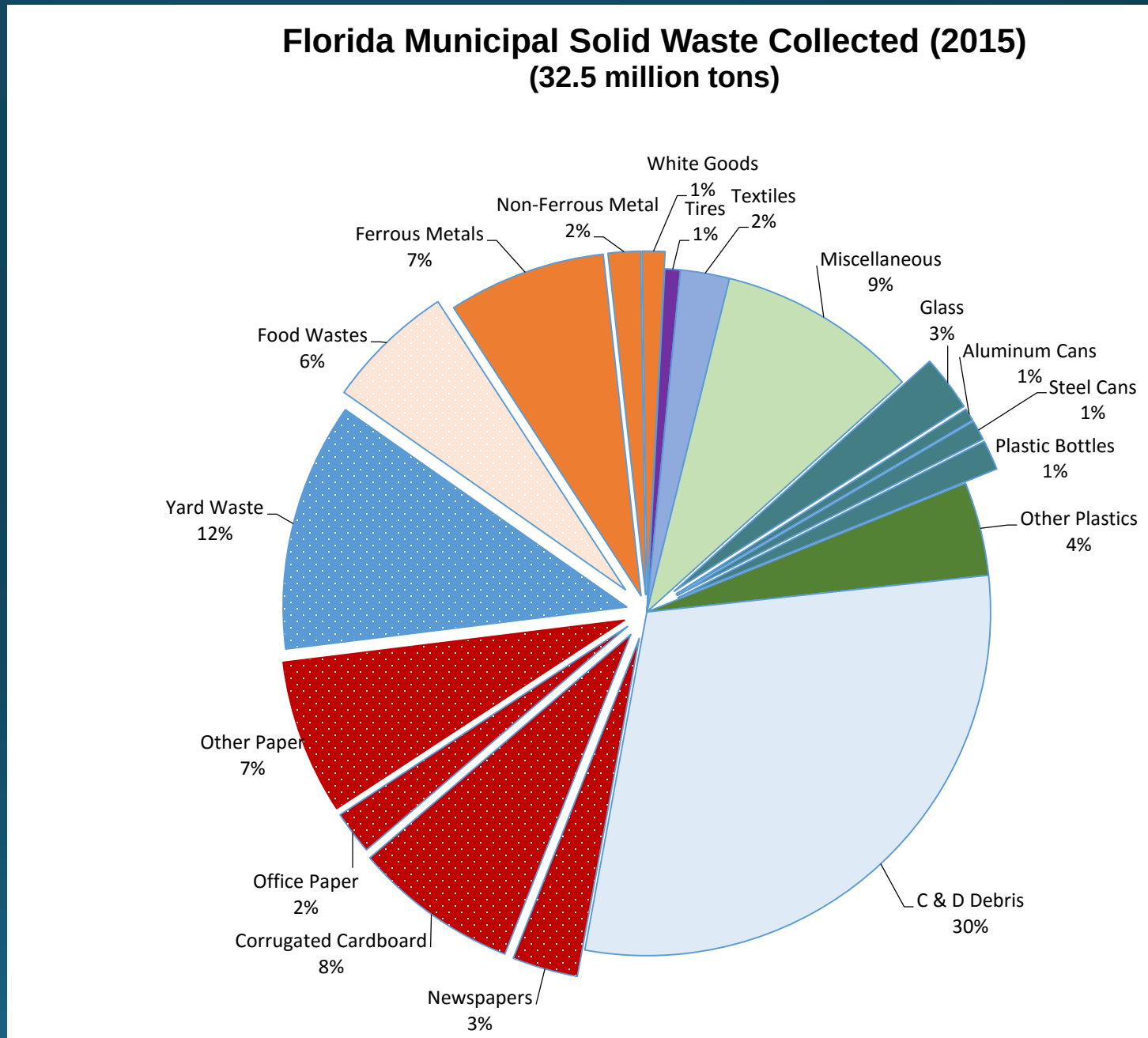



CAT
320C L
CAT


Planter Mix


Concrete Mix Recycled

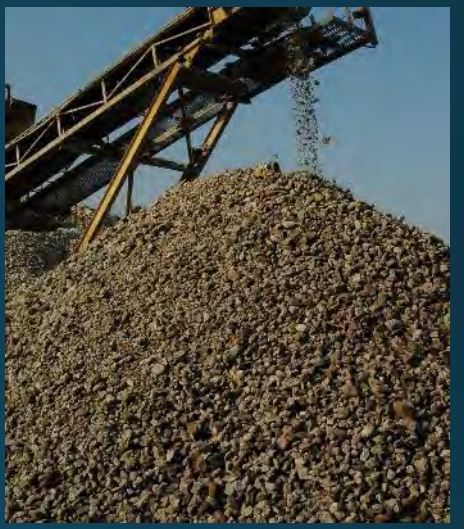
Florida MSW in 2013

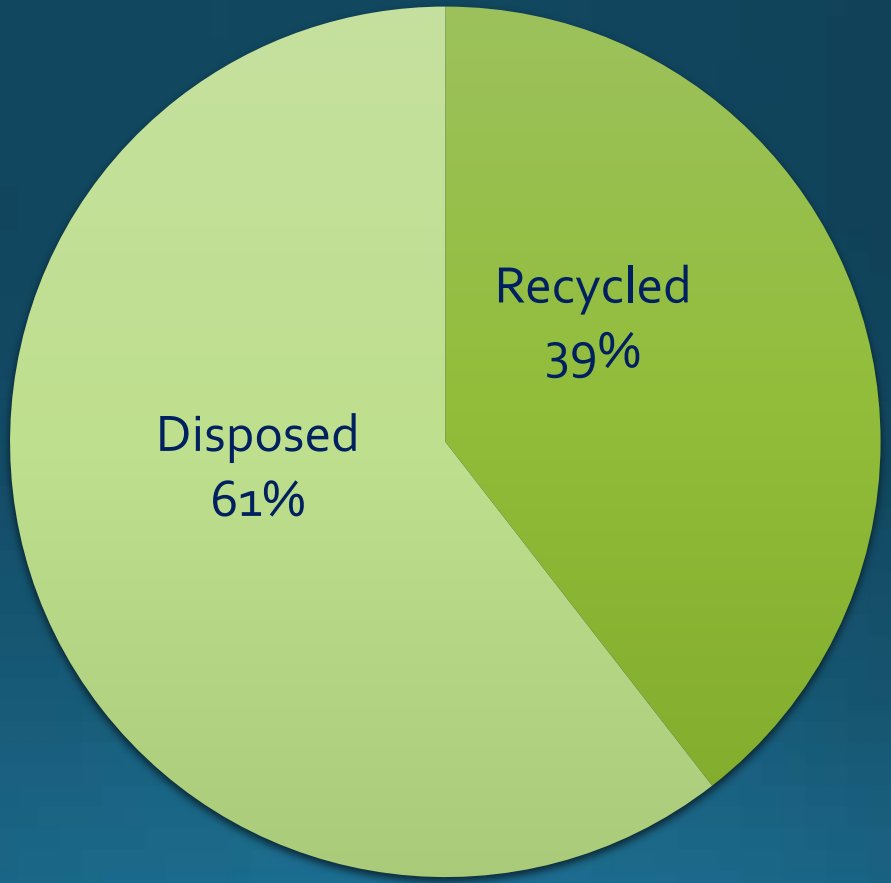


Florida C&D Debris → 2012

Total collected = 6,472,000 tons #

Recycled = 2,556,000 tons
Disposed = 3,916,000 tons





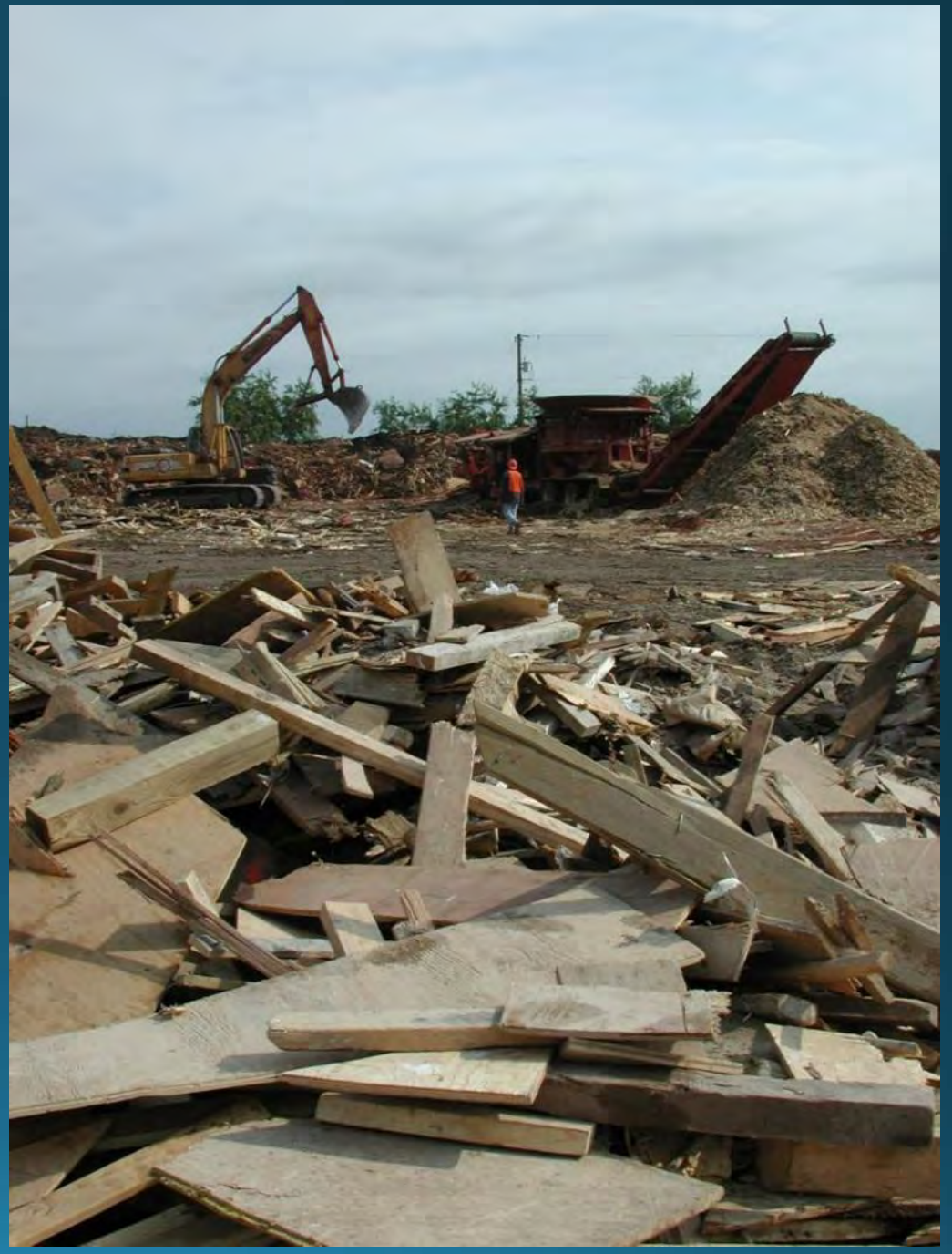
FDEP annual reporting numbers (reflects "MSW" C&D debris)

Concrete

Asphalt Concrete

Asphalt Shingles

Wood



Drywall

RSM

RDF

Common Cited Benefits of Recycling

- Reduce landfill disposal
  - Protect environment
  - Better utilize land resources
- Save natural resources
- Save energy
- Save money
- Create jobs

Construction and Demolition Debris

- Methods for promoting C&D debris recycling
  - Require all debris to pass through a recycling facility
  - Make landfills more expensive
  - Have contractors pay an upfront deposit that is only returned after demonstrated that debris was recycled

Leadership in Energy and Environmental Design (LEED)

- Provides a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

- Buildings and communities are judged on a 100 point total scale (with 10 bonus points available):
  - Certified: 40-49
  - Silver: 50-59
  - Gold: 60-79
  - Platinum: 80 and above


Deconstruction

Mobile Grinder

Processed Wood in Landscape Use

C&D Recycling – State of Practice

Mixed C&D Processing Facility


KOMATSU


KOMATSU


SWS
2831


Fines


Wood
Fines

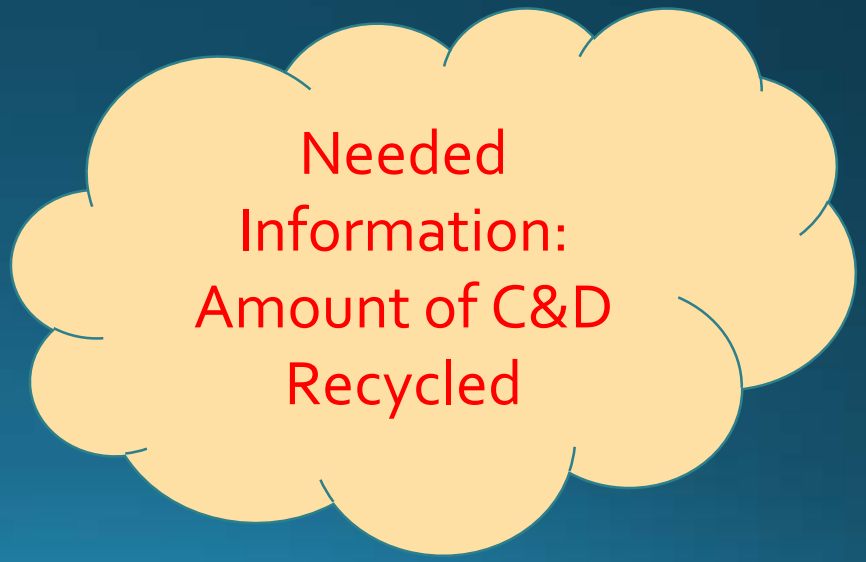

Picking Line
Fines


2
EXIT
EXIT
CARDBOARD
CARDBOARD


METALS

Quantifying the Benefits of Recycling

- Engineers and scientists now have a greater set of tools that we can use to quantify benefits from different waste management processes, including recycling.
- The University of Florida has worked with the CDRA to quantify the benefits accrued by C&D recycling in the US and Florida.
- Examples:
  - Landfill capacity savings
  - Energy savings
  - Life cycle environmental benefits
  - Job creation
  - Impact on local economies



Energy Savings

- Waste recycling estimates were used along with WARM energy factors to estimate energy savings from C&D recycling.

Example: All of the asphalt recycled in 2012 resulted in an energy savings equivalent to 23,000,000 barrels of oil

Greenhouse Gas Emissions

- Waste recycling estimates were used along with WARM GHG emission factors to estimate GHG offsets resulting from C&D recycling.

Example: All of the concrete recycled in 2012 resulted in a GHG savings equivalent to removing over 2.5 million passenger from the road during that year.

Job Creation

- Job statistics from both bulk aggregate and mixed C&D processing facilities have been collected.

Direct and Indirect Economic Benefit

- Economics statistics from both bulk aggregate and mixed C&D processing facilities have been collected.

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Thank You !

FLORIDA RECYCLING PARTNERSHIP

RECYCLE FLORIDATODAY
FOR A SUSTAINABLE TOMORROW

Questions

- Please use the “Questions” tab in in the attendee panel to submit a question
- Use the “Raise Hand” option to be identified for follow up

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Florida Department of Environmental Protection

Waste Reduction/Recycling

Increasing Construction and Demolition Debris Recycling

November 17, 2016

Trends in Construction and Demolition Recycling (February 2017)

Florida Department of Environmental Protection

Waste Reduction/Recycling

Trends In Construction and Demolition Debris Recycling

February 16, 2017

Housekeeping

- All attendees are in “listen-only” mode
- Please use the “Questions” tab to submit a question
- Questions will be answered at the end of the presentation
- The presentation and other material are available in the “Handouts” tab
- This session is being recorded and will be available upon request from the Florida DEP Waste Reduction/Recycling Section
- Please complete the survey after the webinar

Florida Department of Environmental Protection

Waste Reduction/Recycling

Keyna Cory

Executive Director

Florida Recycling Partnership





Agenda

- **Bryce Hill**
  - Marpan Recycling
- **John Shoucair**
  - Florida DOT
- **Carissa Agnese**
  - Skanska USA Civil
- **Craig Ash**
  - Waste Management

Florida Department of Environmental Protection

Waste Reduction/Recycling

Bryce Hill

General Manager

Marpan Recycling

Welcome to Marpan Recycling

HAVING THE RIGHT EQUIPMENT TO ACHIEVE MAXIMUM SEPARATION AND RECOVERY

Misters over tipping floor and one of Marpan's Roll-offs – 40% of our inbound is hauled by us

MARPAN
RECYCLING

Primary Screen

GK Finger Screen – 6 inch cut

MARPAN
RECYCLING

Manual Sorting Required

MARPAN
RECYCLING

We send our OCC direct to the baler and we recycle materials in the same building

MARPAN
RECYCLING

Our “B” line screening includes two magnets, a GK Finger Screen 2” minus, over a Bivitec 1” minus and again Manual Sorting

MARPAN
RECYCLING

Final B line screen is GK Destoner

GK Destoner

WOOD GRINDING TO MAKE MULCH

MARPAN
RECYCLING

We use Kiln Dried lumber & pallets to make colored mulch – our process includes a Mobark slow speed high torque shredder/trommel/apron conveyor and a Morbark vertical electric mill

MARPAN
RECYCLING

Fines & 2” minus wood chips

Concrete crushing equipment and road base pile

MARPAN
RECYCLING

Capacitors, ballasts and non-ferrous metal

MARPAN
RECYCLING

Christmas tree lights

Insulated copper wire

MARPAN
RECYCLING

Mattresses to be destructed and recycled

MARPAN
RECYCLING

Did you ever think about antique bricks?

VALUE $1.50 EACH

MARPAN RECYCLING

Aluminum Cans

Structured Aluminum

MARPAN
RECYCLING

Good batteries & bad batteries can all have some value

MARPAN
RECYCLING

Liquids

MARPAN
RECYCLING

Sheetrock

The hardest material to find a use for

MARPAN RECYCLING

Your residual

Some things come in separated and should be used to max out loads to the landfill


STOP
STOP
Thank you for choosing
MARPAN
RECYCLING
We appreciate your business!

Florida Department of Environmental Protection

Waste Reduction/Recycling

John Shoucair, P.E.

State Materials Office

Florida DOT





Materials Used in Recycling

- **Cementing Supplements for Concrete**
- **Components for Hot Mix Asphalt**
- **Recycled Concrete Aggregate**

Availability of Fly Ash for FDOT Concrete

Current Situation in Florida

- **Fly ash is required** in all DOT concrete mix designs and is a standard component of Ternary mixes.
- **Increasing demand** for fly ash.
- **Decreasing supply** of concrete-grade fly ash.
- **Local shortages -** SMO has issued seven Material Bulletins in the last three years concerning lack of fly ash availability in regions of Florida.

Forecasts by Balmoral, Inc. and AASHTO Fly Ash Task Force indicate that trend will continue.

Potential Fly Ash Replacements in FDOT Concrete

The following natural and recycled materials are available in Florida and development of these resources would help solve local supply shortages of Supplementary cementing materials (SCMs).

- Clays containing kaolin
- Recycled waste glass
- Sugarcane bagasse ash
- Glass sand (high purity silica sand)
- Commercial silica sand

Recycled Materials in Asphalt

- Reclaimed Asphalt Pavement (RAP)
- Ground Tire Rubber (GTR)
- Others:
  - Recycled Crushed Glass
  - Recycled Asphalt Shingles (RAS)

Recycled Concrete Aggregate

- **Optional Base Course in Roadway**
- New pavements from existing FDOT pavements or structures
- Pipe backfill in wet conditions
- Non-structural concrete
- Underdrains
- French Drains – current research

Thank you

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Harvey.DeFord@dot.state.fl.us

Asphalt: Greg Sholar
Gregory.Sholar@dot.state.fl.us

Florida Department of Environmental Protection

Waste Reduction/Recycling

Carissa Agnese

Southeast Regional Environmental Manager

Skanska USA Civil

SKANSKA

Recycle and Reuse of Construction Waste

By: Carissa Agnese, SE Regional Environmental Manager

SKANSKA

Sustainability

All projects recycle or reuse more than 95% of all its construction waste.

SKANSKA

SKANSKA USA Civil SE - Sustainability / Waste / Carbon Emission Quarterly Report

PROJECT NAME & NUMBER	Midtown Tunnel
REPORT PREPARED BY:	Brian Kelly
REPORT DATE:	1/1/15 - 3/31/15

PROJECT SITE INNOVATIVE/GREEN PRACTICES:

MATERIAL		MATERIAL DESCRIPTION (Example: Piles, Structural Steel, Safety Handrails, Formwork, Masonry, Erosion Control, Marine Excavation)	Material Placement / Incoming Material: INCOMING MATERIAL WEIGHT (TONS)	% RECYCLED CONTENT MANUF/VENDOR	Recycled / Re-used / Waste Material: SITE WASTE (RE-USED OR SENT FOR RECYCLING) (TONS)	SITE WASTE (SENT TO LANDFILL) (TONS)	TOTAL WASTE	Resulting Carbon Emission (Based on Material Placement / Incoming Material figures) Emission Factor provided by Skanska NE: General Default Emission Factor	Unit	Emission
1 Concrete	PLACEMENT							0.107	CONC - TON of CO2 / TON of mat.	0.000
	WASTE-RECYCLE-REUSE				192.5	0.0	192.5			
2 Crushed Aggregates	PLACEMENT							0.0052	AGGR - TON of CO2 / TON of mat.	0.000
	WASTE-RECYCLE-REUSE				28.2	0.0	28.2			
3 Structural & Miscellaneous Metals	PLACEMENT							1.46	METAL - Tons of CO2 / Tonne of mat.	0.000
	WASTE-RECYCLE-REUSE				75.0	0.0	75.0			
4 Asphalt	PLACEMENT							0.066	ASPHALT - Tons of CO2 / Tonne of mat.	0.000
	WASTE-RECYCLE-REUSE				29.9	0.0	29.9			
5 Soil/Dirt	PLACEMENT							0.024	SOIL - Tons of CO2 / Tonne of mat.	0.000
	WASTE-RECYCLE-REUSE				31.3	0.0	31.3			
6 Marine Excavation / Site Excavation	WASTE-RECYCLE-REUSE				12,349.0	0.0	12,349.0			
7 Wood	PLACEMENT							0.72	WOOD - Tons of CO2 / Tonne of mat.	0.000
	WASTE-RECYCLE-REUSE				518.8	0.0	518.8			
8 Fabrics	PLACEMENT									
	WASTE-RECYCLE-REUSE				6.5	0.0	6.5			
9 Plastics	PLACEMENT							3.31	PLASTIC - Tons of CO2 / Tonne of mat.	0.000
	WASTE-RECYCLE-REUSE				32.5	0.0	32.5			
10 Gypsum / Plaster	PLACEMENT							0.18	PLASTER - Tons of CO2 / Tonne of mat.	0.000
	WASTE-RECYCLE-REUSE				10.3	0.0	10.3			
11 Tile	PLACEMENT							0.78	TILE - Tons of CO2 / Tonne of mat.	0.000
	WASTE-RECYCLE-REUSE				4.6	0.0	4.6			
12 Paper / Cardboard	PLACEMENT									
	WASTE-RECYCLE-REUSE				37.7	0.0	37.7			
13 Oily Water / Used Oil Filters / Solids	WASTE-RECYCLE-REUSE				5.4	REPORT PROPERLY DISPOSED WASTE HERE	5.4			
14 Hazardous Materials Waste: (Refer to Sec 57 of the HASP manual)					0.0	REPORT PROPERLY DISPOSED WASTE HERE	0.0			
15 Common Universal Waste: Batteries, Pesticides, Un broken Mercury-containing Eqpt., Bulbs. (Refer to Sec 57 of the HASP manual)					0.0	REPORT PROPERLY DISPOSED WASTE HERE	0.0			
16 Electronic Equipment Waste: Computers, small electric devices, cathode ray tube, TV, Copier, Scanner. (Refer to Sec 57 of the HASP manual)					0.0	REPORT PROPERLY DISPOSED WASTE HERE	0.0			
17 General Site Trash or Other Waste not reported above (Going to Landfill)						106.87	106.9			
					13,321.82	106.9	13,428.7			
					TOTAL WASTE FIGURES			0.588 Electricity (KW / hr)	kgCO2 / Liter	371,409.024

ENERGY CONSUMPTION (ELECTRICITY) - Directly procured by Skanska		Energy Use / Activity Description - (Office, Field, Start Up, Other):
Electricity Consumption (KW H)	631,648	
Notes:		
ENERGY CONSUMPTION (FUELS) - Fuel purchased / Paid for by Skanska		Fuel Use / Activity Description - (Equipment, Pumps, Vehicles, Start Up, Heating, Other):
Diesel (Gallons):	51,256	
Unleaded (Gallons):	14,556	
Natural Gas (CCF):	0	
POTABLE WATER CONSUMPTION BASELINE		Pot Water Use / Activity Description - (Office, Field, Start Up, Concrete Curing, Testing, Other)
Potable Water (Gal):	1,049,391	
Notes:		
RECYCLED (REUSE) WATER CONSUMPTION BASELINE		Recyc. Water Use / Activity Description: - (Dust Control, Grassing / Seeding / Irrigation, Construction Use, Testing/Start Up/Owner)
Recycled Water (Gal):	10,000	
Notes: MTT reused arount 10,000 gallons of dewatering water for dust supression in Q4		
ADDITIONAL NOTES:		
Notes: 131 aerosol cans punctured		

JOBSITE ENERGY EFFICIENCY / GREEN PRACTICES IMPLEMENTATION (X Check Apply)		General Default Emission Factor	Unit	Emission
Skanska Electronic Manuals and Forms, (preventing paper& toner consumption)	X			
Electronic Jobsite Filing (preventing carton and paper consumption)	X	2.679 Diesel (Converted to Liter)	kgCO2 / Liter	519,210.833
Consumption of Recycled Paper & (Green)-Eco Friendly Office Supplies	X	2.272 Gasoline (Converted to Liter)	kgCO2 / Liter	125,205.042
Use of Solar Energy Lights & Reflectors				
Use of Non Potable / Recycled water (Dust Control / Irrigation)	X			
Concrete Recycling / Onsite Re-use	X			
Suitable Soil Re-use	X			
Steel Pile Re-use (Sheet Pile, H-Pile etc.)				
Concrete Forms Re-use				
FINISHED PROJECT ENERGY EFFICIENCY/ECO-FRIENDLY CONTRIBUTION (X Check Apply)				
Electronic Toll Collection Systems (Reducing Vehicle Fuel Burn, Tire/Break Wear)				
Infrastructure Improvement and/or LEED certified structure				

SKANSKA

Concrete

SKANSKA

SKANSKA

Soils

SKANSKA

The project chose to perform insitsu treatment of lead contaminated soil.

Using this method reduced hazardous waste.

Treatment was a lower cost then shipping off as hazardous waste.

SKANSKA

Wood

SKANSKA

The project used an aerosol can puncturing system to manage its can waste.

The system reduced hazardous waste

Saves $33,000 per 4,400 cans

- Procurement
- Equipment Maintenance
  - Used Oil, filters, etc…
- Job Sharing
- Close out of Projects

SKANSKA

Crew Involvement

SKANSKA

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Skanska
SE Regional Environmental Manager

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757-692-2872

Florida Department of Environmental Protection

Waste Reduction/Recycling

Craig Ash

Environmental Protection Manager

Waste Management Inc. of Florida





WM C&D Recycling Facilities
South Florida

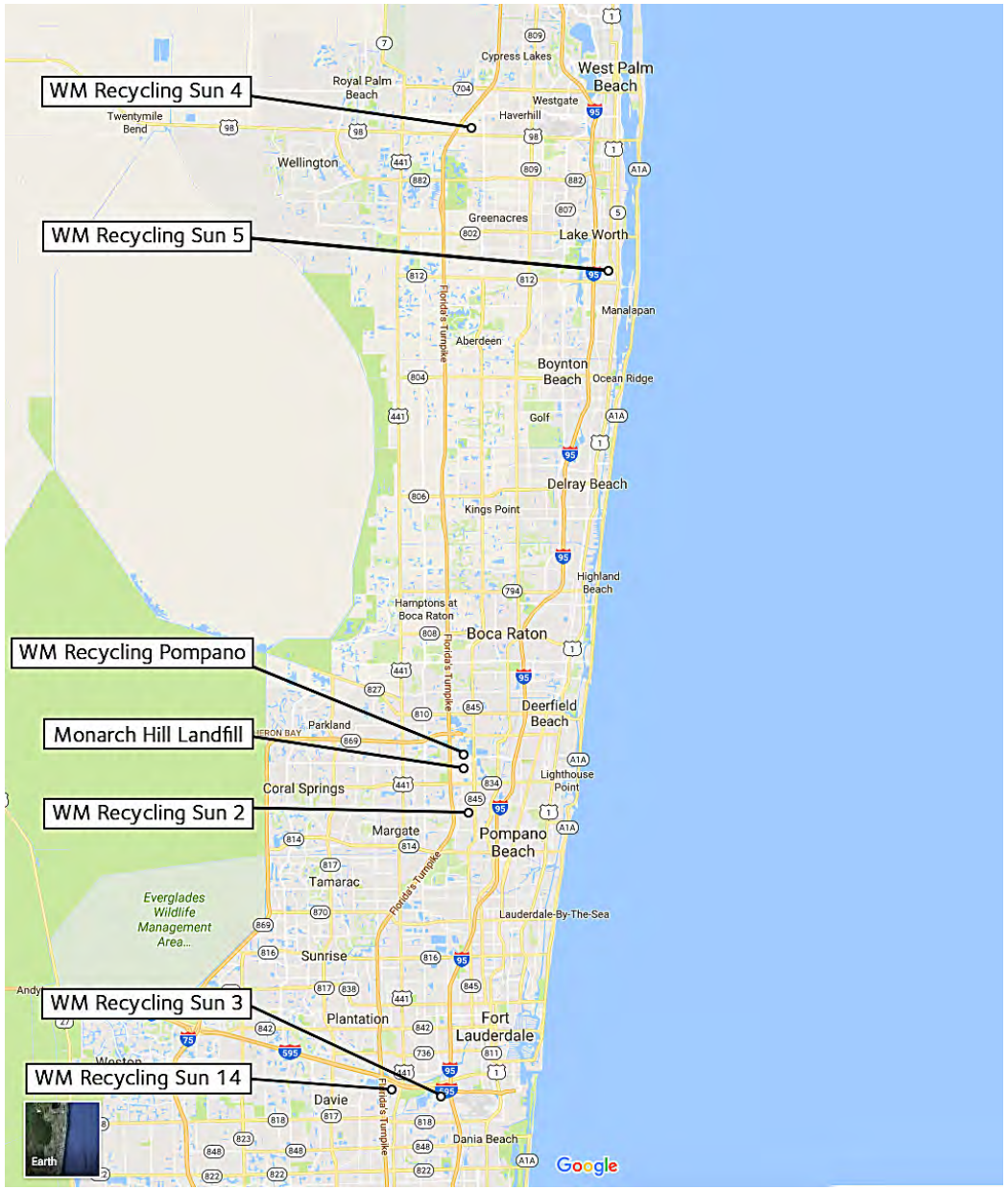
Palm Beach County

- WM Recycling Sun 4
- WM Recycling Sun 5

South Florida Facilities (con't)

- **Broward County**
  - WM Recycling Sun 2
  - WM Recycling Sun 3
  - WM Recycling Sun 14

C&D Recycling Facility Locations



WASTE MANAGEMENT

THINK GREEN.®

Recycled Materials

- Asphalt
  - landfill roads
- Concrete
  - commercial road base
  - lakefill
- Paper
  - OCC
- Metals
- RSM
  - final cover at landfill
  - soil amendment

Recycled Materials (con't)

- Wood
  - Ground for fuel at WTE plant
- Yard Trash
  - Ground for landfill cover
  - Ground for mulch
- Materials Not Recycled
  - Drywall
  - Asphalt shingles
  - Textiles

WASTE MANAGEMENT

THINK GREEN.®

C&D Recycling Numbers

Recycled Mats	Sun 2	Sun 3	Sun 4	Sun 5	Sun 14	Pompano
Asphalt	-	-	-	-	-	-
Concrete						
roads or lake fill	56,523	72,780	103,126	42,074	-	5
RSM	29,257	69,527	80,149	30,920	-	6
Wood						
LF Cover	9,210			-	26	-
mulch/compost	-	11,028	26,045	-	-	-
waste to energy				8,626	-	-
Landclearing Debris	-	-	-	-	-	
Drywall	-	-	-	-	-	
Shingles/Roofing	-	-	-	-	-	
Paper						
OCC	1,151	1,390	3,022	-	34	
Plastic	374	131	255	-	51	
Metals	4,103	7,802	11,424	-	444	1

Total Recycled (tons)	**100,618**	**162,658**	**224,021**	**81,620**	**555**	**12**
Total Disposed (tons)	**108,525**	**11,990**	**95,878**	**30,284**	**78,308**	**156,940**
Recycled (%)	**48%**	**93%**	**70%**	**73%**	**1%**	**0%**

Average = 71%

RSM Beneficial Reuse

Recycling Challenges

- **RSM Disposal – Beneficial Re-use**
  - soil amendment
  - commercial/industrial setting
  - landfills (final cover)
- **Contamination in materials**
- **Environmental**
  - dust, odors, noise

Financial Challenges

- **Tipping fees**
  - MRF vs landfill
- **Commodities pricing**
  - plastic
  - metals
  - paper
- **Equipment maintenance**
- **Picking line personnel and equipment operators**
- **Economy**

Waste Management Inc. of Florida

Craig Ash
Environmental Protection Manager
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Pompano Beach, FL 33073
Mobile: 954 882 4818

THINK GREEN.®

Thank You !

FLORIDA RECYCLING PARTNERSHIP

RECYCLE FLORIDATODAY
FOR A SUSTAINABLE TOMORROW

Questions

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- Use the “Raise Hand” option to be identified for follow up

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  - Recycling: Solid Waste Management reports, Recovered Materials Dealer Certification and Reporting, Construction & Demolition Reporting Program, Public Sector Reporting Program
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- ***Chris Perry***
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Organics in Florida: Part I (May 2016)

Florida Department of Environmental Protection

Waste Reduction & Recycling

Organics in Florida: Part I

"The State of Organics in Florida"

May 11, 2016

Housekeeping

50% by 2015
60% by 2017
70% by 2018
75% by 2020

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Agenda

50% by 2015
60% by 2017
70% by 2018
75% by 2020

- Kim Brunson
  - Publix Super Markets
- Frank Franciosi
  - US Composting Council
- Jay Bassett
  - EPA Region 4
- Miriam Zimms
  - Kessler Consulting

Florida Department of Environmental Protection

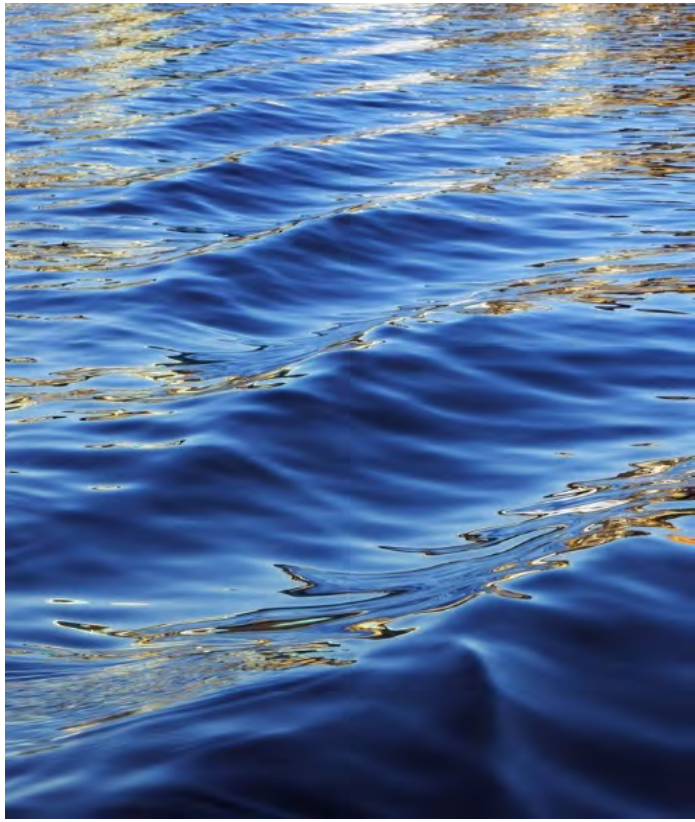
Waste Reduction/Recycling

Frank Franciosi

US Composting Council

US Composting Council Update

Frank Franciosi-Executive Director



US Composting Council

Established 1990

- **Who & What Are We?**
- The US Composting Council (USCC) advances compost manufacturing and promotes compost use to enhance soils and provide economic and environmental benefits for our members and society.
- **Compost: Nature's Way To Grow!**

Vision Statement

We believe that the recycling of organic materials is central to achieving healthy soils, clean water and a sustainable society.

Areas of Engagement

- **Education**
  - Annual Conference
  - Composter Training Program
- **Market Development**
  - Seal of Testing Assurance
  - Consumer Use Programs
- **Advocacy**
  - State Policy Support
  - National Issues
- **Membership**
  - Communication
  - Database
  - Organizational Management
  - State Chapters

Educational Activities

- Compost Operations Training Course- 7th Year
  - Over 1,000 students from 23 states and three countries
  - 2015 In CA, VA, NC and FL
  - 2016 In CA, NY, NC and AZ
  - 2016 Certified Compost Operation Manager (CCOM)
- 2015 Compost Technician—GA
- 2015 Expanding to Food Scraps on a Farm—IA
- Specifying compost—CA
- Composting with Forced Air—CA
- One webinar—The role for Compostable Plastics in diversion

Advocacy Activities – 2015

Federal and National Issues

- Supported federal legislation targeting food waste
  - Maine & Minnesota
- Persistent Herbicides
  - Meeting with EPA re: re-registration process
  - Produced “Composter’s Guide to Persistent Herbicides”
- Compostable Products
  - Expanded CP Toolkit with grant from USDN
  - Conducted Webinar on role of CP in diversion programs
- Summit participation
  - NRC Sustainable Materials Management (June)
  - EPA Food Recovery (SC-November)
- Supported International Year of Soils

State Chapters & Committees

- ***The US Composting Council Chapters is a vital partner to its chapters as the national organization providing coordination, visibility and access to national resources. As such, chapters recognizes their responsibility to the USCC to promote national membership growth, in local support of national promotions such as International Compost Awareness Week, encourage market development and use of STA/Certified compost, and to assist the national organization As such, chapters recognizes their responsibility to the USCC to promote national membership growth, regional training and national conferences and other programs benefitting the compost industry.***

CA Association of Compost Producers
STATE CHAPTER OF THE U.S. COMPOSTING COUNCIL

NC Composting Council
STATE CHAPTER OF THE U.S. COMPOSTING COUNCIL

MN Composting Council
STATE CHAPTER OF THE U.S. COMPOSTING COUNCIL

VA Composting Council
STATE CHAPTER OF THE U.S. COMPOSTING COUNCIL

MD-DC Composting Committee
STATE CHAPTER OF THE U.S. COMPOSTING COUNCIL

Model Rules Template for State Regulations

www.compostingcouncil.org

State Regulations by State Map:

- http://compostingcouncil.org/state-compost-regulations-map/

Model Rules Template:

- http://compostingcouncil.org/wp/wp-content/plugins/wp-pdfupload/pdf/14798/US-Composting-Council-Model-Compost-Rule-Template-v1.pdf

Strategic Partnerships

- American Hort
- BioCycle
- IECA
- KAB
- National Foundation to End Senior Hunger-(NFESH)
- BPI
- Kimberly Clark Professional
- Soil Science Society of America

A GUIDE TO WORKPLACE COMPOSTING

Kimberly-Clark PROFESSIONAL

US Composting Council®

KEEP AMERICA BEAUTIFUL

Online Resources

- A Guide to Workplace Composting
- http://compostingcouncil.org/workplace-composting/
- Compostable Plastics Toolkit
- http://cptoolkit.org/
- Curb-to-Compost Toolkit
- http://compostfoundation.org/c2c
- Fact Sheets & Free Reports
- http://compostingcouncil.org/factsheets-and-free-reports/

Composting Council Research & Education Foundation

- Received second $75,000 grant to continue development of Certification Program from the 11th Hour Project
  - Develop test questions and administrative procedures
- Planning for transfer of Composter Training Program from USCC to CCREF
- Compostable Plastics Tool Kit Upgrade
- Scholarship program
- International Compost Awareness Week-ICAW

Market Development Activities

- Updated Compost: The Sustainable Solution
- Completed TMECC review & revision
- Created and introduced STA “Certified Compost”

Market Development Activities

- Contracted with Joe Lamp'l (Growing a Greener World) to expand our outreach efforts nationally

US Composting Council

Seal of Testing Assurance®

Introducing Certified Compost®

Certified Compost™

STA | Seal of Testing Assurance

US Composting Council®

USCC STA Participants are: Compost Manufacturers!

Seal of Testing Assurance

2015 Program 'Stats'

Companies in the STA Program = 234

Compost Products = 298

Compost in the STA Program = Over 4 million tons or Approx. 8 million cy's

Labs in STA Program = 11

States with STA participants = 39

Florida has 11 STA Participants

Seal of Testing Assurance
Compost *ONLY!*

CURRENT State Agencies Requiring STA Compost ONLY

AKDOT · CalTrans · CODOT · FLDEP · MNDOT · NCDOT · NYDOT · ORDOT · SCDOT · TXDOT WIDNR WIDOT · WSDOT

Creating Demand for Infrastructure

- Policies and legislative action demanding soil restoration in conjunction with stormwater management.
  - Model Ordinances for Soil Restoration
  - Stormwater BMP's
  - Low Impact Development
  - Green Infrastructure (USGBC) LEED Certification
  - DOT (use of STA Certified Compost)

Call for abstracts-May 2016

US Composting Council®

Florida Department of Environmental Protection

Waste Reduction/Recycling

Jay Bassett

US Environmental Protection Agency



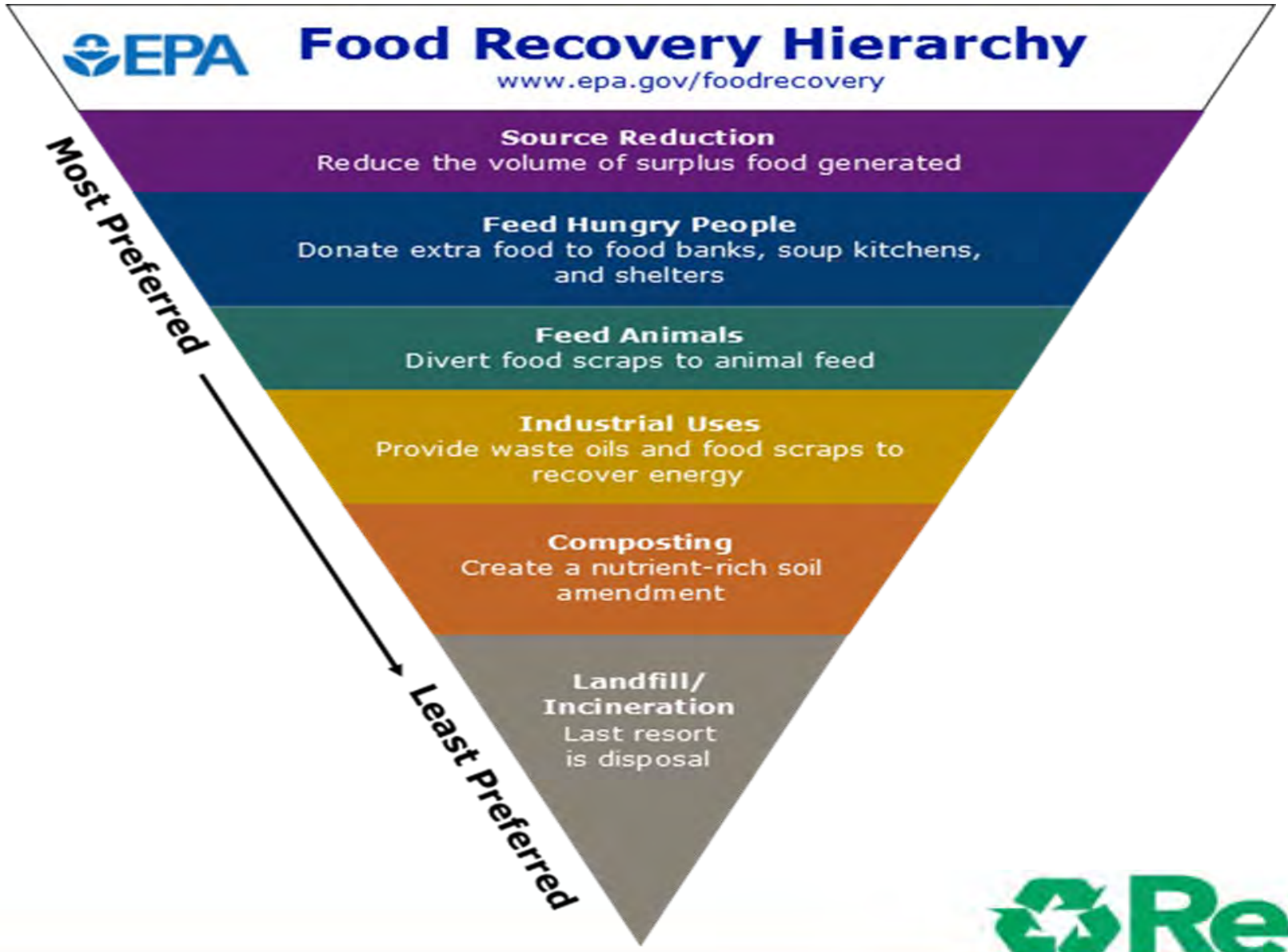


EPA's Call to Collective Action to Meet the U.S. 2030 Food Loss & Waste Goal




Rethink

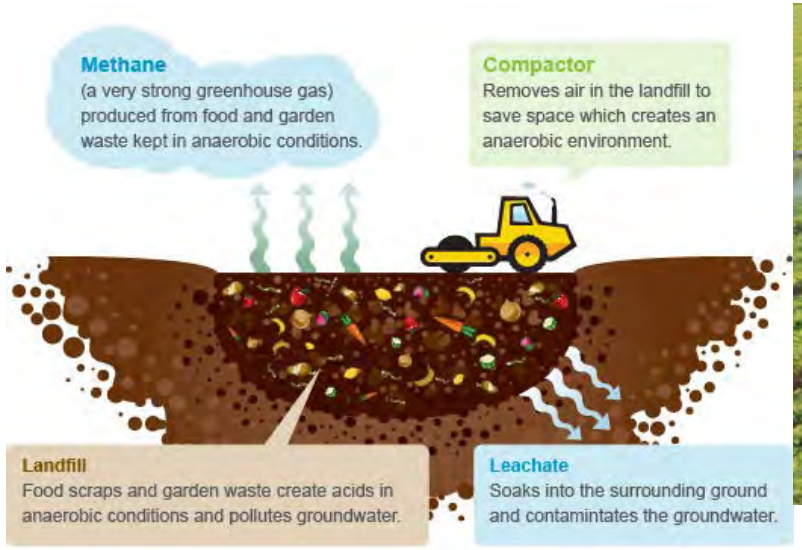
CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW



Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

The Cost of Wasted Food



Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

What a Waste

- **Food loss & waste valued at $161.6 billion**
- **21% of the nation's waste stream; 35 million tons**
- **5% capture rate**
- **Production consumes 80% of the nation's water and half our land.**
- **Yet, 48 million Americans are food insecure.**

Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

U.S. 2030 Food Waste Reduction Goal

On September 16, 2015, US EPA Deputy Administrator Meiburg and USDA Secretary Vilsack announced the United States' first-ever national food waste reduction goal - Reduce wasted food by 50% by 2030.

Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

Paris Agreement

The agreement was to limit global warming below 2 ºC by 2100. 196 *parties* made pledges in an international agreement at the United Nations Conference of the Parties 2015 (COP21) to reduce greenhouse gas emissions.

Under current policies, the U.S. is not projected to fully realize its pledge by 2025. **The U.S. will fall short of its pledge by 0.36-0.57 billion tons of CO_2 in 2025**

FOOD RECOVERY SUMMIT

Charleston, SC • November 16-18, 2015

250 leaders from across the country

Over 80 presentations

Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

EPA United States Environmental Protection Agency

www.epa.gov/smm

Focus Areas

- Increase public awareness
- Improve data
- Form and strengthen partnerships
- Clarify date labels
- Build infrastructure
- Seek prevention strategies

Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

Tackling the Wasted Food Problem – A Partnership Among Key Players

Commercial Food Operations Producers, grocers, restaurants, institutions
Changing operations to reduce wasted food.

Public/Municipal and Private Operations

Supporting source reduction, donation, composting.

Food Banks and Support Networks

Meeting needs of food insecure people.

Government

Laws, policies, programs

e.g. reduce liability risks, create incentives, technical assistance, research, public recognition programs, support infrastructure development.

Other Supporters and Sponsors

Volunteer, faith-based, and philanthropic organizations, "innovation community"
Supporting hunger relief through food recovery and donation programs.

Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

Food Loss and Waste
A Call to Action

Identify Opportunities → Make Commitments → Take Action

2030 Food Loss and Waste Reduction Goal

Rethink

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

ReFED | Rethink Food Waste
Economics and Data

http://www.refed.com/?sort=economic-value-per-ton

http://waste360.com/food-waste/seven-key-takeaways-refed-s-roadmap-reduce-us-food-waste-report?NL=WST-03&Issue=WST-03_20160408_WST-03_98&sfvc4enews=42&cl=article_1_b&utm_rid=CPEQW000003538826&utm_campaign=7194&utm_medium=email&elq2=c94645b7eba04fd78b578c1813183bea

ABOUT REFED

ReFED is a collaboration of over 30 business, nonprofit, foundation, and government leaders committed to reducing United States food waste in the United States. ReFED seeks to unlock new philanthropic and investment capital, along with technology, business, and policy innovation, which is projected to catalyze tens of thousands of new jobs, recover billions of meals annually for the hungry, and reduce national water use and greenhouse gas emissions. ReFED was formed in early 2015 to create a Roadmap to Reduce U.S. Food Waste, the first ever national economic study and action plan driven by a multi-stakeholder group committed to tackling food waste at scale.

THE ROADMAP WAS MADE POSSIBLE WITH THE GENEROUS SUPPORT FROM THE FOLLOWING FOUNDATIONS:

AHEARN FAMILY FOUNDATION · ATTICUS TRUST · AGUA FUND, INC. · THE CLAREL FOUNDATION · JOHN MERCK · Walmart Foundation · the David & Lucile Packard Foundation · GRACE · the LUMPKIN FAMILY · HENRY P. KENDALL FOUNDATION · IMPACTASSETS · LOCAL ECONOMIES PROJECT

Integrated Solid Waste Management

Developing a stakeholder driven roadmap for moving from a solid waste disposal based system to an integrated solid waste management system) and ultimately one founded or structured on the principles of Sustainable Materials Management.

Products include:

1. 2030 Vision for Integrated Solid Waste Management in EPA Region 4;
2. Guide to Integrated Solid Waste Management Accounting and System Funding; and
3. Benchmarking Analytics for New Program Expansions.

Food: Too Good To Waste

https://www.epa.gov/sustainable-management-food/food-too-good-waste-implementation-guide-and-toolkit

CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW

Florida Department of Environmental Protection

Waste Reduction/Recycling

Miriam Zimms

Kessler Consulting





Florida Organics Recycling *History and Current State*

Miriam Kessler, LEED AP®
Lean Six Sigma Green Belt, USCC Compost and SWANA Certified

Florida Department of Environmental Protection
Organics in Florida: Part I "The State of Organics in Florida"
May 11, 2016

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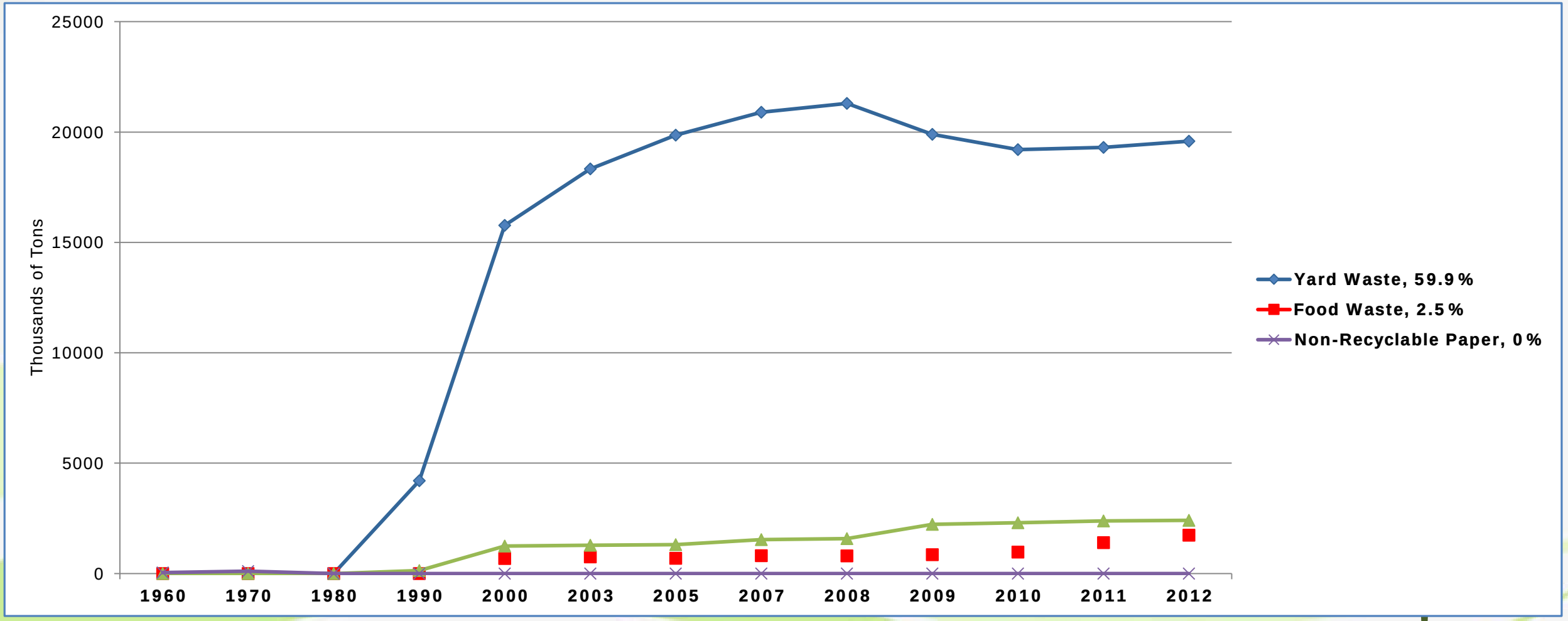
Recovery of Organics



Source: EPA MSW in the U.S., 2012

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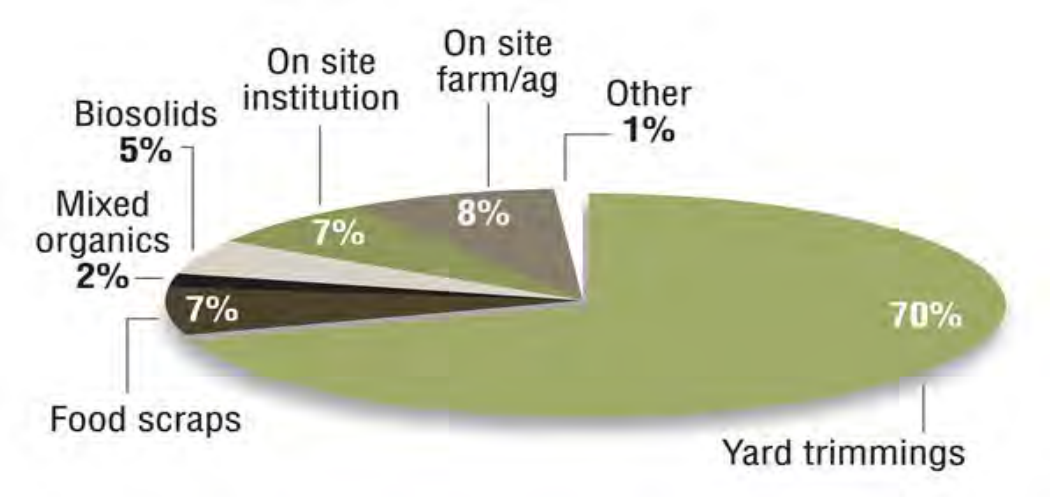
Organics Recovery Infrastructure

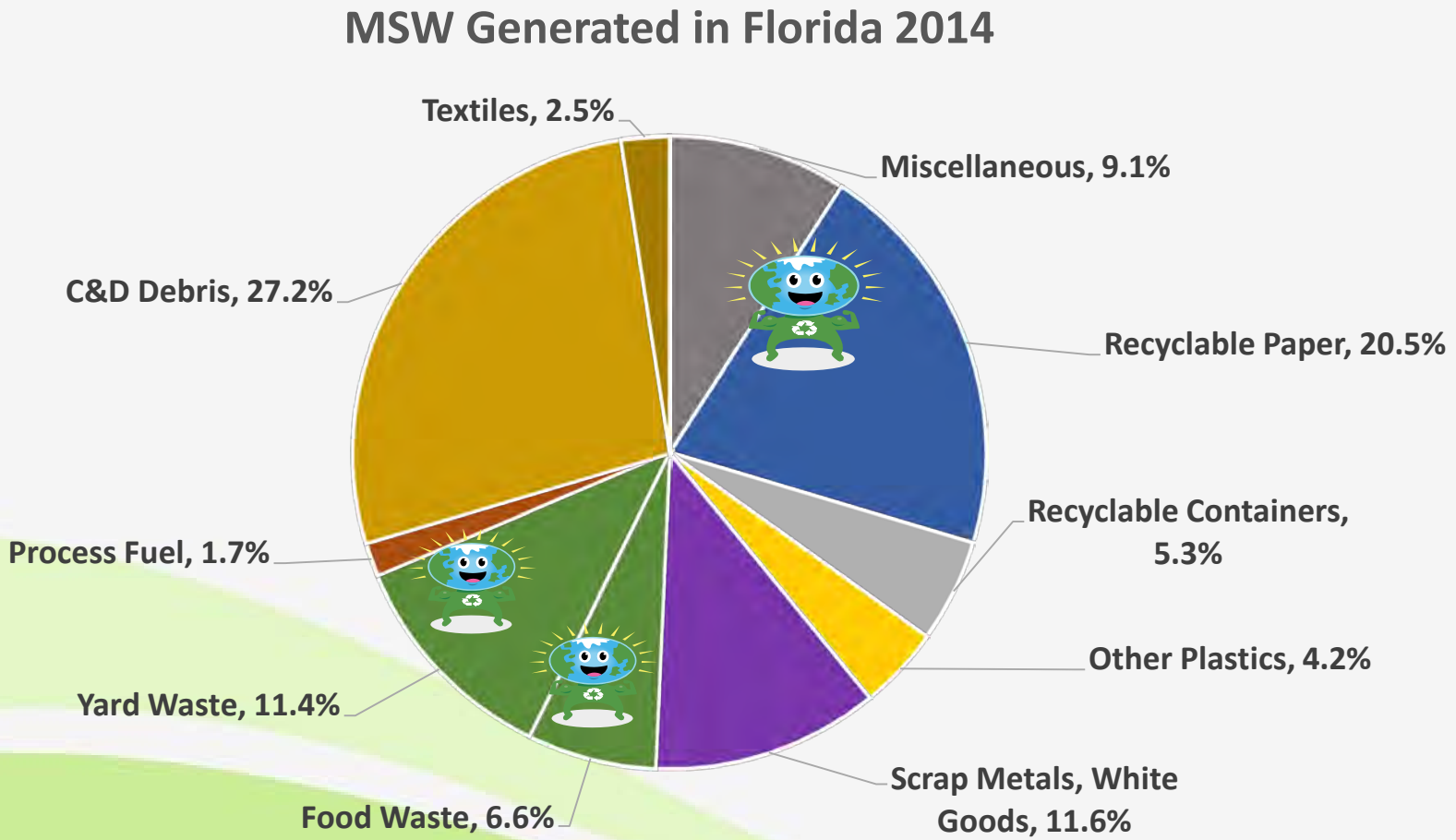
- Over 4,900 composting facilities identified in the U.S.
- More than 180 communities collecting residential food scrap

Organics Recovery Facilities in U.S.



Source: Biocycle, 2014

FL MSW Waste Generation



Source: DEP 2014 Data
Graph: Kessler Consulting, Inc.

kessler consult
ive waste solutions

Florida's Organics Recycling History

- 1988 Yard Waste Landfill Ban
- Started As Mulching State
- FORA – FL Organics Recycling Association
- RFT – Organics Committee, DOT Outreach, ELS Events
- FL DEP – Active Staff
- University Research, UF IFAS

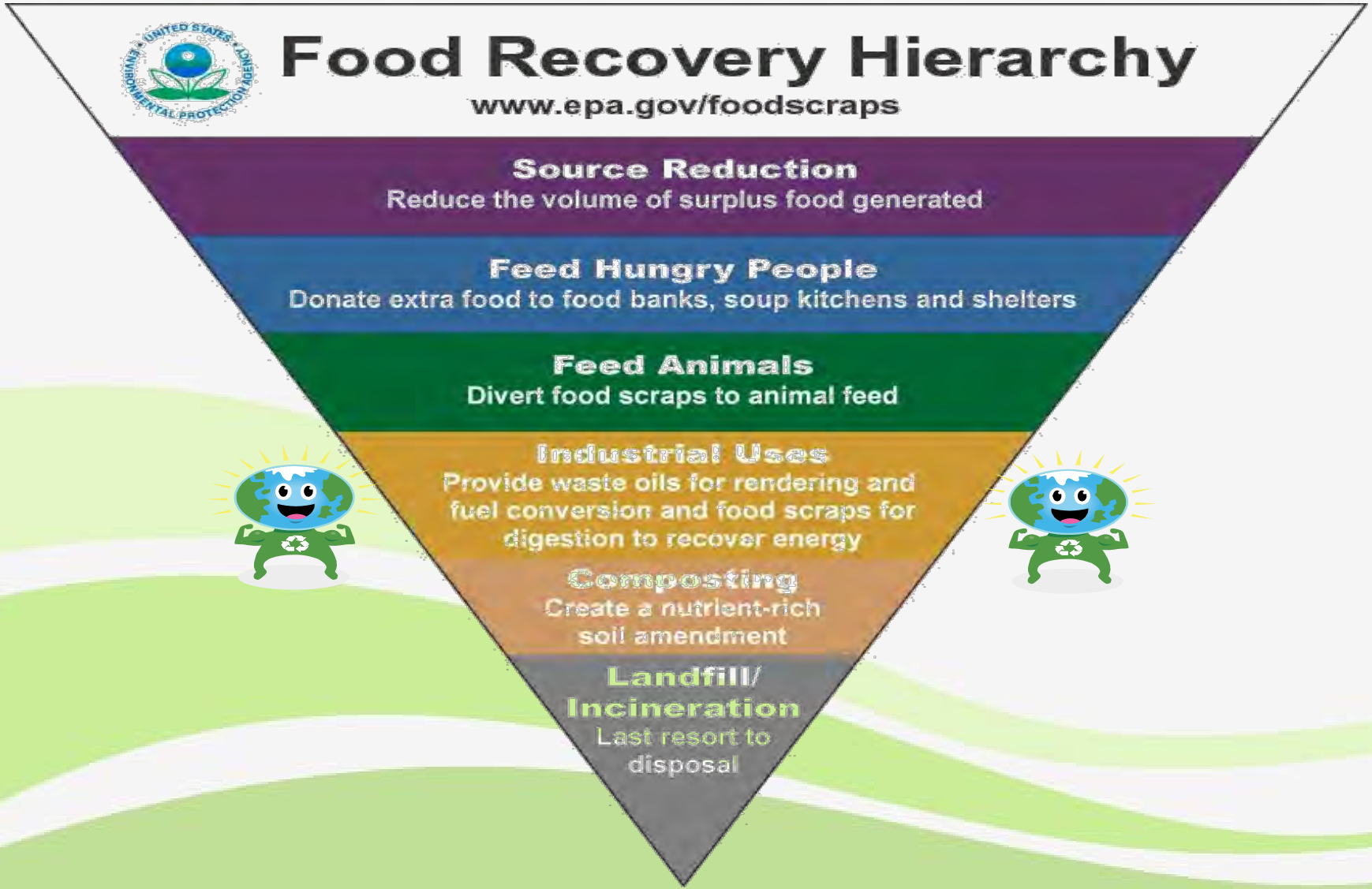
Florida's History (continued)

- FORCE, the Florida Organics Recycling Center for Excellence
  - DACS, DOT, and UF IFAS Outreach
  - Research and Demonstration Projects
  - Marketing Workshops
  - Educational Material
  - Seven State Report
    - Formal Organics Committee
      - Regulatory Reform, FDEP Chapter 62-709
  - Statewide Operator Training Course in Three Parts of FL

Florida's History (continued)

- 2008, 75% Recycling Goal by 2020, HB 7135
- 2010, FL Repeals Yard Waste Landfill Ban
- Corporate Sustainability Programs
- Hauler Response to Corporate Demand
- Local Government Role
  - Residential – Backyard Composting
  - 75% Goal – Program Planning
  - Facilities
    - Yard Waste
    - Biosolids Composting

EPA Food Hierarchy – Planning for Recovery



Increase Recovery Goals

FW: KCI Waste Composition Data Average

Commercial / Institutional Programs

Commercial Sector Example

Amalie Arena, Tampa Bay Lightning
Food Waste Composting Program

Source: Amalie Arena

GREEN FOR OUR PARADISE

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Residential Program

FW: 10-18% of Single Family Waste Based on KCI WCS Data

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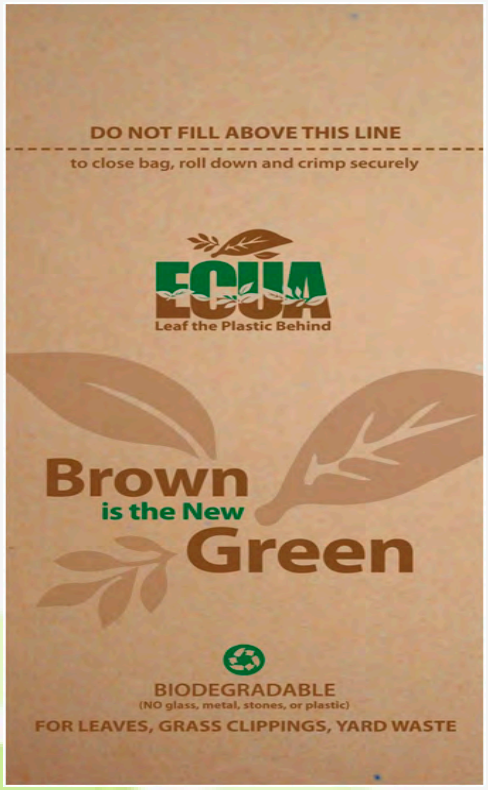
Local Government Example

Emerald Coast Utilities Authority
Biosolids and Yard Waste Compost Program



Source: ECUA

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Collection Infrastructure

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Processing Infrastructure

- Processing growth supports hauler service expansion
- Biosolids Facilities
- Yard Waste Facilities
- Food waste facilities in Florida

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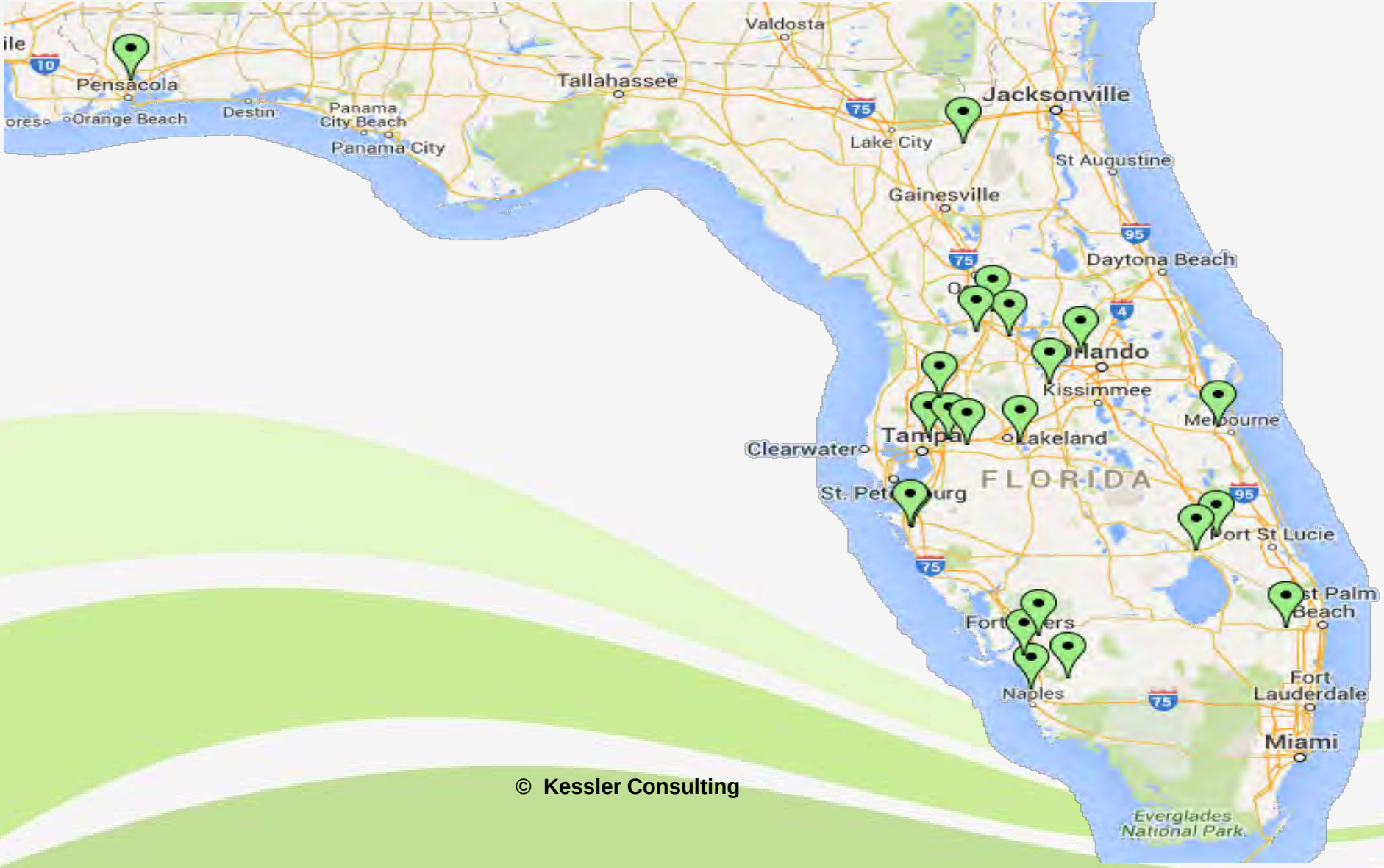
Florida STA and Pre-Consumer Vegetative FW Facilities - 2016



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Marketing Program and Moving Material

Market	Effort to Develop
Landscape	Low-Moderate
Nursery	High
Topsoil Blending	Low-Moderate
DOT	Moderate
Golf Course	High
Environmental	High
Agriculture	High
Retail (bagged)	High

Local Government Goals

First Zero Waste Plan in the State of FL

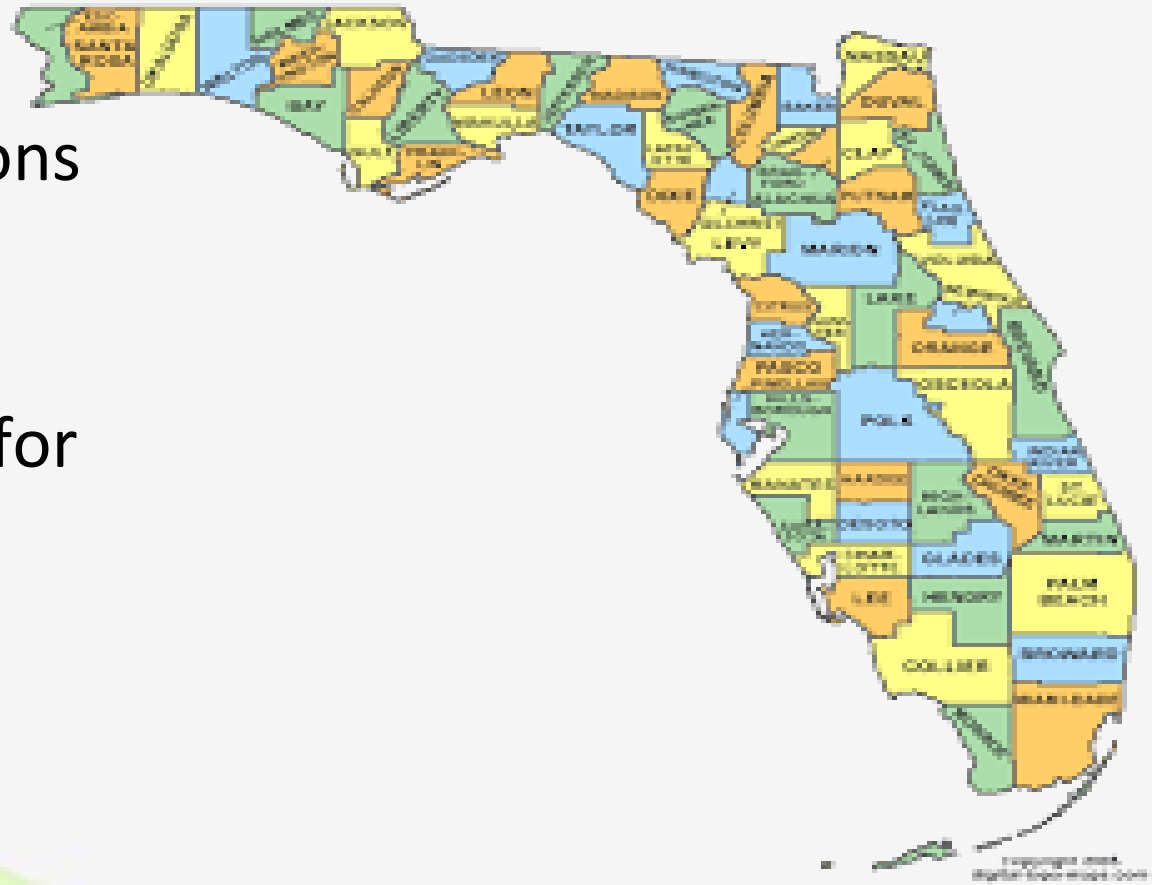
- City of Key West, FL
  - 10% recycling rate with a phased in approach to 25% - 40% - 75% (over 10 years)
  - Does not include WTE in calculation, if it did the rate would be higher.

Organics Recycling and Recovery Overview

- Organics recycling facility capacity is growing to meet commercial and yard waste demand
- Food scrap collection and processing infrastructure are maturing because of the private sector
- Biosolids composting is growing in the public sector

Organics Recycling and Recovery
Florida's Next Steps

- A Champion, understanding definitions and the hierarchy of Materials Management
- Food scrap recovery is next frontier for meeting high diversion goals
- Food scrap recovery mandates / disposal bans



Contact Information

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(813) 601-5047
www.kesconsult.com
mzimms@kesconsult.com

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ive waste solutions

Questions

- Please use the “Questions” tab in in the attendee panel to submit a question
- Use the “Raise Hand” option to be identified for follow up

FDEP Waste Reduction Staff

- ***Karen Moore***
  - Environmental Administrator
  - Karen.S.Moore@dep.state.fl.us or 850-245-8864

- ***Shannan Reynolds***
  - Recycling: Solid Waste Management reports, Recovered Materials Dealer Certification and Reporting, Construction & Demolition Reporting Program, Public Sector Reporting Program
  - Shannan.Reynolds@dep.state.fl.us or 850-245-8716

- ***Laurie Tenace***
  - Special Wastes Management: electronics, mercury, batteries, household hazardous waste, pesticides, pharmaceuticals
  - Laurie.Tenace@dep.state.fl.us or 850-245-8759

- ***Henry Garrigo***
  - Grants Management
  - Recycling Market Development
  - Henry.Garrigo@dep.state.fl.us or 850-245-8822

Florida Department of Environmental Protection

Waste Reduction/Recycling

Organics in Florida: Part I

"The State of Organics in Florida"

May 11, 2016





Organics in Florida: Part II (May 2016)

Florida Department of Environmental Protection

Waste Reduction & Recycling

Organics in Florida: Part II

“Strategies and Directions"

May 25, 2016





Housekeeping

50% by 2015
60% by 2017
70% by 2018
75% by 2020

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- Kim Brunson
  - Publix Super Markets
- Nora Goldstein
  - BioCycle
- Jorge Montezuma
  - NC DENR
- Lauren O'Connor
  - FL DEP
- Robin Safley
  - FL Assoc. of Food Banks
- Brenda Platt
  - Institute for Local Self-Reliance
- Hunt Briggs
  - Resource Recycling Systems

Florida Department of Environmental Protection

Waste Reduction/Recycling

Nora Goldstein

Editor
BioCycle Magazine

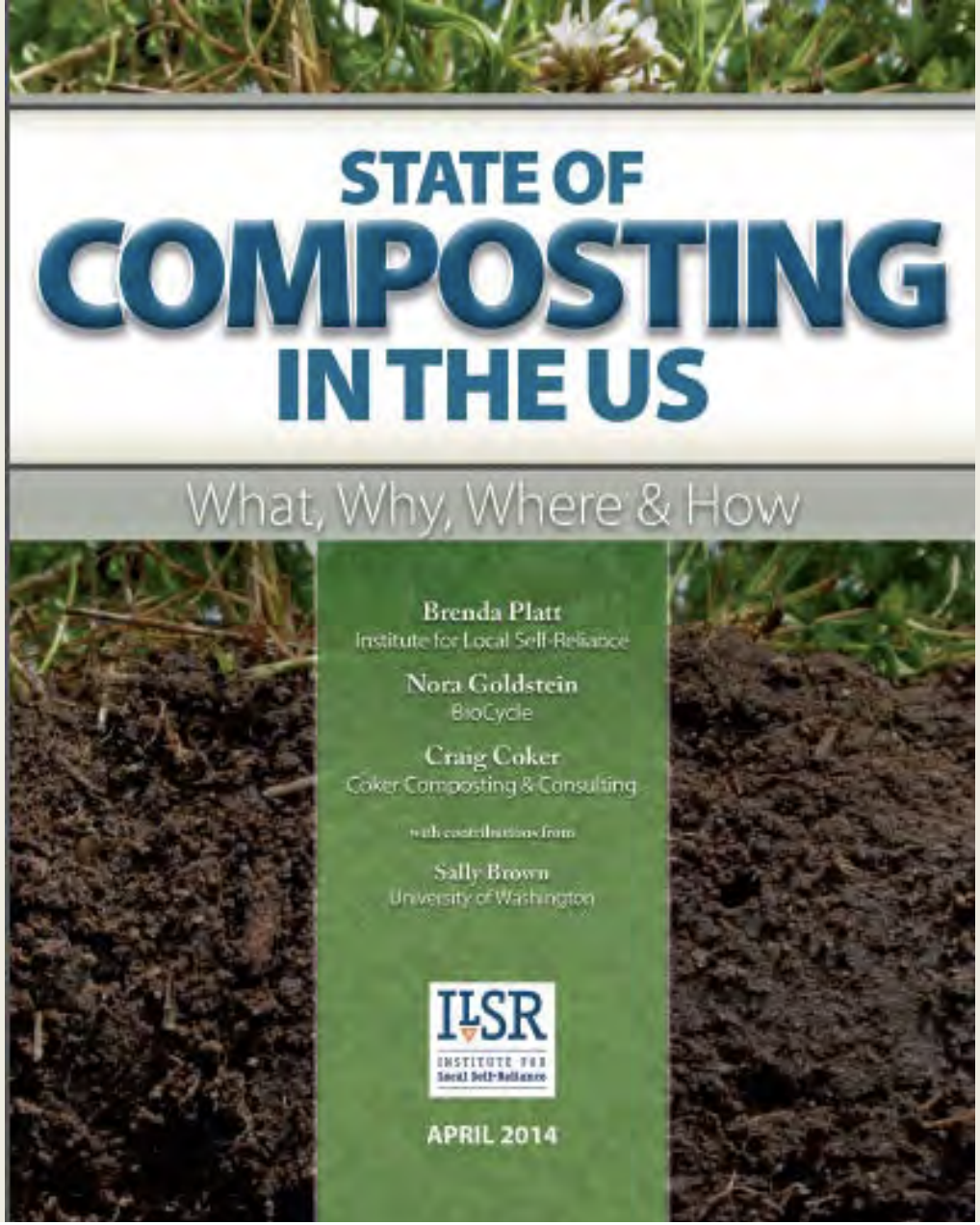




Organics Management Trends

Nora Goldstein, BioCycle

- Current Infrastructure
- Policies
- Manufacturing and Markets
- Drivers
  - Wasted Food Prevention, Rescue, Recycling
  - Integrated Solutions In Age of Resource Scarcity
  - Reducing Methane Emissions, Sequestering Carbon



http://www.ilsr.org/state-of-composting/

BioCycle.net
BIOCYCLE
THE ORGANICS RECYCLING AUTHORITY

State of Composting Snapshots (44 states reporting this data)

- Yard trimmings — 3,453
- Food waste — 347**
- Mixed organics — 87
- Biosolids — 238
- On-site composting at institutions: 337
- Composting on-site at farms: 400

**>500 (2014; BioCycle's www.findacomposter.com)

Total Tons of Organics Diverted
(33 of 44 responding states; 2012 data)

- Total of 19.4 million tons
- Ranking by states reporting:
  - California: 5.9 million tons
  - Florida: 1.5 million tons
  - Iowa: 1.3 million tons
  - Washington State: 1.2 million tons
  - New York: 1.0 million tons

Composting Facility Breakdown By Size (31 states reporting; 2012 data)

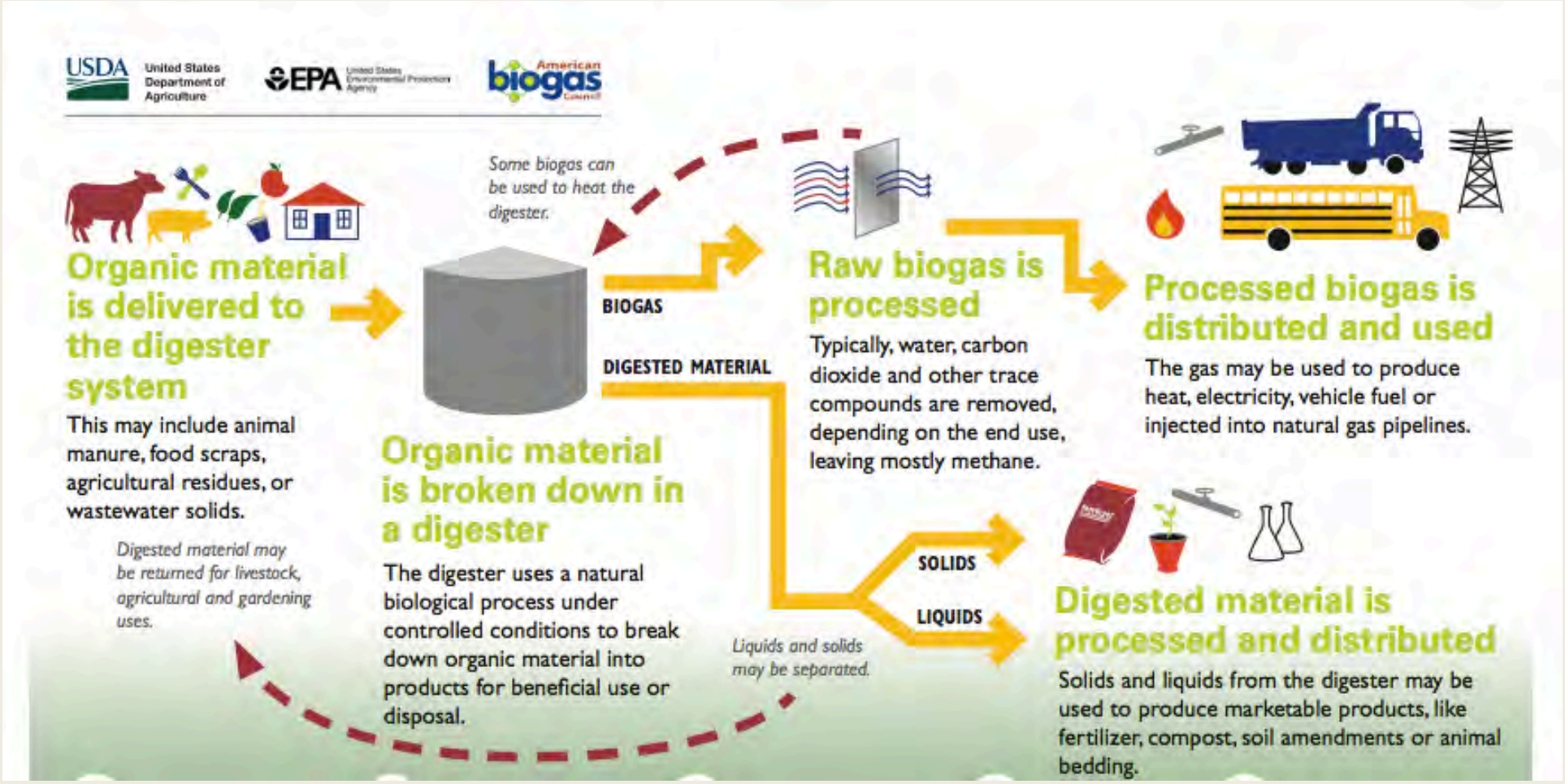
Total Facilities Reporting: 3,285

- Less than 5,000 tons/year — 2,354 (72%)
- 5,000 to 20,000 tons/year — 713 (22%)
- Over 20,000 tons/year — 218 (6%)

Heavy populated states such as California, Florida, Massachusetts, New Jersey, New York, Ohio, Virginia and Washington included in states responding

What Is Anaerobic Digestion?

www.americanbiogascouncil.org



Source: American Biogas Council

Anaerobic Digestion Systems

- Wet Systems
  - Low Solids
  - High Solids
- Dry Systems
- Easiest way to distinguish?
  - Pumpable = Wet
  - Move with a loader = Dry

Categories of SSO AD Projects in U.S.

- Wet and dry digesters processing source separated organics, primarily food waste streams
  - Some solely commercial
  - Some public/private partnerships
- Farm digesters receiving deliveries of off-farm substrates, including commercial SSO
- Captive
- Codigestion at municipal wastewater treatment plants

Monterey Regional Waste Management District, Marina, CA

Integrating AD and Composting

Sensenig Farm, Kirkwood, Pennsylvania

CleanWorld, Sacramento, CA

Energy Net Positive, Gresham, Oregon WWTP

The BioCycle Portals

Composting

BioCycle FindAComposter.com®

New & Improved

Anaerobic Digestion

BioCycle FindADigester.com®

Introducing

Organics Collection Services

BioCycle FindOrganicsHauler.com®

Introducing

SPONSORED BY

BioCycle THE ORGANICS RECYCLING AUTHORITY BioCycle.net

BPI FOUNDING SPONSOR

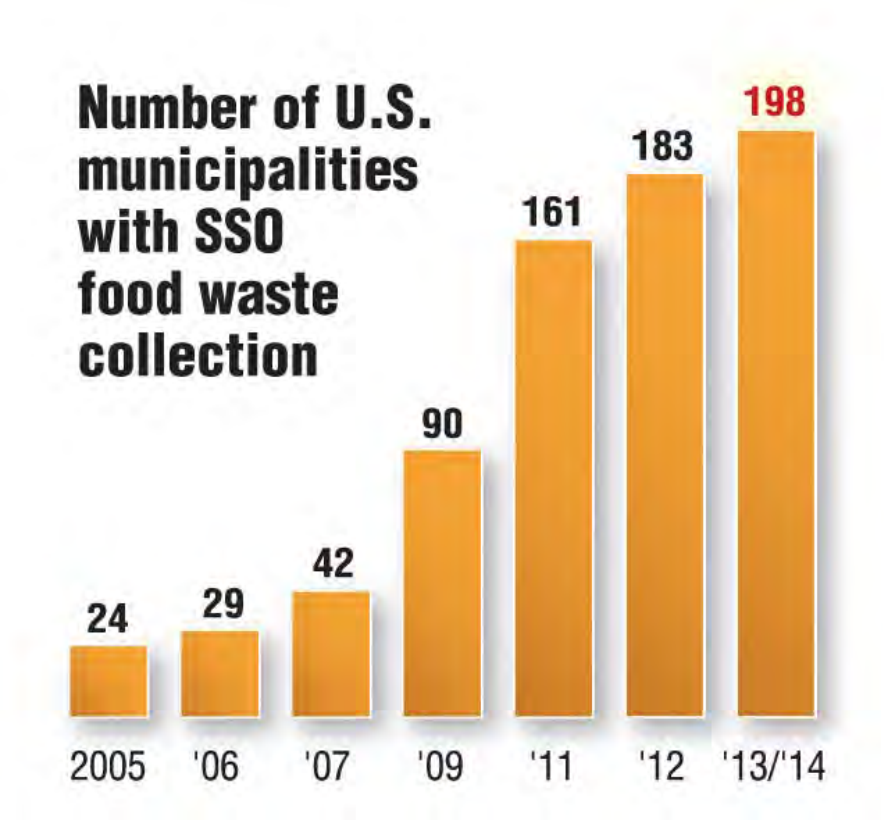
FPI FOODSERVICE PACKAGIN INSTITUTE

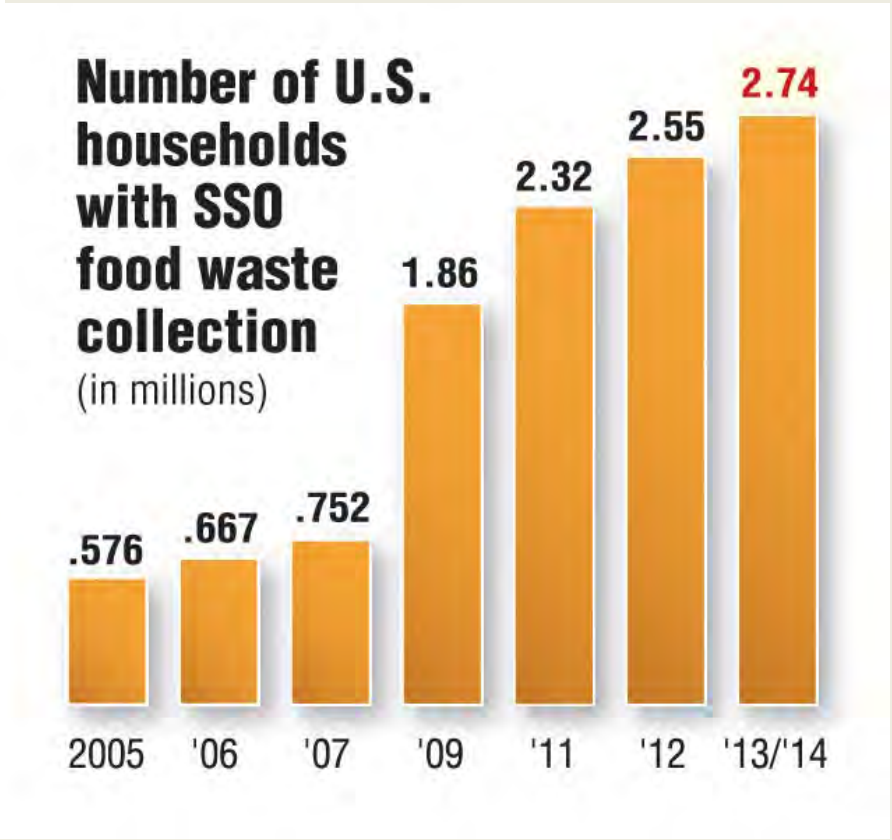
CLOSED LOOP foundation

ILSR INSTITUTE FOR Local Self-Reliance

Conseil canadien du COMPOST Council of Canada

CYCLE RECYCLING AUTHORITY





Growth Trends:

- About 10% growth in number of municipalities and households

Prediction for 2015

- Slow but steady growth, with several major communities expanding programs (e.g., Minneapolis, New York City)

Source: BioCycle, 2015

Figure 1. Community composting sites in New York City supported or funded by the NYC Compost Project

Graphic courtesy of the DSNY Bureau of Waste Prevention, Reuse and Recycling

*Map shows community compost site locations in 2012. The number of sites increased to 221 in 2013.

Subscription Services

Compost Pedallers

Carter's Compost

Policies — Organics Disposal Bans & Mandates

- No proximity but quantity provision — Massachusetts
- Bans with proximity and quantity generated provisions — Connecticut, Rhode Island
- Phased in ban leading to no organics in landfill — Vermont
- Mandates — California
- Quantity of organics allowed in trash — Metro Vancouver
- Increase in wasted food prevention and rescue — Vermont

Where Are We Heading With Organics Management?

Composting as disposal alternative or ……..

Source: DNREC File photo

….. or Compost Manufacturing

Raw Materials for Composting

Disposal Alternative

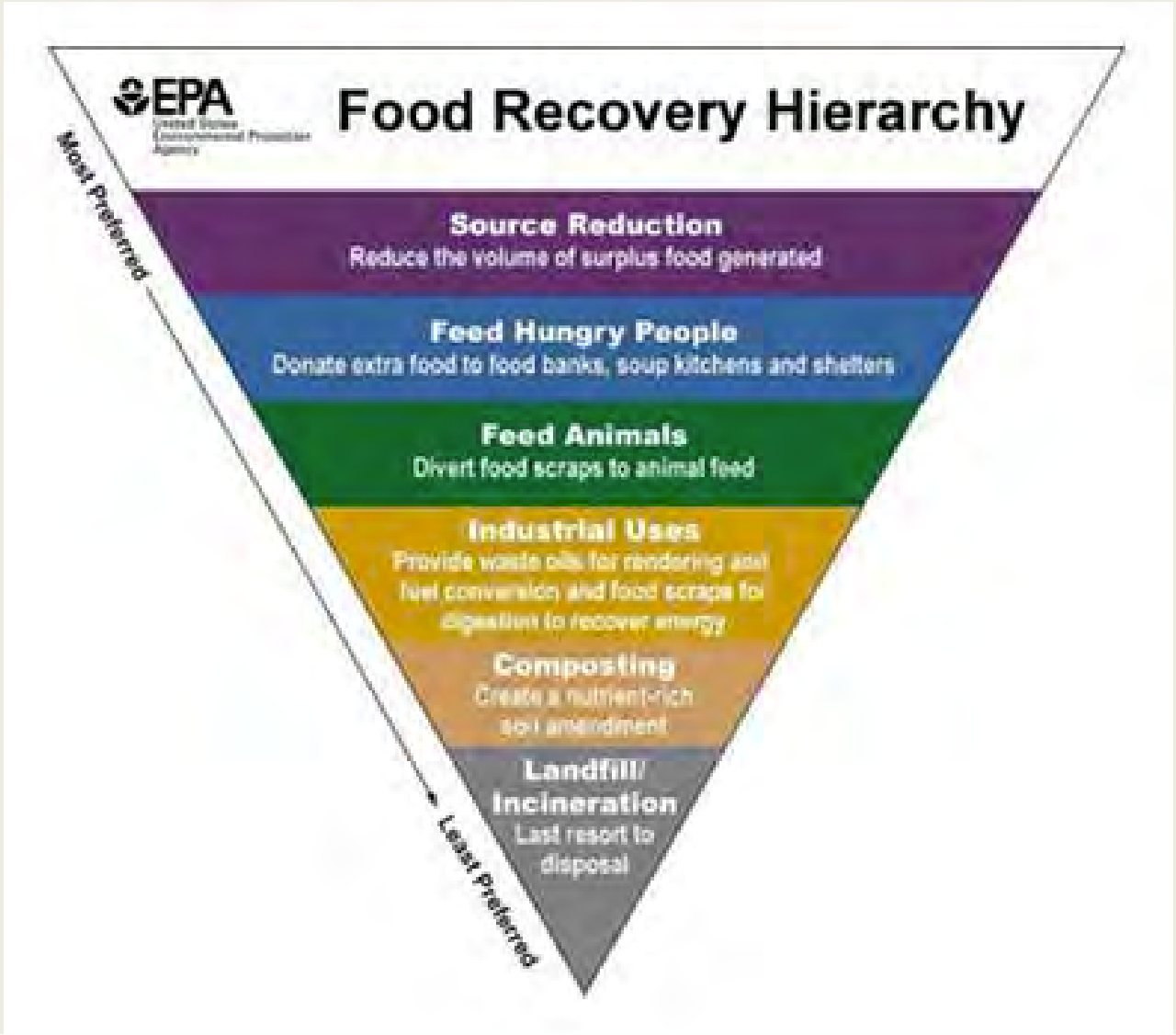
Compost Manufacturing

Compost Manufacturing

What Scale? What Cost?

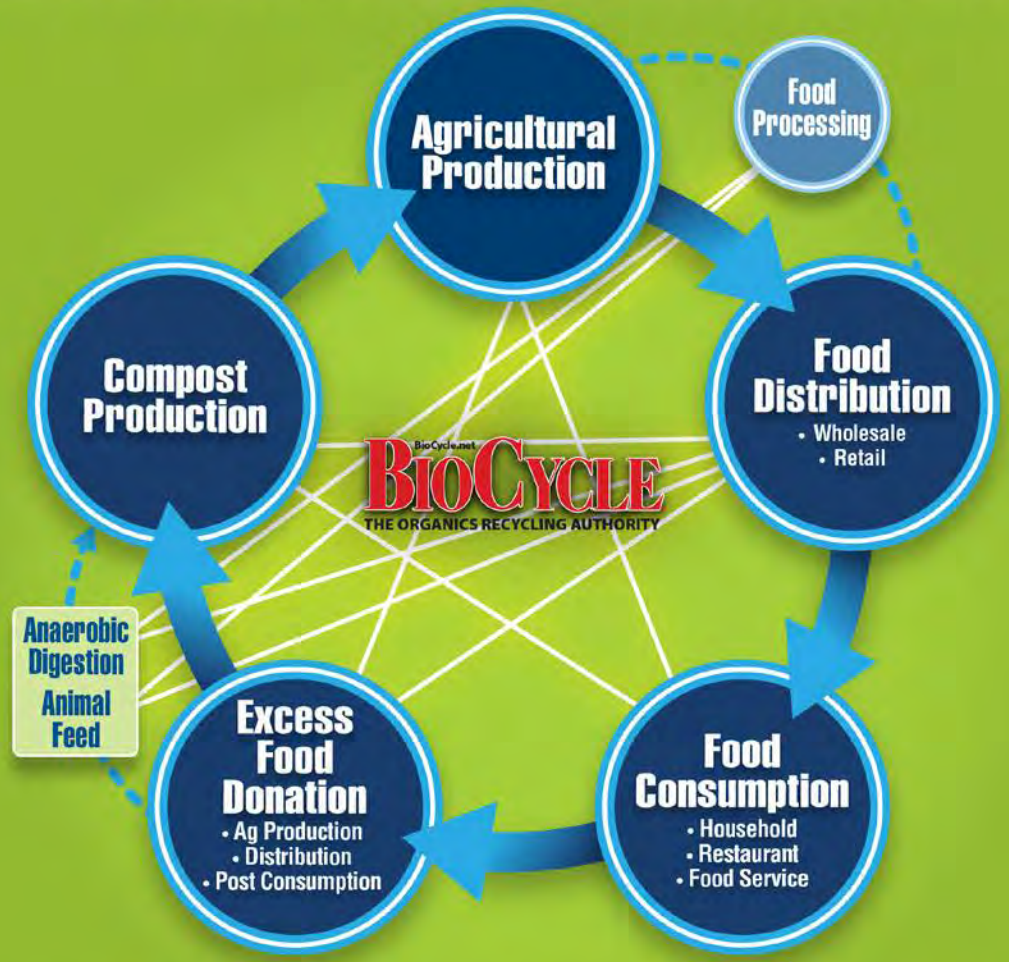
Compost Into …….

Food Systems



Food System Life Cycle

Food For People, Food For Soil



Graphic concept source: "Examining the Feasibility of Increasing Compost Use on Food Crops," ENVIRON International Corp., Clackamas, OR; March 2014

INTEGRATED SOLUTIONS

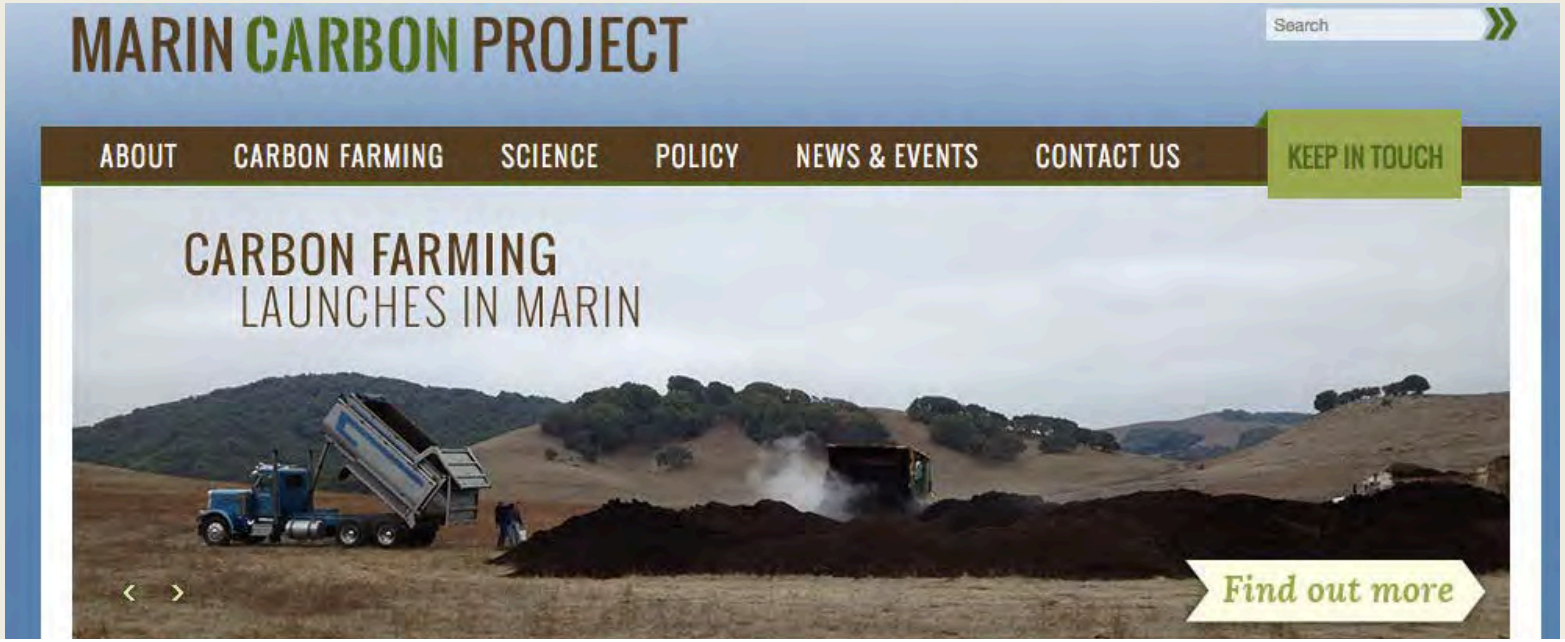
Montgomery County, MD RainScapes Rewards Rebate Program

- BMP for rain gardens: amending soil with compost
- Conservation landscapes: required to have 3-inch layer of compost (incorporated to create a 6-12 inch improved soil layer)
- Property owners offered rebate for low-impact development installations
- US$2,500 max for residential
- US$10,000 max for commercial, multi-family, or institutional
- Replicated in Gaithersburg & Rockville (MD)
  Over 100 Certified RainScapes Professionals

Source: Brenda Platt, Institute for Local Self-Reliance

Climate Change

- **Methane as Short-Lived Climate Pollutant = basis for GHG reduction funding in California**
- **Compost application to sequester carbon**
  - **http://www.marincarbonproject.org/**



Nora Goldstein, Editor
BioCycle
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Florida Department of Environmental Protection

Waste Reduction/Recycling

Jorge Montezuma

North Carolina
Dept. of Environment and Natural Resources





Organics Recycling in North Carolina

Jorge Montezuma, EIT

Organics Recycling Specialist

Recycling and Materials Management Section

Division of Environmental Assistance & Customer Service

NC Department of Environmental Quality

FL DEP Organics Webinar

May 25, 2016

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OUTLINE

NC Recycling Program

NC Organics Recycling Study

2015 Food Recovered

Next Steps

NC DEQ's Division of Environmental Assistance & Customer Service
Recycling and Materials Management Section

"NC Recycling Program"

Technical Assistance

- Troubleshoot Operations
- Navigate Permitting
- Research Markets
- Search Feedstocks
- Create Clusters
- Liason
- Trainings (US/NC Composting Council)

Organics Grants

- Public & Private
- Bonus: Food Diversion
- 111 project awards
- $1.9 million since 1990
- 17 FTE jobs created
- $12 awarded/ton diverted/reporting year

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Navigating Food Diversion in NC

- DWM Solid Waste Section
- DWR Animal Feeding Operations
- Division of Environmental Assistance & Customer Service
- State Vet's Office
- DWR Non-Discharge Permitting Unit
- DWR Stormwater Permitting

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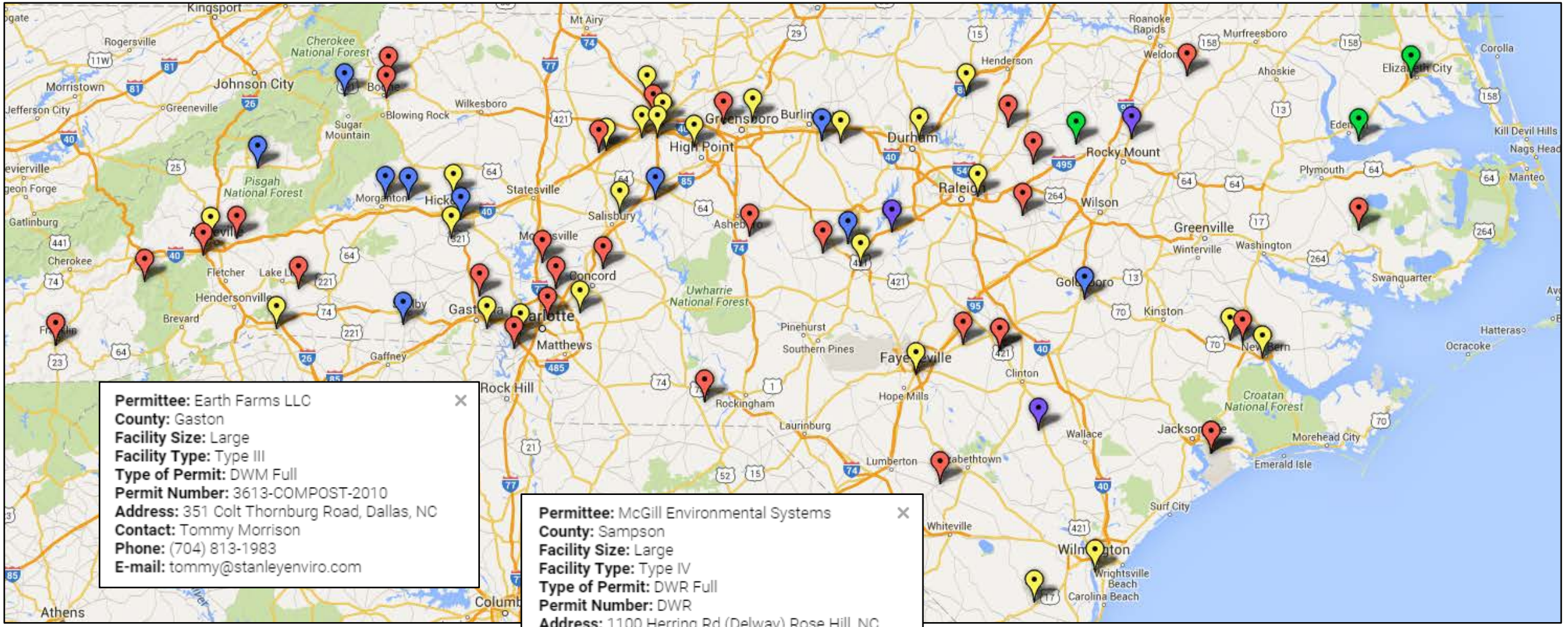
PERMITTED COMPOSTING FACILITIES



Permittee: Earth Farms LLC
County: Gaston
Facility Size: Large
Facility Type: Type III
Type of Permit: DWM Full
Permit Number: 3613-COMPOST-2010
Address: 351 Colt Thornburg Road, Dallas, NC
Contact: Tommy Morrison
Phone: (704) 813-1983
E-mail: tommy@stanleyenviro.com

Permittee: McGill Environmental Systems
County: Sampson
Facility Size: Large
Facility Type: Type IV
Type of Permit: DWR Full
Permit Number: DWR
Address: 1100 Herring Rd (Delway) Rose Hill, NC
Contact: Noel Lyons
Phone: (910) 532-2539
E-mail: nlyons@mcgillcompost.com

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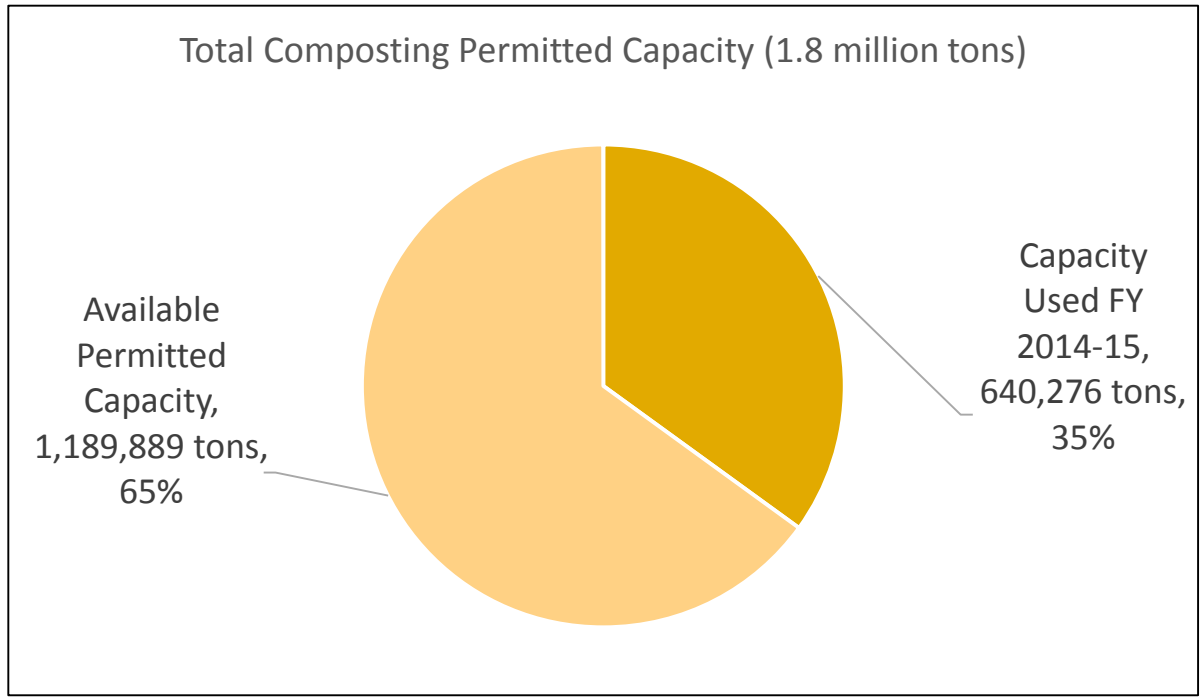
NC ORGANICS RECYCLING STUDY:
MATERIALS MANAGED 2011-2015 & FOOD RECOVERED 2015

North Carolina Department of Environmental Quality
Division of Environmental Assistance and Customer Service
Recycling and Materials Management Section

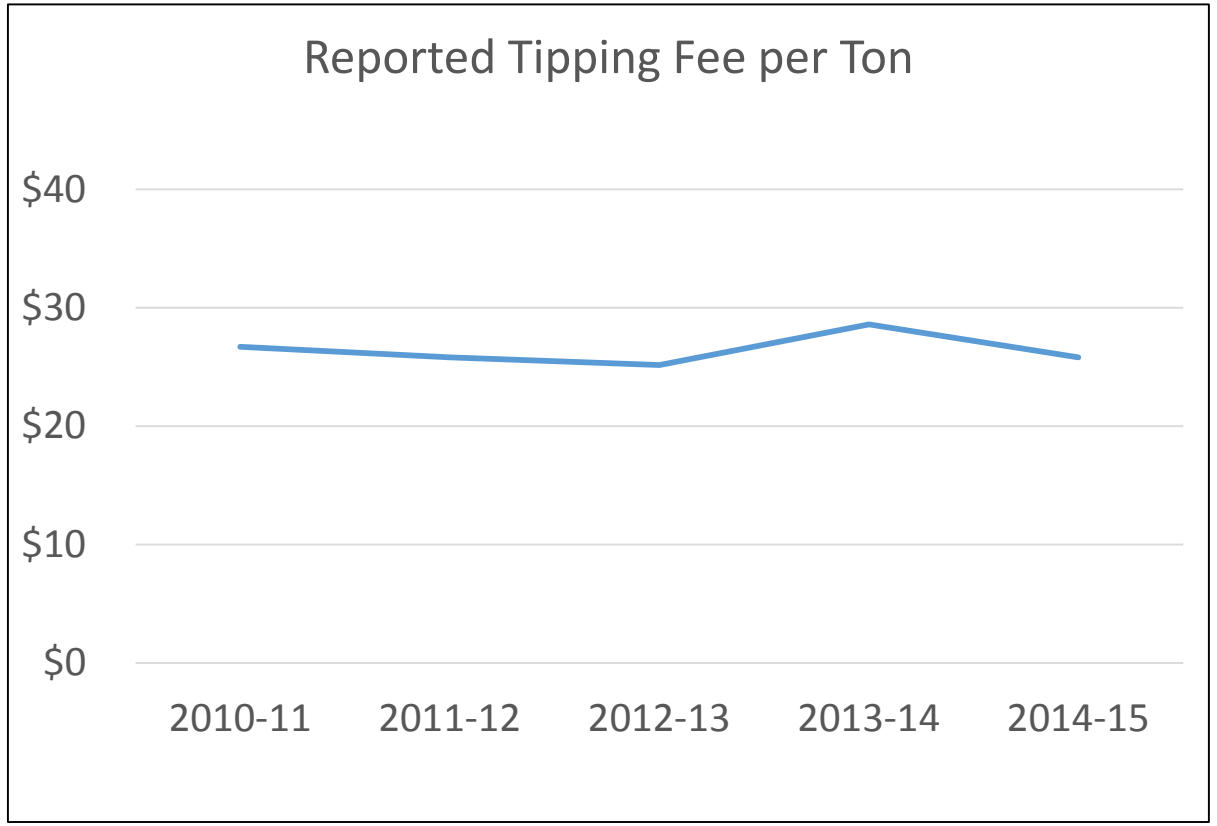
APRIL 2016

Environmental Assistance and Customer Service
ENVIRONMENTAL QUALITY

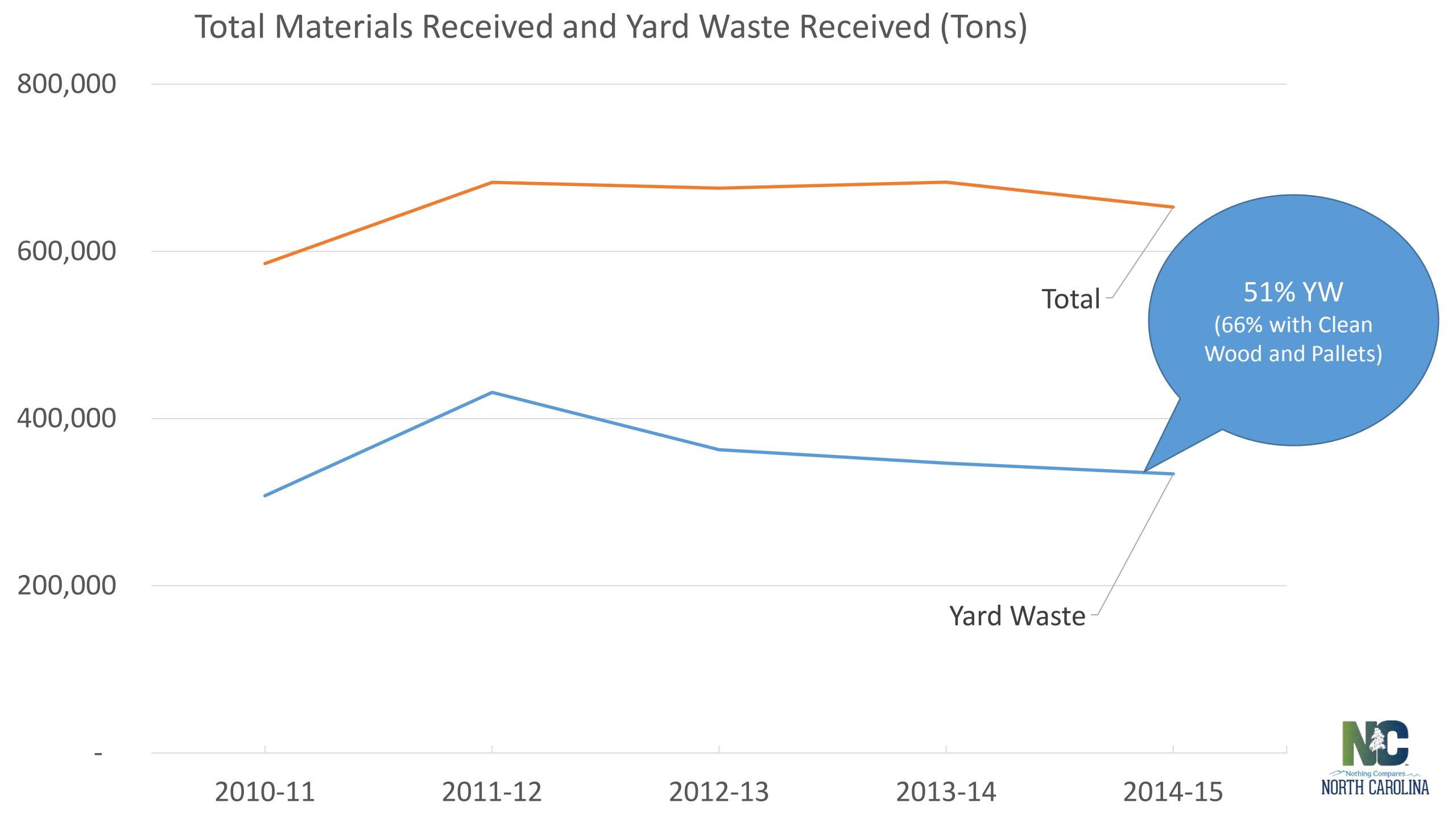
GENERAL
INPUTS
OUTPUTS
FOOD RECOVERED



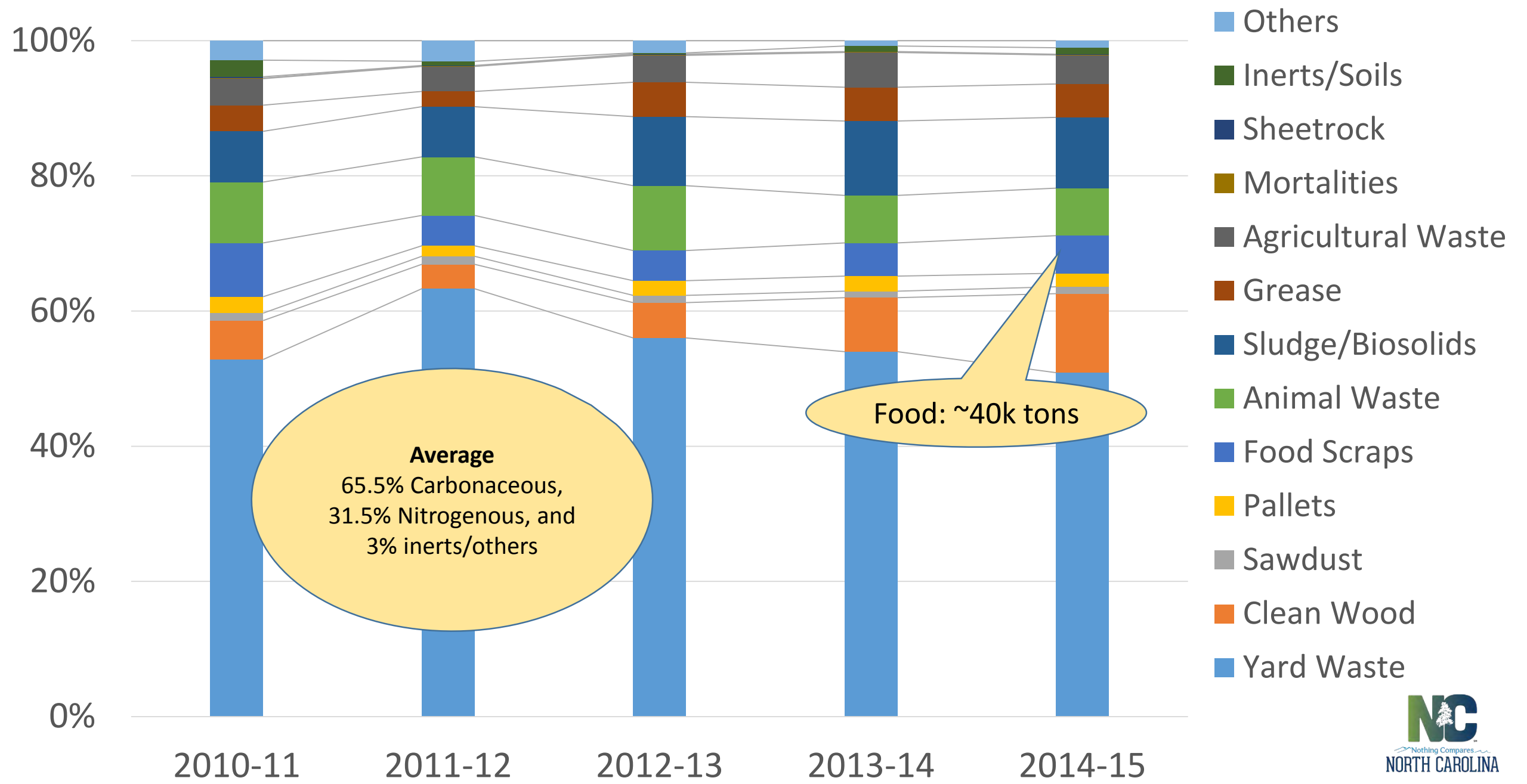
9 private
11 public sites



Nothing Compares
NORTH CAROLINA


Total Materials Received and Yard Waste Received (Tons)
800,000
600,000
400,000
200,000
-
2010-11
2011-12
2012-13
2013-14
2014-15
Total
Yard Waste
51% YW
(66% with Clean Wood and Pallets)
Nothing Compares
NORTH CAROLINA

The Composting "Evolving Ton"



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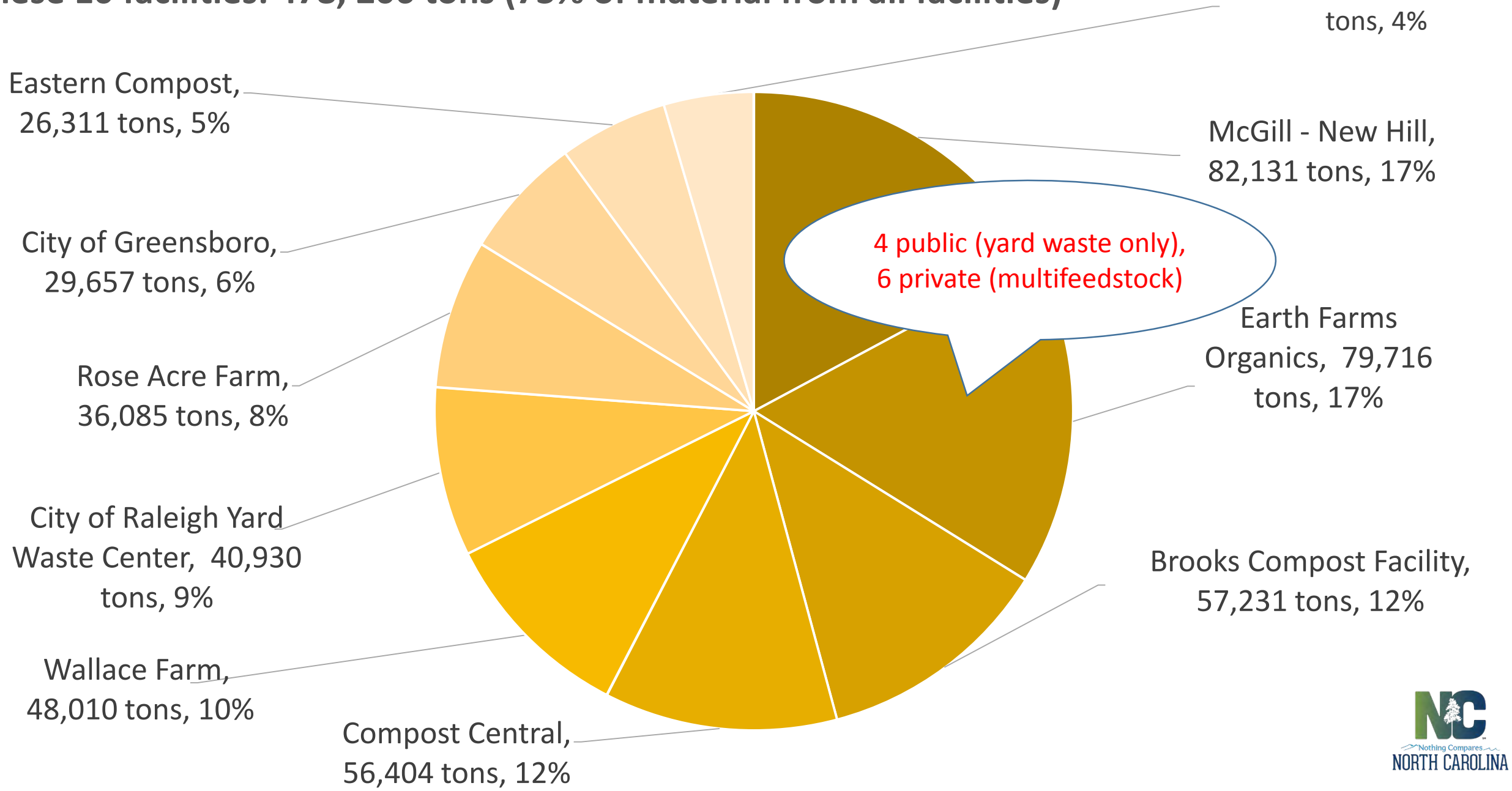
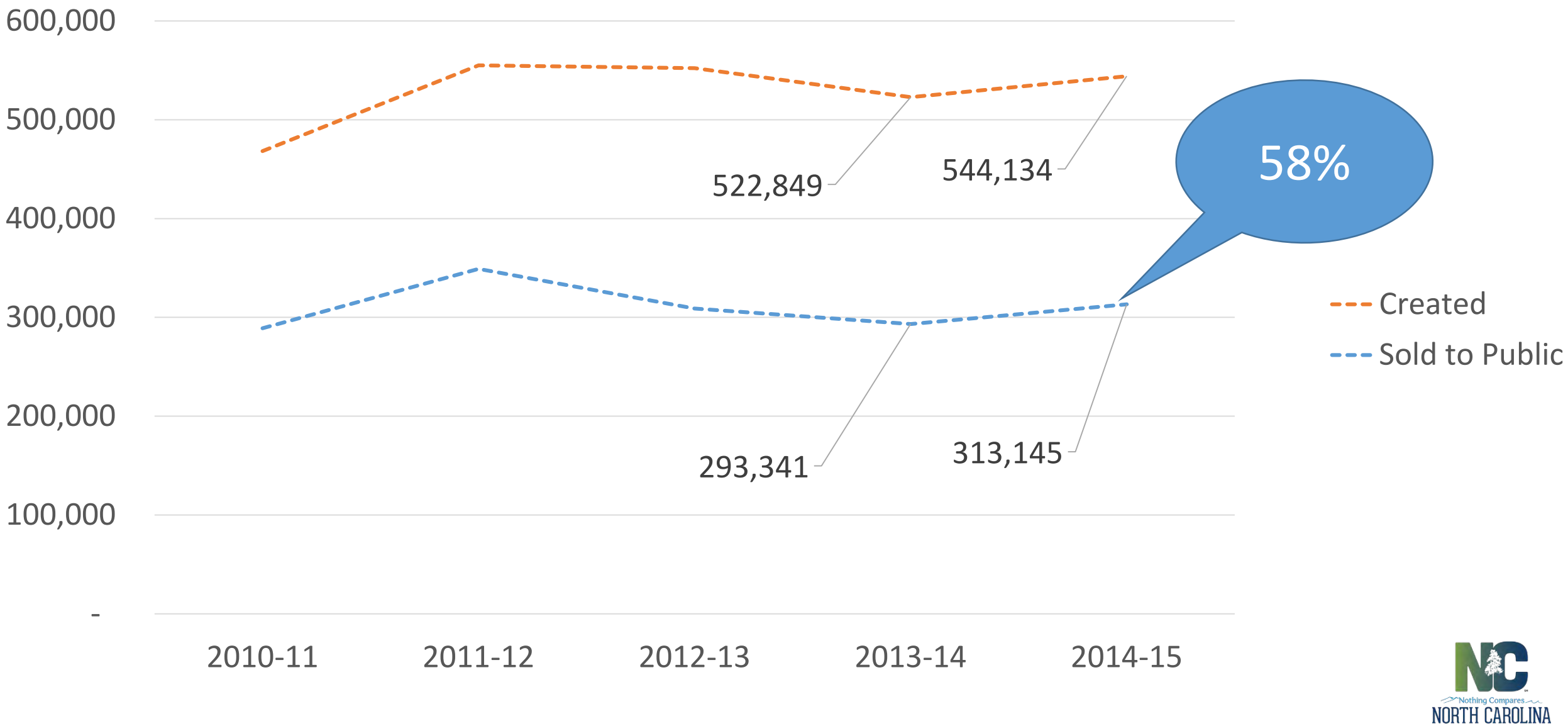
NORTH CAROLINA

Most Tons Received in fiscal 2014-15: Percentage based on tons accepted by these 10 facilities: 478, 206 tons (73% of material from all facilities)



Total Material Created & Sold to the Public (Tons)



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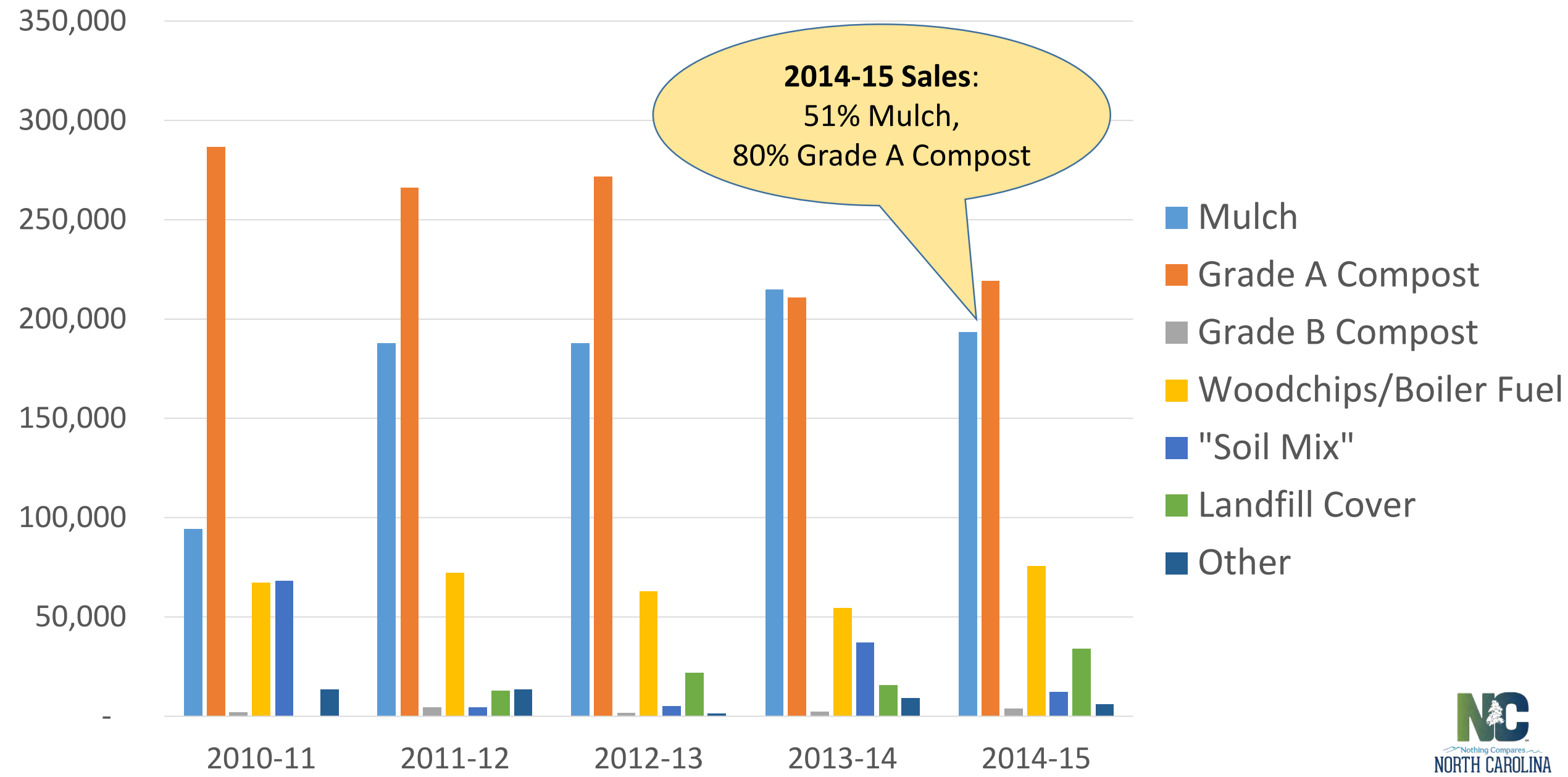
Products Created (tons)



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Organics Recycling Conclusions

Healthy composting infrastructure

- Available capacity
- Stable and competitive tipping fees
- Compost demand
- 3.7 jobs/10,000 tons composted*
- Rules update coming soon
- Missing data (landfill/compost ops, community composting, backyard composting, etc)

Next: food recovered

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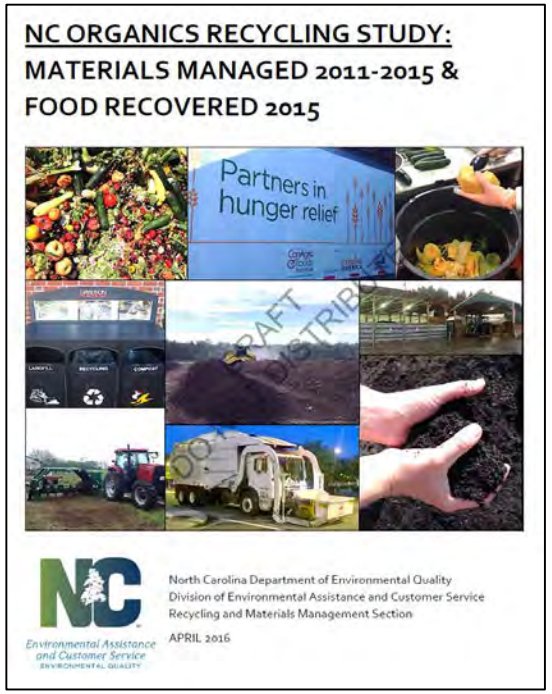

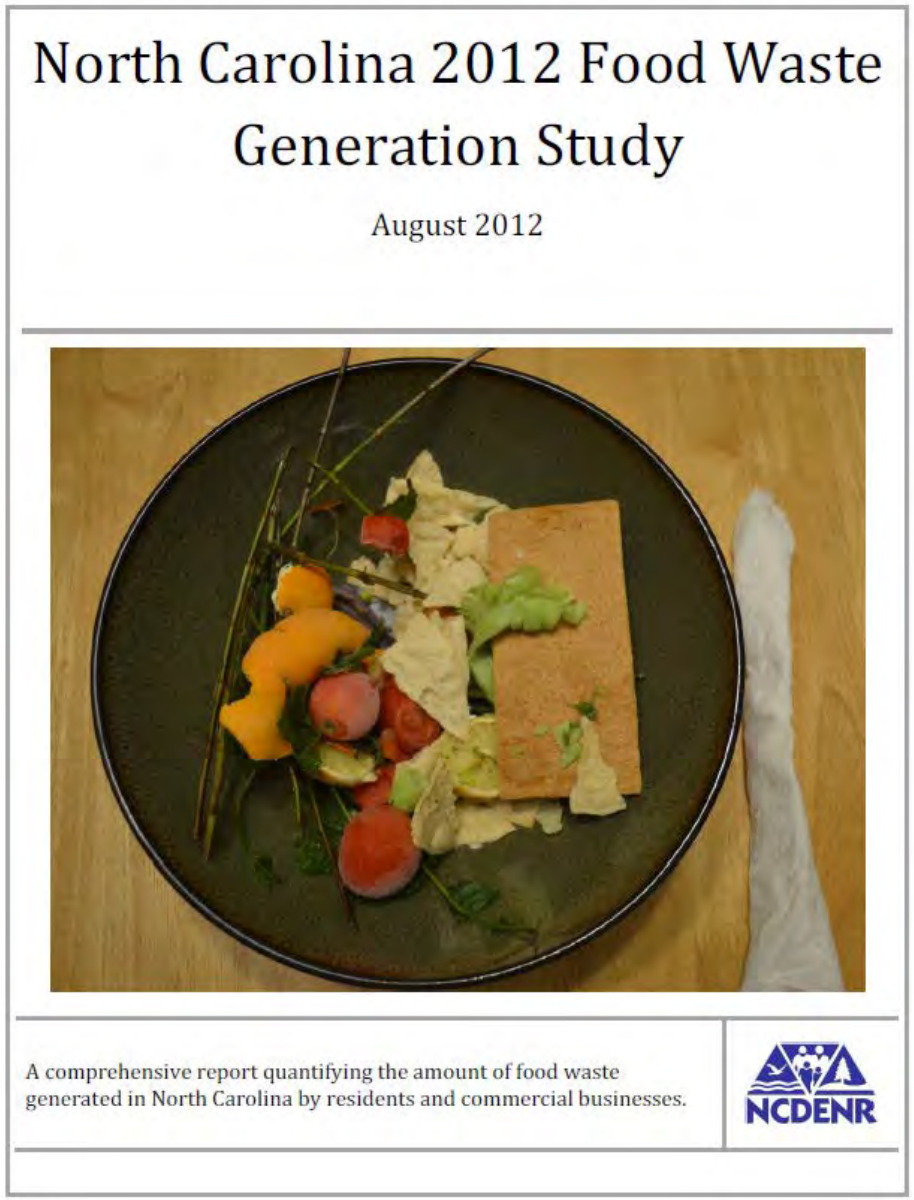

1.1 MILLION tons (residential & commercial generation)

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APPALACHIAN STATE UNIVERSITY

BELMONT ABBEY COLLEGE

DUKE UNIVERSITY

HIGH POINT UNIVERSITY

NORTH CAROLINA STATE UNIVERSITY

PFEIFFER UNIVERSITY

SALEM COLLEGE

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

UNIVERSITY OF NORTH CAROLINA AT PEMBROKE

FOOD SCRAPS COLLECTION

at community colleges, colleges, universities

14 public & 7 private

Sports venues

Special events

Pre/Post-Consumer

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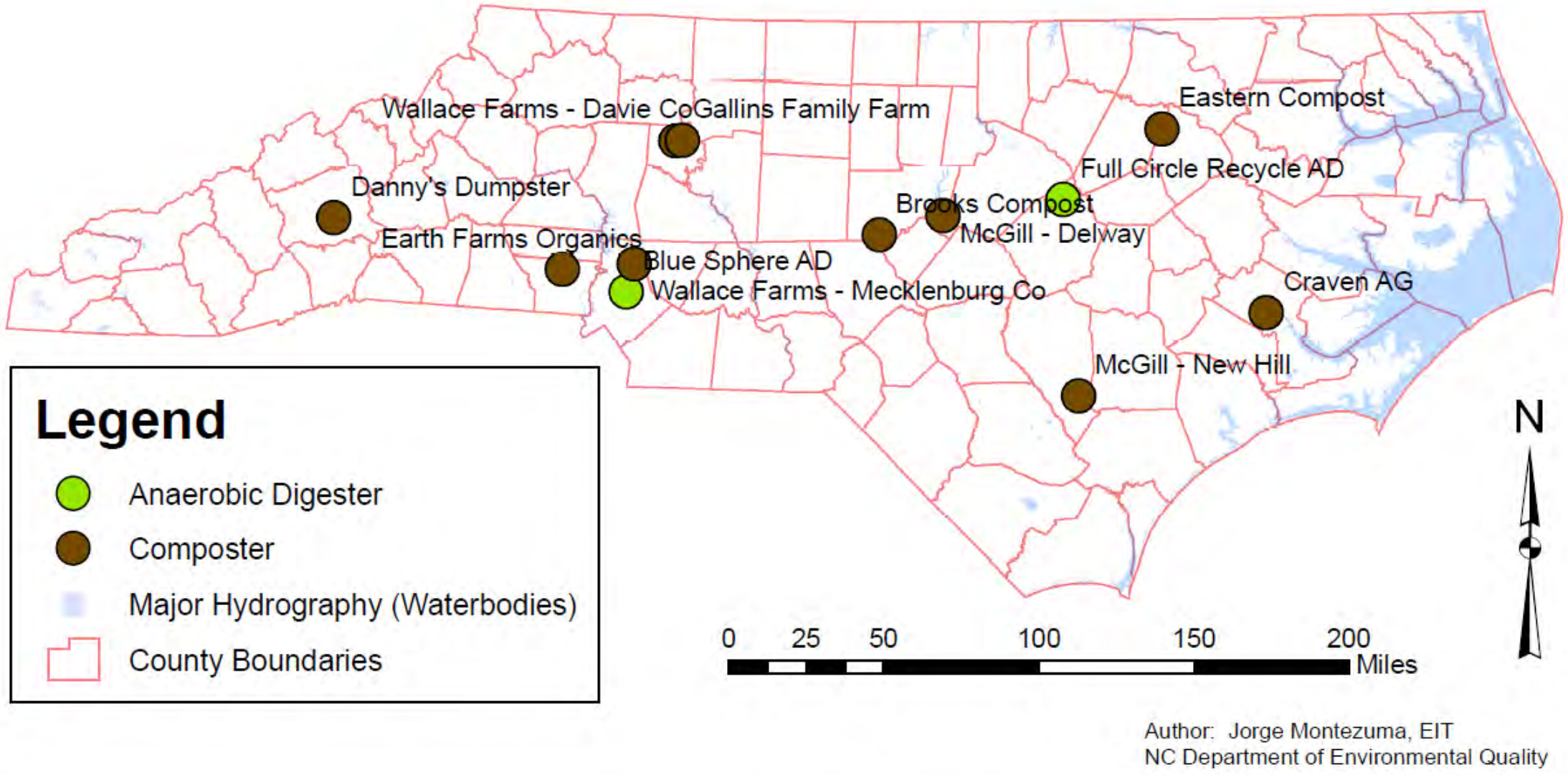
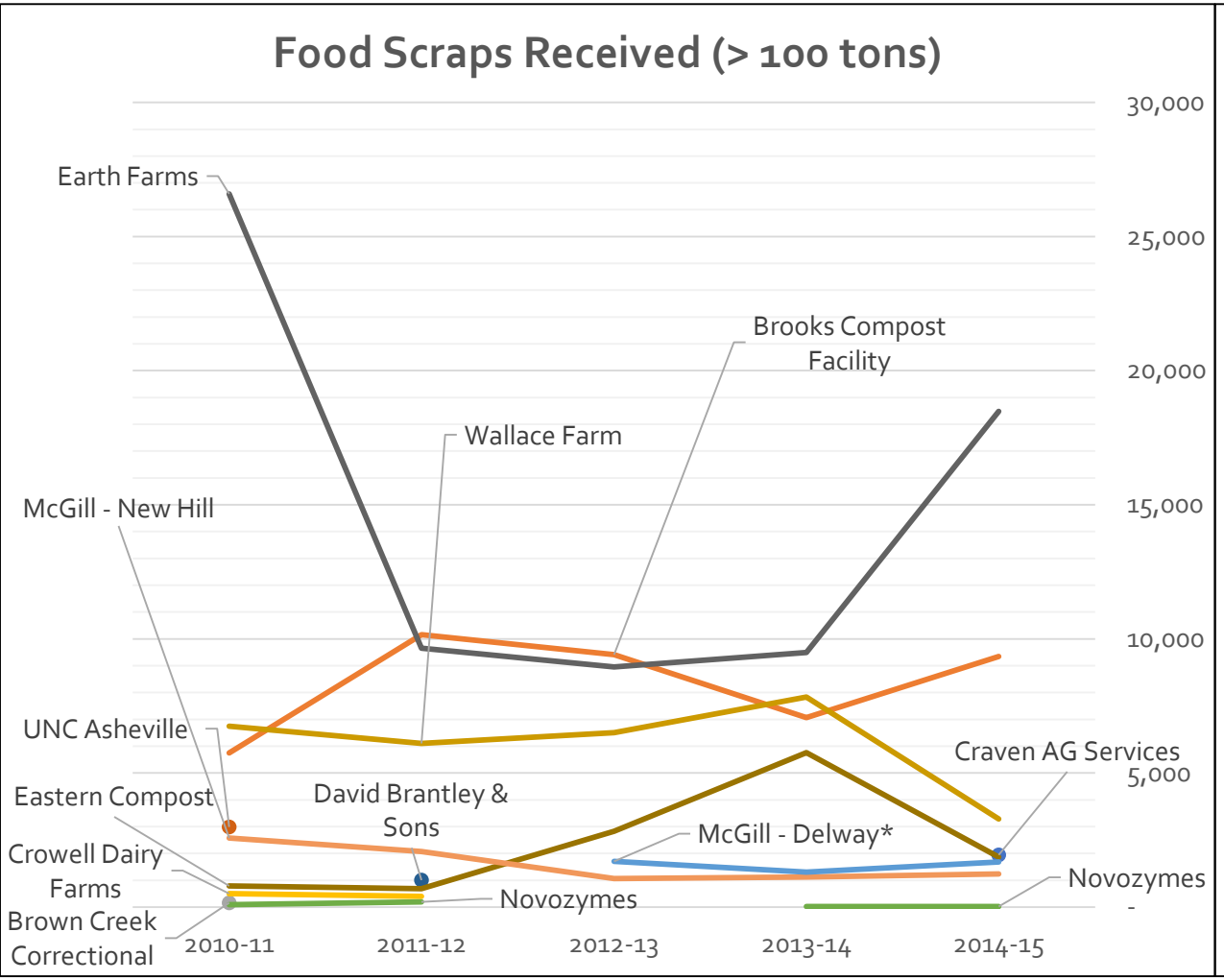
Permitted AD/Composting Facilities

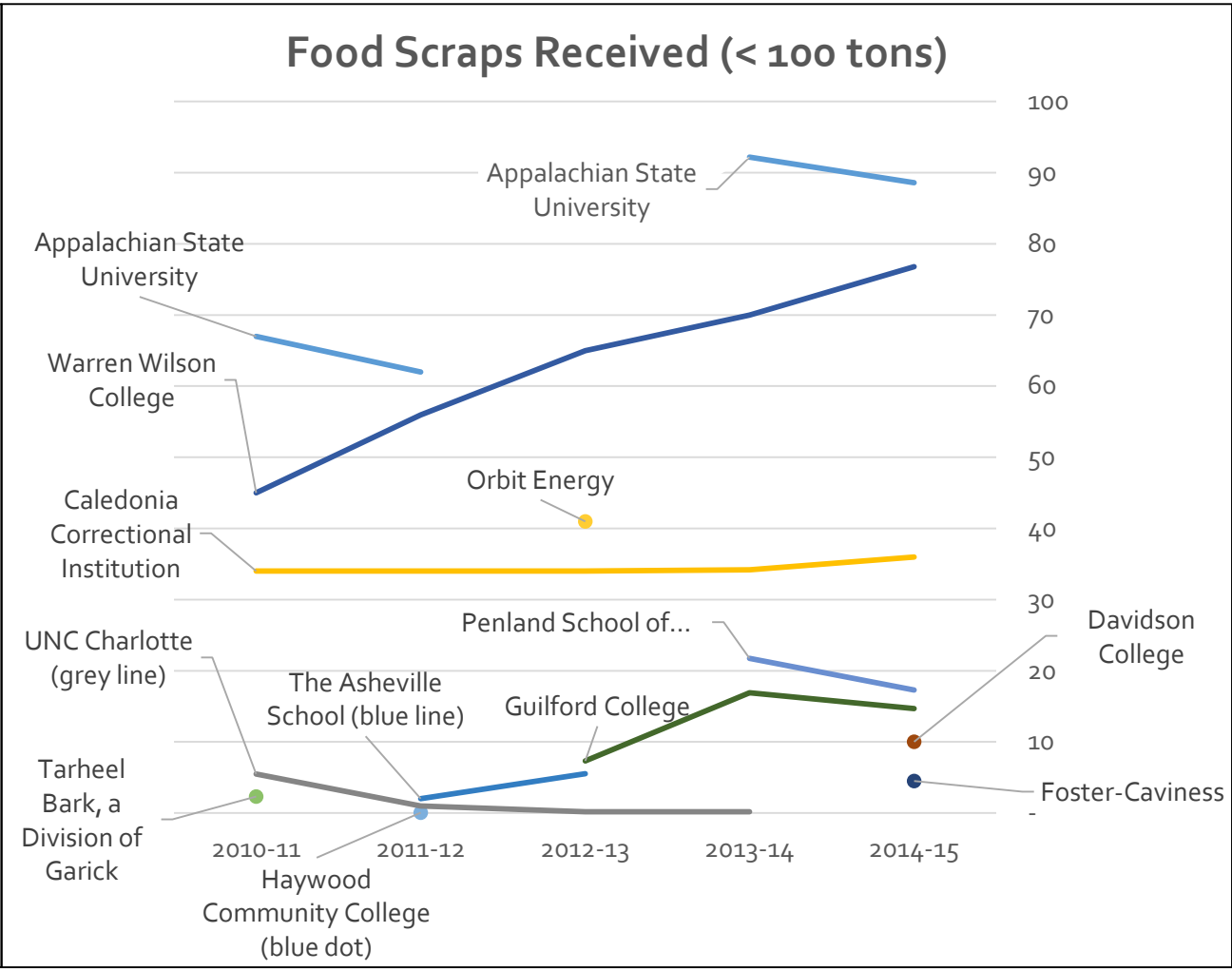
Able to Accept Off-Site Food Scraps



Author: Jorge Montezuma, EIT
NC Department of Environmental Quality

Food Composting





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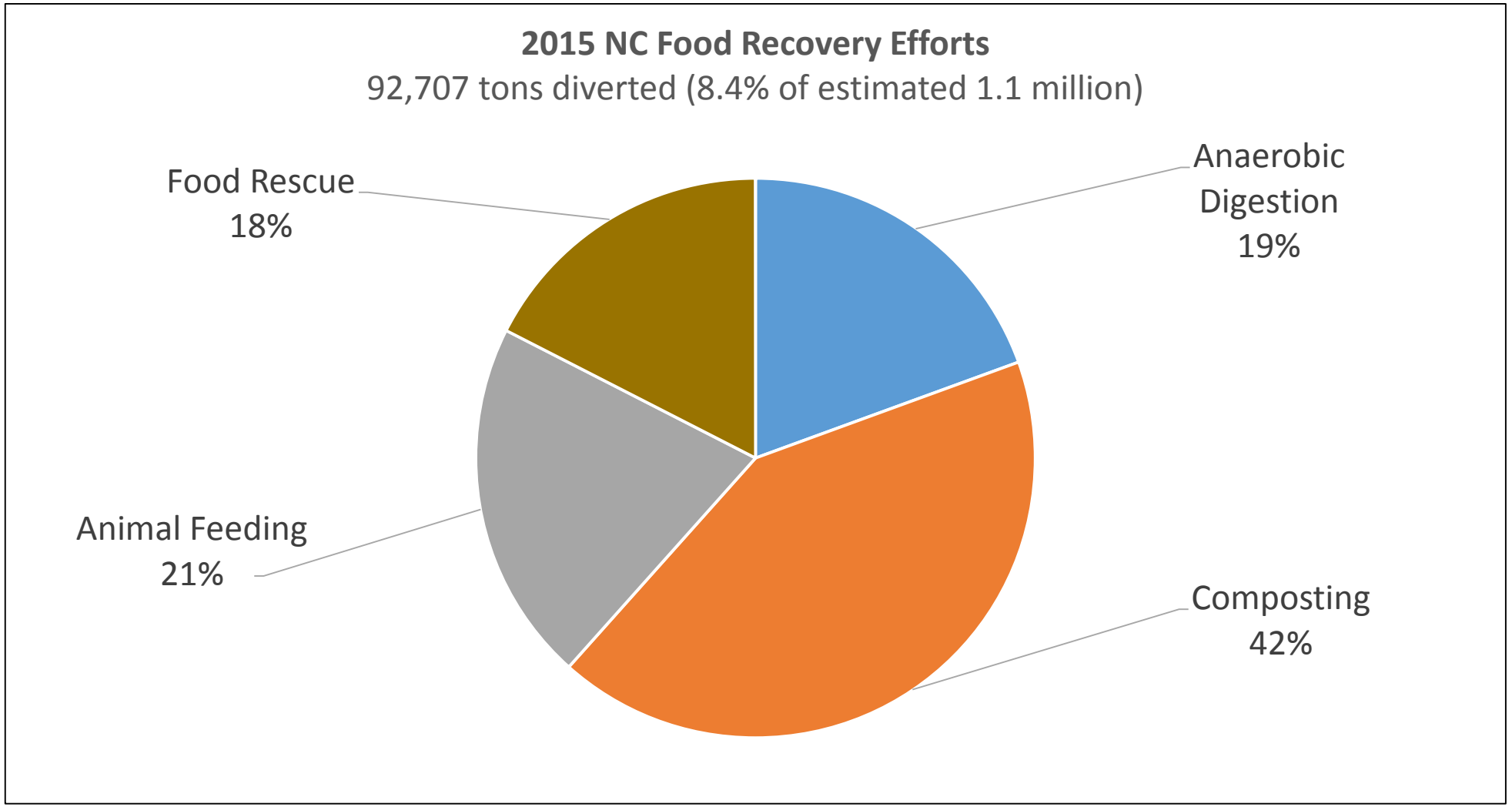
2015 NC Food Recovery Efforts
92,707 tons diverted (8.4% of estimated 1.1 million)
Food Rescue
18%
Anaerobic
Digestion
19%
Animal Feeding
21%
Composting
42%

Strategy	Management Goals	Infrastructure Required to Meet Goal
Food Rescue	110,000 tons	Expansion of refrigerated vehicles, refrigerated storage, and pickup locations.
Animal Feeding	110,000 tons	Expansion of vehicles and pickup locations.
Anaerobic Digestion	110,000 tons	There is currently under construction a permitted food scraps-based anaerobic digester (Blue Sphere in Charlotte, Mecklenburg County) with enough design capacity (500 tons per day of food scraps) to meet the Anaerobic Digestion share of the 50% reduction goal. Also, the only anaerobic digester that is processing food scraps at this moment (Full Circle Recycling in Zebulon, Johnston County), has available capacity. To increase diversion through anaerobic digestion, food scraps collection vehicles as well as pickup locations within NC will be required to meet the goal.
Commercial Composting	220,000 tons	Figure 2 shows there are approximately 1.2 million tons of permitted composting capacity currently available at commercial composting facilities. This should be enough to accommodate 220,000 tons of food scraps in addition to the necessary carbonaceous material to effectively compost the food scraps. Even though the available permitted capacity to process organic materials exists, the major publicly operated commercial composting facilities would have to integrate food scraps into their operations and permits. Additionally, food scraps collection vehicles as well as pickup locations in NC will be required to meet the goal.

Food Recovery Conclusions

- Food rescue and animal feeding are established and have a significant impact
- Food-AD is coming
- Composters have capacity
- Need to create collection clusters

Next Steps

- Regional Food Recovery Summits (SC models)
- Food Collection Grants (public/private)

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Thank you!

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Florida Department of Environmental Protection

Waste Reduction/Recycling

Lauren O’Connor

Florida
Dept. of Environmental Protection





Program Overview

- The Florida Composting Program regulates the recycling of organic solid wastes.
- The program's primary focus is on production and use of compost made from solid waste and on source-separated organic processing facilities (SOPF).
- Program activities include rulemaking, providing technical assistance, providing information on environmental aspects of compost production and use, and registering/permitting source-separated organics processing facilities and composting facilities.

Program History

- Rulemaking Authority under 403.061, 403.704 and 403.7043, Florida Statutes (FS). Law Implemented under 403.7043, FS.
- Formerly 17-709.550, Florida Administrative Code (F.A.C.)
- Rule 62-709, F.A.C. implemented in November 1989, containing regulations for processing yard trash and for composting solid waste.
- Rule amended in February 2010 to include Registration of facilities composting vegetative (food) wastes, animal byproducts and manure/manure blending.

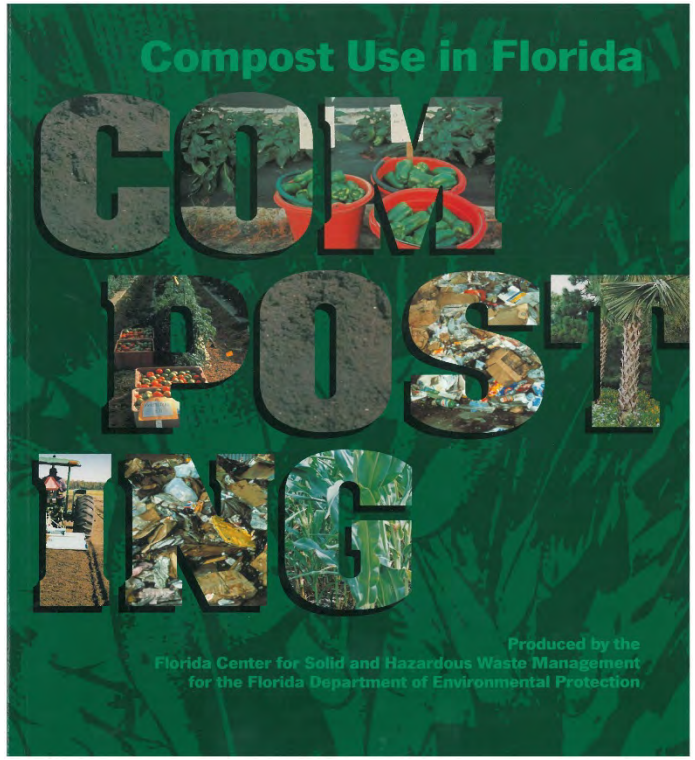
Rule Chapter 62-709: Criteria for Organics Processing and Recycling Facilities:

https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-709

Marketing & Research

Compost Use in Florida

Developed by the Florida Center for Solid and Hazardous Waste Management, December 1998



Recycling Yard Trash: Best Management Practices Manual for Florida

Developed by the industry to provide guidelines for operating yard trash processing facilities

Applicable Composting Rules

- Rule 62-701, F.A.C. – Solid Waste Management Facilities
- Rule 62-709, F.A.C. – Criteria for Organics Processing and Recycling Facilities
- Rule 62-640, F.A.C. – Biosolids

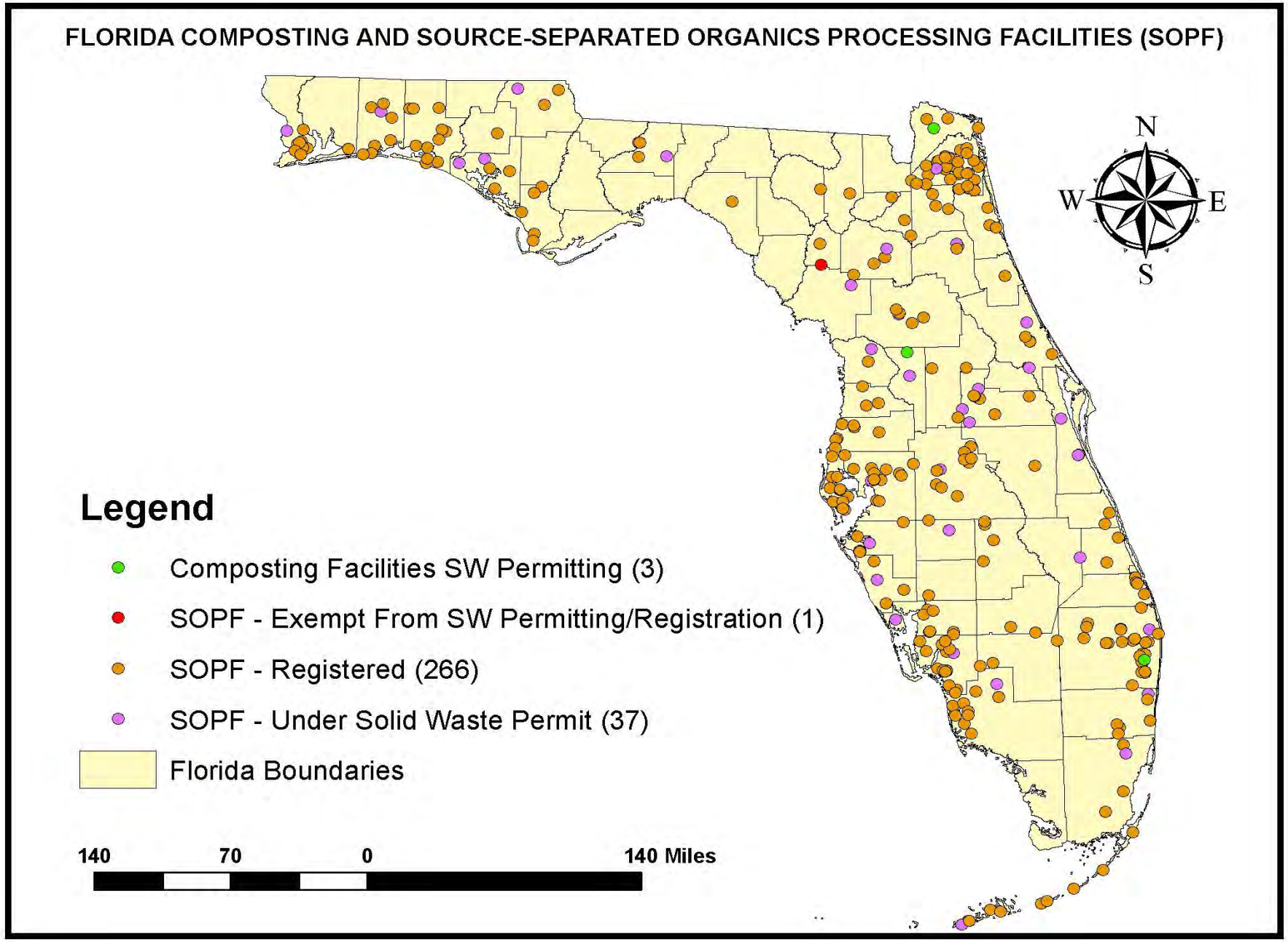
Types of Composting Permits

- Composting Facility Permit
  - Chapter 62-701, F.A.C.
  - Chapter 62-709, F.A.C.
  - Specific for certain activities – 5 years
- SOPF Registration
  - Chapter 62-709, F.A.C.
  - Limited to 1 year – must renew annually
- SOPF Exemptions – Normal farming operations
- Biosolids Processing Permit
  - Chapter 62-640, F.A.C.
  - Permit required – 5 years

Source-Separated Organics Processing Facility (SOPF)

- Facility that transfers, stores, or processes source separated organics, such as:
  - Yard trash (unprocessed trees, branches, leaves, mulch, etc.)
  - Vegetative (food) waste
  - Animal by-products
  - Manure/Manure Blending
- Facilities may also compost any combination of these materials at these facilities
- There are currently 307 SOPF's registered in Florida
- Registered/Under Permit SOPF:

http://www.dep.state.fl.us/waste/categories/solid_waste/pages/SOPF.htm


FLORIDA COMPOSTING AND SOURCE-SEPARATED ORGANICS PROCESSING FACILITIES (SOPF)
N
W
E
S
Legend
Composting Facilities SW Permitting (3)
SOPF - Exempt From SW Permitting/Registration (1)
SOPF - Registered (266)
SOPF - Under Solid Waste Permit (37)
Florida Boundaries
140
70
0
140 Miles

SOPF Regulations

- Operations that meet the criteria of Department rules shall **register** annually with the Department in lieu of obtaining a permit. If criteria are not met, they most obtain a solid waste management facility permit.

Operations Plan

- Design and operating requirements summary
  - Operational features and equipment necessary to maintain clean, orderly operation
  - Barrier to prevent unauthorized entry
  - Dust and litter control methods
  - Fire protection and control provisions
  - Control vectors and objectionable odors
  - Materials processed/removed timely
  - Maintain records of incoming and outgoing material

Processing Time Frames

- Incoming materials
  - Yard trash must be size-reduced within 6 months, or within a period required to received 3,000 tons or 12,000 CY (whichever is greater)
  - Putrescible must be incorporated within 48 hours
- Processed materials
  - Processed mulch, compost, etc. must be removed from the property within 18 months.

Fire Protection and Control

- Fire protection and control provisions to prevent accidental burning of solid waste:
  - All weather, 20 foot access road
  - No materials shall be mechanically compacted
  - No materials shall be more than 50 foots from access by motorized fire fighting equipment
    - i.e. pile width no more than 100’

Equipment, Facility Design

- Typical Equipment:
  - Front end loader, excavator, bob cat
  - Grinder – horizontal vs. tub grinder
  - Water truck
  - Haul vehicles

- Facility design:
  - Barrier to prevent unauthorized entry
  - Perimeter roads
  - Setbacks in Chapter 62-701, F.A.C.
    - 100’ potable well
    - 50’ from waterbody/wetland (does not include onsite water body that does not discharge offsite.)

Yard Trash Processing/Composting Facility

Composting Facility

- Solid waste management facility where solid waste is processed using composting technology.
- Processing may include physical turning, windrowing, aeration or other mechanical handling of organic matter.
- Facility using composting technology for treatment of biosolids.

Compost Classification

- Type Y - Only yard trash
- Type YM - Vegetative waste, animal by product or manure, with or without yard trash
- Type A - Solid waste other than yard trash other than only yard trash, vegetative waste, animal byproducts or manure; Mature and is fine.
- Type B - Solid waste other than yard trash other than only yard trash, vegetative waste, animal byproducts or manure; Mature or semi-mature, fine or medium

Classification

- Type C - Solid waste, other than only yard trash, vegetative waste, animal byproducts or manure; Mature or semi-mature and is fine, medium, or coarse
- Type D - Fresh, fine medium or coarse
- Type E - Metal concentration, under code 4
- Biosolids - Class AA

Use of Compost

- Types Y, YM or A
  - Unrestricted distribution
- Types B or C
  - Restricted to use by commercial, agricultural, institutional or governmental operations
  - Only B can be used in general public – parks
- Type D
  - Used only at landfills and reclamation projects
- Types E
  - Disposal pursuant to Chapter 62-701, F.A.C.

Compost Permit - Requirements

- Regulate the production and use of compost made from solid waste:
  - Engineer of record and professional certification
  - Facility design
  - Site plan showing the location of all property boundaries certified by a Florida licensed professional surveyor and mapper
  - Performance and design standard
    - Support for operation
    - Leachate controls and removal system performance
    - Storm water management system

Records/Reporting

- Records must be maintained for 3 years
  - Analytical results on compost testing
  - Quantity, type and source of waste received
  - Quantity and type of waste processed into compost
  - Quantity and type of compost produced by product classification; and
  - Quantity and type of compost removed for use or disposal, by product classification, and the market or permitted disposal facility.
  - Quarterly submittal – finished compost analyses (District)
  - Annual report submittal to DEP – June 1 of each year

Contact Information

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Florida Department of Environmental Protection
Waste Registration Section
Lauren.oconnor@dep.state.fl.us
850-245-8756

Florida Department of Environmental Protection

Waste Reduction/Recycling

Robin Safley

Executive Director
Florida Assoc of Food Banks





Robin Safley

Executive Director, Florida Association of Food Banks

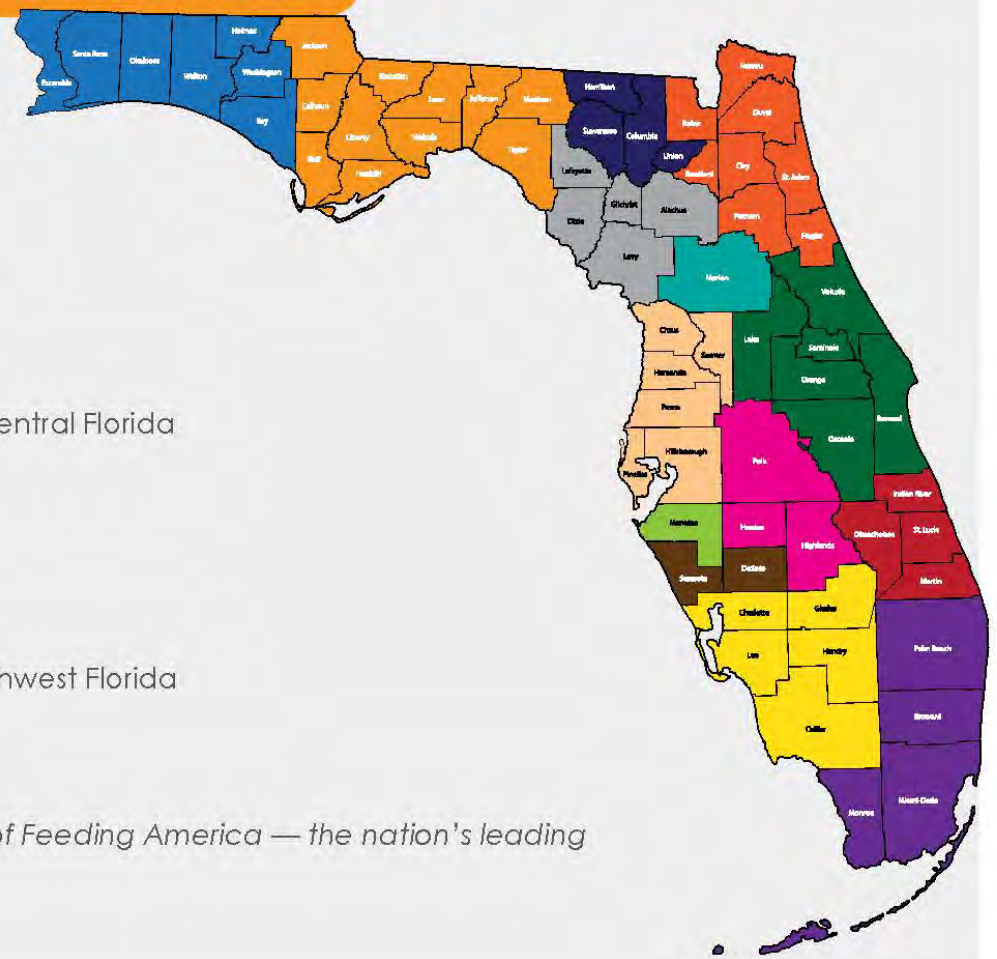
FAFB.org

FLORIDA ASSOCIATION OF FOOD BANKS

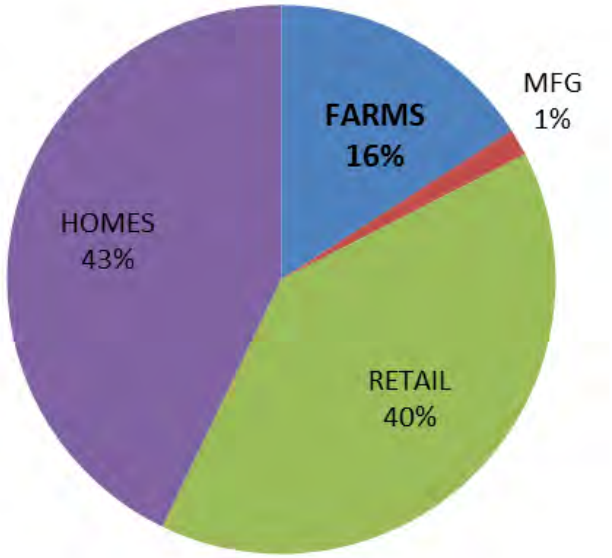
PARTNER STATE ASSOCIATION OF FEEDING AMERICA

WHERE WE ARE IN YOUR COMMUNITY

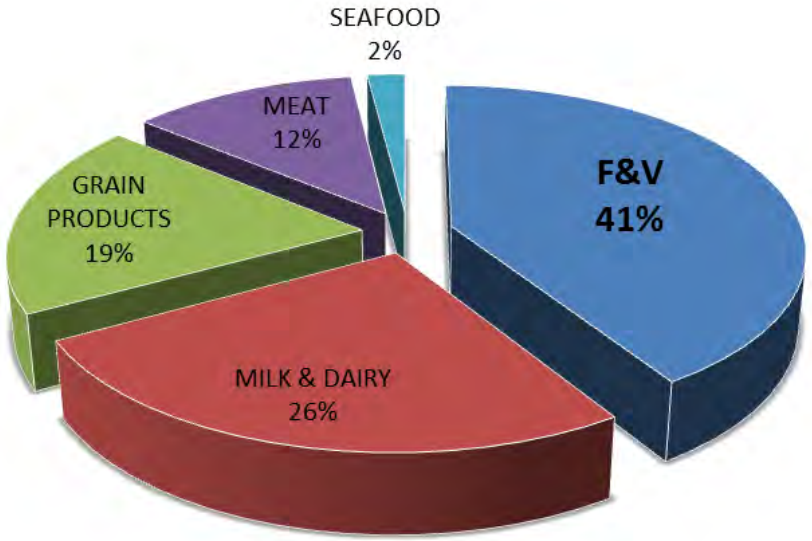
- Feeding the Gulf Coast
- Second Harvest of the Big Bend
- Florida Gateway Food Bank
- Feeding Northeast Florida
- Bread of the Mighty Food Bank
- First Step Food Bank
- Feeding Tampa Bay
- Second Harvest Food Bank of Central Florida
- The Food Bank of Manatee
- Agape Food Bank
- Treasure Coast Food Bank
- All Faiths Food Bank
- Harry Chapin Food Bank of Southwest Florida
- Feeding South Florida



FAFB is a Partner State Association of Feeding America — the nation's leading domestic hunger-relief charity.

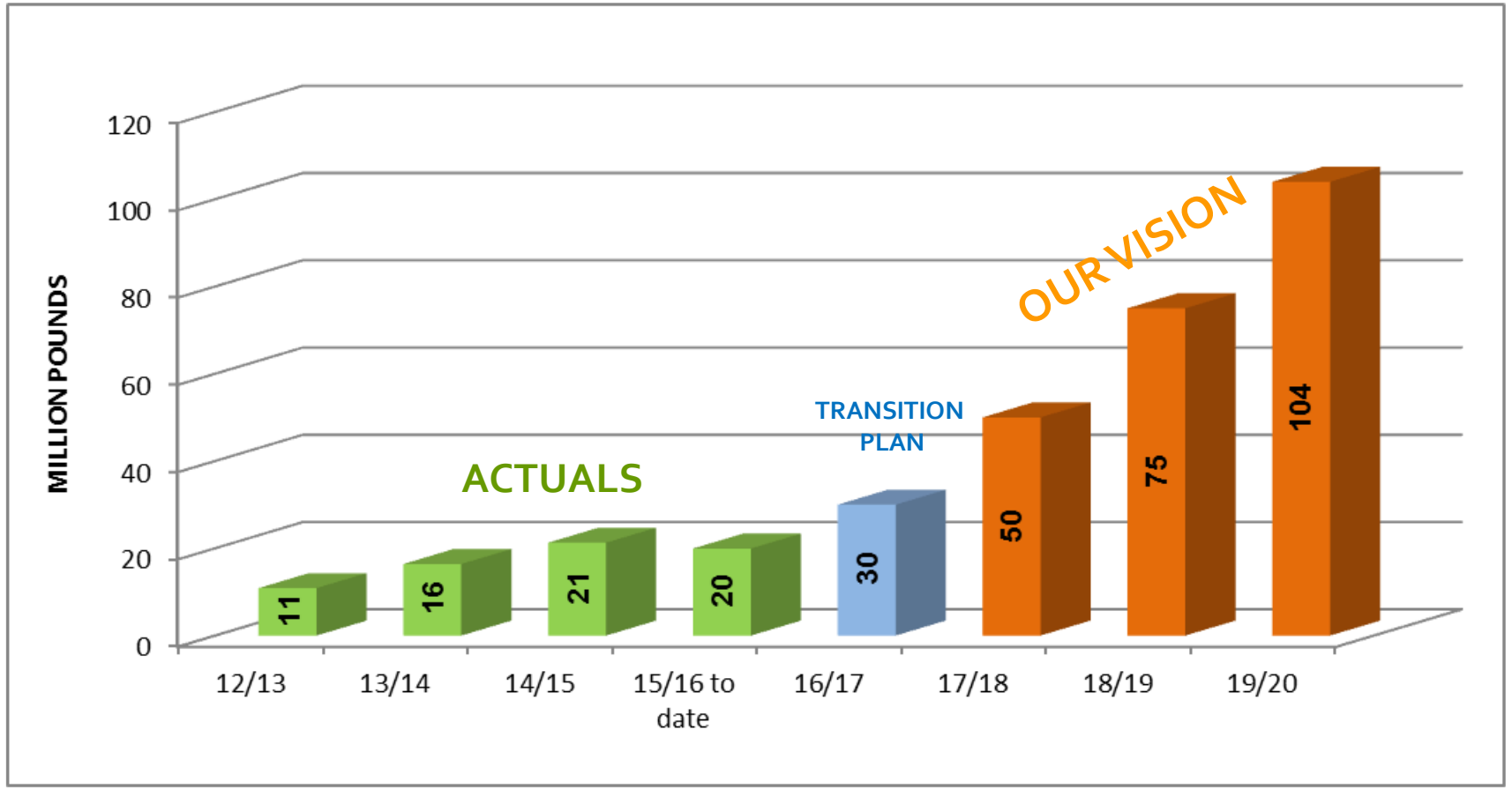


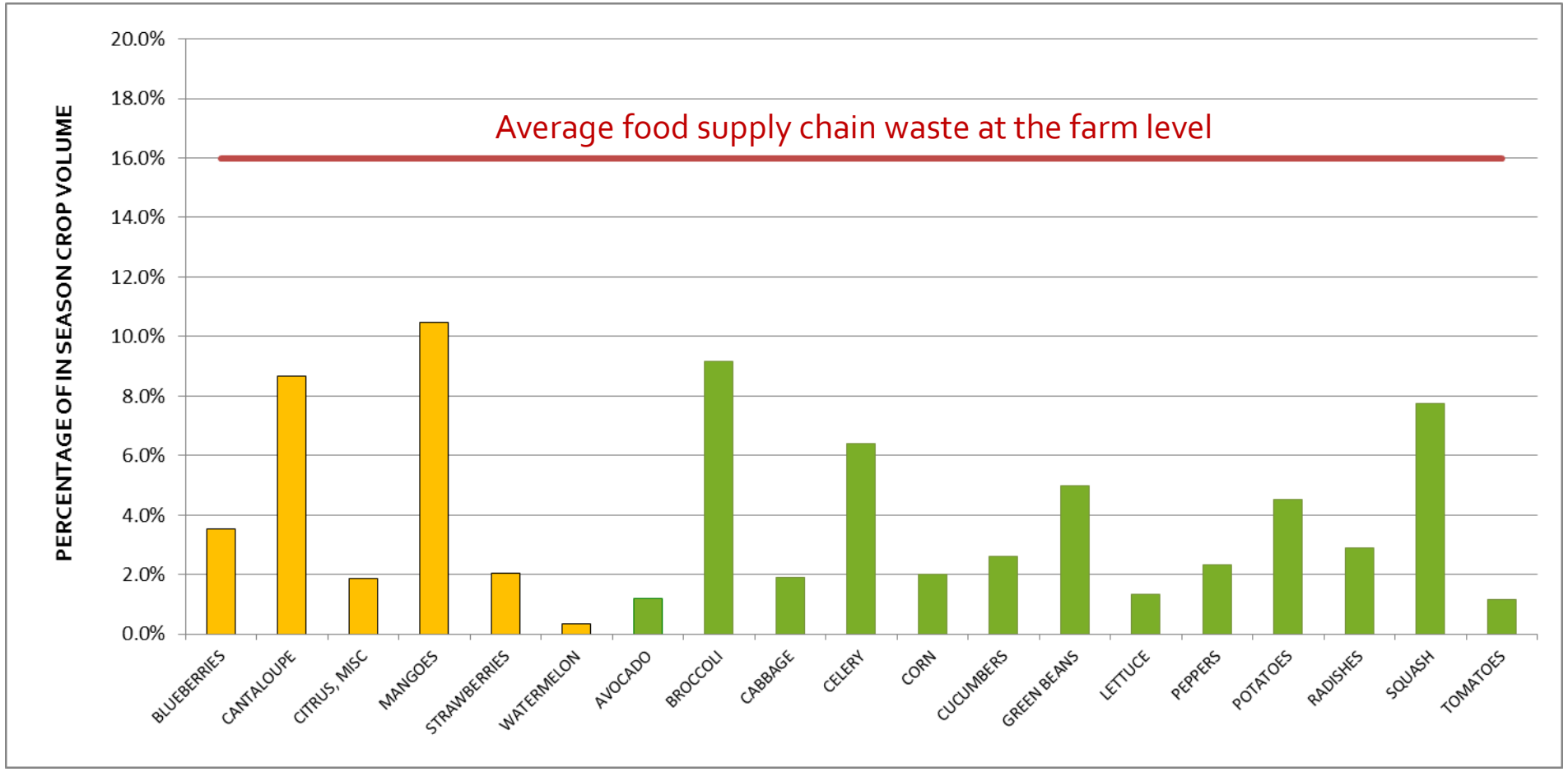
US Food Waste by Weight



US Food Waste by Type

Major Florida crop potential recovery pounds = 156,000,000


MILLION POUNDS
120
100
80
60
40
20
0
ACTUALS
TRANSITION PLAN
OUR VISION
11
16
21
20
30
50
75
104
12/13
13/14
14/15
15/16 to date
16/17
17/18
18/19
19/20


PERCENTAGE OF IN SEASON CROP VOLUME
20.0%
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
Average food supply chain waste at the farm level
BLUEBERRIES
CANTALOUPE
CITRUS, MISC
MANGOES
STRAWBERRIES
WATERMELON
AVOCADO
BROCCOLI
CABBAGE
CELERY
CORN
CUCUMBERS
GREEN BEANS
LETTUCE
PEPPERS
POTATOES
RADISHES
SQUASH
TOMATOES

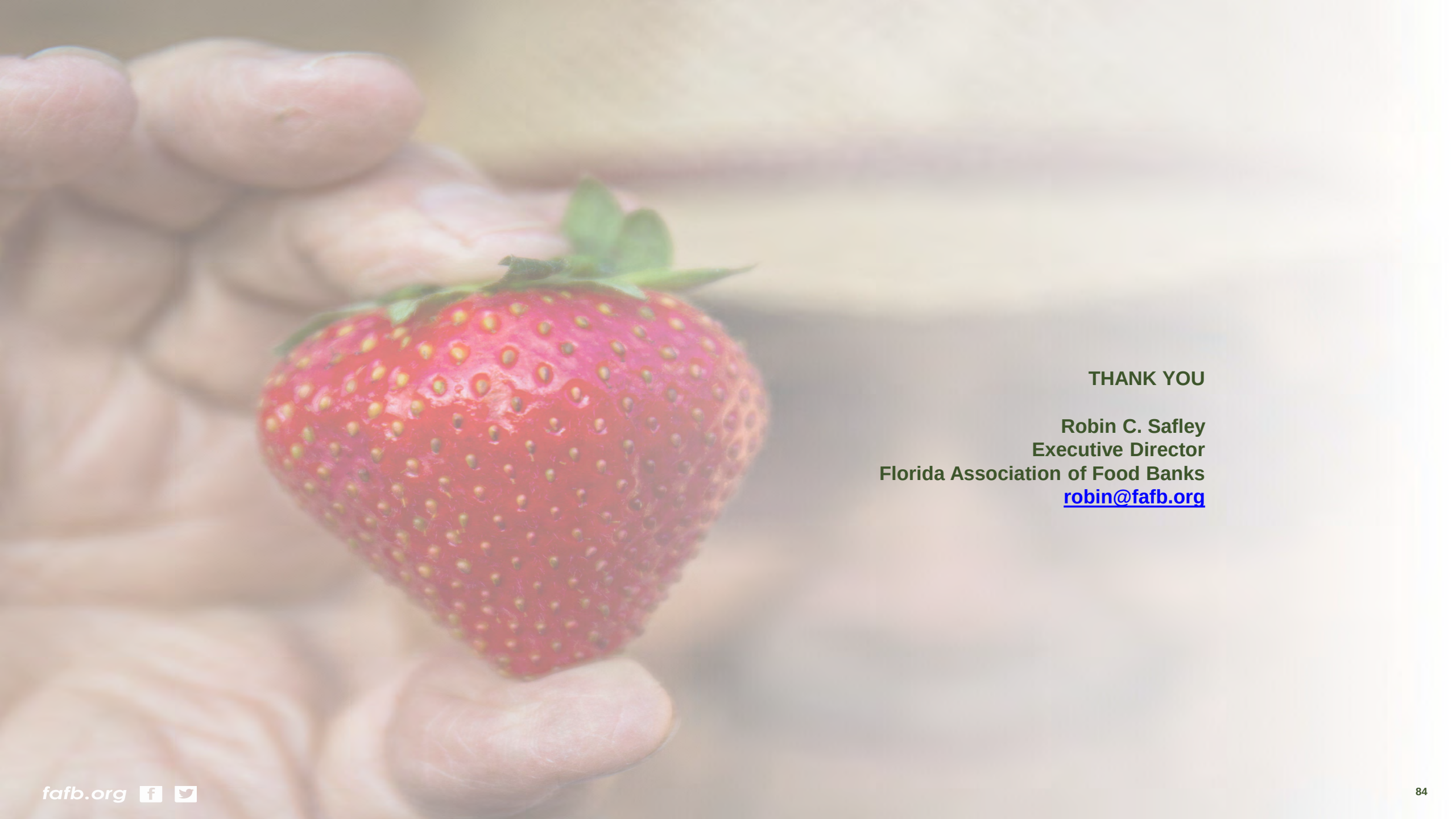

Load planning
Forward vision
Frequency
Locations
Continuity of Supply
Grading
Cull points
Packaging
Waste
Quality
Variety
Client Fatigue
Seasonality
Acceptance
Price
PPO
No cost
Other elements
Tax credits

DISTANCES
FOOD BANK CAPACITY
MARKET CONDITIONS
WEATHER

AVERAGE = $4,550 PER TRUCKLOAD

100,000,000 POUNDS

$11.4 MILLION



THANK YOU

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Florida Department of Environmental Protection

Waste Reduction/Recycling

Brenda Platt

Co-Director
Institute for Local Self-Reliance



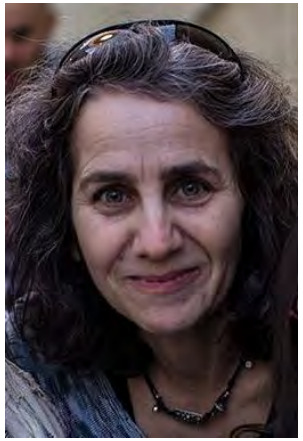




Developing Composting Infrastructure to Build Community

Brenda Platt
Director, Composting Makes ene Project
Institute for Local Self-Reliance
bplatt@ilsr.org

May 25th, 2016, Managing Florida's Organics: Part II "Strategies & Directions"
FL DEP WEBINAR



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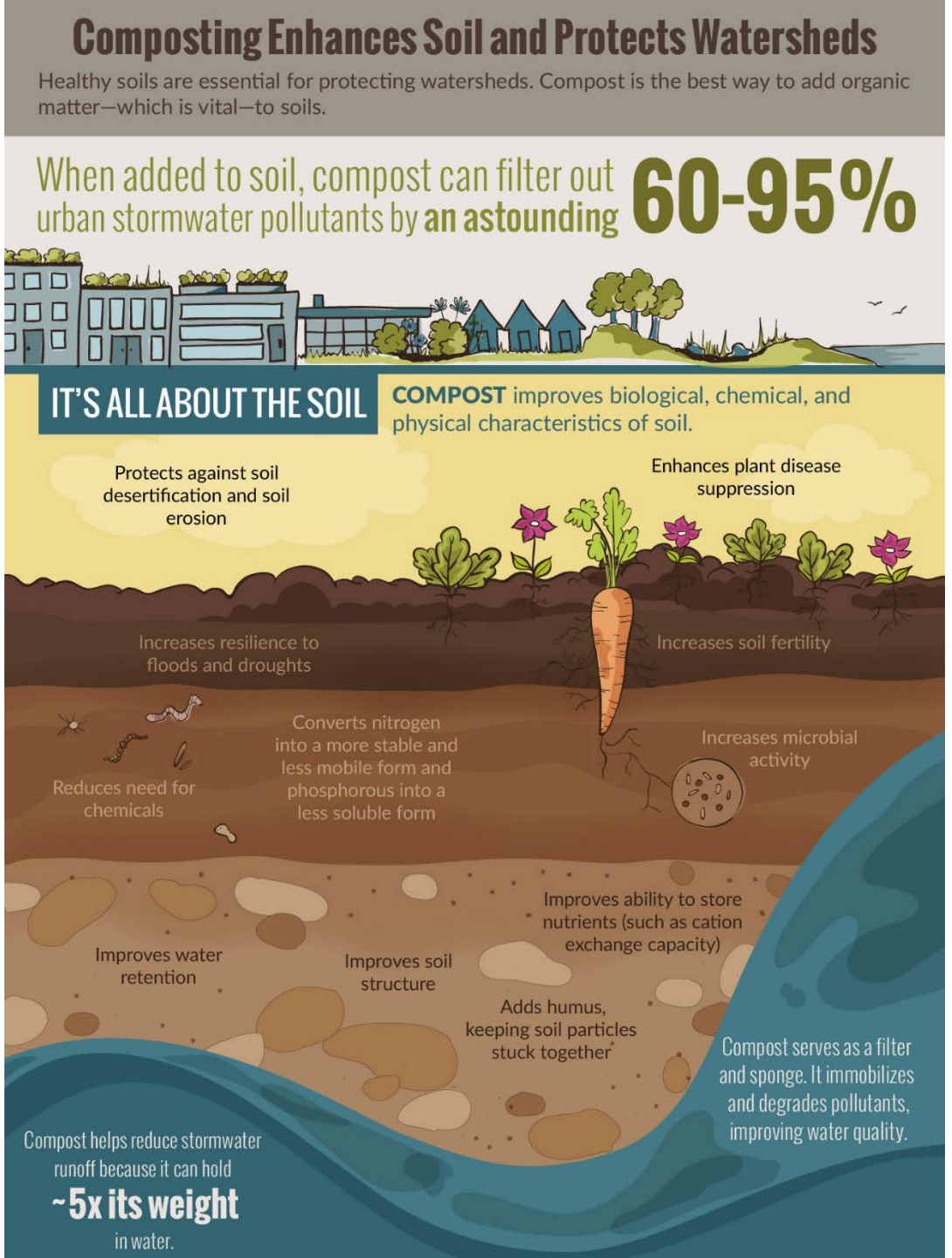
Infographics:
ilsr.org/compost-impacts



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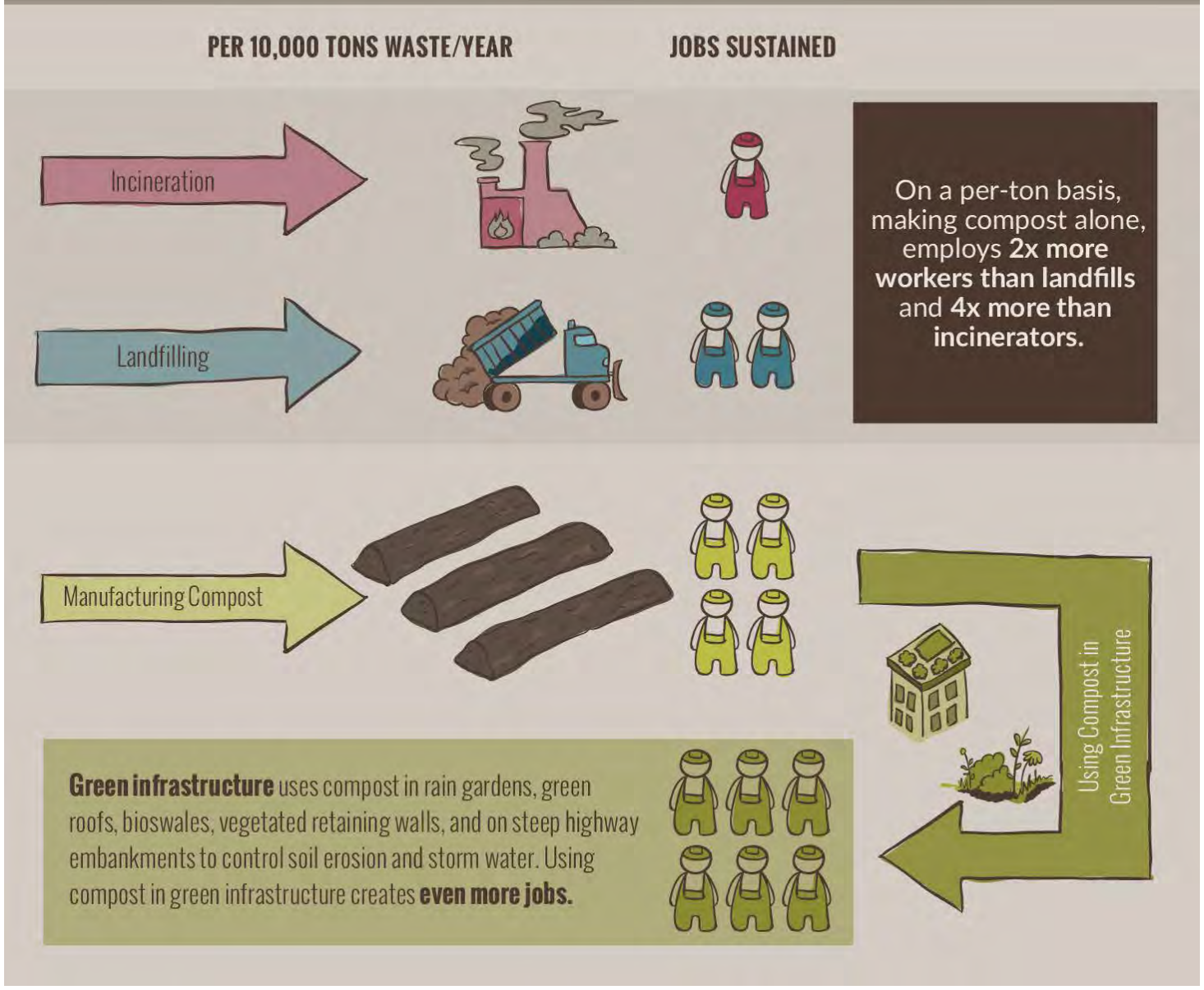
Composting Creates Jobs

Jobs are sustained in each stage of the organics recovery cycle.



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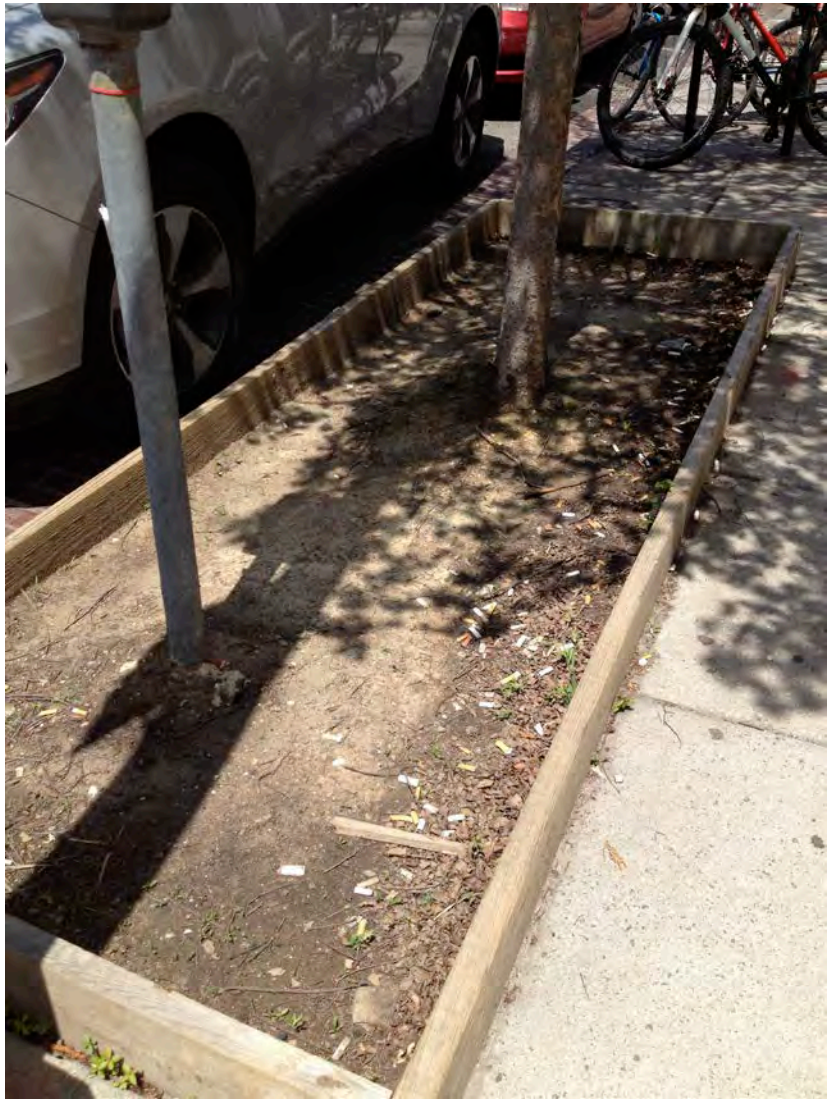
MCS Inc., www.mcsnjinc.com

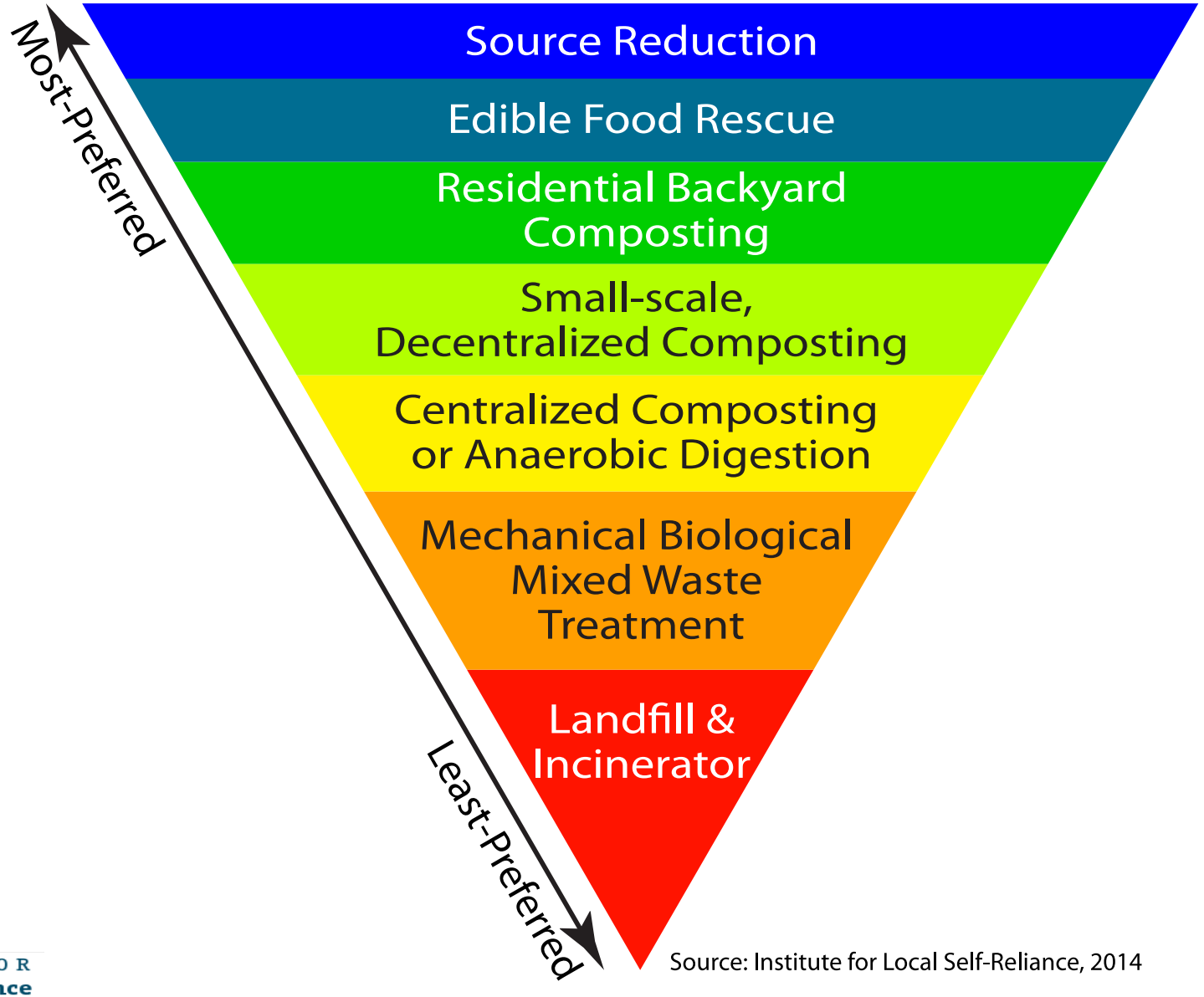
Composting, lots of ways

Trend to rely on large-scale far-away compost sites

Makes It Harder to Improve Local Soil



Hierarchy For Reducing & Recycling Food Scraps And Other Organic Discards



Source: Institute for Local Self-Reliance, 2014

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Orlando – Get Dirty for Valentine's Day


SECTIONS SEARCH Orlando Sentinel

THURSDAY MAY 19, 2016 ALL SECTIONS NEWS SPORTS BUSINESS CLASSIFIED OBITUARIES ENTERTAINMENT TRAVEL

Orlando suggests something 'dirty' for Valentine's Day

- FREE bins to City of Orlando residents
  - Free home delivery
  - Assembled
  - The Earth Machine
- Launch February 14, 2015 "Get Dirty" Campaign
  - Get Dirty for Valentine's Day
  - Get Dirty with Your Neighbors
- 3,068 delivered as of April 2016

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Cheverly, MD, shows 25% of residents will backyard compost, saving money on collection and disposal fees

- April 2011, backyard composting program
- 25% of 1,600 single-family homes participating
- ~100 tons per year composted
- ~$6,000 in avoided disposal fees/year
- Total savings expected to be $120,000 over 20 years
- A dozen municipalities have implemented the program (including Bowie, Greenbelt, Mount Rainier, Berwyn Heights, Colmar Manor & Brentwood).

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Source: Doug Alexander, NIE Institute, Landover Hills, MD

Farmers Need Particular Support

farm and farmer

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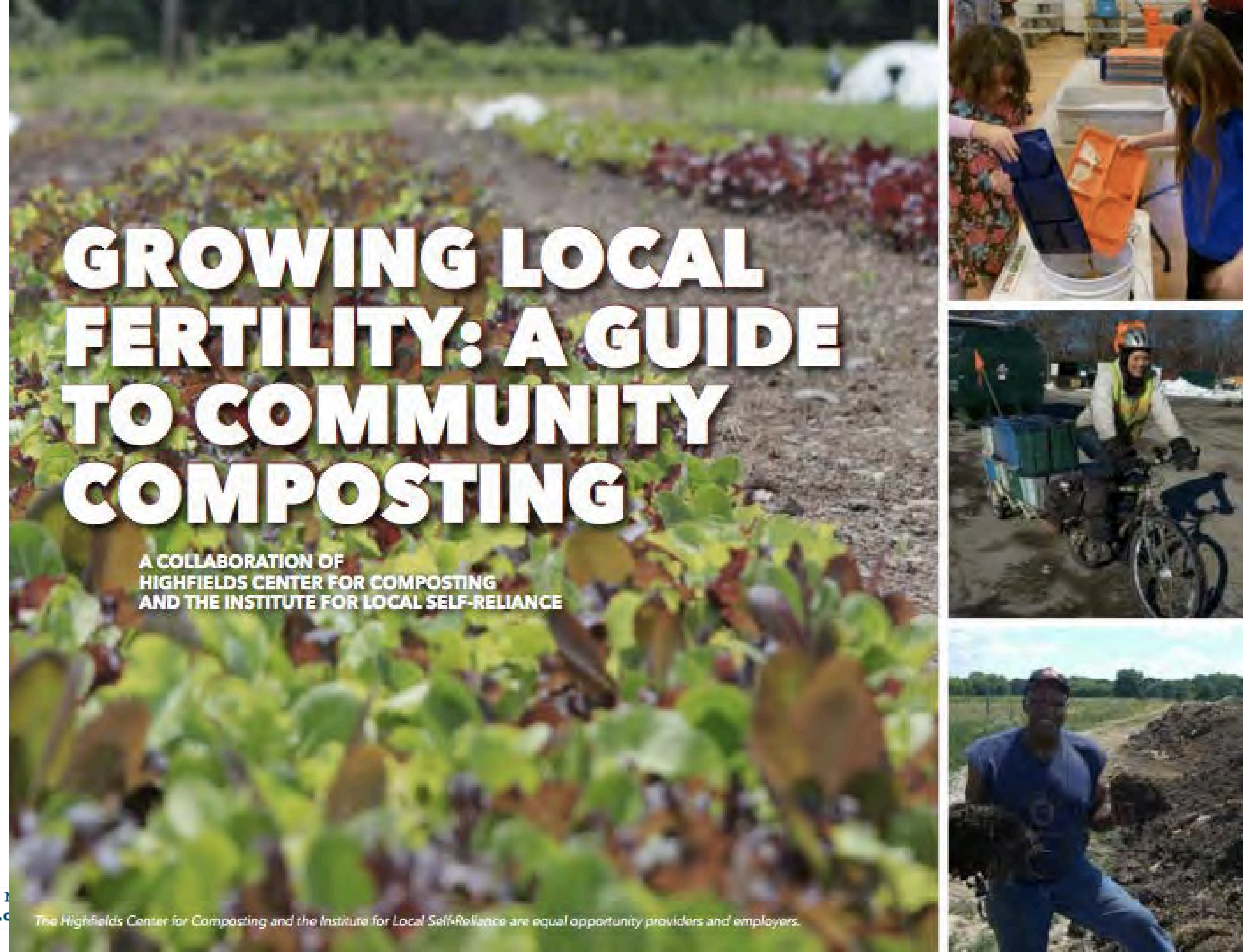
GROWING LOCAL FERTILITY: A GUIDE TO COMMUNITY COMPOSTING
A COLLABORATION OF
HIGHFIELDS CENTER FOR COMPOSTING
AND THE INSTITUTE FOR LOCAL SELF-RELIANCE
The Highfields Center for Composting and the Institute for Local Self-Reliance are equal opportunity providers and employers.

ILSR

Principles of Community Composting

- Resources recovered
- Locally based and closed loop
- Organic materials returned to soils
- Community-scaled and diverse
- Community engaged, empowered, and educated
- Community supported

Download the free* Growing Local Fertility: A Guide to Community Composting *at www.ilsr.org/growing-local-fertility

Compost builds community!

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Types of Community Programs

1. Community gardens
2. Farms
3. Schools
4. Drop-off networks
5. Collection entrepreneurs
6. On-site composters
7. Off-site composters
8. Demonstration and community leader training sites
9. Worker-owned cooperatives
10. Home-based or homesteader hubs

Philly Compost offers pedal-powered collection service to neighboring restaurants within a 2-mile radius (Philadelphia)

Drop-off Network

Home Services News/FAQ Partners Resources 19125 Product Us

Neighborhood Compost Map

Finding a Composting Site in your Neighborhood

Gardeners and confident composters: share your experience and your bins! You know that the best way to keep organics out of the waste stream is to compost in your own backyard. The reasons are many:

> no emissions from transporting organics
> low tech
> least expensive

"The map is such an awesome resource!"
- unsolicited email, Philadelphia resident

By placing yourself on the Philly Compost Map, you're not only showing overwhelming interest in composting, you'll also help us quantify reduced carbon and methane emissions for our region. The more composters, the better for the planet!

Compost sites on the Map are color coded:

- Shared community sites are **purple**. We ask donors to check with the Site Host before contributing. If your site can accept more organics, or already has more than your household contributing to it, we ask you to share it.
- Private sites are **red**. We ask that everyone check with the site contact before visiting. if your site cannot handle more organics, or is in a hard-to-access space, we suggest you list it as a private site.
- Yellow sites are folks that would love to find a shared site nearby. If your compost site is near one of these, please contact that neighbor and share your bin!
- Commercial sites are **green**. We're coming soon to Germantown!
- City sites are **blue**.

To add your site to the map:

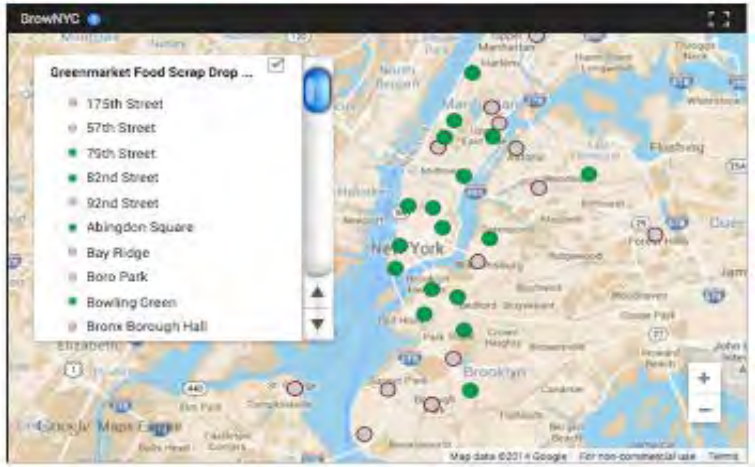
- When viewing the map, click on the Edit button along the left side bar
  If you don't see an Edit button, you'll need to log in to your Google account. If you don't have one, and don't want to create one, send an email to us with the location of your compost site.
- After you click the Edit button, you'll see options along the top left of the map itself.
- If you are clicked onto a point, you will be directed to edit just that point. To create a new point, make sure your cursor is not clicked on anything.
- Click on the placemark icon (looks like a tear drop) and position it where you'd like.
  Or ... while you have the map visible, enter a street address in the map search bar, and select Save to My Map, then to Philly Compost.
- Change teardrop color to red (for private) or purple (for shared) site, and add any other descriptive text to the text box.
- Click the Done button when you are finished (over to the left, where the Edit button was).

GREENMARKET FOOD SCRAP COLLECTION SCHEDULE

GrowNYC currently offers food scrap collection at 35 Greenmarket locations. Consult our main compost page for a guide of what we do and do not accept.

Please adhere to the drop-off schedule at each location. Food scraps cannot be accepted after stated hours. All locations are year-round unless noted otherwise.

In cases of severe winter weather, markets may close early or be cancelled. Please drop early and check our blog or follow us on social media for schedule updates.



Partner Key:
DSNY = NYC Department of Sanitation
GrowNYC = GrowNYC + Community Partners
LES Ecology Center = Lower East Side Ecology Center
SIRCompost [formerly Western Queens Compost Initiative] (NYC Compost Project)
Battery = Battery Conservancy
NYRP = New York Restoration Project

BOROUGH	GREENMARKET	DAY	TIME	PARTNER
Bronx	Bronx Borough Hall Greenmarket Grand Concourse & 161st St	Closed until Spring. Dates Pending.	8am-2pm	GrowNYC
Bronx	Pos Park Greenmarket Grand Concourse & 192nd St	Closed until Spring. Dates Pending.	8am-1:30pm	GrowNYC
Brooklyn	Bay Ridge Greenmarket 3rd Ave & 95th St	Closed until Spring. Dates Pending.	8am-1pm	DSNY

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New York Compost Project, New York City

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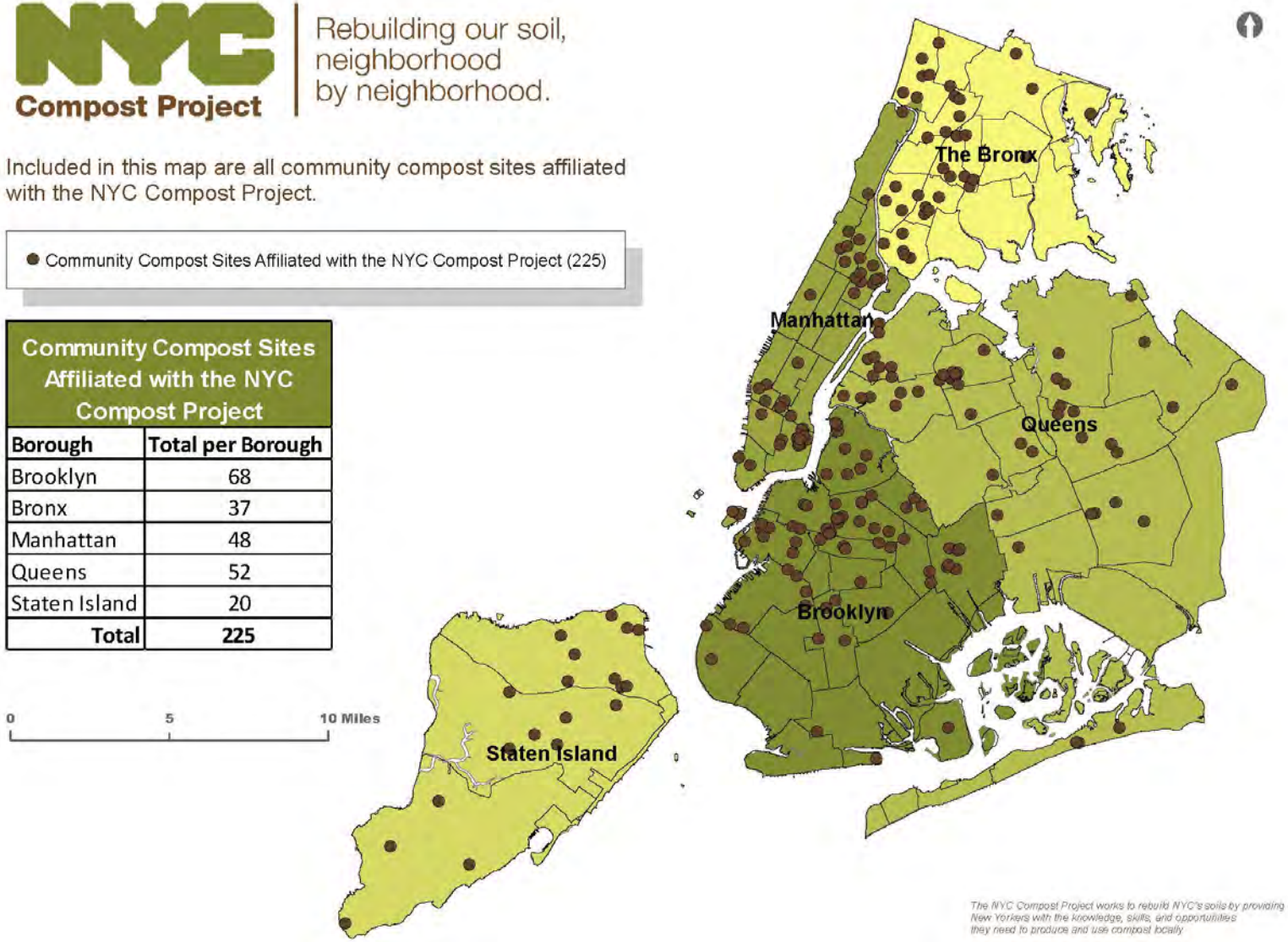
NYC Compost Project

Rebuilding our soil, neighborhood by neighborhood.

Included in this map are all community compost sites affiliated with the NYC Compost Project.

● Community Compost Sites Affiliated with the NYC Compost Project (225)

Community Compost Sites Affiliated with the NYC Compost Project	
Borough	**Total per Borough**
Brooklyn	68
Bronx	37
Manhattan	48
Queens	52
Staten Island	20
Total	**225**



The NYC Compost Project works to rebuild NYC's soils by providing New Yorkers with the knowledge, skills, and opportunities they need to produce and use compost locally.

The project is funded and managed by the NYC Department of Sanitation's Bureau of Waste Prevention, Reuse and Recycling. Learn more at nyc.gov/compostproject.

IISR

NYC Compost Project

Community Gardens

myrtle village green

Ground To Earth
Contributors

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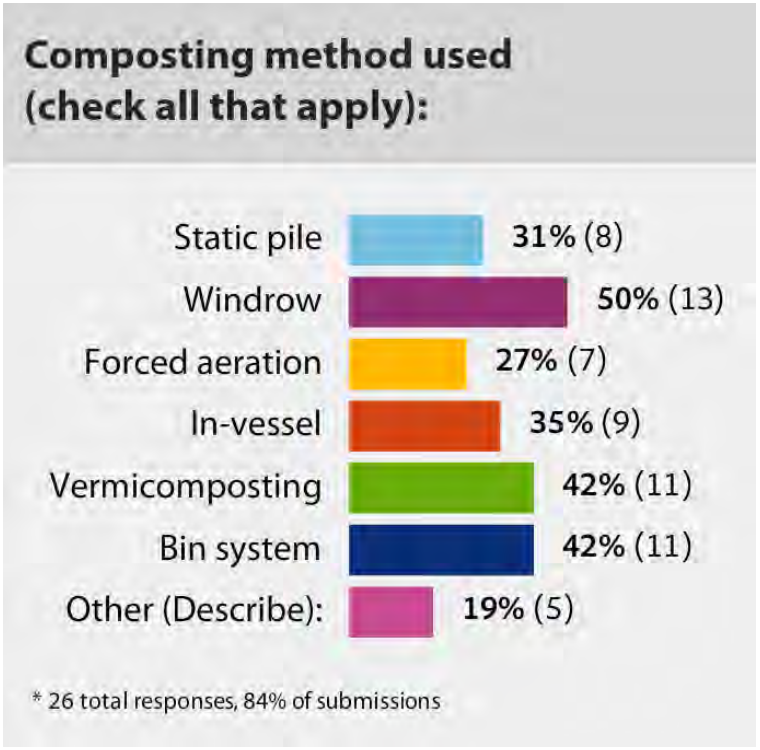
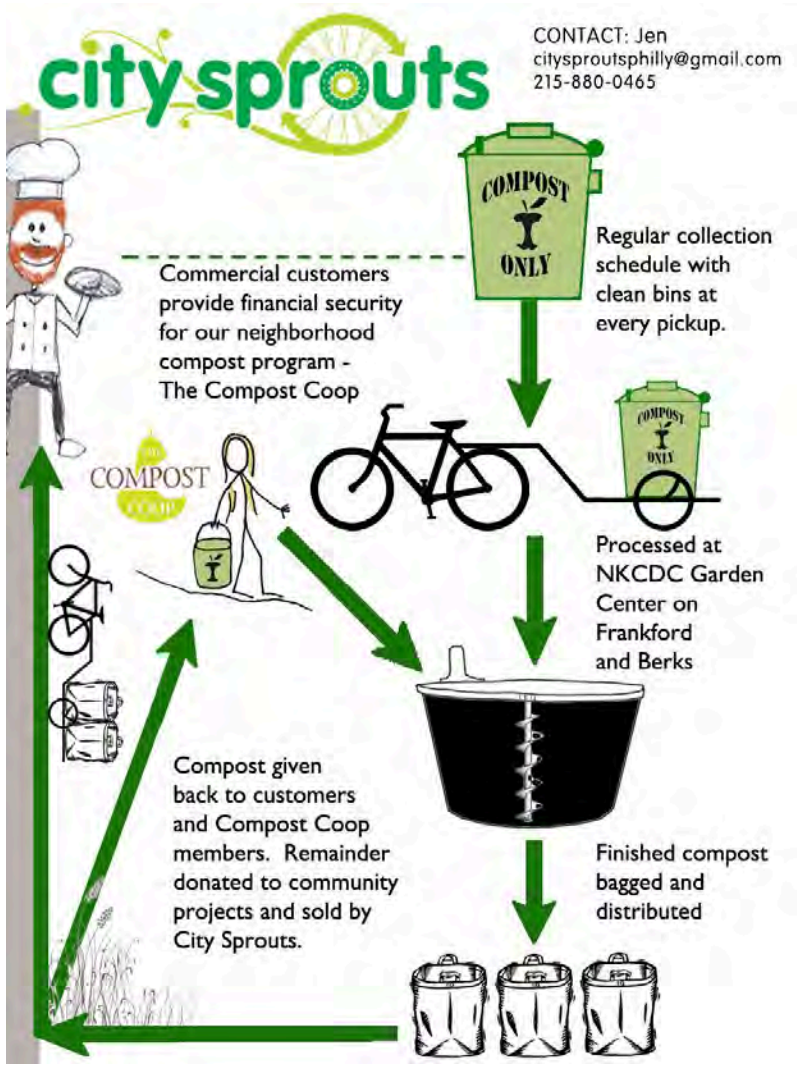


Earth Tub in-vessel compost system at Philly Compost (Philadelphia)

Building a windrow by hand at Red Hook Community Farm (Brooklyn, NY)

City Sprouts, Philadelphia



Collection Entrepreneurs

city sprouts
sustainable services

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Gainesville Compost

Gainesville COMPOST
From Waste to Food

BIKECOMPOST

ILSR INSTITUTE FOR Local Self-Reliance

Urban Farms

Red Hook Community Farm

Growing Power

ECO City Farms

Volunteers Are Important
Training Operators Is Critical

The NYC Compost Project cultivates community leaders through its ***Master Composter Certificate Program***.

These leaders volunteer their time to conduct public workshops, provide community outreach, bring people to gardens, and spread compost.

Neighborhood Soil Rebuilders (NSR) Composter Training Program

We're looking for partner communities to replicate this program!

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Schools are vital


Harriet Tubman ES, DC


Berwyn Heights ES, MD


EW Stokes Public Charter School, DC

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Continuous Flow Systems – No pitchforks needed

All Saints Regional Catholic school, NJ

Ripowam Cisqua School, NY

Chatham School, NJ

Kingsway Regional School, NJ

Frostburg University in Maryland

Stevenson School, CA

Roscoe School, NY

Ramapo College, NJ

Montclair State College, NJ

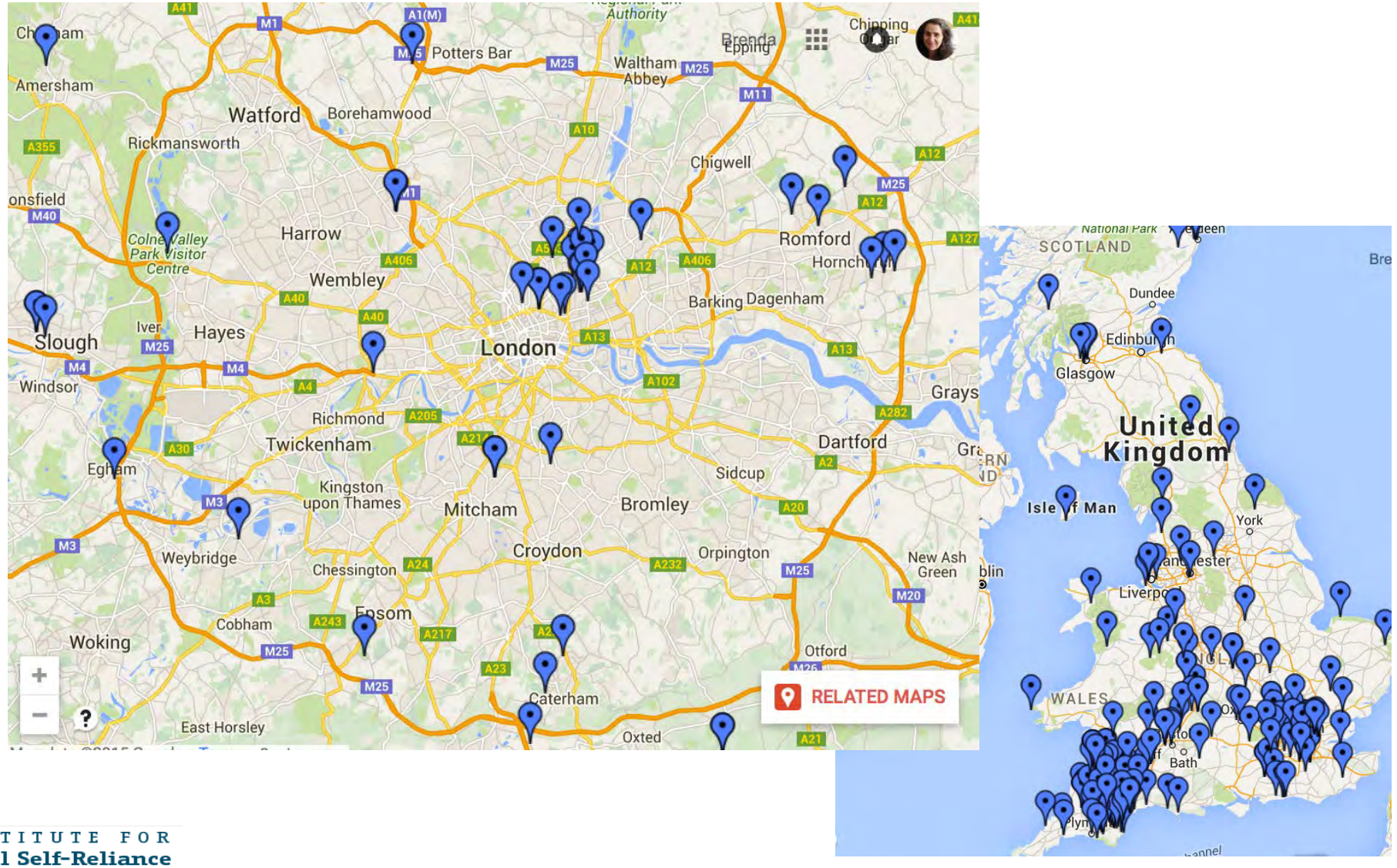
IISR

NATH
Sustainable Solutions

Ridan Composter

Children with Ridan Composter at Benthal Primary School, London (Hackney Council)

Ridan Composter Locations (sample)



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Ramona Unified School District (CA)

2014-2015

Source reduction = 2,860 lbs.

- Fed people = 7,280 lbs.
- Fed animals = 3,840 lbs.
- Composted = 6,576 lbs.

- A cost benefit of more than $18,000 for RUSD in 2015.

Compost Connoisseurs

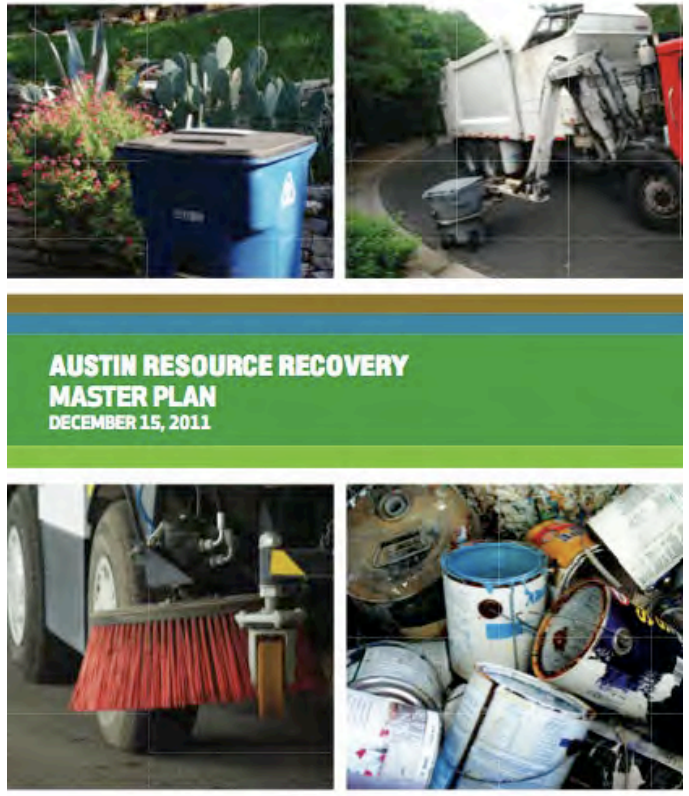
Delivering to the food pantry.

Gloria Quinn, Ramona Unified School District, "School District Implements Food Recovery Hierarchy," BioCycle, April 6, 2016, San Diego.

Austin zero waste plan

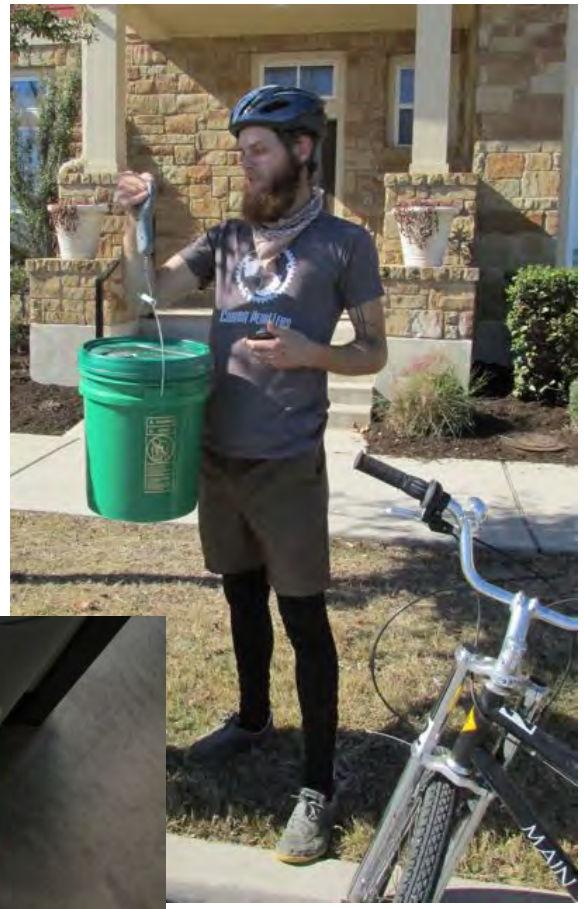
"…decentralized composting processes can reduce the carbon footprint of collection and transportation while consuming organics in more localized situations that do not require large organized collection programs."

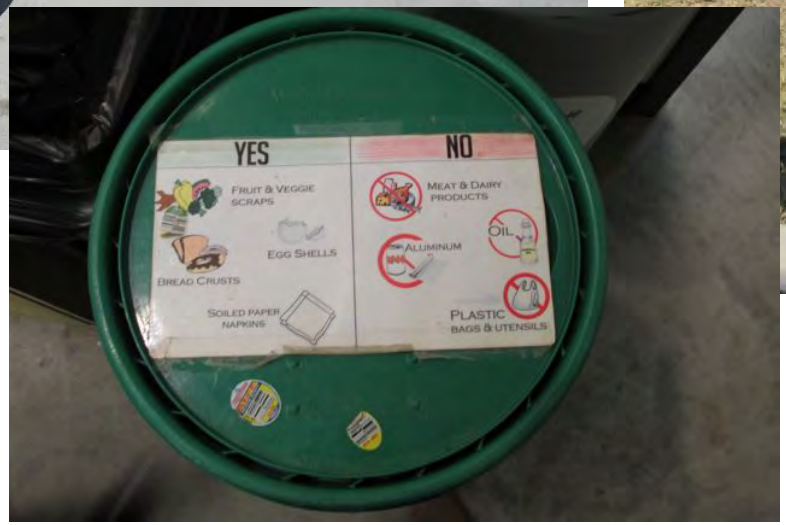
"The Department recognizes that, in addition to helping the City achieve its Zero Waste goals, composting also addresses the community's interest in enriching the region's soil, strengthening sustainable food production and completing the food cycle."



The Austin Resource Recovery Master Plan (December 2011), pp. 105-106. http://www.austintexas.gov//sites/default/files/files/Trash_and_Recycling/MasterPlan_Final_12.30.pdf

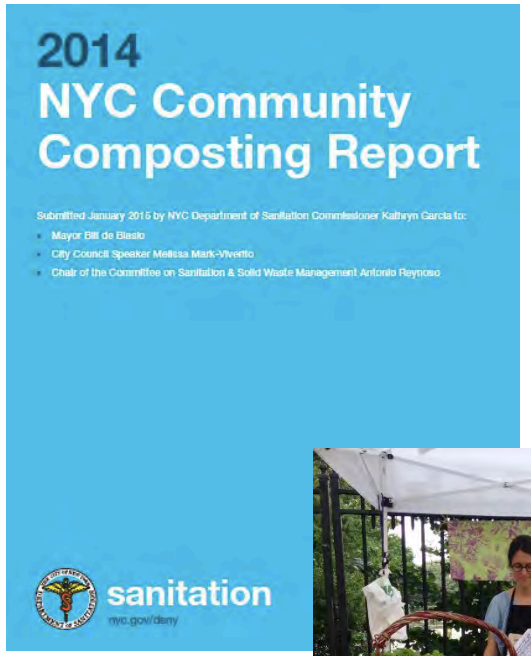
Compost Peddlars (Austin)





Compost Peddlars (Austin)

NYC Supports Community Composting



DSNY Organic Waste Diversion Strategy:

DSNY believes that a strong organic waste diversion strategy for NYC will operate at three scales:

① at a citywide level,

② in communities and neighborhoods, and

③ in the home.

This tiered approach enables the City to divert the greatest amount of organic waste from landfills; build support for and participation in organic waste recycling; and generate high-quality finished compost in NYC to improve soils and public health.

BioCycle PRESENT

cultivating community composting

January 26, 2016 • Jacksonville, FL

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What can you do? Some ideas…

- Policy to support diversified infrastructure
- Access to land & funding support
- Technical assistance and tools for locally based systems
- Model locally based systems
- Master Composter Training Program
- Replicate the Neighborhood Soil Rebuilders Composter Training Program
- Procurement of finished compost
- Spur adequate equipment for small-scale systems
- Promote pay-as-you-throw trash fee[illegible] reinvest savings into communities (e.g., community composting, community solar)

Photos: NYC Compost Project

Florida Department of Environmental Protection

Waste Reduction/Recycling

Hunt Briggs

Recycling Resource Systems





Roadmap to Reduce U.S. Food Waste

Managing Florida's Organics: Part II

May 25

Hunt Briggs, RRS

ReFED | Rethink Food Waste *Through Economics & Data*

What is the ReFED *Roadmap?*

ReFED is a nonprofit collaboration formed in 2015 of over 30 business, nonprofit, foundation and government leaders committed to reducing food waste in the United States.

On March 9th, ReFED launched *A Roadmap to Reduce U.S. Food Waste by 20 Percent,* the first ever national economic study and action plan driven by a multi-stakeholder group committed to tackling food waste at scale.

AWARENESS

- Amount of food wasted
- Causes of that waste
- Impacts on the environment & economy

ACTION

- Reduction/ prevention
- Recovery
- Reuse/ Recycle

ReFED Steering Committee, Advisory Council, and *Roadmap* Team

THE PROBLEM OF FOOD WASTE

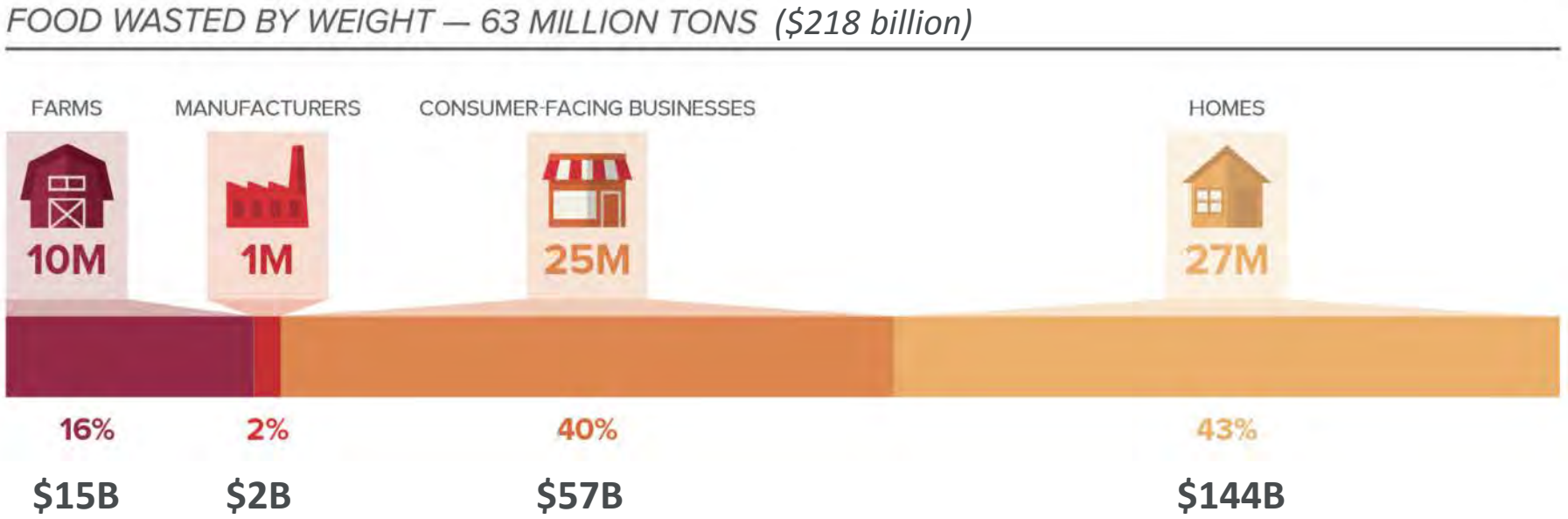
The Baseline Problem in the US

Every year, American consumers, businesses and farms spend $218 billion (roughly 1.3% of GDP) on food that is never eaten

U.S. Food Waste utilizes:

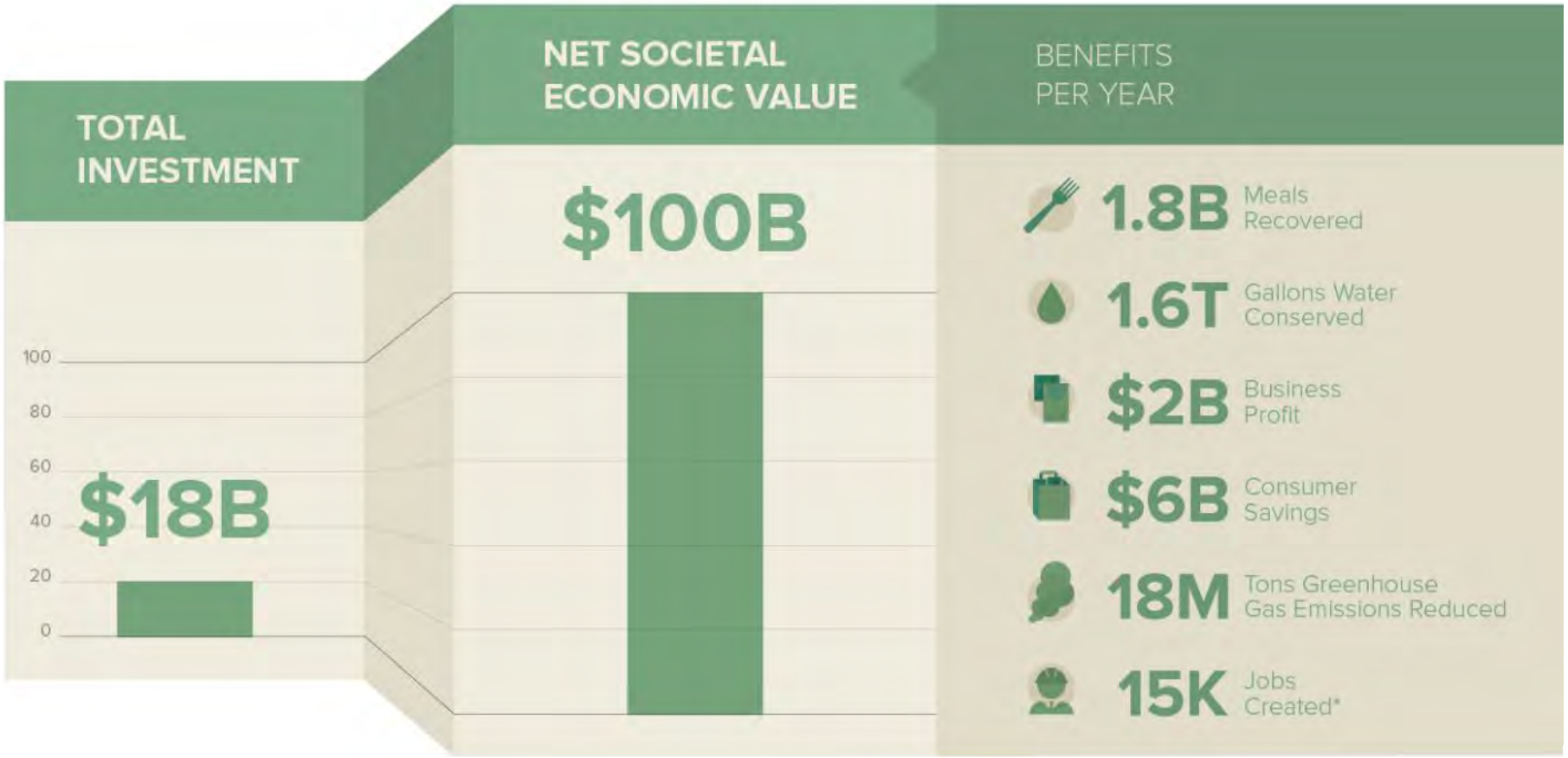
- 18% of Cropland
- 19% of Fertilizer
- 21% of Freshwater
- 21% of landfill volume

ReFED Food Waste Baseline: Nearly 63M tons of waste per year



THE SOLUTIONS AND ECONOMIC ANALYSIS

AN $18 BILLION INVESTMENT IN 27 SOLUTIONS TO REDUCE U.S. FOOD WASTE BY 20% WILL YIELD $100 BILLION IN SOCIETAL ECONOMIC VALUE OVER A DECADE



ReFED

Jobs and environmental benefits not included in $100b calculation
*Jobs created is a total number, not annual new jobs

Data Analysis: 13M tons of potential (20%)

Prevention
Stopping waste from occurring in the first place

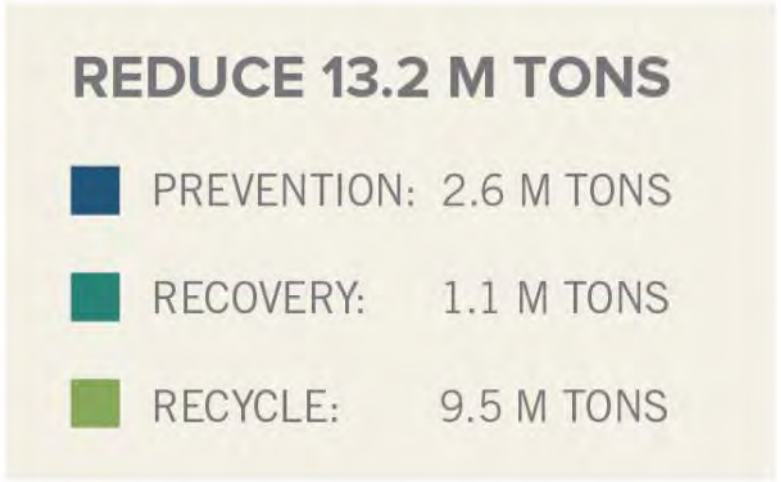
12 solutions
Most Cost Effective

Recovery
Redistributing food to people

7 solutions
Best at Alleviating Hunger

Recycling
Repurposing waste as energy and agricultural products

8 solutions
Greatest Diversion Potential



ReFED

27 Solutions Evaluated

Prevention Solutions	
Packaging, Product & Portions	Standardized Date Labeling
	Packaging Adjustments
	Spoilage Prevention Packaging
	Produce Specifications (Imperfect Produce)
	Smaller Plates
	Trayless Dining
Operational & Supply Chain Efficiency	Waste Tracking & Analytics
	Cold Chain Management
	Improved Inventory Management
	Secondary Resellers
	Manufacturing Line Optimization
Consumer Education	Consumer Education Campaigns

Recovery Solutions	
Donation Infrastructure	Donation Matching Software
	Donation Storage & Handling
	Donation Transportation
	Value-Added Processing
Donation Policy	Donation Liability Education
	Standardized Donation Regulation
	Donation Tax Incentives

Recycling Solutions	
Energy & Digestate	Centralized Anaerobic Digestion (AD)
	Water Resource Recovery Facility (WRRF) with AD
On-Site Business Processing Solutions	In-Vessel Composting
	Commercial Greywater
Agricultural Products	Community Composting
	Centralized Composting
	Animal Feel
	Home Composting

Criteria for Selection

Available Data

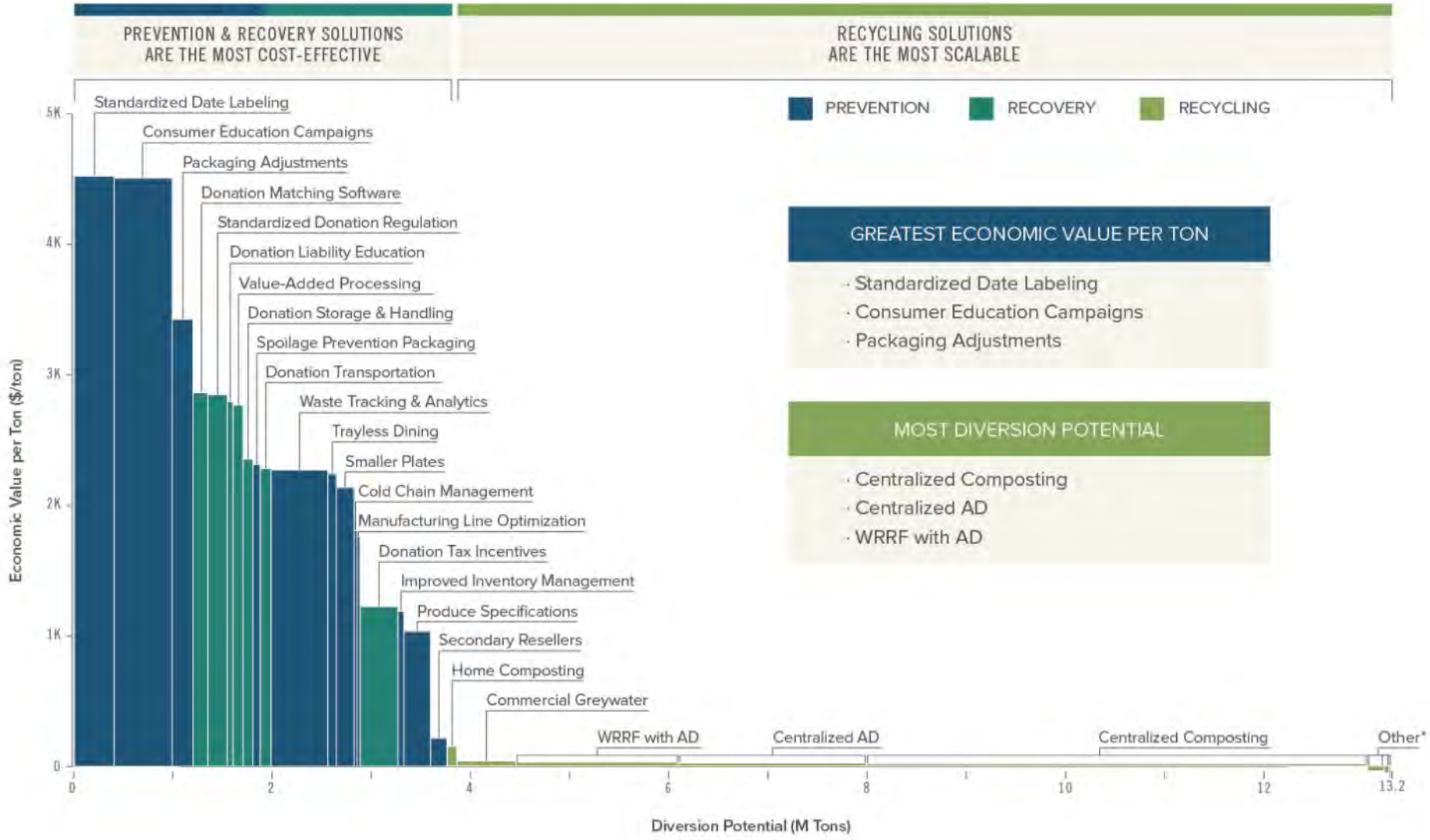
Cost effective

Feasible

Scalable

ReFED

MARGINAL FOOD WASTE ABATEMENT COST CURVE



ReFED

* Other: *Community Composting, Animal Feed, In-Vessel Composting*

Prevention

Generally low levels of investment and food valued at high wholesale/retail prices

Largest net environmental benefit by avoiding wasted resources in agriculture – twice the GHG impact per ton reduced of recycling

<u>Top 3 Most Scalable Solutions:</u>

- *Standardized Date Labeling*
- *Consumer Education Campaigns*
- *Waste Tracking & Analytics*

ReFED

Recovery

3 pillars to scale:

1) Enabling policy that financially incentivizes donations from businesses with standardized regulations

2) Education for businesses on donor liability protections and safe food handling practices

3) Logistics and infrastructure to transport, process, and distribute excess food.

<u>Top 3 Most Scalable Solutions:</u>

- *Donation Tax Incentives*
- *Standardized Donation Regulation*
- *Donation Matching Software*

ReFED

Recycling

Nearly three-quarters of total *Roadmap* diversion potential

3 main recycled products: compost, biogas, animal feed

Northeast, Northwest, and Midwest show the highest economic value per ton from recycling due to high disposal fees and high compost & energy prices

Top levers to scale recycling: (1) increase in landfill disposal costs, (2) efficiencies in hauling and collection through siting near urban centers, and (3) denser routes

<u>Top 3 Most Scalable Solutions:</u>

- *Centralized Composting (highly variable scale)*
- *Centralized Anaerobic Digestion (AD)*
- *Water Resource Recovery Facility with AD*

Levers to Drive Action Across all Stakeholders

Four crosscutting actions needed to quickly cut 20% of waste and put the U.S. on track to achieve a broader 50% food waste reduction goal by 2030.

POLICY
Commonsense tweaks leading to standardized national policy

FINANCING
New catalytic capital and quantified non-financial impacts

INNOVATION
5 focus areas and innovation incubator networks

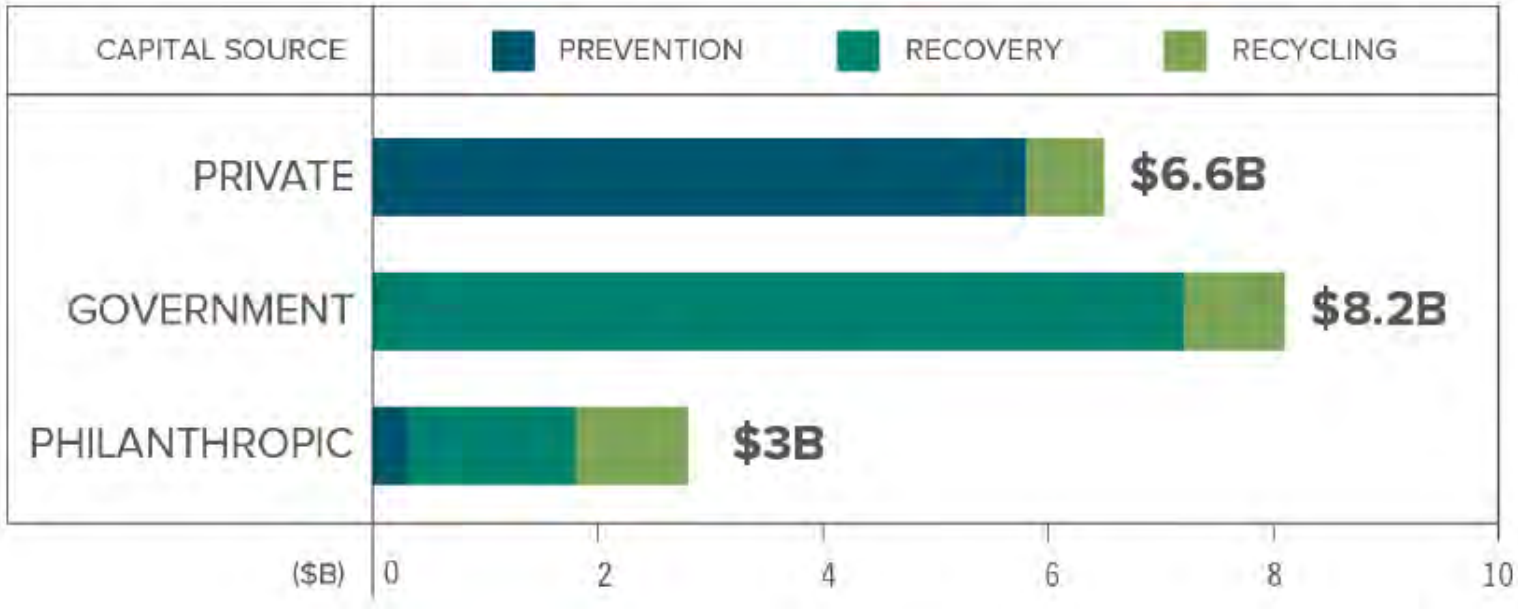
EDUCATION
National Consumer and Employee campaigns

ReFED

Financing

The Roadmap will require an $18 billion investment, less than a tenth of a penny of investment per pound of food waste reduced, which will yield an expected $100 billion in societal Economic Value over a decade.

FINANCING NEEDS FOR 20% REDUCTION IN FOOD WASTE OVER A DECADE



Big Opportunity: *Form impact investment funds focused on food waste solutions, while better incorporating social and environmental benefits into government budgeting.*

Policy

Near Term Priorities

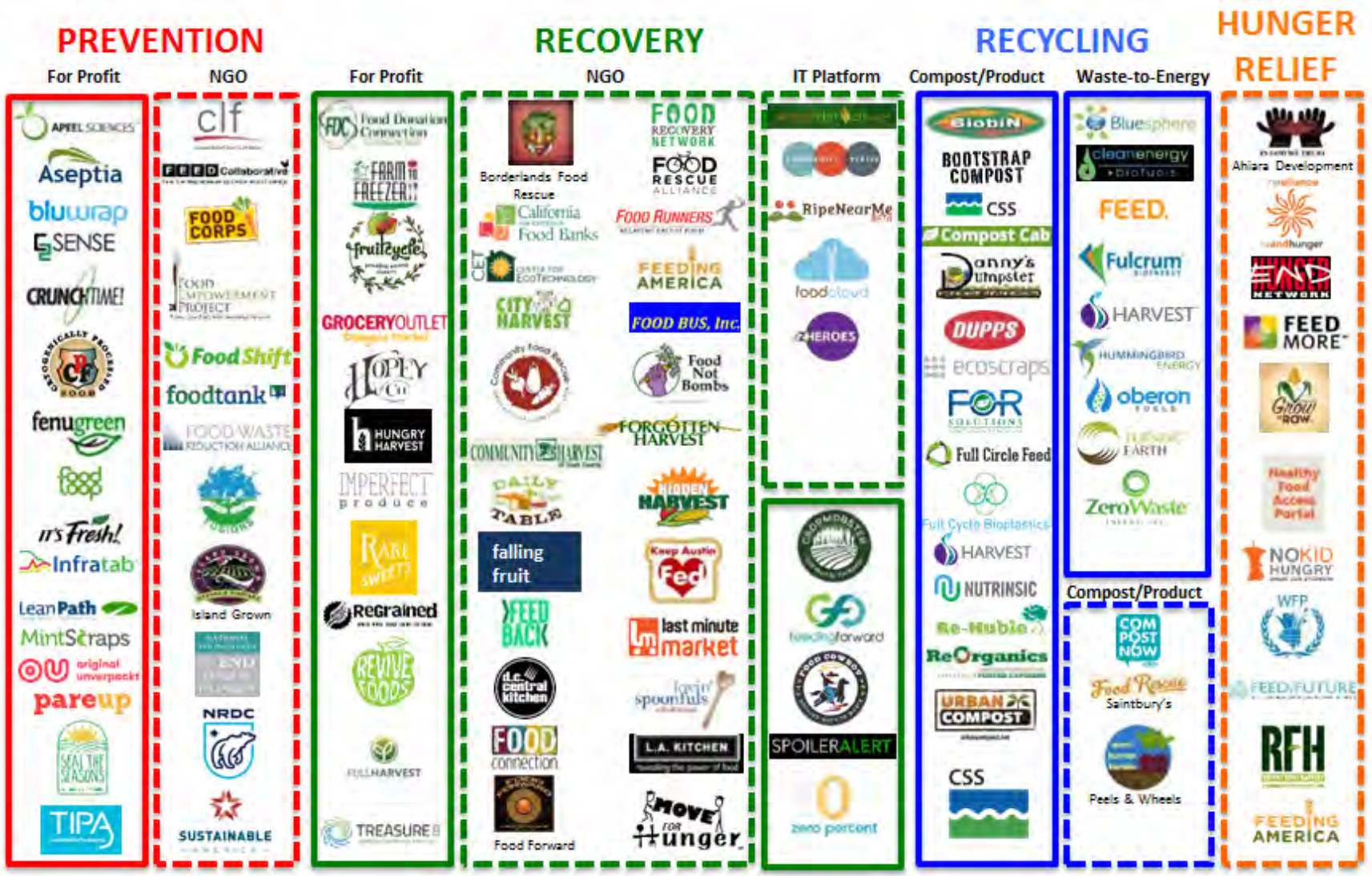
- Donation Tax Incentives — Maintain and build upon the recent expansion of permanent federal food donation tax incentives for all farms and food businesses.

- Food Donation Regulation — Create a common standard of safe handling practice regulations among state and local health departments.

- Recycling Best Practices — Spread best practices to encourage recycling, such as streamlined permitting of processing facilities, improved enforcement of waste bans, and expanded incentives to encourage diversion of food waste from landfills.

Big Opportunity: *Pass comprehensive federal food waste legislation that ties together nearly a dozen individual policies and signals a market shift to food businesses.*

Innovation



Big Opportunity: *Incubator network focused on 5 Big Ideas: Packaging & Labeling, IT-enabled Transportation & Storage, Logistics Software, Valued-add Compost Products, Distributed Recycling*

Education

Consumer Education

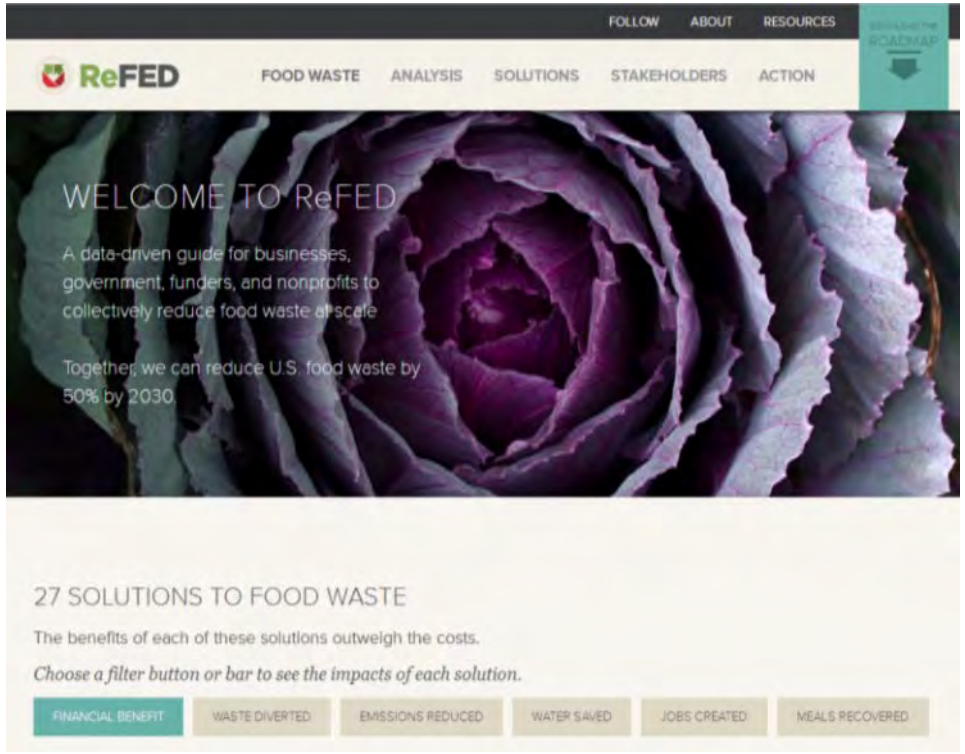
- One of the most cost effective of the 27 solutions
- Spurs consumer demand for smarter retail offerings, such as Standardized Date Labeling, Spoilage Prevention Packaging, Imperfect Produce, and Trayless Dining.
- In late April, NRDC and the Ad Council will launch the first widespread public service campaign promoting food waste awareness.

Employee Education

- Half of *Roadmap* solutions require employee involvement in day-to-day execution
- Training can avoid the removal of product from shelves when it is still safe to eat, identify food that can be donated, and properly source-separate scraps to remove contaminants for recycling.
- Quickest path to widespread employee training would be to link a new Food Waste Certification to existing Food Safety Certification programs

Big Opportunity: *Expand national social-based marketing campaign to achieve widespread consumer awareness and behavior change in coordination with a national food waste employee certification effort.*

Need More Info? Visit refed.com



Interactive Cost Curve ranks solutions by economic value, scalability, and environmental/social benefits

Download and share the Roadmap full report (96pg), Key insights (5pg), and Technical Appendix

Additional Detail on the 27 solutions and priorities for each stakeholder

Future Research Priorities

Contact Us to join a multi-stakeholder working group to take action

Contact: info@refed.com

ReFED

Florida Department of Environmental Protection

Waste Reduction/Recycling

Adam Saslow

Next steps…..





Questions

- Please use the “Questions” tab in in the attendee panel to submit a question
- Use the “Raise Hand” option to be identified for follow up

FDEP Waste Reduction Staff

- ***Karen Moore***
  - Environmental Administrator
  - Karen.S.Moore@dep.state.fl.us or 850-245-8864

- ***Shannan Reynolds***
  - Recycling: Solid Waste Management reports, Recovered Materials Dealer Certification and Reporting, Construction & Demolition Reporting Program, Public Sector Reporting Program
  - Shannan.Reynolds@dep.state.fl.us or 850-245-8716

- ***Laurie Tenace***
  - Special Wastes Management: electronics, mercury, batteries, household hazardous waste, pesticides, pharmaceuticals
  - Laurie.Tenace@dep.state.fl.us or 850-245-8759

- ***Henry Garrigo***
  - Grants Management
  - Recycling Market Development
  - Henry.Garrigo@dep.state.fl.us or 850-245-8822

Florida Department of Environmental Protection

Waste Reduction/Recycling

Organics in Florida: Part II

“Strategies and Directions"

May 25, 2016





Make Recycling Your Business (October 2016)

Florida Department of Environmental Protection

Waste Reduction/Recycling

Make Recycling Your Business

Commercial Recycling Education

October 13, 2016

Housekeeping

- All attendees are in “listen-only” mode
- Please use the “Questions” tab to submit a question
- Questions will be answered at the end of the presentation
- The presentation and other material are available in the “Handouts” tab
- This session is being recorded and will be available on the DEP website for sharing
- Please complete the survey after the webinar

Florida Department of Environmental Protection

Waste Reduction/Recycling

Kim Brunson

Recycling and Solid Waste Manager

Publix Supermarkets

Chair of Florida Recycling Partnership and

Vice-Chair of Recycle Florida Today

Agenda

50% by 2015
60% by 2017
70% by 2018
75% by 2020

- Kim Brunson
  - Publix Super Markets
- Patricia Johnson
  - Waste Management
- Emory Smith
  - Lee County
- Paul Hurst
  - City of Tallahassee
- John Zapata
  - Rooms-To-Go

Florida Department of Environmental Protection

Waste Reduction/Recycling

Patricia Johnson

Total Recycling Program Manager
South Florida
Waste Management

Waste Management

Commercial Recycling

Patricia G. Johnson
Total Recycling Program Manager
October 2016

Presentation Overview

- Understanding Waste Management
- Benefits of Commercial Single Stream
- What Single Stream Recycling is to WM
- Different Ways WM Succeeds
  - Communications
  - Best Practices
  - Solutions out of the Box
  - Waste Management Sustainability Services

WASTE MANAGEMENT

Waste Management

WASTE MANAGEMENT

Single Stream Recycling Benefits

- Single-stream recycling greatly increases participation - on average up to 50 percent more recyclable materials
- Single-stream recycling allows all recyclables to be placed into a single container for collection and processing
- No sorting into separate bins and no use of multiple bins
- Helps lower costs and emissions by reducing transportation while capturing new volume
- Employs advanced recycling technology including magnets, screens and optical scanners to automate the sorting of recyclables
- Improves local recycling programs by increasing capacity while maintaining material quality

WASTE MANAGEMENT

Challenges to Commercial Single Stream Recycling

- Changes in maintenance/janitorial staff
- Wrong containers interior & exterior
- Lack of training
- Lack of what is acceptable recyclables
- Lack of Posters/Signage
- Apathy from Management
- Enforcement

  Miami Dade Ordinance No. 91-123 (not enforced)

  Miami Beach Ordinance No. 2014 3886 (enforced)

WM
WASTE MANAGEMENT

Single Stream Recycling

At Waste Management Inc. of Florida

- Materials that we can extract value
- Materials that we can minimize contamination
- Efficiencies in truck routes
- Less cost to process
- Maximum resale value

WASTE MANAGEMENT

Communications with Customers

- Know your Customer/Correct Equipment
- Education prior to Customer Commitment to have recycling/Right type of Recycling
- Correct Contracts
- Provide Training Materials to Customers (Posters/Brochures/Videos)
- What happens when there is contamination
- Operations ability to communicate directly with customer
- Account Manager Follow Ups not just as to service but as to “their” business

Contamination in your Recycling Container

WASTE MANAGEMENT

Success in Commercial Recycling

1. University from 7.8% Diversion to 27.3%
    - Right Sized
    - Education
2. 2nd Largest Commercial Building in Miami from 0 diversion to 57%
    - Converted Compactor to Trash for 6 months
    - Educated Tenants/Janitorial
    - Internal Bins provided to all employees of tenants
3. Large Hotel 0 diversion to 12%
    - Recommended baler for Cardboard & Paper
    - Provided bins for cans & plastic bottles
    - Hotel implemented digester (86 tons/monthly to 69 tons/monthly tons/monthly
    - Education to Hotel Employees

WASTE MANAGEMENT

Solutions / Best Practices

WASTE MANAGEMENT

Waste Management Sustainability Services

Providing Sustainable Strategies for All

Who we work with:

- Commercial Properties
- Education
- Food & Retail
- Healthcare
- Maritime
- Construction
- Events & Venues
- Government
- Manufacturing
- Transportation

What we do:

- Sustainable Enterprise Strategies
- Program Design & Implementation
- Certification & Standards
- Collaboratives & Innovation
- Sustainable Performance, Analytics & Reporting
- Resource Management

WASTE MANAGEMENT

Recycle Often Recycle Right℠

http://recycleoftenrecycleright.com/

Think before you toss:

Almost anything you throw away can be recycled in some way — paper, plastic, aluminum, food waste, glass and even electronics

Get creative:

Think about new uses for cans, bottles and paper

Raise awareness:

Be a recycling ambassador

WM's YouTube channel

Reduce, Reuse and **THEN** Recycle

WASTE MANAGEMENT

recycle

The possibilities are endless.

"You must be the change you wish to see in the world.“
Mahatma Gandhi

WASTE MANAGEMENT

Florida Department of Environmental Protection

Waste Reduction/Recycling

Emory Smith

Superintendent, Public Works
Lee County Solid Waste





Lee County Mandatory Business Recycling

A BRIEF HISTORY AND PROGRAM OVERVIEW

EMORY SMITH
PUBLIC UTILITIES SUPERINTENDENT

Lee County
Solid Waste

Lee County Ordinance 07-25

- Background
- Implementation
- Current Results

A copy of the ordinance is available on our website at
http://www.leegov.com/solidwaste/about/ordinances

Lee County Solid Waste

- ❖ Franchise Haulers required to offer recycling collection along with MSW collection
- ❖ Cost was included in the MSW collection fee
- ❖ Franchise Haulers established collection rates for recycling from businesses

2000 – Multifamily Recycling Begins

Lee County Solid Waste

- Recycling collection rates set in hauling contracts at $1.25 per cy per collection

- Examples –

MSW 1-96-1 =$50.59

Recy. 1-96-1 =$ 2.57

Savings $48.02

MSW 1-8-1 =$240.96

Recy. 1-8-1 =$ 43.33

Savings $197.63

Cheaper to Recycle!

2005 – Additional Financial Incentive for Commercial Recycling

Lee County Solid Waste

- Mandatory recycling for commercial establishments and multifamily properties
- Mandatory recycling of construction and demolition debris
- Commercial Customer Database

2007 –

Recycling Ordinance 07-25 enacted

Effective January 1, 2008

Lee County Solid Waste

Implementation – First Steps (Business and Multi-family)

- Workshops (4)

- Educational Materials

- Customer Data from Franchise Haulers
- Ongoing Data Exchange

- Acquiring Private Contractor's (Hauler's) Recycling Information

- Website

Lee County Solid Waste

Commercial Customer Database

Cust #	Site #	Customer Name	Street #	Street Name	MSW	Qty	Size	Freq	REC	Qty	Size	Freq	Rec Provider	Comments
6479	1	(2) STEINMART #262	25191	S TAMIAMI TRL	FEL	1	8	3	R/O	1	40	0	ABC	SH CARDBOARD TO ORLANDO
8316	1	(PA) BONITA GRANDE INVESTMENTS	12870	TRADE WAY FOUR	FEL FEL REL	2 1 3	4 2 96	2 1 2	REL FEL	1 1	96 4	2 2	ABC ABC	
11697	1	7-ELEVEN	26975	OLD 41 RD	FEL	1	8	2	FEL	1	8	1	ABC	
11934	7	7-ELEVEN	12931	BONITA BEACH RD SE	FEL	1	6	2	FEL	1	6	1	ABC	
11934	8	7-ELEVEN	28175	S TAMIAMI TRL	FEL	1	4	2	FEL	1	4	1	ABC	
11934	9	7-ELEVEN	24530	S TAMIAMI TRL	FEL	1	4	2	FEL	1	6	1	ABC	
11934	10	7-ELEVEN	12661	BONITA BEACH RD	FEL	1	4	2	FEL	1	4	1	ABC	
11934	1	7-ELEVEN	6221	ESTERO BLVD	FEL	1	6	1	FEL	1	6	1	ABC	
11934	3	7-ELEVEN	7120	ESTERO BLVD	FEL	1	6	1	FEL	1	6	1	ABC	
11934	5	7-ELEVEN	3051	ESTERO BLVD	FEL	1	6	1	FEL	1	6	1	ABC	
11745	1	7-ELEVEN 34151	24651	S TAMIAMI TRL	FEL	1	6	2	FEL	1	8	2	ABC	
9379	1	A&S TRANSPORT	27871	INDUSTRIAL ST	FEL	1	2	1	REL	1	96	1	ABC	
9379	2	A&S TRANSPORT	27875	INDUSTRIAL ST	FEL	1	4	1					ABC	SHARES W/ SITE 1
10423	1	AAMCO OF BONITA SPRINGS	25090	BERNWOOD DR	FEL	1	4	1	REL	1	96	1	ABC	
3061	1	AAPA ,LLP	9400	BONITA BEACH RD	FEL	1	8	1	REL	4	96	1	ABC	

Lee County Solid Waste

Implementation – the Real Work

Commercial & Multi-Family

- Mailings, by area, to non-participants (first mailing May 2008)
- One-on-one meetings with local businesses
- Waste audits for businesses – often identifying savings
- Two more additional mailings to non-participants
- 50% of Businesses were doing some form of recycling already – Cardboard, paper, metal, etc.
- 85% of multi-family were recycling in 2008 when ordinance was enacted. Formal (voluntary) multi-family recycling began in 2000
- No fees administered to date

Lee County Solid Waste

Business Recycling Ordinance Requirements

- Must recycle their most generated recyclable material
- Fiber Products
- Containers
- Metals (ferrous or non-ferrous)
- Wood
- Other

- Multi-family recycling service is already provided (just under utilized)

- Owner is responsible – will require education

Lee County Solid Waste

Business Recycling Ordinance Requirements

- Road to Compliance
- Service agreement and convenient, properly sized container (outside) – business selects the hauler
- Education (probably the most important factor in sustaining programs)
- Convenient collection containers (inside)

- Advanced Disposal Fee
- 3 tiers based on generation code ($100, $250, $500)
- Assessed monthly for non-compliance
- Multi-family only subject to fines

Lee County Solid Waste

Results 2016

- 100% of multifamily properties participating
- 99.5% of commercial businesses participating
- Overall response has been positive

It took approximately one year to achieve these participation rates. These rates have remained stable since 2009.

There is still work to be done.

Lee County Solid Waste

Implementation
Construction & Demolition Recycling

- Targeted mailings to DCD database
- DCD Coordination
  - Automated front desk implementation
  - SWD is connected to permits database
  - Did not require any additional customer service duties for DCD
- Website – source separated and comingled facility lists

Lee County Solid Waste

Implementation
Construction & Demolition Recycling

Presentations and numerous workshops with Building Industry Association members and contractors.

- Asked for their input
- Some resistance
- Requests to make it simple to comply

Followed by a meeting with the Board of County Commissioners

- Commissioners indicated they would increase diversion fees if permittees were not complying at the end of one year.

Lee County Solid Waste

Implementation
Construction & Demolition Recycling

Finalize internal issues

- Coordination with Permit Department
- Financial
- Educational Materials

Lee County Solid Waste

Construction & Demolition Provisions

- C & D Materials Diversion Fee
  - Type of Permit (RES, COM, ROF)
  - Construction, Demolition or Alteration
  - Some types excluded due to limited waste generation
- Must provide proof that 50% of materials generated were recycled
- Exemptions provided
  - Lack of markets/recyclers
- Refund period – 60 days from permit closure or expiration

Lee County Solid Waste

C & D Recycling Must be Enforceable and Supported by Local Elected Officials

Covered Projects	Diversion Fees
Roofing	$ 100
Residence	$ 300
Commercial <10,000 sf	$ 500
Commercial >10,000 sf <100,000 sf	$1,000
Commercial > 100,000 sf	$5,000
Residential Alteration	$ 100
Commercial Alteration	$ 300
Demolition value </= $10,000	$ 300
Demolition value >/= $10,000	$ 750

Lee County Solid Waste

C & D Recycling Necessary to Achieving a 50% Traditional Recycling Rate

- Certified Construction & Demolition Processing Facilities

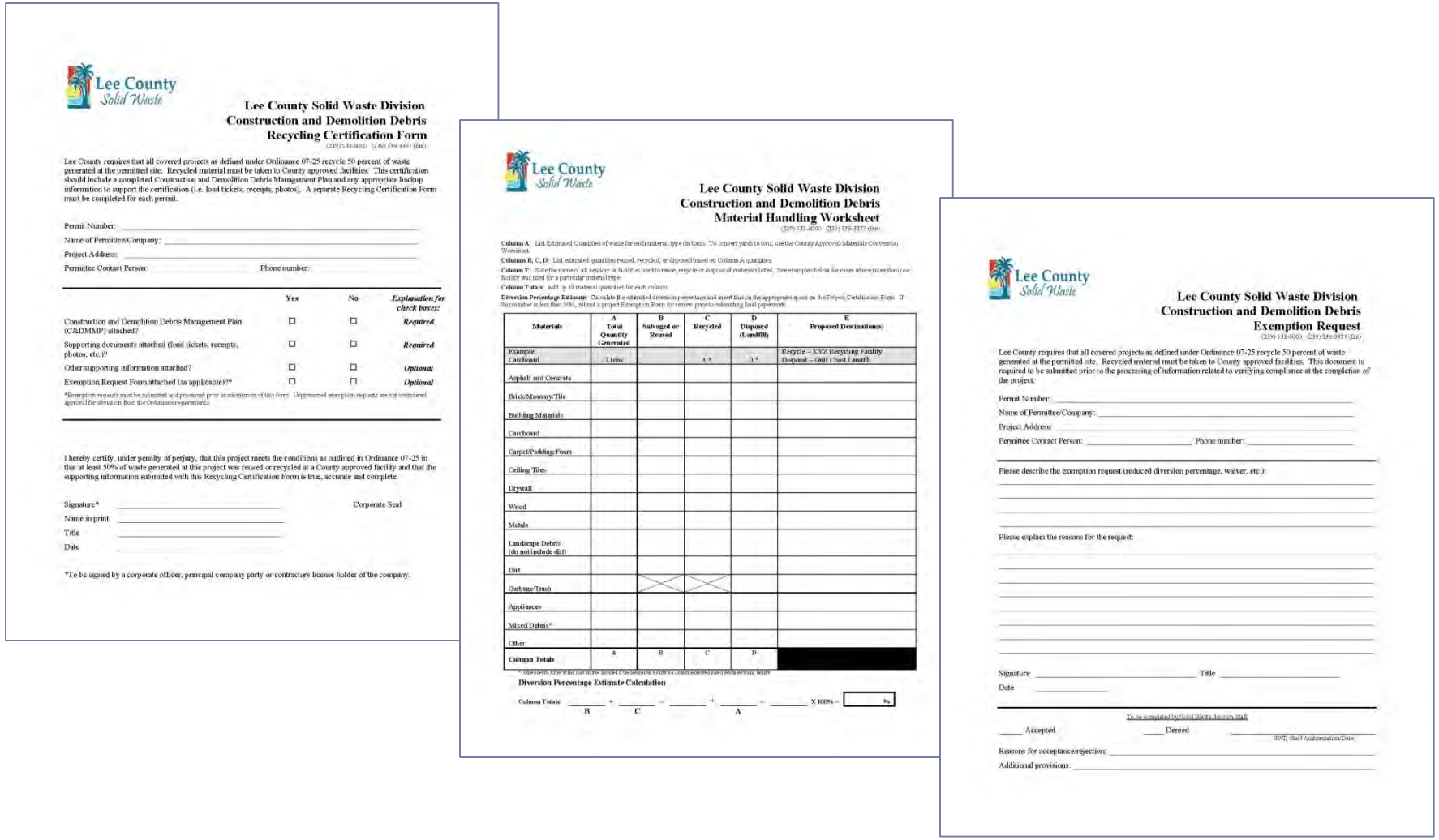
  - Four Certified Facilities in Lee County for Unsorted Material
    - Submit monthly reports demonstrating a minimum of 50% diversion
  - Multiple Facilities for Source-Separated Material
    - Examples - Concrete, metal, wood

Lee County Solid Waste

Documenting C & D Recycling

- Permittee must submit documentation of compliance that includes
  A. Recycling Certification Form
  B. Material Handling Worksheet
  C. Weight Tickets (copies) from Receiving Facility
  D. Failure to Provide Information or Meet the 50% Diversion Rate will Trigger Payment of Diversion Fee Prior to Scheduling Final Inspection.

Lee County Solid Waste



Lee County Solid Waste Division
Construction and Demolition Debris
Recycling Certification Form

Lee County requires that all covered projects as defined under Ordinance 07-25 recycle 50 percent of waste generated at the permitted site. Recycled material must be taken to County approved facilities. This certification should include a completed Construction and Demolition Debris Management Plan and any appropriate backup information to support the certification (i.e. load tickets, receipts, photos). A separate Recycling Certification Form must be completed for each permit.

Permit Number: _____
Name of Permittee/Company: _____
Project Address: _____
Permittee Contact Person: _____ Phone number: _____

	Yes	No	*Explanation for check boxes:*
Construction and Demolition Debris Management Plan (C&DMMP) attached?	☐	☐	***Required***
Supporting documents attached (load tickets, receipts, photos, etc.)?	☐	☐	***Required***
Other supporting information attached?	☐	☐	***Optional***
Exemption Request Form attached (as applicable)?*	☐	☐	***Optional***

*Exemption requests must be submitted and processed prior to submission of this form. Unprocessed exemption requests are not considered approval for deviation from the Ordinance requirements.

I hereby certify, under penalty of perjury, that this project meets the conditions as outlined in Ordinance 07-25 in that at least 50% of waste generated at this project was reused or recycled at a County approved facility and that the supporting information submitted with this Recycling Certification Form is true, accurate and complete.

Signature* _____ Corporate Seal
Name in print _____
Title _____
Date _____

*To be signed by a corporate officer, principal company party or contractors license holder of the company.

Lee County Solid Waste Division
Construction and Demolition Debris
Material Handling Worksheet

Column A: List Estimated Quantities of waste for each material type (in tons). To convert yards to tons, use the County Approved Materials Conversion Worksheet.
Columns B, C, D: List estimated quantities reused, recycled, or disposed based on Column A quantities.
Column E: State the name of all vendors or facilities used to reuse, recycle or dispose of materials listed. See examples below for cases where more than one facility was used for a particular material type.
Column Totals: Add up all material quantities for each column.
Diversion Percentage Estimate: Calculate the estimated diversion percentage and insert that in the appropriate space on the Project Certification Form. If this number is less than 50%, submit a project Exemption Form for review prior to submitting final paperwork.

Materials	A Total Quantity Generated	B Salvaged or Reused	C Recycled	D Disposed (Landfill)	E Proposed Destination(s)
Example: Cardboard	2 tons		1.5	0.5	Recycle – XYZ Recycling Facility Disposal – Gulf Coast Landfill
Asphalt and Concrete					
Brick/Masonry/Tile					
Building Materials					
Cardboard					
Carpet/Padding/Foam					
Ceiling Tiles					
Drywall					
Wood					
Metals					
Landscape Debris (do not include dirt)					
Dirt					
Garbage/Trash					
Appliances					
Mixed Debris*					
Other					
Column Totals	A	B	C	D	

* Mandatory for recycling materials included if the destination facility is a County approved mixed debris recycling facility

Diversion Percentage Estimate Calculation

Column Totals ____ (B) + ____ (C) = ____ ÷ ____ (A) = ____ X 100% = ____ %

Lee County Solid Waste Division
Construction and Demolition Debris
Exemption Request

Lee County requires that all covered projects as defined under Ordinance 07-25 recycle 50 percent of waste generated at the permitted site. Recycled material must be taken to County approved facilities. This document is required to be submitted prior to the processing of information related to verifying compliance at the completion of the project.

Permit Number: _____
Name of Permittee/Company: _____
Project Address: _____
Permittee Contact Person: _____ Phone number: _____

Please describe the exemption request (reduced diversion percentage, waiver, etc.):

Please explain the reasons for the request:

Signature _____ Title _____
Date _____

To be completed by Solid Waste division Staff

____ Accepted ____ Denied _____
SWD Staff Authorization/Date

Reasons for acceptance/rejection: _____
Additional provisions: _____

All forms are available on our website at
http://www.leegov.com/solidwaste/business/recycling/constructiondebris

C & D Instructions for Completing Forms

Per our conversation, please see attached the two forms that we discussed. Please complete, sign and return the forms to me along with a copy of any debris weight tickets. You may return the forms to me via fax, my fax number is at the top right of both forms, or by scanning and emailing the forms to me.

The Recycling Certification Form is fairly self explanatory. Fill in your permit number, site address, contact name and phone number on the top of the form. For the check boxes in the middle, check the first two "yes" and the second two "no". At the bottom of the page, sign and print your name, state your title and date the form. At the bottom right, there is a space for a corporate seal – don't worry about the seal unless you happen to have one.

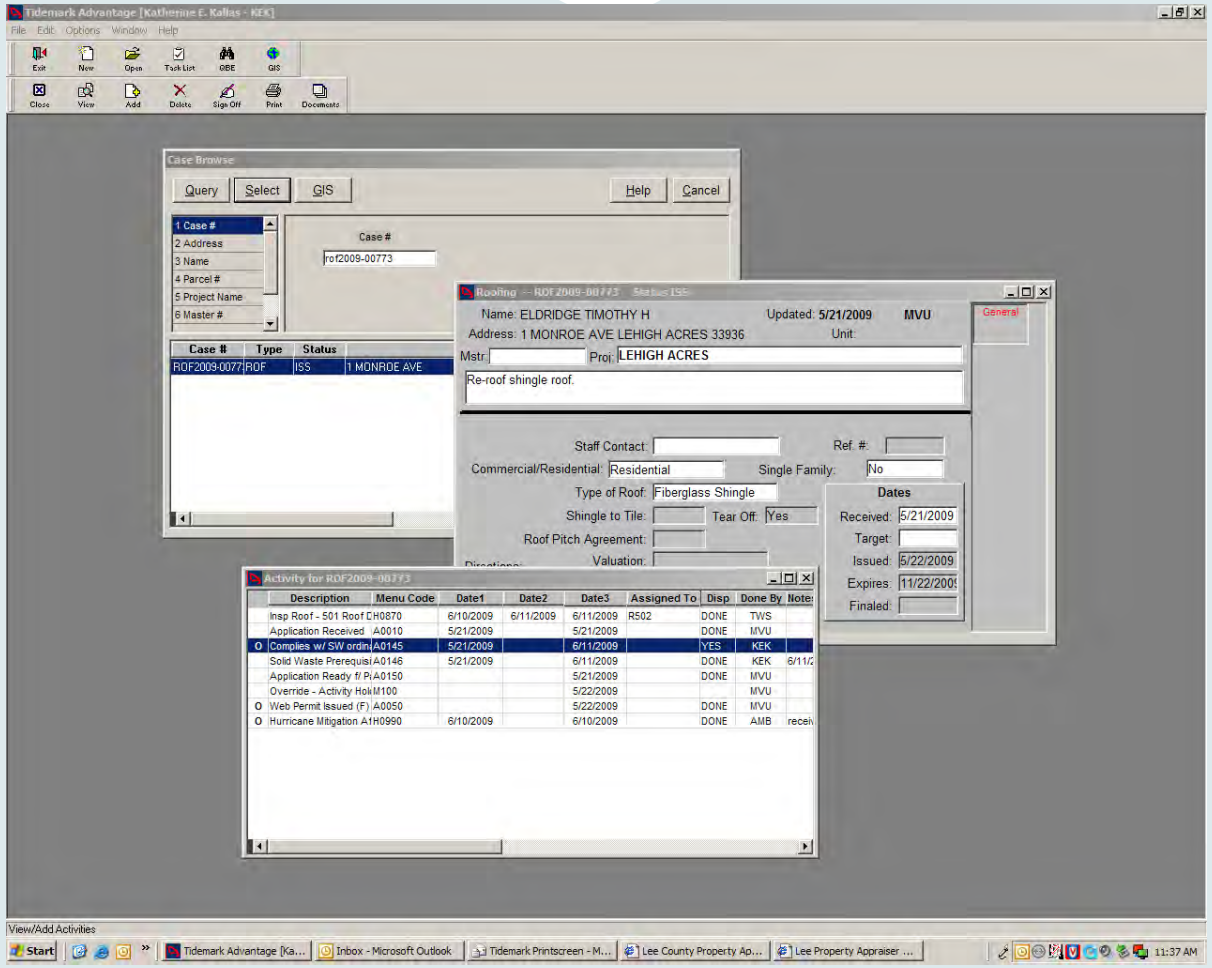
For the Material Handling Worksheet – total the tonnages on your debris tickets and write the total in column "A" next to *Mixed Debris (the last section in the column of materials). Next, divide your total in half (each of the approved facilities demonstrate to us via monthly reporting that at least 50% of all debris disposed of there, by weight, is recycled) and write whatever half of your total tonnage is in column "C" (Recycled) and the other half in column "D" (Disposed). In column "E" fill in the name of the facility. At the bottom, to the far right of the diversion calculation, write "50%" in the box. That's it – you're all done.

Please let me know if you have any questions or need further assistance filling out your forms. As soon as I have your completed documentation, I'll review them and sign off for you so that you can schedule your inspection.

Thanks and have a great afternoon.

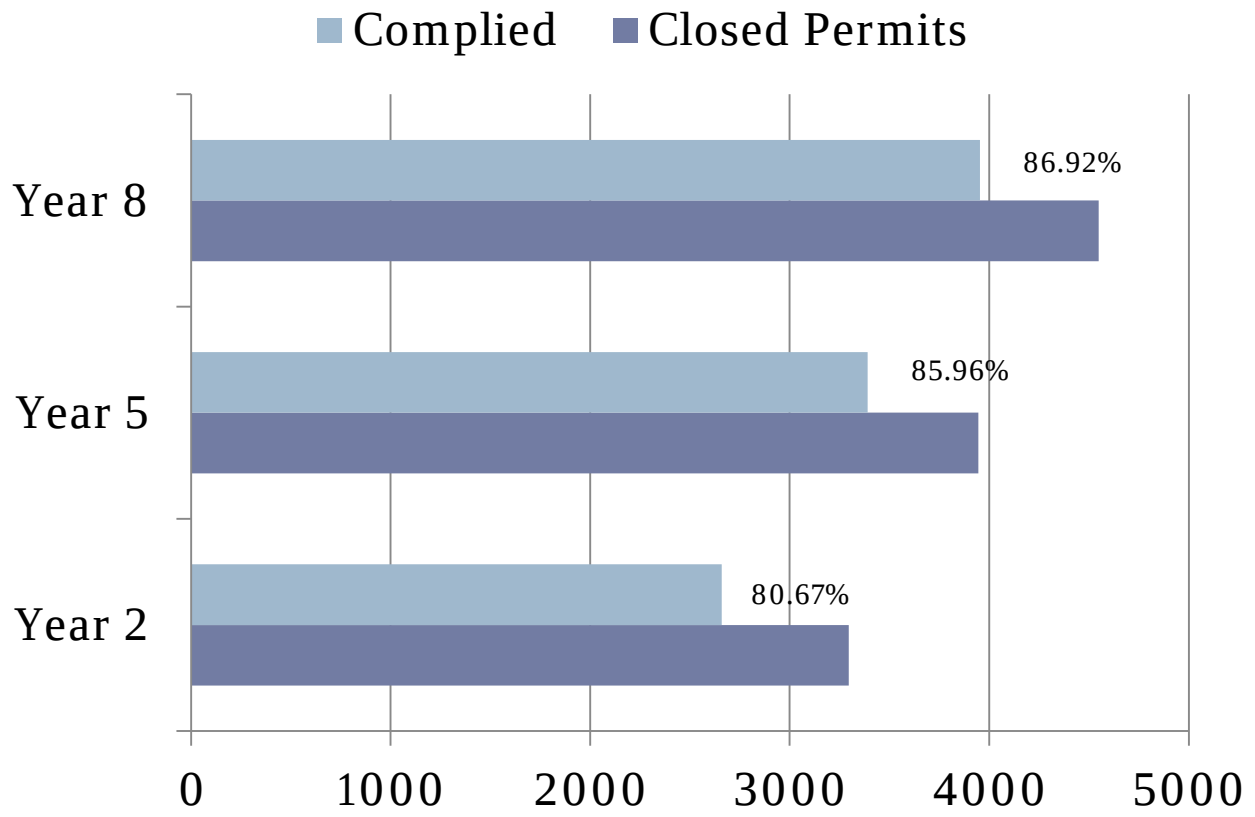
Lee County Solid Waste

Recording Proper Diversion



Lee County Solid Waste

Permittee Compliance



Lee County Solid Waste

C & D Implementation Issues

- Miscommunication
  - Individual pulling the permit often had nothing to do with the project
- Comingled Facility Availability
  - Only one facility at start up
  - Four today including LCSW
- Tracking Information (weight tickets)
- Fear of Forms

Lee County Solid Waste

Keys to Success

- Staff commitment, dedication, hours, etc.
- Franchise Hauler cooperation
- Construction slowdown
- Permits department contributions
- Commercial sector willingness

Lee County Solid Waste

Looking Forward

- Economic Recovery
  - New businesses
  - Increased construction and permits
- Integration of field staff with commercial recycling duties
- Ongoing education
- Refine compliance for businesses

Lee County Solid Waste

Florida Department of Environmental Protection

Waste Reduction/Recycling

Paul Hurst

Community Beautification and Waste Management
City of Tallahassee

City of Tallahassee

Your Own Utilities℠

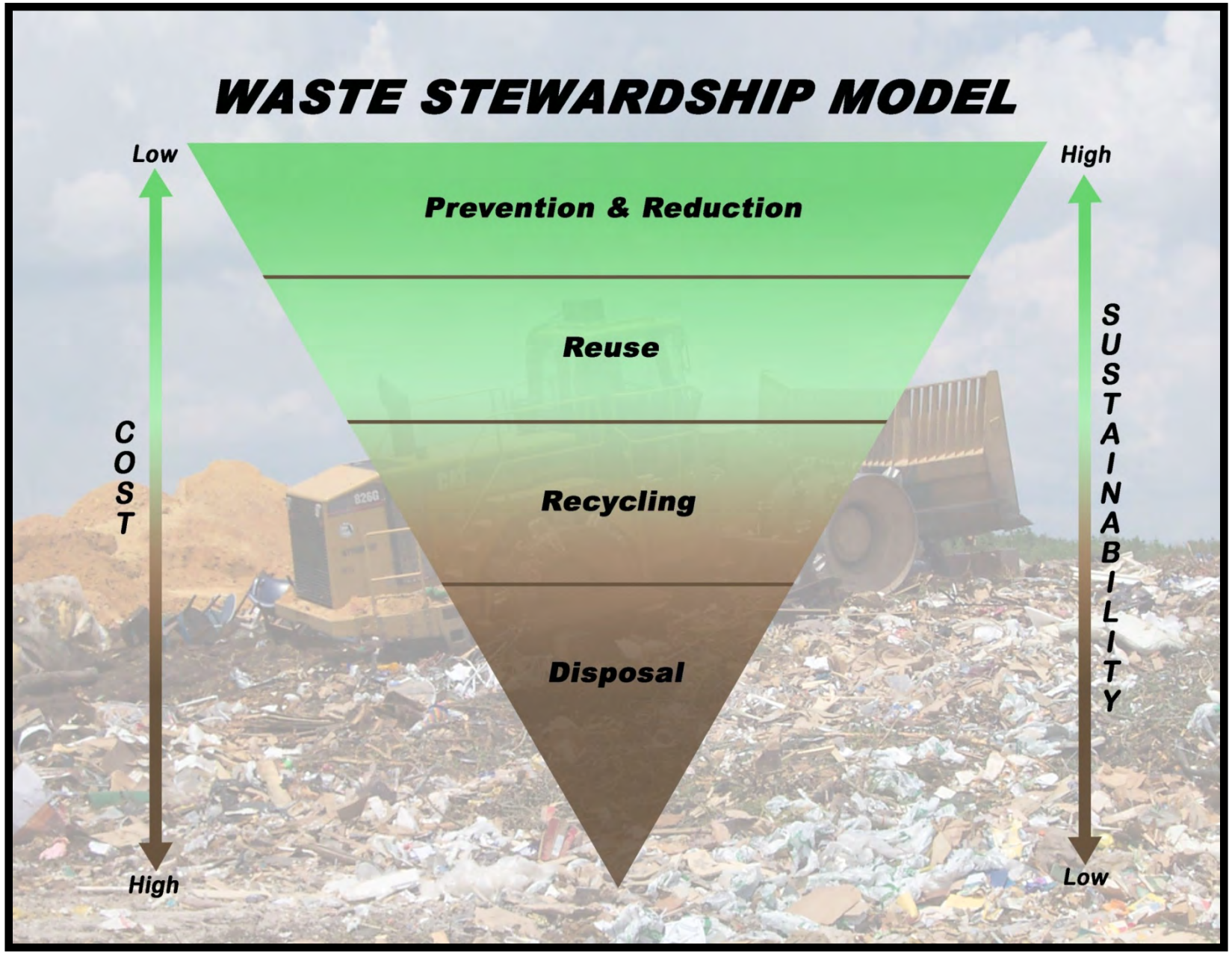
Paul Hurst
Recycle Coordinator

Commercial Recycling?
I'm glad you asked me…

- Why do we do it?
- Who do we do it with?
- Where do we do it?
- How do we do it?
- Where does it go ?
- What else do we do?

City of Tallahassee
Your Own Utilities℠

Why we do it


WASTE STEWARDSHIP MODEL
Low
High
Prevention & Reduction
Reuse
Recycling
Disposal
COST
High
SUSTAINABILITY
High
Low

Who we do it with

MARPAN RECYCLING

LEON COUNTY SCHOOLS

Sustainable

DEPARTMENT OF MANAGEMENT SERVICES

Sustainable Tallahassee

goodwill

Industries - Big Bend, Inc.

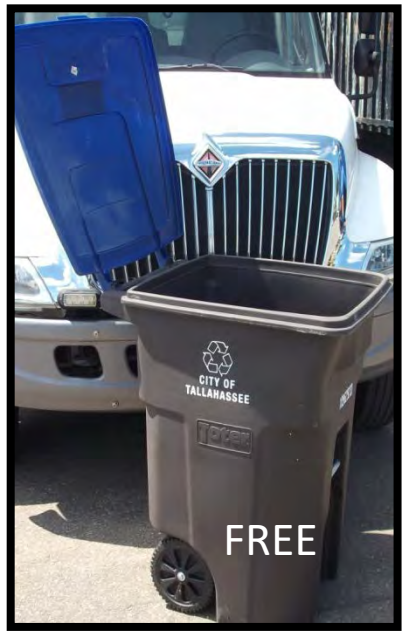
The Sharing Tree

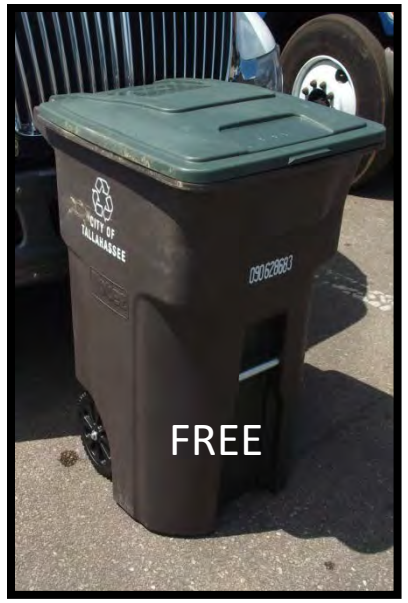
Leon County Recycling

Growing Green

Where do we do it

How we do it





FREE

City of Tallahassee
Your Own Utilities℠

MARPAN RECYCLING

MARPAN RECYCLING

Fibers

Containers

Bulk Waste

Solid Waste

E-scrap

Recycling

Reuse

The Sharing Tree

goodwill

Industries - Big Bend, Inc.

LEON

Yard Trash

Earth Day outreach at the State Capitol Building


Community Garden Projects
City of Tallahassee
Your Own Utilities℠

City of Tallahassee
Your Own Utilities℠

Twice Annual “Cash for Trash” Community Bulky Items and Recycle Collection events

Single Stream Commercial Recycling

Class III Commercial Recycling

Florida Department of Environmental Protection

Waste Reduction/Recycling

John Zapata

SVP/Distribution
Rooms To Go

Commercial Recycling

An environmental responsibility that we all share.

And Very Smart Step to Reduce or Eliminate your waste handling expense.

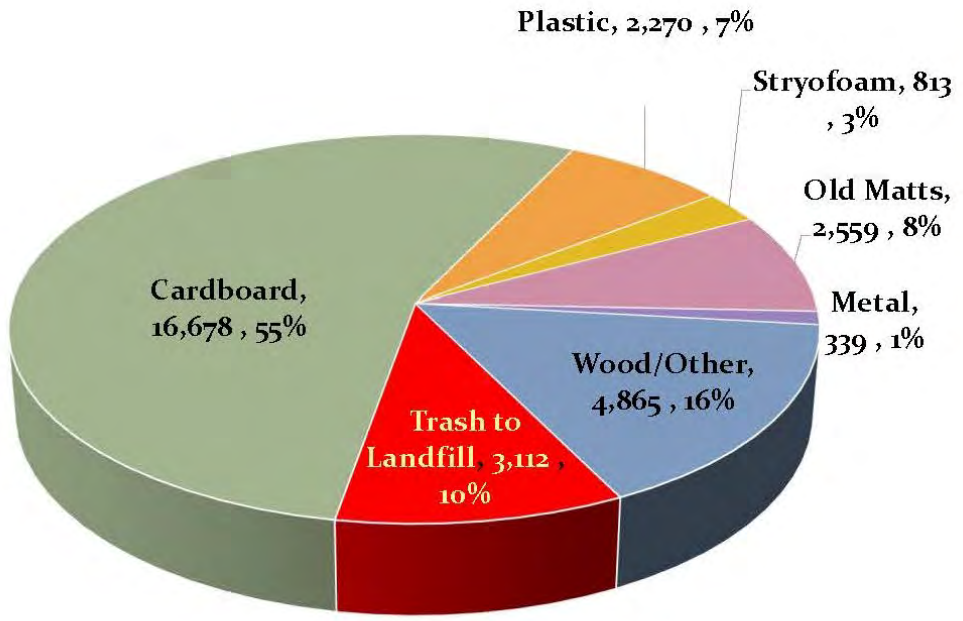
Asset Type	Amount
Cardboard	$ 1,937,528
Plastic	$ 615,217
Stryofoam	$ 541,738
Old Matts	$ 97,200
Metal	$ 50,861
Wood/Other	$ -

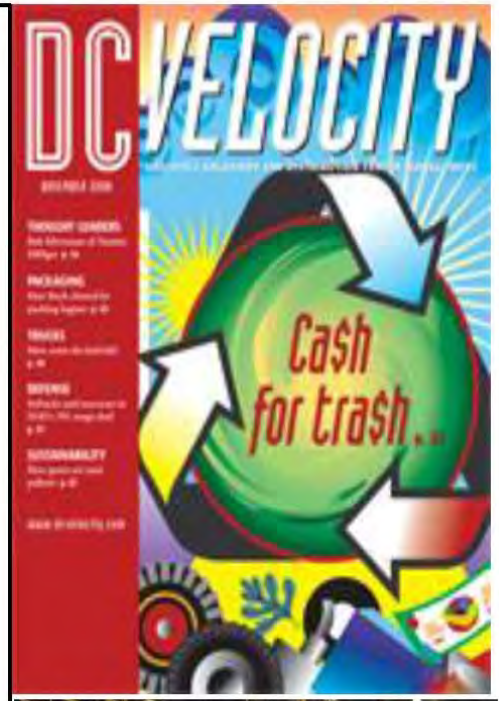
Asset Type	Amount
Cardboard	16,678
Plastic	2,270
Stryofoam	813
Old Matts	2,559
Metal	339
Wood/Other	4,865
Trash to Land	3,112

ROOMS TO GO

Waste Stream Tonnage

30,636 tons - 2015





A Perspective on our total Recycle picture

Over the last 20 years, RTG has saved 225,000 tons of solid waste from ever hitting a landfill. That much waste is the equivalent of 5,000 boxcars full of trash stretching out over a 50 mile long train.

That "trash train" would stretch from **Lakeland to Orlando**. Thousands of trees, thousands of gal's of oil, and tens of thousands of cubic yards of landfill have been saved in the environment.

RTG History of recycling
It takes on a life of its own!

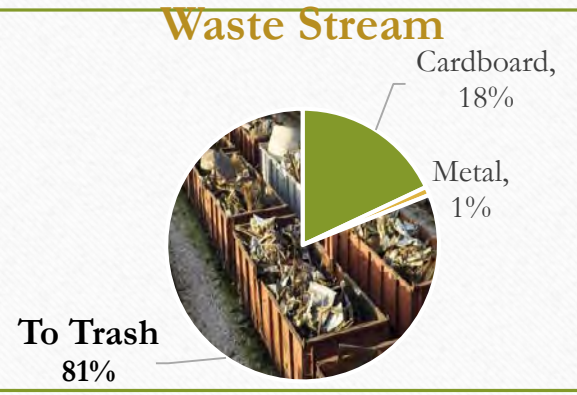
How it started v Today

In 1992 we began to sort out the cardboard for recycling to save a few bucks on our dumpster fees.

In addition is was nice to see a dozen dumpsters each week - **not** going to the landfills.

Our waste stream picture looked much different in 1992 than it does today.

1992



2014

What made the RTG program happen?

- We knew that getting rid of our waste stream was an expense. We would always have to pay people to handle the waste, and that would not change as long as we were in business.
- The thought then was – is there a way to recover any of the expense to handle our waste stream, since the process was unavoidable in business. In addition, we wanted to find a way to divert some of our large waste stream from the landfills.
- There was a way, it was to Recycle! Over the years we not only recovered our costs to handle our waste, we actually profit from it, while having a very positive impact on the environment.
- All commercial companies have to handle waste, and recycling is a proven way to reduce or eliminate the expense, while upholding an important responsibility in the community.

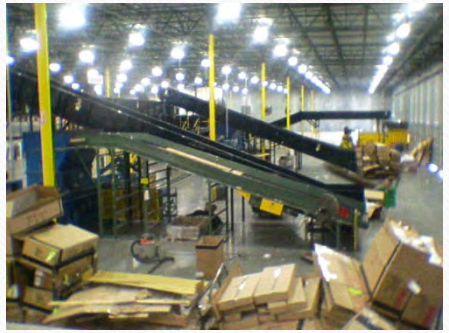
Cardboard, Plastic, Styrofoam, Wood, Metal, Fabrics

As a result of our cardboard success, we began to think about how much overall trash we could eliminate from landfills.

Our mind-set changed from trying to save a few bucks on dumpster fees – to what we could actually accomplish to make a difference both in our processes and in the environment.

Not every one of our efforts is profitable, but they all do significantly reduce the amount of trash we have to send to landfills.

As we grew our recycle items, we found that process changes made sense and that those process changes usually led to better systems and higher productivity. Many of our operations processes became more organized as a better inter-connected unit.



Honestly, we had no idea…

If you look at where we started, *to save a few bucks on dumpster expense*, and consider the journey so far..

- Recycling – Stores, DC's, Cust/delv's
- Fleet metrics to reduce fuel
- Design/Build & retro leaner buildings
- Energy reduction within stores & DC's

One of the best things we ever did, as a company, was to begin our recycling program.

Used to go to Landfill

Now is recycled

In 2013 the Florida DEP recognized RTG for its outstanding performance in recycling.

RTG has many ongoing sustainable efforts, of which recycling plays a major role. Our associates are proud to be a part of the effort that keeps tons of waste out of landfills.

Cardboard, Styrofoam, Plastic, Wood and Metal are the products we recycle from our waste stream. Our recyclables are generated from our Distribution Centers, home deliveries, and our Stores.

We are especially proud of our Styrofoam and plastic recovery as these items take almost a thousand years to break down in a landfill as well as causing major health issues for many birds and fish.

Recycle – It's always a good idea!

Like all new things, there is always a fear of the unknown or taking a new risk. However, research bears out that approaching a recycle attempt has proven to be successful in most cases.

In the ***RILA 2013 Sustainability Report,*** the evidence shows that retailers have achieved significant business benefits from their sustainability efforts.

There will be unknown, unknown's…

"Our research shows that sustainability is a mother lode of organizational and technological innovations that yield both bottom-line and top-line results"

Source: Harvard Business Review – Sept 2009

We found this statement to be very accurate. The process changes we have made over time, due to our recycling efforts, have both streamlined our operations and lowered waste handling expense.

Successful Programs have common ingredients:

1. *A genuine desire* to be ***environmentally responsible*** as a company.
2. *Executive engagement.* Top executives must support this effort and be willing to invest real dollars.
3. *Investment in people and systems.* The company must be willing to invest in an effective leader of people and infrastructure - to insure a success.
4. *Measurement and Tracking.* "What gets measured well, get's managed well". Set metrics, establish baselines, and follow-up.

Unknowns – Negatives – Positives

Employee pride – Awards – Productivity – Process reviews

The one take-away from this presentation should be:
Adapting and implementing a recycle program is just the start of a new, positive, ongoing change for a company.

Many positive things will surface that you could just not foresee in your initial planning, and those items will help your company in many different ways.

We are proud to support

RECYCLE FLORIDA TODAY

ROOMS TO GO

Questions

- Please use the “Questions” tab in in the attendee panel to submit a question
- Use the “Raise Hand” option to be identified for follow up

Webinar Presenters

- ***Patricia Johnson***
  - Waste Management
  - pjohns10@wm.com
- ***Emory Smith***
  - Lee County
  - esmith2@leegov.com
- ***Paul Hurst***
  - City of Tallahassee
  - Paul.hurst@talgov.com
- ***John Zapata***
  - Rooms To Go
  - jzapata@roomstogo.com

FDEP Waste Reduction Staff

- ***Karen Moore***
  - Environmental Administrator
  - Karen.S.Moore@dep.state.fl.us or 850-245-8864

- ***Shannan Reynolds***
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  - Shannan.Reynolds@dep.state.fl.us or 850-245-8716

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  - Grants Management
  - Recycling Market Development
  - Henry.Garrigo@dep.state.fl.us or 850-245-8822

- ***Chris Perry***
  - State Agency Recycling Coordinator
  - Christopher.perry@dep.state.fl.us or 850-245-8759

Thank You !

FLORIDA RECYCLING PARTNERSHIP

RECYCLE FLORIDATODAY
FOR A SUSTAINABLE TOMORROW

Florida Department of Environmental Protection

Waste Reduction/Recycling

Make Recycling Your Business

Commercial Recycling Education

October 11, 2016

It Begins with the Bin (September 2016)

Florida Department of Environmental Protection

Waste Reduction/Recycling

It Begins with the Bin

Residential Recycling Education

September 15, 2016





Housekeeping

- All attendees are in “listen-only” mode
- Please use the “Questions” tab to submit a question
- Questions will be answered at the end of the presentation
- The presentation and other material are available in the “Handouts” tab
- This session is being recorded and will be available on the DEP website for sharing
- Please complete the survey after the webinar

Florida Department of Environmental Protection

Waste Reduction/Recycling

Kim Brunson

Recycling and Solid Waste Manager

Publix Supermarkets

Chair of Florida Recycling Partnership and

Vice-Chair of Recycle Florida Today

Agenda

50% by 2015
60% by 2017
70% by 2018
75% by 2020

- Kim Brunson
  - Publix Super Markets
- Mitch Hedlund
  - Recycle Across America
- Elizabeth Bartlett
  - Keep Florida Beautiful
- Amy Boyson
  - Waste Management
- Allison Macdonald
  - St. Lucie County

Florida Department of Environmental Protection

Waste Reduction/Recycling

Mitch Hedlund

Executive Director
Recycle Across America





IT BEGINS AT THE BIN

Outreach Strategies to Promote Residential Recycling

recycle across americc

Actor and spokesperson for Recycle Across America:
Johnny Galecki

Residential recycling is ...

recycle across america

hindered by society-wide recycling issues.

Actor and spokesperson for Recycle Across America: Johnny Galecki

recycle across america

In order for recycling to be economically viable and able to compete with virgin commodity pricing fluctuations ...
you, me and 320 million other people in the U.S. need to do it <u>properly</u>,
at home *and wherever we go.*

Actress, model and spokesperson for Recycle Across America: Angie Harmon

Imagine stops signs looking different everywhere we go, whether near our home, at our children's school, at our workplace, or when we travel to other places.

Unfortunately recycling bins and labels are completely different looking everywhere people go, even if the sorting instructions are the same.

recycle across america

Actress and spokesperson for Recycle Across America: Kristen Bell

Due to the lack of consistency with design, colors and messaging with labels on bins, whether at home, at work, at school or throughout society, people are confused, apathetic and even becoming skeptical aboutrecycling.

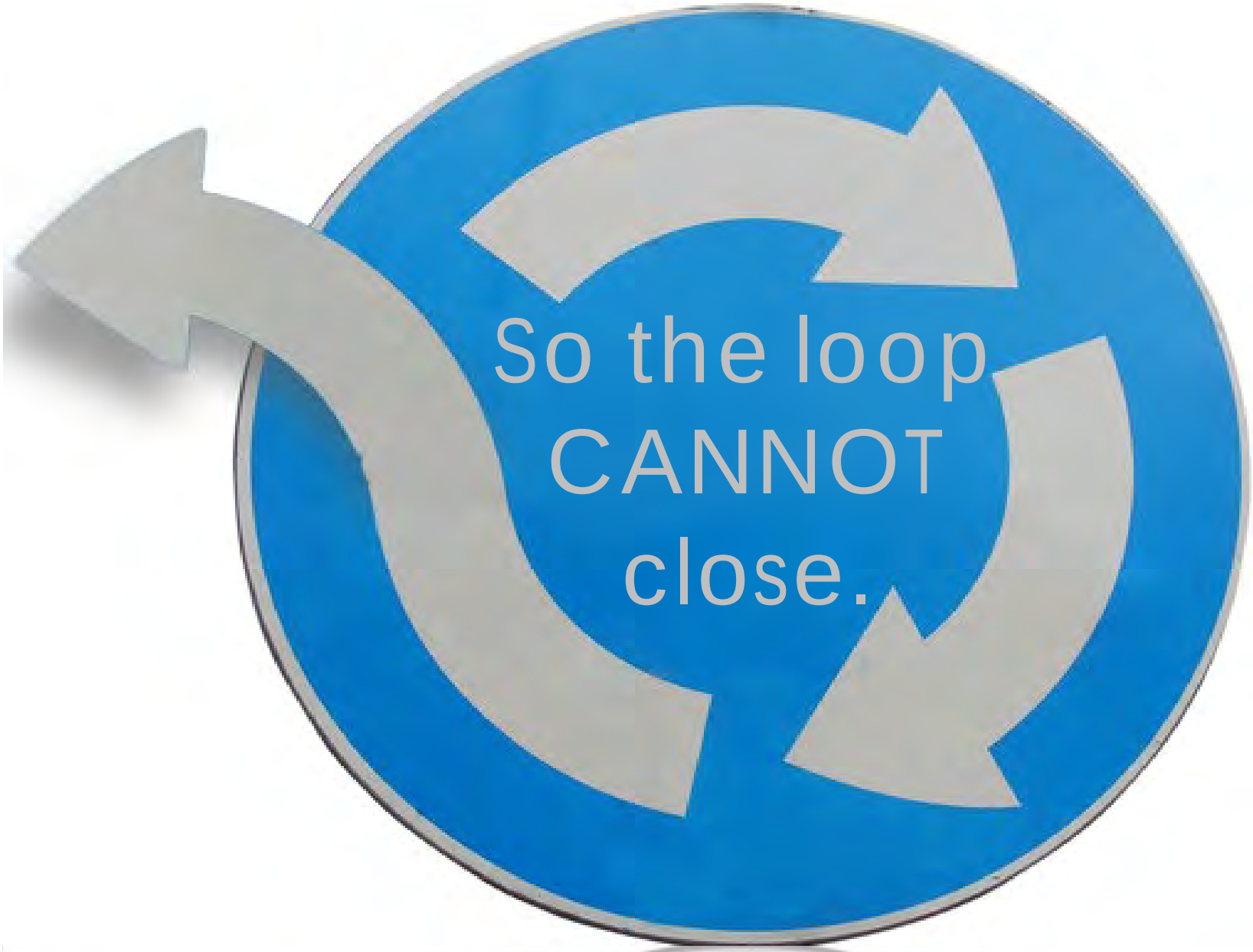
recycle across america

And the subsequent high levels of costly contamination in recycling bins is crippling the economics and viability of recycling.

Actor and spokesperson for Recycle Across America: Jeremy Piven

Which is putting CPG companies between a rock and a hard place.

Many manufacturers and CPG companies are experiencing **billions** of dollars of shareholder pressure to begin using more recycled content. But because they don't have access to quality recycled commodities at competitive prices (due to the contamination), they begin to change their packaging material, which causes more issues with consumer confusion and recycling. And so the cycle becomes more complicated.



recycle across america

recycle across america®

standardized labels for recycling bins ... simple solution - profound impact

Outreach Strategies to Promote Residential Recycling

Therefore we created a simple nonprofit solution to fix the systemic issues which come from public confusion.

Society-wide standardized labels make it easy for people to *recycle more and recycle right*, wherever they are.
It's that simple

Musician Alanis Morrissette
(spokesperson for Recycle Across America)

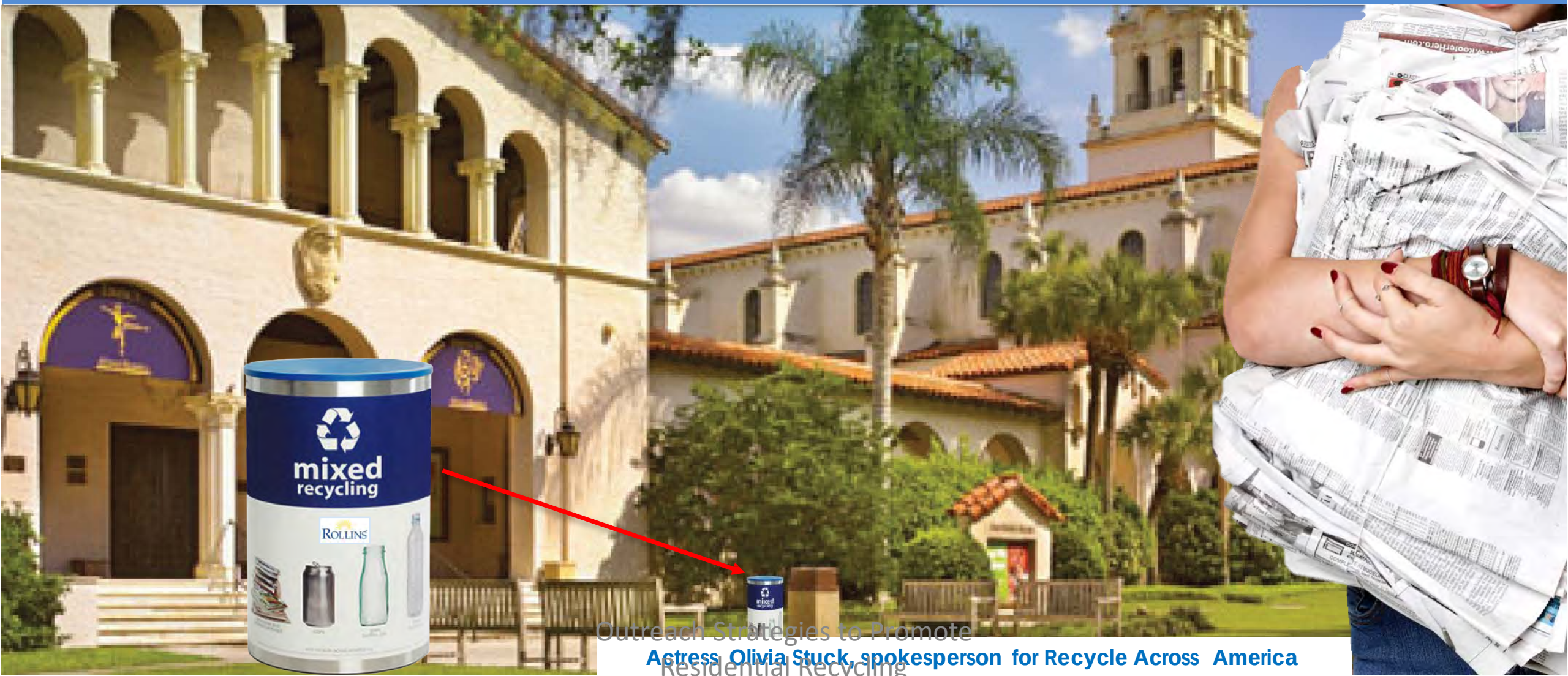
Contact: Mitch Hedlund mitch@recycleacrossamerica.org

Society-wide standardized labels on rollaway carts for houses and multi-family housing help people *recycle more and recycle right* at home.

Contact: Mitch Hedlund mitch@recycleacrossamerica.org

recycle across america

Society-wide standardized labels on recycling bins at colleges and universities help students *recycle more and recycle right* at school.



Actress Olivia Stuck, spokesperson for Recycle Across America

Society-wide standardized labels on recycling bins at K-12 schools help students *recycle more and recycle right* at school.

recycle across america

Society-wide standardized labels on recycling bins at airports help travelers and visitors *recycle more and recycle right.*

Society-wide standardized labels on recycling bins at grocery stores, banks, parks, retailers and throughout society help consumers and people *recycle more and recycle right.*

Society-wide standardized labels at the workplace, helps employees *recycle more and recycle right.*

All 80,000 Walt Disney World employees only see the standardized labels on recycling bins at work.

Imagine what happens when they go home and they see the same standardized labeling system on their rollaway cart at home.

recycle across america

Society-wide standardized labels on recycling bins at the beach and throughout the county help visitors, students and residents *recycle more and recycle right.*

Society-wide standardized labels on recycling bins at national parks and other destinations help people *recycle more and recycle right.*

There is a standardized label designed for nearly every sorting need in the U.S.

When necessary, the standardized labels can beslightly modified to accommodate various materials, while not compromising the integrity of the standardized label elements or the efficacy of the solution.

There are standardized labelsfor all types of lids/bins.

The standardized labels work!

THE STANDARDIZED LABELS ARE DRAMATICALLY INCREASING RECYCLING LEVELS

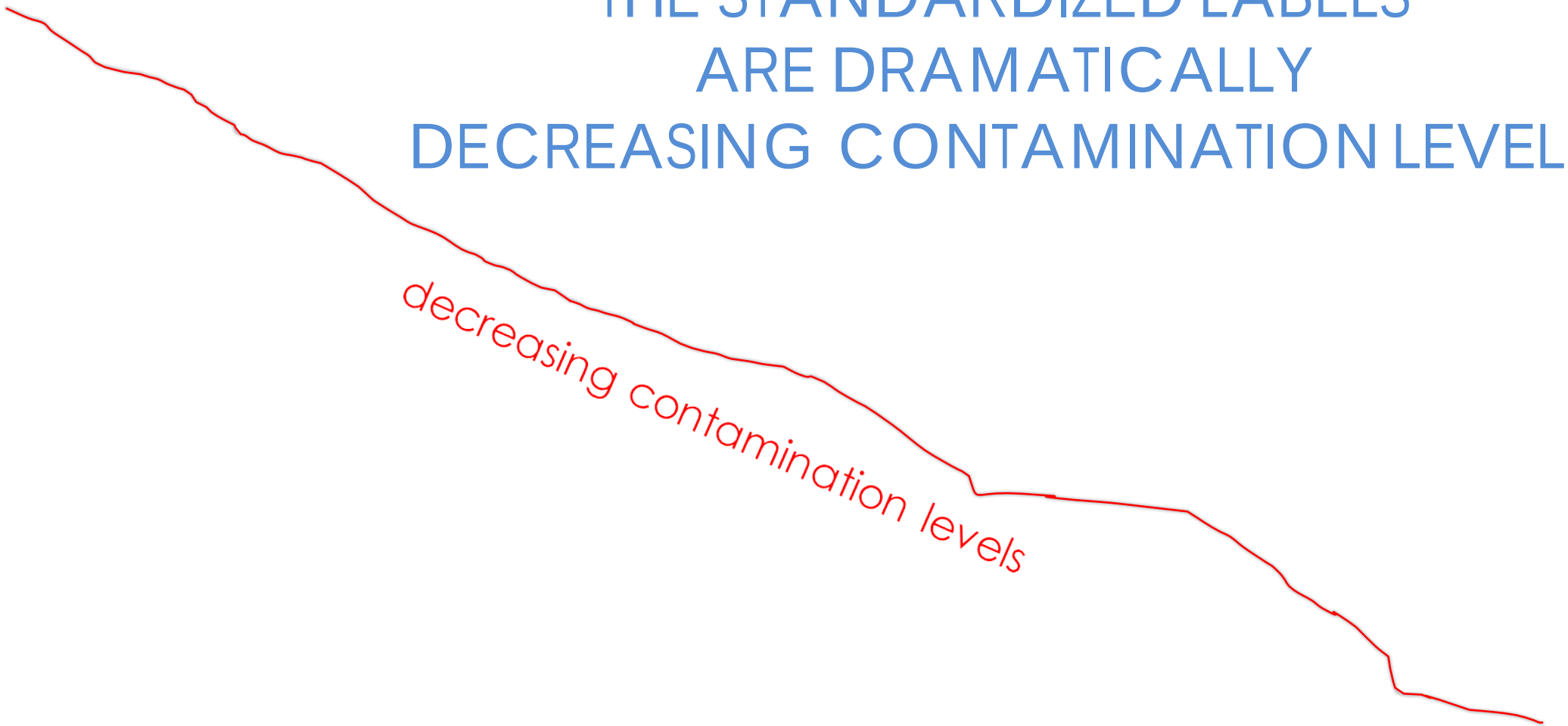
Orlando K-12 Public Schools (OCPS), recycling levels increased

90%

in the first year of using the standardized labels on their recycling bins.

The standardized help prevent contamination!

THE STANDARDIZED LABELS ARE DRAMATICALLY DECREASING CONTAMINATION LEVELS



recycle across america

National Focus Group – Won – Consumer's Choice

Rubbermaid® conducted a randomized focus group with 1,000 consumers from across the U.S.

The standardized labels WON against all the labels they were compared to, including Rubbermaid's recycling labels and numerous other recycling labels in the marketplace.

The focus group participants agreed that the Recycle Across America society-wide standardized labels were:

- More appealing
- More comprehensive
- More effective, and subsequently
- Generated the best recycling results!

Rapid National Movement – Global Brand Leaders

2,500 K-12 schools and universities!

More than 5,000 K-12 schools and universities

Outreach Strategies to Promote

recycle across america

Residential Recycling

Office Depot is the designated office supplier retailer for the state of Florida and municipalities and they have just joined the movement.

lefs recycle right!®

the standardized labels on bins make it easy

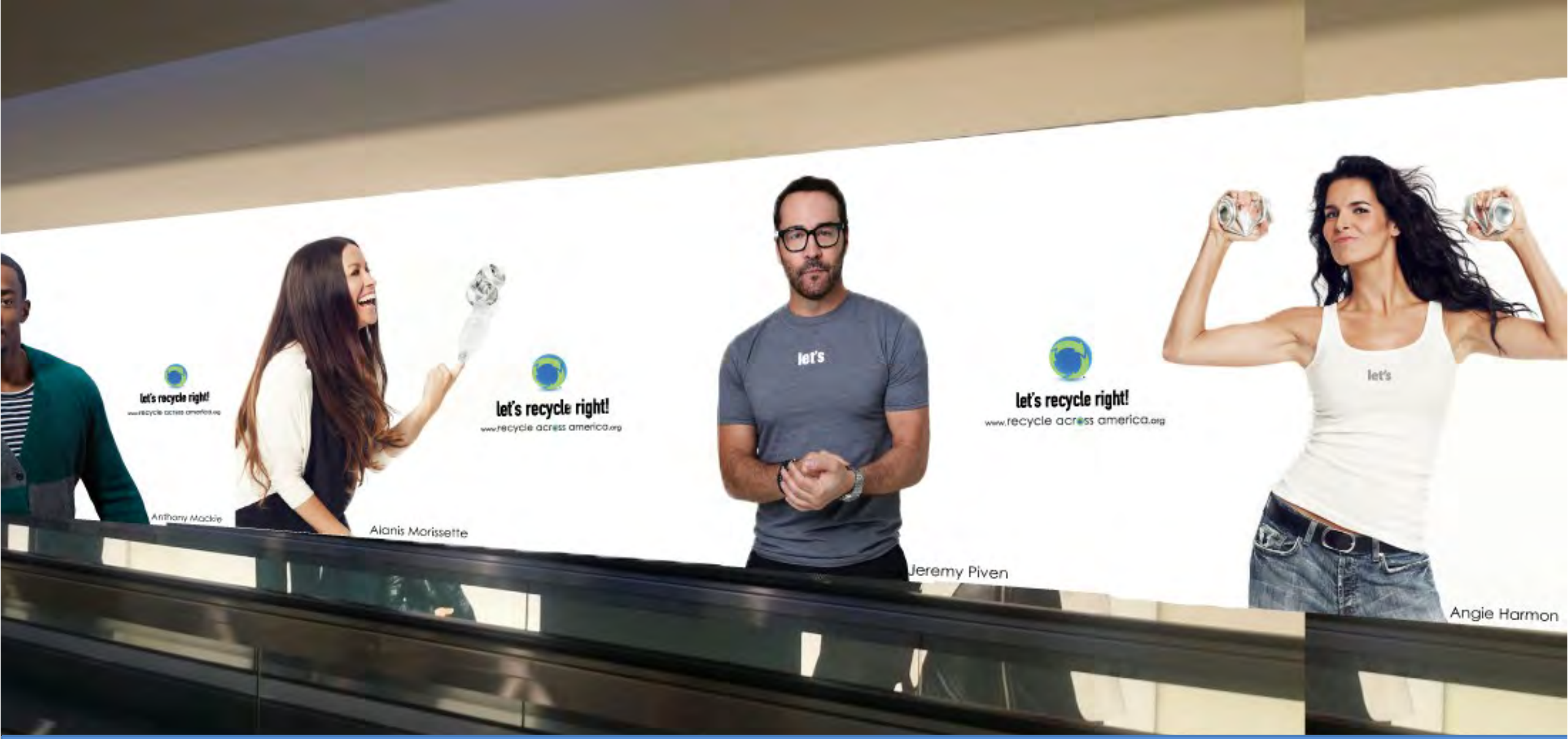
Outreach Strategies to Promote
Residential Recycling

To help introduce the standardized label solution publicly and to begin advancing the message about proper recycling, we now have nearly 50 celebrities donating their influence to grow this solution in the celebrity-led ”Let’s recycle right!®” PSA campaign.

recycle across america

Outreach Strategies to Promote Residential Recycling

The celebrity-led "Let's recycle right!" PSA campaign is available for participating municipalities and government agencies.



And can be used at participating schools and airports.

And free billboard space and print ad use is available to participating municipalities and brands.

recycle across america

And TV commercials and radio spots as well.

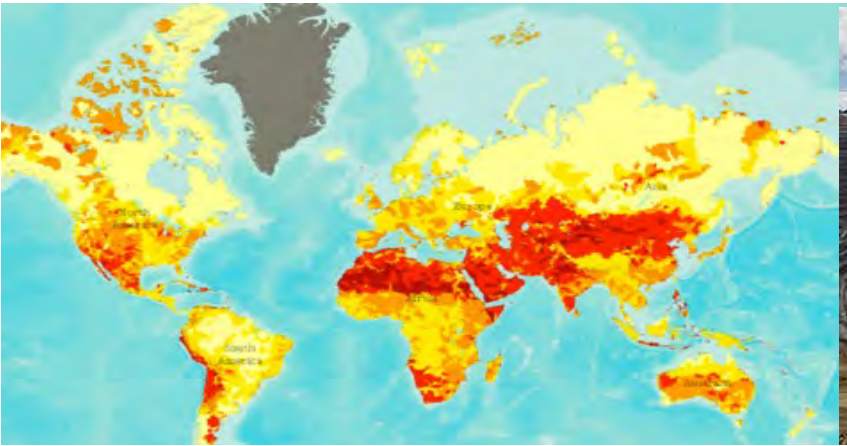


Recycling is the #1 action

society can do to improve our impact on the environment,

and to simultaneously improve the economy, to green-up manufacturing, to prevent waste from going into oceans and to mitigate climate change.

But it all starts at the bin.



IT'S TIME FOR PROGRESS.

It's time to apply the same logic to recycling, that has been used for many other critical standardizations in history, which have helped society act on their good intentions. So that recycling can begin to be profitable and thriving, and so manufacturers and CPG brands can begin relying on recyclables as dependable and evergreen commodity.

Athlete and Model Gabby Reece spokesperson for Recycle Across America

recycle across america

Thank You!

Contact: Mitch Hedlund
mitch@recycleacrossamerica.org

Florida Department of Environmental Protection

Waste Reduction/Recycling

Elizabeth Bartlett

Environmental Education Coordinator
Keep Florida Beautiful

Keep Florida Beautiful

KEEP AMERICA BEAUTIFUL AFFILIATE

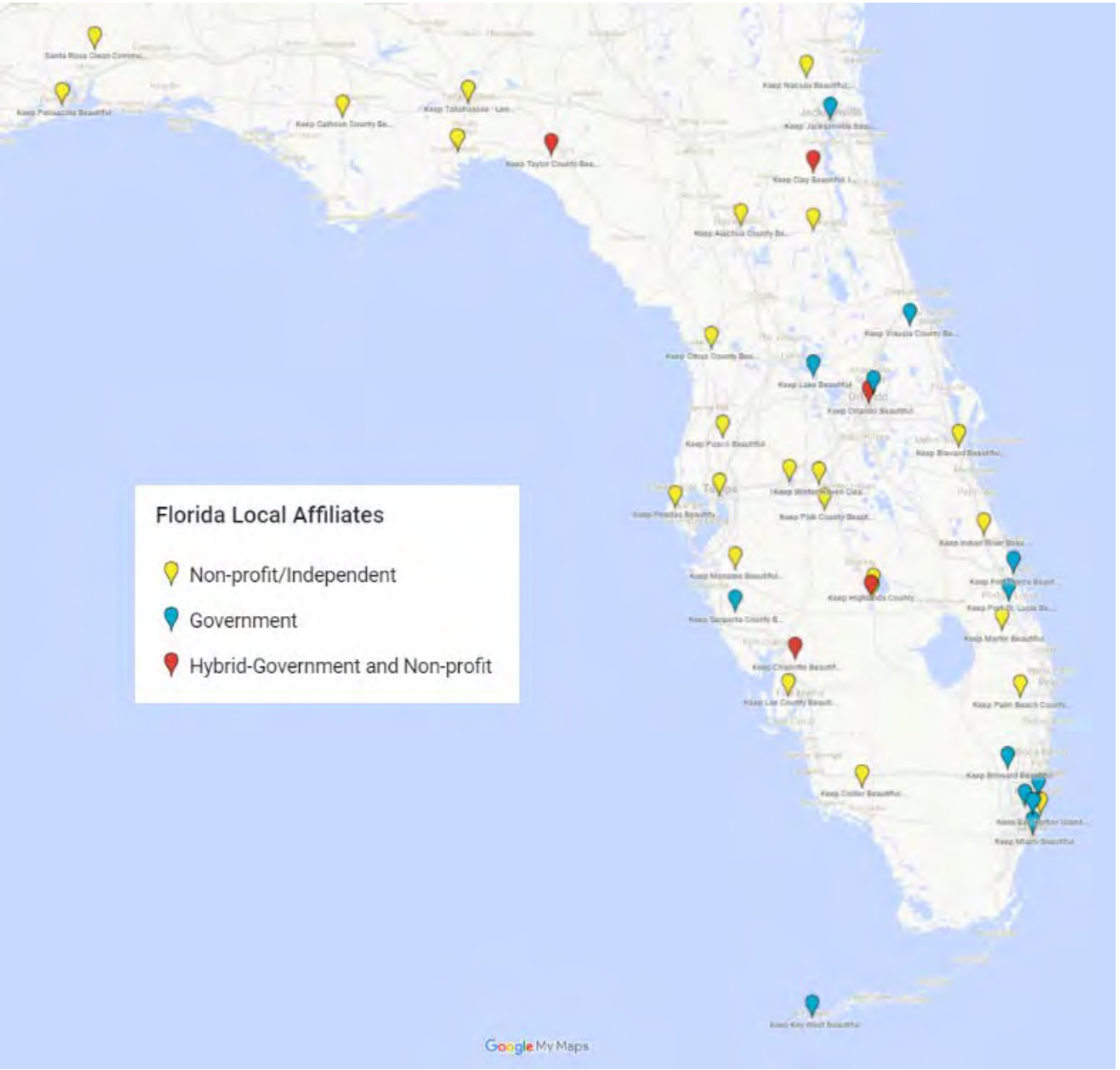
Outreach Strategies to Promote Residential Recycling

September 15, 2016

About Keep Florida Beautiful

- State-level affiliate of Keep America Beautiful
- KFB's mission is to inspire, educate and empower people in Florida to take action every day to improve and beautify their community environments
- We collaborate with > 40 local affiliates in Florida to engage thousands of volunteers in Florida who take action in their communities through programs that deliver positive and lasting impact
- Our primary initiatives are:
  - Recycling
  - Litter Prevention
  - Environmental Education
  - Solid Waste Reduction

Keep Florida Beautiful
KEEP AMERICA BEAUTIFUL AFFILIATE



Florida Local Affiliates

- 43 city, county, neighborhood affiliates in Florida
- Some are associated with local government, some are non-profit, a few are hybrids of both
- Have well-established relationships with communities and businesses

Challenges to Recycling

- 75% recycling goal mandated by Florida statute in 2008
- Recycling rates in Florida have increased over the past 7 reporting years, but need to improve significantly in order to reach the 75% goal
- There is a collective will to do the right thing, but inconsistent messaging can work at cross purposes

Outreach Strategies

Keep Florida Beautiful
KEEP AMERICA BEAUTIFUL AFFILIATE

Avenues for Public Engagement

Collaborate with state and county recycling programs to communicate consistent messaging through:

- Keep America Beautiful Recycling Initiatives
- Keep Florida Beautiful website and social media
- Florida Local Affiliates network

Keep America Beautiful – America Recycles Day

Date: November 15, 2016

America Recycles Day is a nationally recognized day dedicated to promoting and celebrating recycling in the United States. Every year on or around November 15 (America Recycles Day) event organizers educate neighbors, friends and colleagues through thousands of events.

Several Florida Local Affiliates participate in this event every year

Learn more and register your event: http://americarecyclesday.org/

Keep America Beautiful – I Want To Be Recycled

'I Want To Be Recycled' is a public service advertising and awareness campaign produced by Keep America Beautiful in partnership with the Ad Council.

This campaign seeks to inspire Americans who do not recycle regularly to make recycling a daily habit by providing tools and educational resources that will help make the occasional recyclers an "everyday" recycler:

- Learn what to recycle and how
- Discover how to "Give Your Garbage Another Life" through the recycling journey
- Play the Super Sorter game
- PSAs: Journey, Stadium, Smile and Superhero!

http://www.iwanttoberecycled.org/

Keep America Beautiful – Recycle-Bowl

Registration Deadline: 10/14/2016

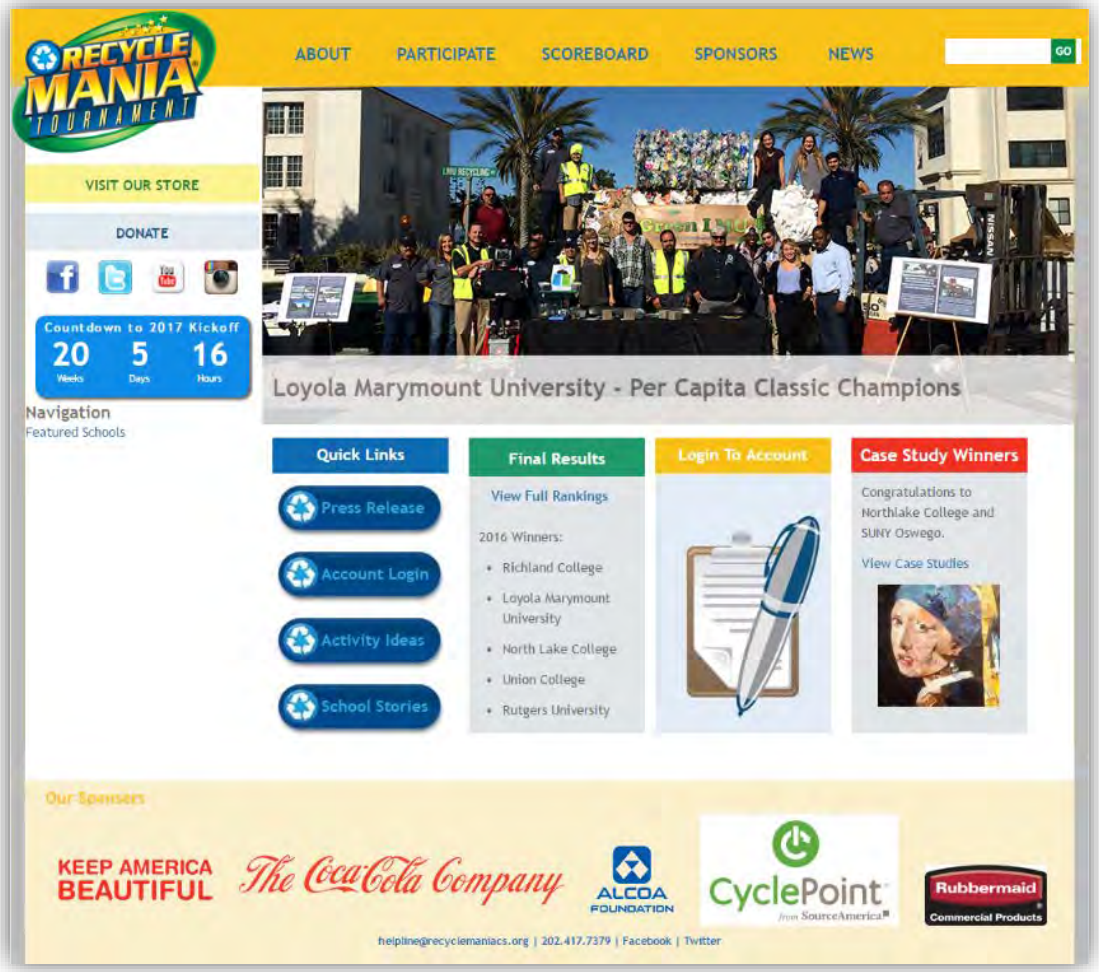
Competition Dates: 10/17/2016 – 11/15/2016

Recycle-Bowl is a competition that uses the Tools of Change to encourage recycling behavior in K-12 schools. Schools collect and track the weight of recyclables during the four-week competition period. Participation in Recycle-Bowl provides an opportunity to train and educate teachers, custodians, staff and students on recycling.

Recycle-Bowl is open to all elementary, middle and high schools, including public, private and charter schools.

Learn more and register your school(s) : https://www.kab.org/recycle-bowl

Keep America Beautiful – RecycleMania



Date: Spring 2017

RecycleMania is a friendly competition and benchmarking tool for college and university recycling programs to promote waste reduction activities to their campus communities.

Competing colleges and universities are ranked according to how much recycling, trash and food waste they collect over two months.

With each week's updated ranking, participating schools follow their performance against other colleges and use the results to rally their campus to reduce and recycle more.

http://recyclemaniacs.org/

Keep Florida Beautiful Website

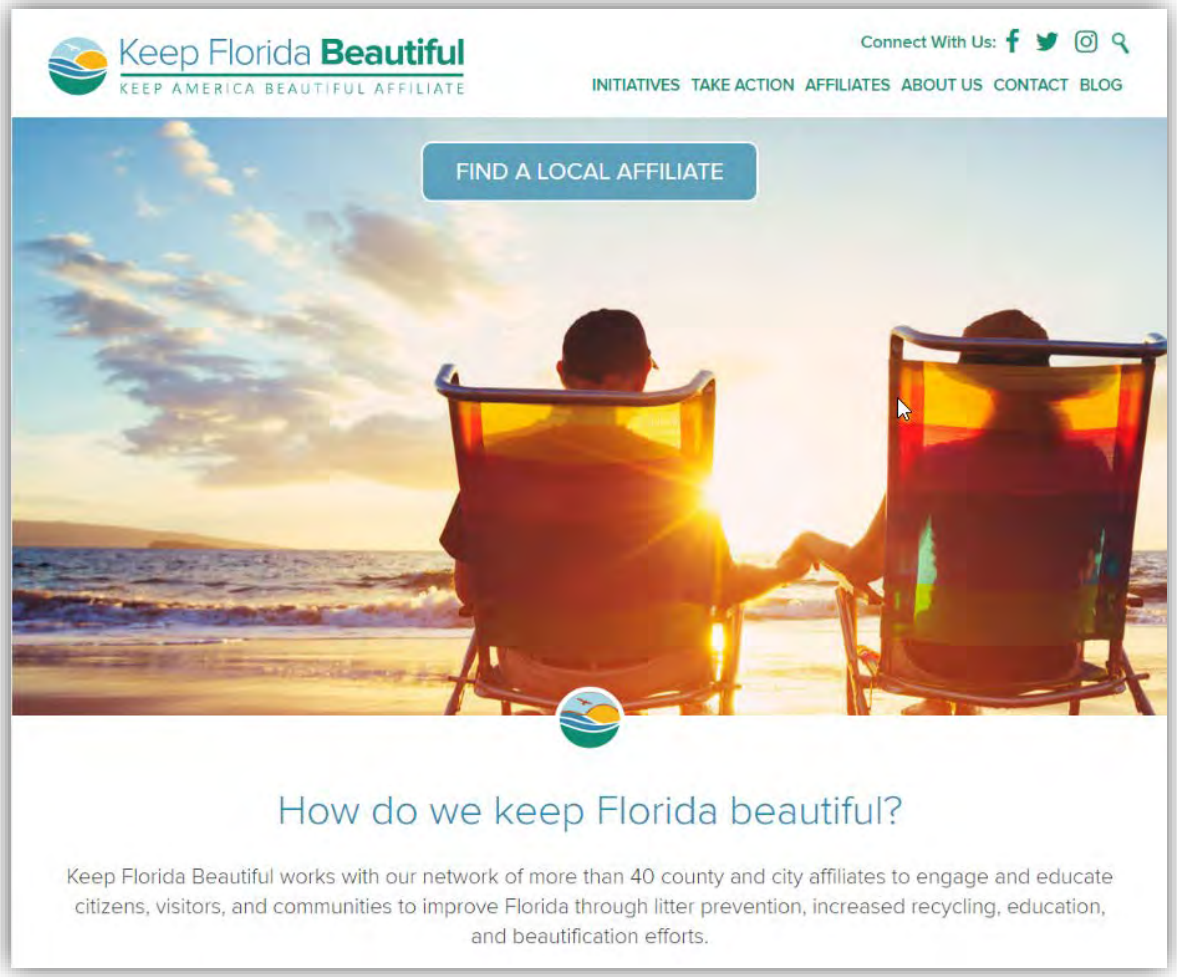
The Keep Florida Beautiful website is designed to promote public awareness regarding:

- Recycling
- Litter Prevention
- Environmental Education
- Solid Waste Reduction

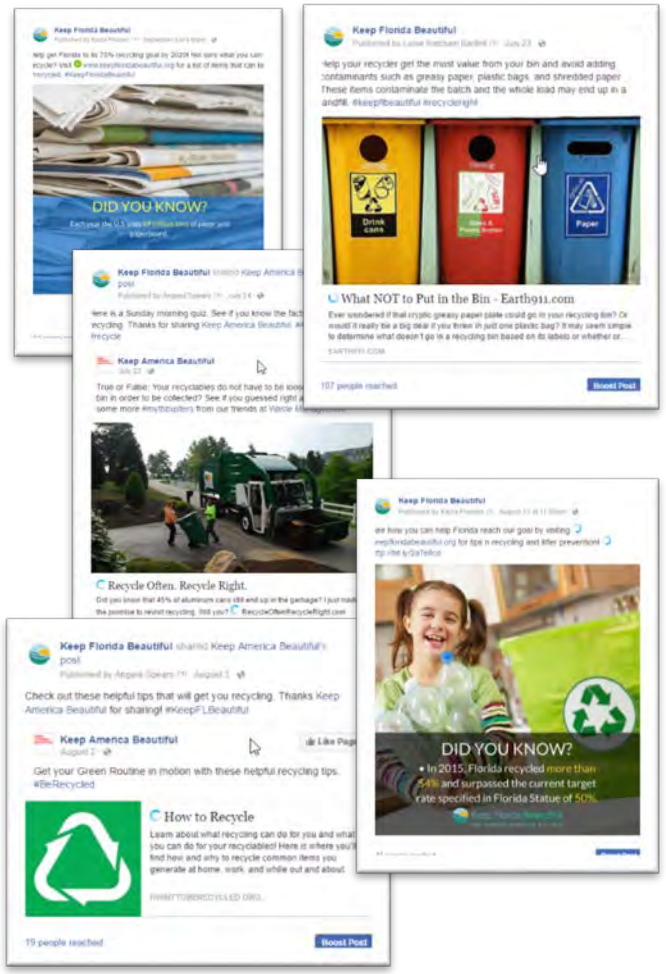
Primary features include:

- Listing of Florida Local Affiliates
- Affiliates event calendar searchable by location
- Blog articles on topics of interest
- Education and training resources

https://www.keepfloridabeautiful.org/



Keep Florida Beautiful Social Media



Keep Florida Beautiful maintains a social media presence on Facebook, Twitter, and Instagram to educate, inform and involve the general public in litter prevention and recycling education.

We also use social media as an avenue to engage the public with Florida Local affiliates in their communities by promoting affiliate activities and accomplishments.

- https://www.facebook.com/keepflbeautiful/
- https://twitter.com/KeepFLBeautiful
- https://www.instagram.com/keepflbeautiful/

Keep Florida Beautiful
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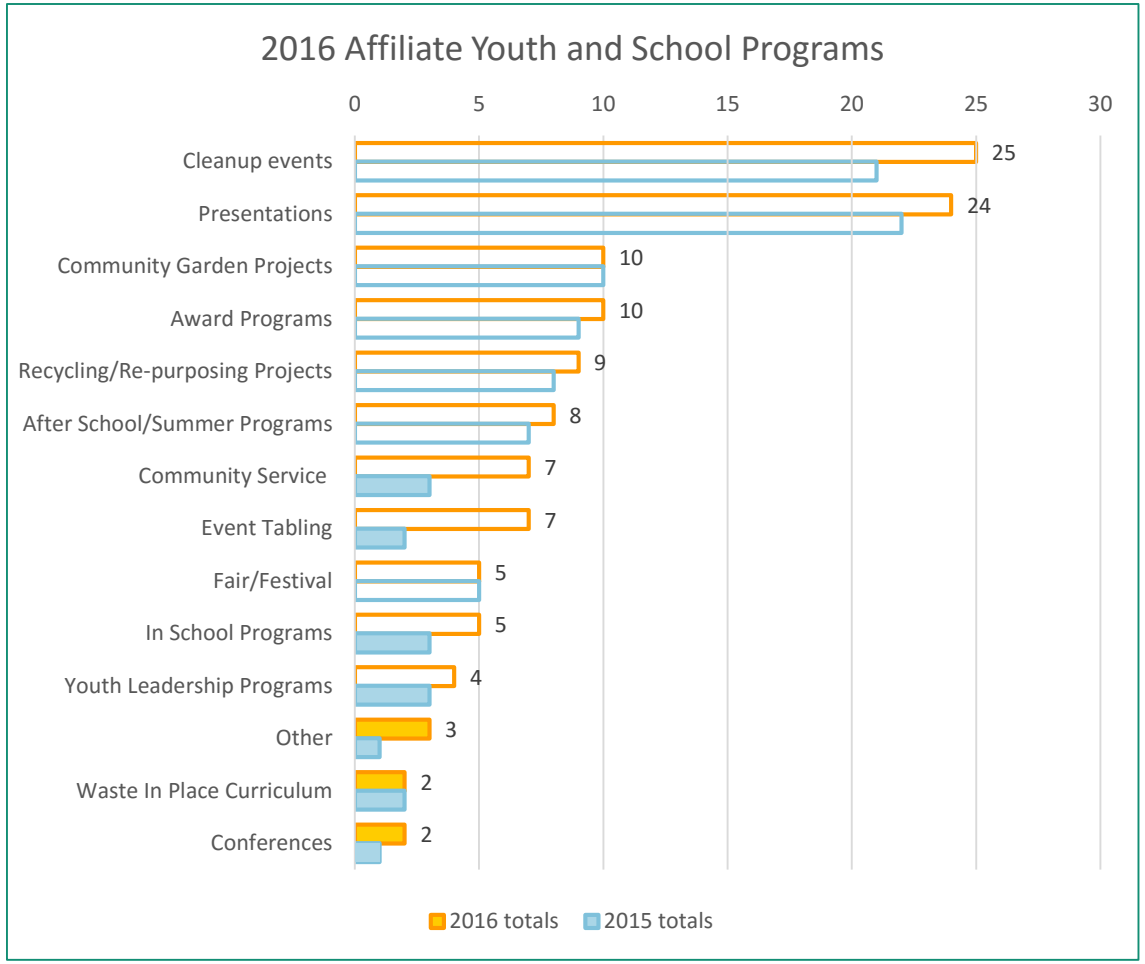
Florida Local Affiliates - Education Outreach



Florida Local Affiliates promote waste management and recycling education inside and outside of the classroom.

A few of the many examples include:

- Keep Brevard Beautiful works under contract with Brevard County Solid Waste to conduct classroom training on recycling and waste management in landfills for all 4th and 5th graders in the county.
- Keep Key West Beautiful assists in setting up recycling programs and training for students, teachers and staff as needed!
- Keep Pinellas Beautiful has a bright futures community service program that has several different options for completion which includes working at a plastic recycling center, clean up events, and office administration.
- Keep Winter Park Beautiful teaches recycling and litter prevention during Young Naturalist Camp at Mead Gardens. Instruction including an activity where youth recycle their own paper during a papermaking craft.

Florida Local Affiliates – Connection to Community

Florida Local Affiliates are very engaged with their communities. During the last year, affiliates organized more than 4,000 cleanup events in Florida

Volunteers make the difference:

- 82,000+ volunteers participated in cleanup events statewide.
- Floridians volunteered 350,000 + hours to make these cleanups a success.
- 4.8 million pounds of debris were removed from Florida's landscape.
- 95,000 pounds of recyclables were collected.

With support from county recycling offices, affiliates will be able to mobilize communities to spread the word on recycling.

Keep Florida Beautiful
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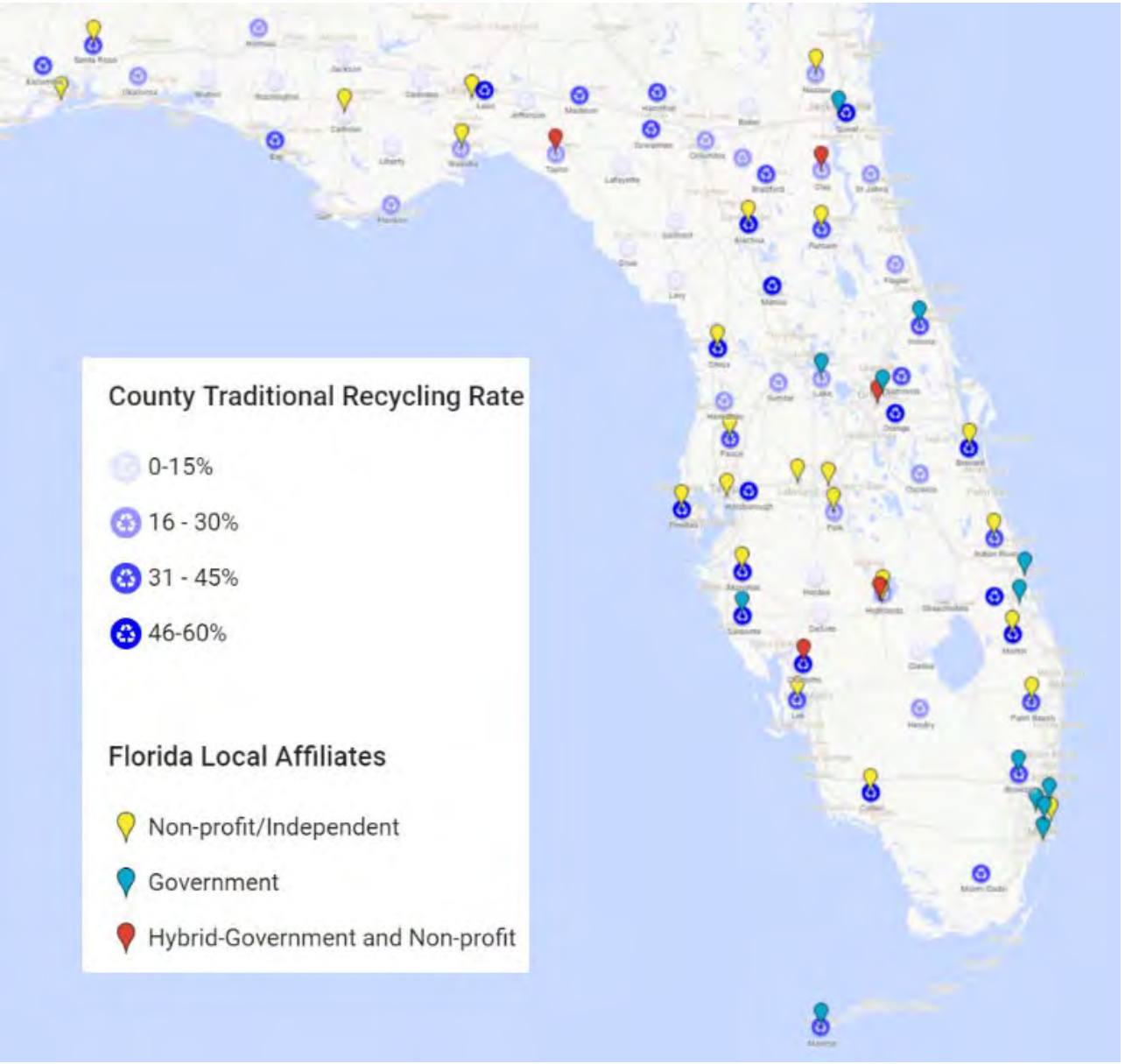

County Recycling Rates

- 15 out of 16 counties with traditional recycling rates above 45% have at least one local affiliate
- More than half of the 17 counties with recycling rates between 30 and 45% have local affiliates
- Only 8 of the 34 counties with recycling rates below 30% have local affiliates

Wrap up

- **Keep America Beautiful** provides the framework to improve recycling through its initiatives and resources
  - Recycling programs carried out by local affiliates across the country
  - Programs include data collection and reporting used to quantify and demonstrate effectiveness of outreach
- **Keep Florida Beautiful** serves as a resource for promoting communication and cross-training for local affiliates
  - Collaborate and share your messages on recycling
  - Serve as a resource for recycling education
- **Florida Local Affiliates** are your connection to people in your communities
  - Directly connect with the public through outreach events
  - Can provide insight on local issues and how to resolve them

Keep Florida Beautiful
KEEP AMERICA BEAUTIFUL AFFILIATE

Keep Florida Beautiful
KEEP AMERICA BEAUTIFUL AFFILIATE

Contact

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Environmental Education Coordinator
Keep Florida Beautiful

ebartlett@keepfloridabeautiful.org

Florida Department of Environmental Protection

Waste Reduction/Recycling

Amy Boyson

Community Relations Manager
Waste Management

Evolving to Recycling 2.0
A Conversation on Recycling

Amy Boyson
Waste Management
Community Affairs Manager

September 15, 2016

WASTE MANAGEMENT

The Recycling World Has Changed

And continues to evolve—we need to keep up!

The evolving ton

- The **material we use daily has evolved** tremendously
- For example, look at the newspaper industry

Single-stream recycling

- We can put all recyclables in one, convenient cart. Flip side is
- This **invites materials that aren't recyclable**
- When in doubt, ~20% of people put something in recycle bin anyway

Recycling programs vary by region

- Further compounding **confusion about what is recyclable** from Area to Area—internally and for our customers

Education

- Need to do things differently to have different outcomes

Outreach Strategies to Promote Residential Recycling

What Makes Something Recyclable?

Driving Forces

Collection

Convenience
Size/shape
Contamination

Processing

Identification
Sorting
Size

End-Market

Demand
Volume
Value

Recycle Often. Recycle Right.℠

Getting Back to the Basics of Recycling

- Built on behavior change science framework:
  - Keep it simple
  - Focus on barriers and benefits
  - Tell people why
  - Ask for a commitment
- Focuses on specific actions, related to basic materials with large recycling potential: bottles, cans and paper
- Addresses contamination issues that cause the most issues at MRFs: Wet items and plastic bags

Simple Messages

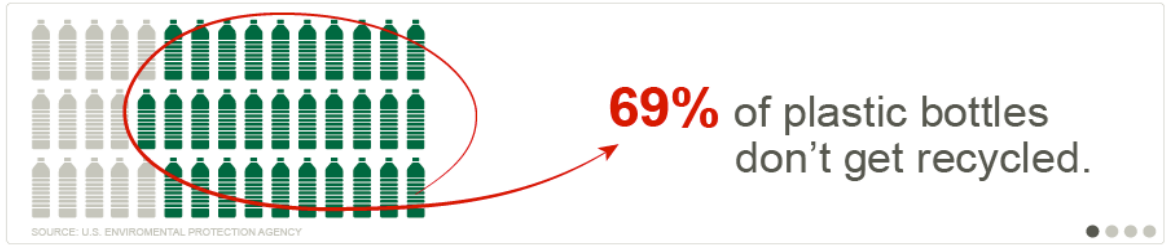
Simplifying the Message

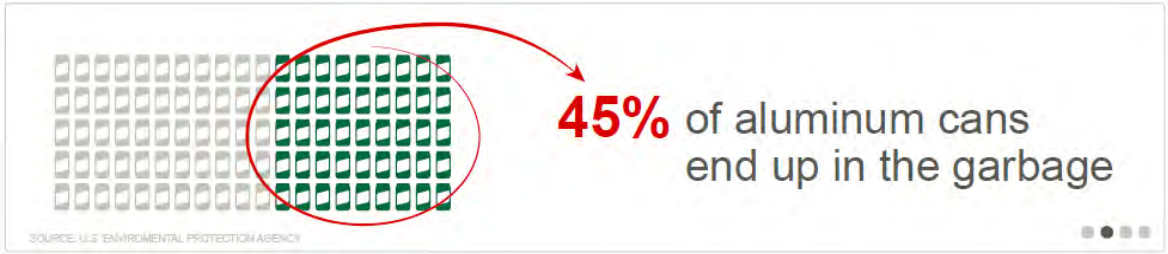
- Focus on 3 simple behaviors that could greatly impact recycling
- Tested and proven approach
- Accompanying myth busters/FAQs for those who want to dig deeper

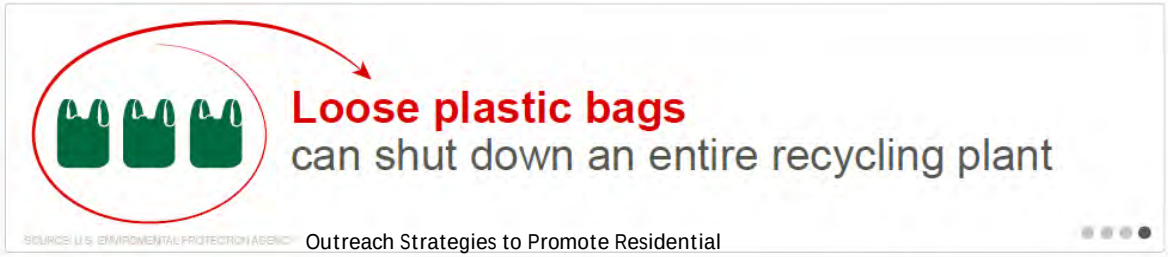
RECYCLE OFTEN.
RECYCLE RIGHT.℠

Microsite Provides Platform

Tell People Why







RECYCLE OFTEN.
RECYCLE RIGHT.℠

Education

MYTHBUSTERS

Hover over the center of an image to find out if it is recyclable in your curbside mixed recycling cart.
Click on that same tile to get an Expert Tip for disposal.

RECYCLE ALL BOTTLES, CANS, PAPER AND CARDBOARD

NO PLASTIC BAGS

TRASH IT INSTEAD

YouTube Video

Resources available at www.RecycleOftenRecycleRight.com

RECYCLING BASICS: All the recycling information you'd ever need is just a click away. Need help getting started? Here are some tools to use at home.

Myth Busters

Poster

Brochure

Cart/Bin Signs

EDUCATION: Want to bring recycling education to a school near you? Download the materials below to help you get started.

Elementary Curriculum Overview

Recycling Educational Flyer

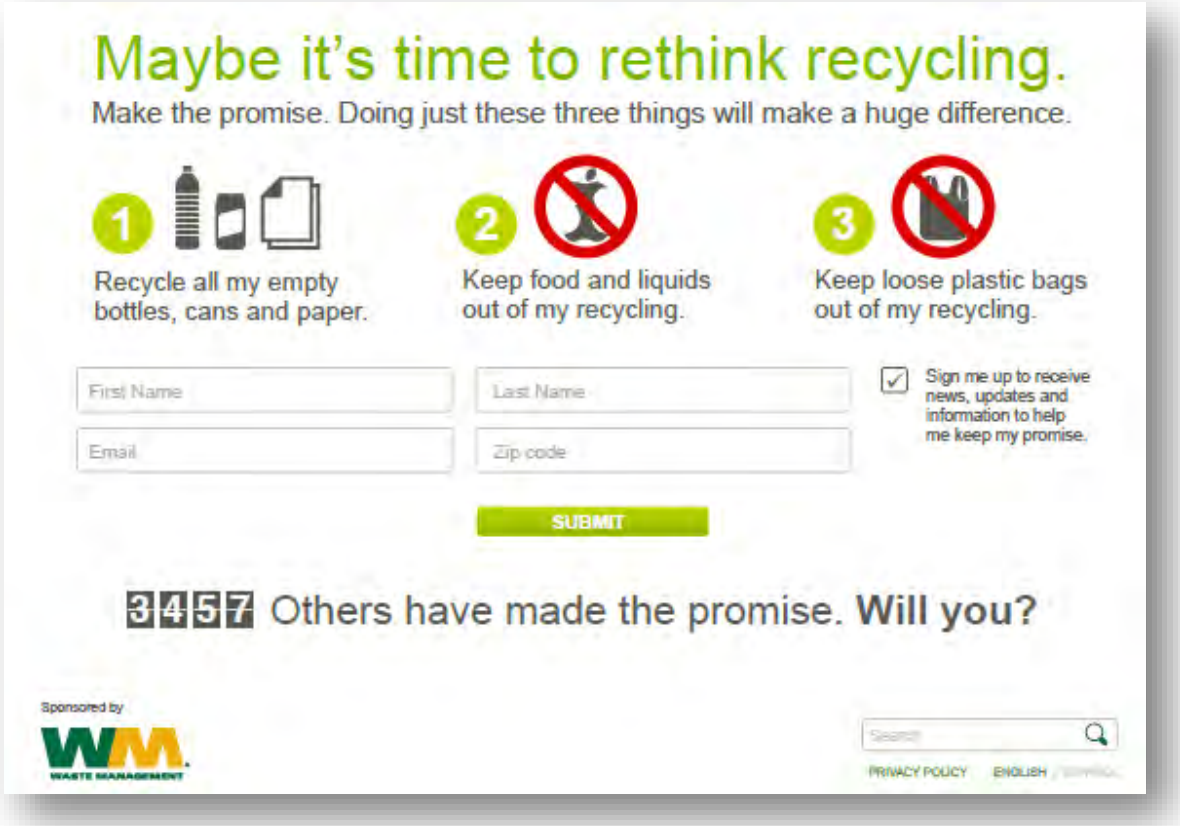
Curriculum:
Grades K-2
Grades 3-5
Grades 4-5

Flyer with Kid's Activity

Recycled Art Activities

The Promise
Ask for a Commitment

- Behavior change science shows that people that commit to an action are much more likely to follow through
- The Recycle Often, Recycle Right promise asks people to commit to the 3 simple behaviors
- Then, asks them to share with their friends and family



Recycle Often. Recycle Right Widget

What it is:

- A small image that displays a message on your website and links to RORR.com

How it works:

- Your city webmaster does a one-time update, dropping the embed code into the recycling page on your city's website and the widget is installed
- Waste Management periodically updates the messaging on the widget to reflect the current RORR strategies

Why it's great:

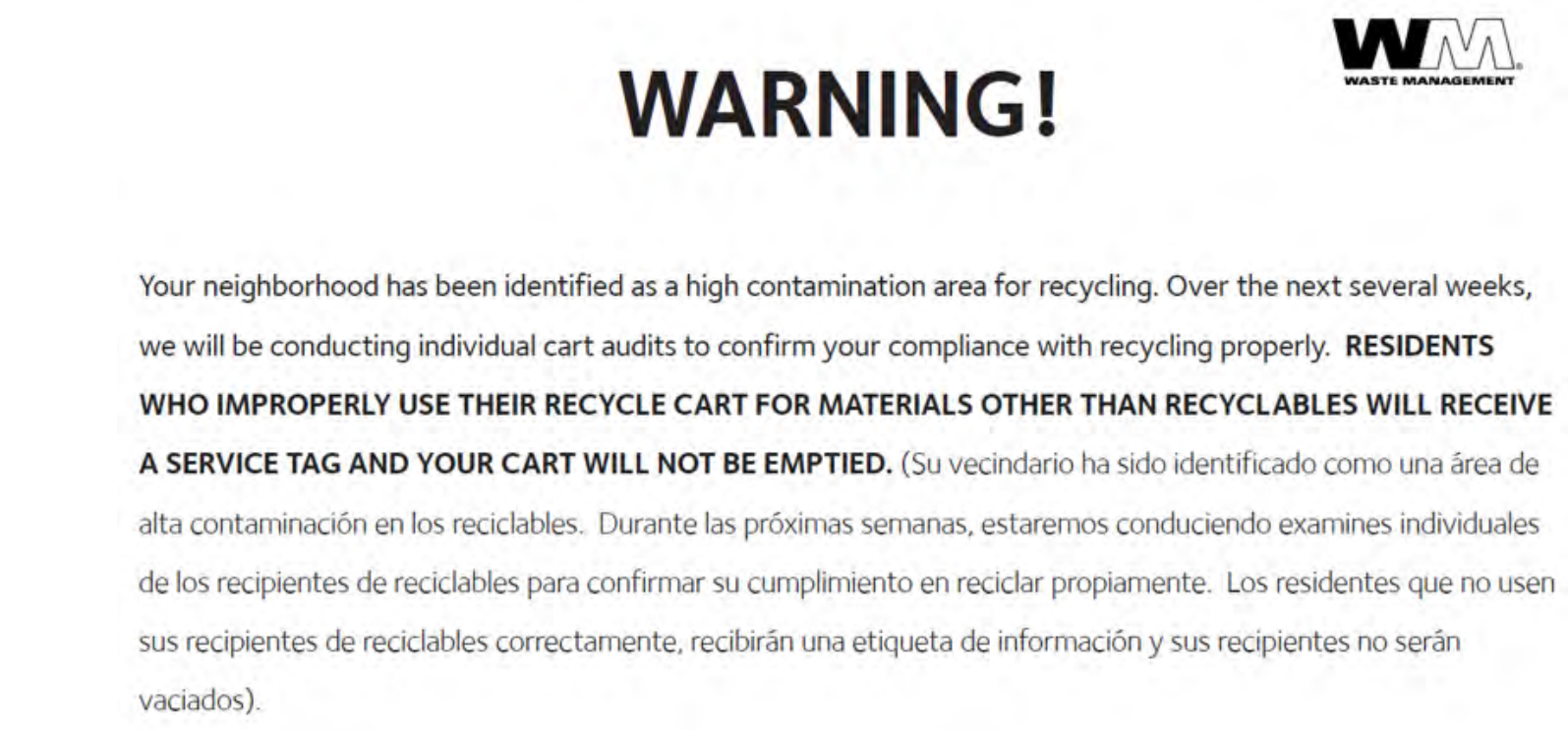
- It's easy to use – it just requires a one-time installation from your webmaster
- You can place it wherever makes the most sense on your website and it automatically resizes to fit your page, up to 300 pixels in width
- It helps keep your website current, addressing consumer FAQs and recycling myths
- It provides an easy way for consumers in your city to get the most up-to-date information about recycling

Curbside Education Program
Information Directly on the Cart

Step 1: New acceptable/non-acceptable sticker on lid of recycle cart

Curbside Education Program
Information Directly on the Cart

Step 2: Notification tag informing resident of contamination issue



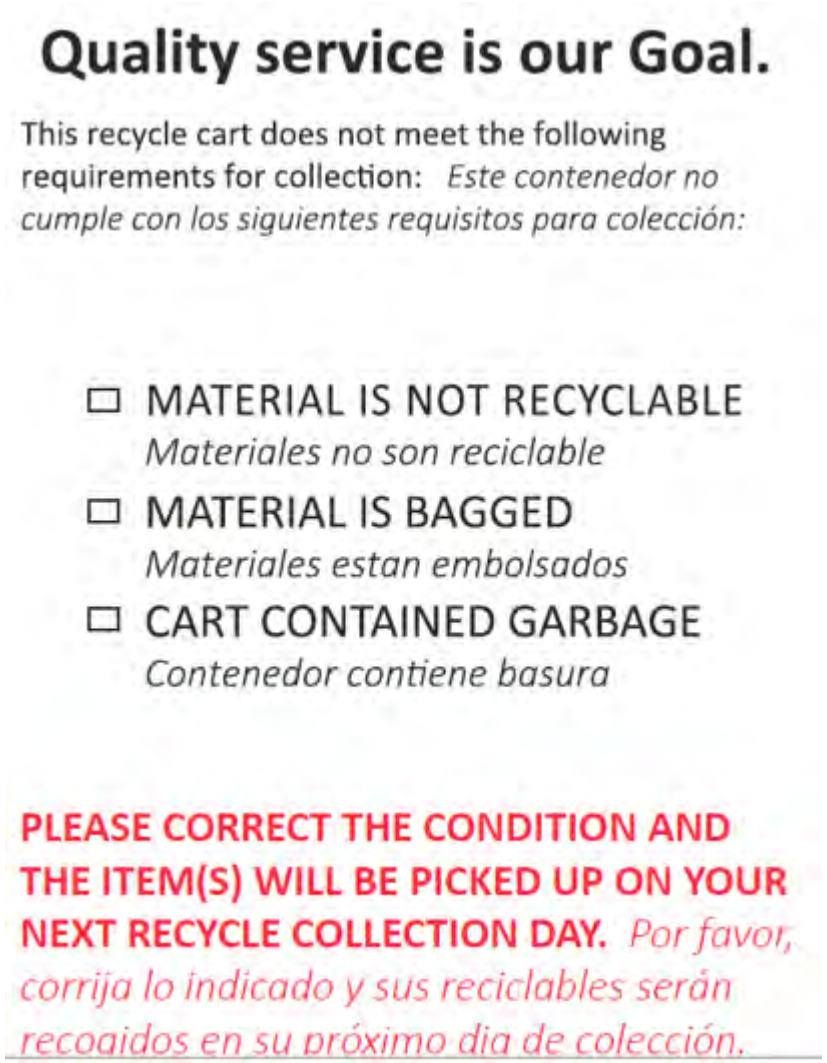
WARNING!

Your neighborhood has been identified as a high contamination area for recycling. Over the next several weeks, we will be conducting individual cart audits to confirm your compliance with recycling properly. **RESIDENTS WHO IMPROPERLY USE THEIR RECYCLE CART FOR MATERIALS OTHER THAN RECYCLABLES WILL RECEIVE A SERVICE TAG AND YOUR CART WILL NOT BE EMPTIED.** (Su vecindario ha sido identificado como una área de alta contaminación en los reciclables. Durante las próximas semanas, estaremos conduciendo examines individuales de los recipientes de reciclables para confirmar su cumplimiento en reciclar propiamente. Los residentes que no usen sus recipientes de reciclables correctamente, recibirán una etiqueta de información y sus recipientes no serán vaciados).

Curbside Education Program

Information Directly on the Cart

Step 3: Tag cart and do not service recycle cart.



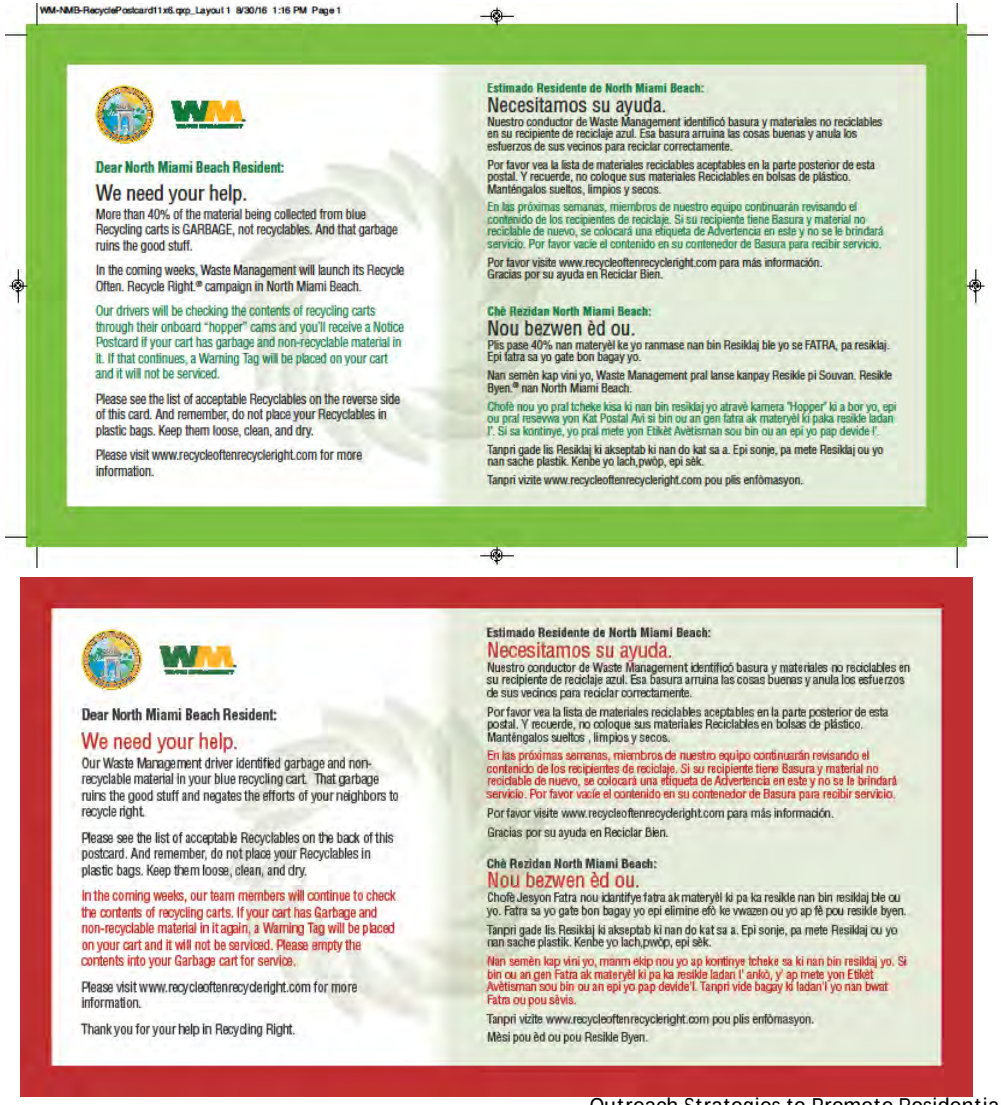
Quality service is our Goal.

This recycle cart does not meet the following requirements for collection: *Este contenedor no cumple con los siguientes requisitos para colección:*

- ☐ MATERIAL IS NOT RECYCLABLE
  Materiales no son reciclable
- ☐ MATERIAL IS BAGGED
  Materiales estan embolsados
- ☐ CART CONTAINED GARBAGE
  Contenedor contiene basura

PLEASE CORRECT THE CONDITION AND THE ITEM(S) WILL BE PICKED UP ON YOUR NEXT RECYCLE COLLECTION DAY. *Por favor, corrija lo indicado y sus reciclables serán recogidos en su próximo dia de colección.*

Additional Education Program



WM-NMB-RecyclePostcard11x6.qxp_Layout 1 9/30/16 1:16 PM Page 1

Dear North Miami Beach Resident:

We need your help.

More than 40% of the material being collected from blue Recycling carts is GARBAGE, not recyclables. And that garbage ruins the good stuff.

In the coming weeks, Waste Management will launch its Recycle Often. Recycle Right.® campaign in North Miami Beach.

Our drivers will be checking the contents of recycling carts through their onboard "hopper" cams and you'll receive a Notice Postcard if your cart has garbage and non-recyclable material in it. If that continues, a Warning Tag will be placed on your cart and it will not be serviced.

Please see the list of acceptable Recyclables on the reverse side of this card. And remember, do not place your Recyclables in plastic bags. Keep them loose, clean, and dry.

Please visit www.recycleoftenrecycleright.com for more information.

Estimado Residente de North Miami Beach:

Necesitamos su ayuda.

Nuestro conductor de Waste Management identificó basura y materiales no reciclables en su recipiente de reciclaje azul. Esa basura arruina las cosas buenas y anula los esfuerzos de sus vecinos para reciclar correctamente.

Por favor vea la lista de materiales reciclables aceptables en la parte posterior de esta postal. Y recuerde, no coloque sus materiales Reciclables en bolsas de plástico. Manténgalos sueltos, limpios y secos.

En las próximas semanas, miembros de nuestro equipo continuarán revisando el contenido de los recipientes de reciclaje. Si su recipiente tiene Basura y material no reciclable de nuevo, se colocará una etiqueta de Advertencia en este y no se le brindará servicio. Por favor vacíe el contenido en su contenedor de Basura para recibir servicio.

Por favor visite www.recycleoftenrecycleright.com para más información.
Gracias por su ayuda en Reciclar Bien.

Chè Rezidan North Miami Beach:

Nou bezwen èd ou.

Plis pase 40% nan materyèl ke yo ranmase nan bin Resiklaj ble yo se FATRA, pa resiklaj. Epi fatra sa yo gate bon bagay yo.

Nan semèn kap vini yo, Waste Management pral lanse kanpay Resikle pi Souvan. Resikle Byen.® nan North Miami Beach.

Chofè nou yo pral tcheke kisa ki nan bin resiklaj yo atravè kamera "Hopper" ki a bor yo, epi ou pral resevwa yon Kat Postal Avi si bin ou an gen fatra ak materyèl ki paka resikle ladan l'. Si sa kontinye, yo pral mete yon Etikèt Avètisman sou bin ou an epi yo pap devide l'.

Tanpri gade lis Resiklaj ki akseptab ki nan do kat sa a. Epi sonje, pa mete Resiklaj ou yo nan sache plastik. Kenbe yo lach,pwòp, epi sèk.

Tanpri vizite www.recycleoftenrecycleright.com pou plis enfòmasyon.

Dear North Miami Beach Resident:

We need your help.

Our Waste Management driver identified garbage and non-recyclable material in your blue recycling cart. That garbage ruins the good stuff and negates the efforts of your neighbors to recycle right.

Please see the list of acceptable Recyclables on the back of this postcard. And remember, do not place your Recyclables in plastic bags. Keep them loose, clean, and dry.

In the coming weeks, our team members will continue to check the contents of recycling carts. If your cart has Garbage and non-recyclable material in it again, a Warning Tag will be placed on your cart and it will not be serviced. Please empty the contents into your Garbage cart for service.

Please visit www.recycleoftenrecycleright.com for more information.

Thank you for your help in Recycling Right.

Estimado Residente de North Miami Beach:

Necesitamos su ayuda.

Nuestro conductor de Waste Management identificó basura y materiales no reciclables en su recipiente de reciclaje azul. Esa basura arruina las cosas buenas y anula los esfuerzos de sus vecinos para reciclar correctamente.

Por favor vea la lista de materiales reciclables aceptables en la parte posterior de esta postal. Y recuerde, no coloque sus materiales Reciclables en bolsas de plástico. Manténgalos sueltos , limpios y secos.

En las próximas semanas, miembros de nuestro equipo continuarán revisando el contenido de los recipientes de reciclaje. Si su recipiente tiene Basura y material no reciclable de nuevo, se colocará una etiqueta de Advertencia en este y no se le brindará servicio. Por favor vacíe el contenido en su contenedor de Basura para recibir servicio.

Por favor visite www.recycleoftenrecycleright.com para más información.

Gracias por su ayuda en Reciclar Bien.

Chè Rezidan North Miami Beach:

Nou bezwen èd ou.

Chofè Jesyon Fatra nou idantifye fatra ak materyèl ki pa ka resikle nan bin resiklaj ble ou yo. Fatra sa yo gate bon bagay yo epi elimine efò ke vwazen ou yo ap fè pou resikle byen.

Tanpri gade lis Resiklaj ki akseptab ki nan do kat sa a. Epi sonje, pa mete Resiklaj ou yo nan sache plastik. Kenbe yo lach,pwòp, epi sèk.

Nan semèn kap vini yo, manm ekip nou yo ap kontinye tcheke sa ki nan bin resiklaj yo. Si bin ou an gen Fatra ak materyèl ki pa ka resikle ladan l' ankò, y' ap mete yon Etikèt Avètisman sou bin ou an epi yo pap devide'l. Tanpri vide bagay ki ladan'l yo nan bwat Fatra ou pou sèvis.

Tanpri vizite www.recycleoftenrecycleright.com pou plis enfòmasyon.

Mèsi pou èd ou pou Resikle Byen.

WM-NMB-Warning Tag.qxp_Layout 1 9/31/16 11:30 AM Page 1

Your recycling has garbage in it.
Hay basura en su reciclaje.
Resiklaj ou a gen fatra ladan'l.

We found one or more of the following items:
Encontramos uno o más de los siguientes artículos:
Nou jwenn youn oswa plis nan atik sa yo:

- ☐ **Recyclables bagged in plastic bags**
  Artículos reciclables en bolsas de plástico
  Resiklaj ki andedan sache plastik
- ☐ **Dirty/wet items (like food and liquids left in your recycling)**
  Artículos mojados y/o sucios (no deje alimentos o líquidos en sus artículos reciclables)
  Atik ki sal/mouye (tankou manje ak likid ki nan resiklaj ou)
- ☐ **Non-recyclable items (like garden hoses or propane tanks)**
  Artículos no reciclables (como mangueras de jardín o tanques de gas propano)
  Atik ki paka resikle (tankou kawoutchou pou wouze oswa tank gaz pwopàn)
- ☐ **Other** Otro Lòt _____

We had to leave your recycling behind. Please empty this material in your garbage cart for service.
No pudimos recolectar su reciclaje. Por favor vacíe este material en su contenedor de basura para recibir servicio.
Nou te oblije kite resiklaj ou dèyè. Tanpri jete materyèl sa nan bwat fatra ou pou sèvis.

When in doubt, leave it out.
Si tiene alguna duda, déjelo afuera.
Lè w gen dout, pa mete'l.

How Can We Work Together?

Community events	City Website	Email Blasts
Social Media	Public Access Channel	City Council Meetings
Community Groups	Schools	What Else?

Florida Department of Environmental Protection

Waste Reduction/Recycling

Allison Macdonald

Program Manager
St. Lucie County

St. Lucie County, Florida

IT PAYS TO RECYCLE RIGHT!

Allison Macdonald
Program Manager | Solid Waste Department

ST. LUCIE COUNTY FLORIDA

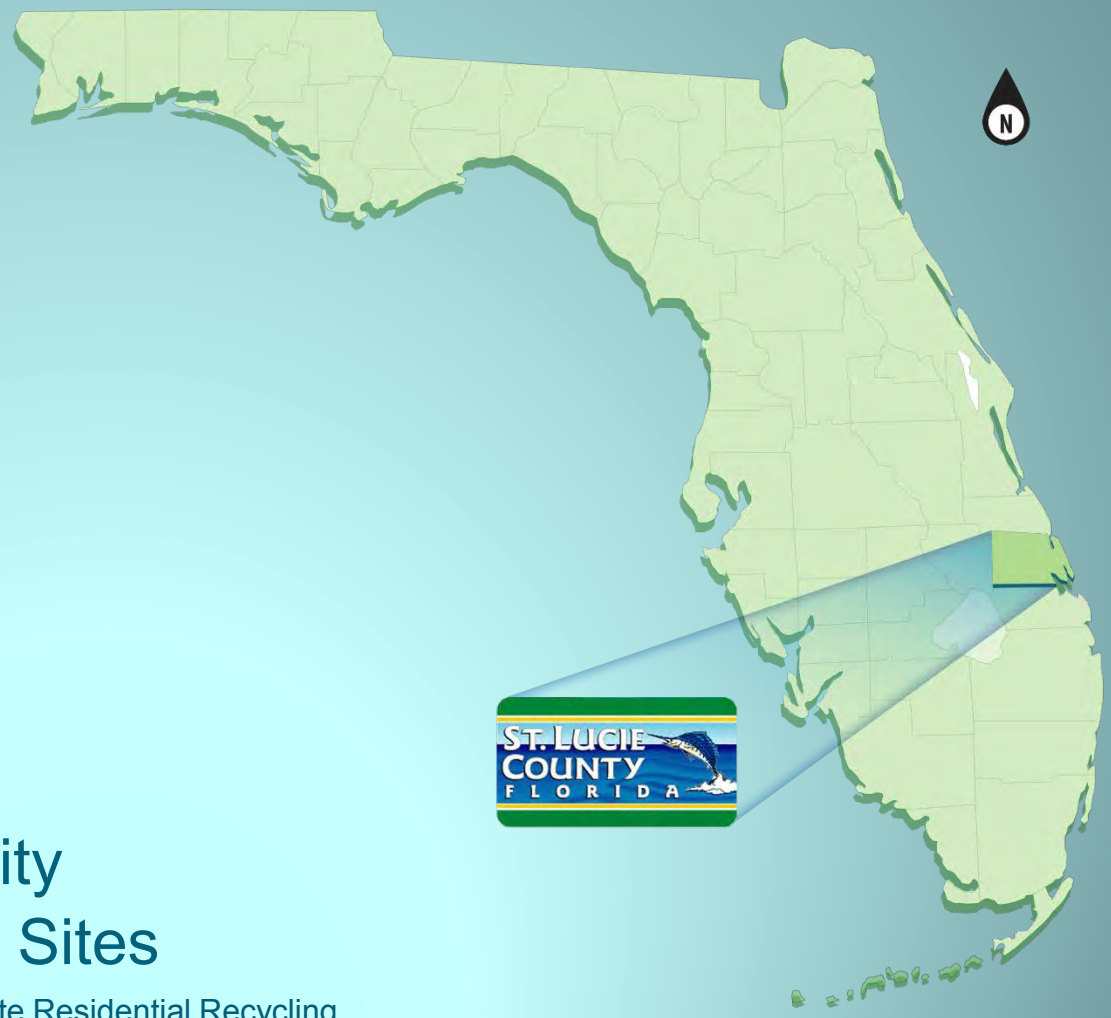
Presentation Outline

1. *Project Implementation/Goals*
2. *Contracting*
3. *Construction*
4. *Marketing and Education*
5. *Results*

Geographic Location

- St. Lucie County, Florida
  - Population Increase
  - Rapid Growth

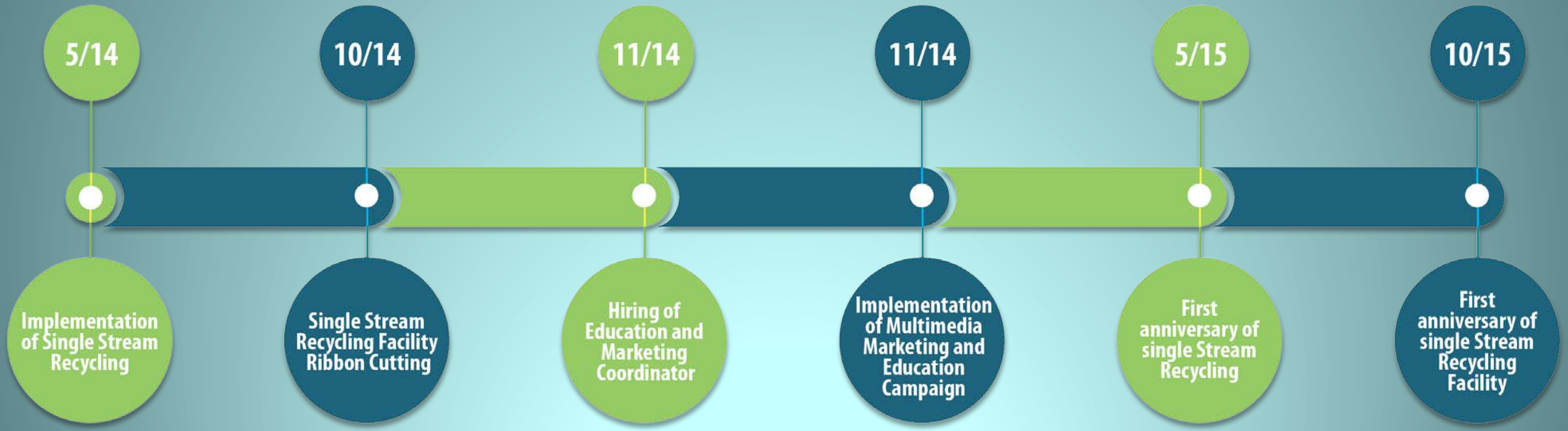
- Baling and Recycling Facility Site
  - Baling Facility
  - Class I Balefill
  - C&D Debris Processing Facility
  - C&D Debris Landfill
  - Glass Recycling System
  - Yard Waste Processing Site
  - Single Stream Processing Facility
  - Scrap Metal and Tire Collection Sites



Program Development/Goals

- Educate and encourage people to participate in our integrated solid waste management practices
- Implement innovative technologies for responsible solid waste management
- Divert reusable materials from the landfills
- Maximize the part of the waste stream that can be recovered and marketed

Single Stream Recycling Timeline



Innovative Contracting Agreements
City of Port St. Lucie

- Establishing private-public partnership between St. Lucie County, City of Port St. Lucie, and the hauler (WastePro)
- Interlocal agreement with the City of Port St. Lucie
- Provides for guaranteed recyclable stream and revenue
- Minimizes risk to St. Lucie County
- Provides County-controlled disposal location for household waste

Innovative Contracting Agreements – Hauler

- St. Lucie County's tipping fee is $55/ton (tons delivered) plus $8/ton processing fee
- Guarantee of 100 tons/day (put-or-pay, $55/ton)
- Hauler is responsible for marketing and sales of all commodities
- St. Lucie County does not receive revenue from the sales of the commodities
- Minimal impact to St. Lucie County due to market fluctuations
- Hauler is averaging 135 tons/day
- Design capacity of facility is 120 tons/day

Single Stream Facility Construction

- Construction cost = $7.4M
- Housed in a 35,000 square foot building
- Equipment rated at 15 tons per hour (operating at 20 tons per hour)

Single Stream Facility Construction

- Infeed system
- Optical sorter (PET and HDPE)
- OCC screen, News screen
  Finishing screen
- Manual sort stations
- Conveyors
- Magnets
- Bunkers
- Eddy current separator
- Baler

Began operation in October 2014

Glass Recycling

- System purchased from Andela Products for $385,000
- Design capacity of 20 tons/hour
- Return on the investment if only used for daily cover = 9 years
- Tipping fee: $4.50/ton
- Glass is being trucked from West Palm Beach by a South Florida hauler
- Produces a 3/8-inch minus and sand aggregate

Multimedia Marketing and Education Campaign

- Television – SLCTV and 24 Networks on Comcast
- Radio – Top 8 stations in our market
- Digital format – Comcast.net, Treasure Coast Newspaper
- Print Media – local news outlet, brochure

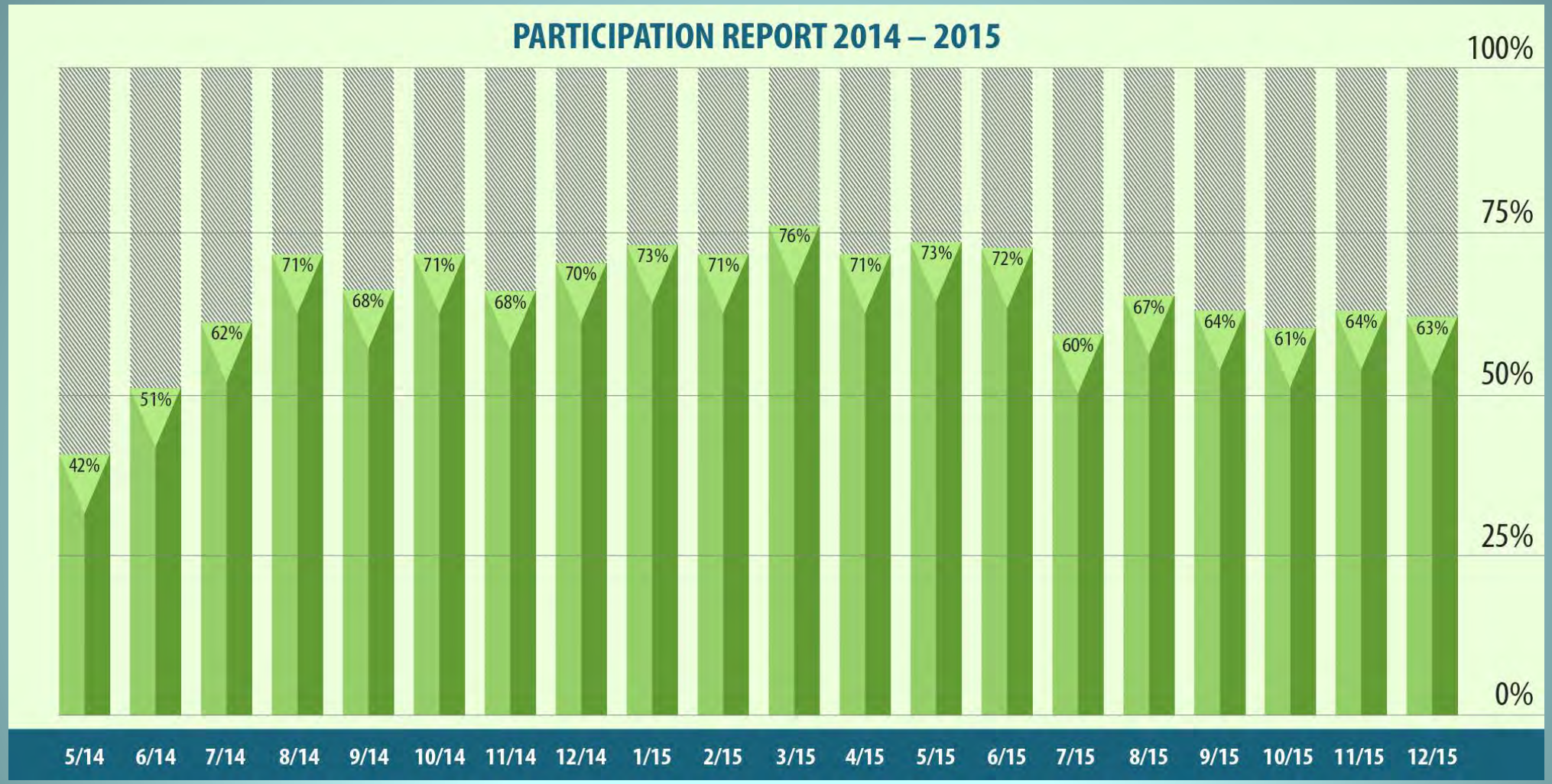
Recycling Challenge

- Began May 1, 2014
- Funded by Waste Pro through promotional funds per our contract agreement
- Residents are chosen at random
- Staff looks for carts that are placed at the curb properly and then checks to make sure the proper material is in the cart
- Resident is awarded $100
- Nearly $90,000 awarded to residents in unincorporated St. Lucie County and the City of Port St. Lucie

Recycling Challenge goes to the Fair

- Monthly recycling challenge funds will be used at the fair
- Fair goers will be greeted at the gate and reminded that “It Pays to Recycle Right” at the fair
- Volunteers will reward patrons at the fair with $10 bills
- The theme for school exhibits is Preserve the FUN…Recycle when done!

Recycling Participation Rates



*Data provided by Rehrig Pacific Company

Results

- Single stream recycling facility is processing 20 tons/hour
- Generated 22 new St. Lucie County jobs with no additional cost
- 50% increase in recycling tonnages
- Increase in public awareness
- Ability to target contamination
- Increased participation rate
  - May 2014 participation rate was **42%**
  - May 2015 participation rate was **73%**
  - December 2015 participation rate was **63%**

Questions

- Please use the “Questions” tab in in the attendee panel to submit a question
- Use the “Raise Hand” option to be identified for follow up

FDEP Waste Reduction Staff

- ***Karen Moore***
  - Environmental Administrator
  - Karen.S.Moore@dep.state.fl.us or 850-245-8864

- ***Shannan Reynolds***
  - Recycling: Solid Waste Management reports, Recovered Materials Dealer Certification and Reporting, Construction & Demolition Reporting Program, Public Sector Reporting Program
  - Shannan.Reynolds@dep.state.fl.us or 850-245-8716

- ***Laurie Tenace***
  - Special Wastes Management: electronics, mercury, batteries, household hazardous waste, pesticides, pharmaceuticals
  - Laurie.Tenace@dep.state.fl.us or 850-245-8759

- ***Henry Garrigo***
  - Grants Management
  - Recycling Market Development
  - Henry.Garrigo@dep.state.fl.us or 850-245-8822

Florida Department of Environmental Protection

Waste Reduction/Recycling

It Begins with the Bin

Residential Recycling Education

September 15, 2016





Appendix C -

Meeting Notes -

Recycling Business Development (December 2016)

Recycling Business Development Technical Advisory Group (TAG) Meeting Participants

December 9, 2016

Meeting Notes and Participant Survey Results

TAG Meeting Purpose:

By the end of 2020, the State of Florida is tasked to achieve a recycling goal of 75%. In order to meet the 2020 recycling goal, Florida must find ways to improve and expand markets for recyclable materials generated in the state and assure the continued viability and growth of Florida's business infrastructure.

The Florida Department of Environmental Protection (FDEP), with assistance from the Southern Waste Exchange, Inc. (SWIX), convened a Technical Advisory Group (TAG) made up of Florida business owners, waste management service providers, waste management and recycling consultants, local, state and federal government representatives, and non-profit organizations involved with waste management and recycling issues.

These participants, in an open and moderated discussion format, discussed and formulated specific recommendations to the FDEP about what the current impediments in Florida to increasing Florida's recycling markets and what actions the state can take to overcome these obstacles.

Summary of Meeting Discussions/Presentations:

After opening remarks from both the Southern Waste Information Exchange, Inc. (SWIX) and the FDEP, Mr. Jerry Powell, editor of Resource Recycling magazine provided a presentation about recyclable market development that summarized state policies and programs throughout the country. The following summarizes those remarks:

- Some of the more successful recyclable market development programs in the country are housed in those states' economic development agencies. Some have specific goals for their states' recyclable materials market development within their overall state economic development programs.

- Characteristics of states that have the most successful market development programs are: higher than average ($47/ton of material) disposal costs, landfill or disposal facility surcharges that help fund state market development efforts, state recycling mandates related to various recyclable materials and procurement of recycled content materials, grants/loans to support local government and private sector recycling efforts.

- Procurement of recycled content materials by both state and local government agencies can be a market development tool. Texas does good job of this through its Department of Transportation (DOT) for compost and processed glass.

- States can drive market development through encouraging/mandating Pay-As-You-Throw programs for residential waste collection.

- States can also drive market development through funding (grants and/or loans) of developing processing technologies of targeted materials.

- States that are more successful than others in market development for recyclable materials also have good data on status of the recycling industry for targeted materials based on in house or contracted expert staff that continually stays abreast of developments and gathers this data.

- Market development can include researching and exploring about new materials that may become waste in the future and how they may be managed.

- States that do not have comprehensive market development programs can still (if desired by the state) perform market development for just certain targeted waste streams (e.g., organics, plastics).

Obstacles/Impediments to Recyclable Market Development in Florida

- Lack of high disposal fees (statewide average is $42/ton, national average is $47/ton and states with most successful market development programs average well over $70/ton).

- Little or no grant funding support for market development programs at state or local government level.

- Sparse state and local government agency procurement of materials containing recycled content.

- Other than tire disposal fee, no disposal facility surcharges or other funding for state and local government recycling program efforts.

- Little or no financial and other support from state for existing and potentially new recycling business/industry.

- Historically low prices for recyclable commodities/materials that are or may be available, from both domestic and international markets.

Participant Survey Results

Specific Suggestions and Recommendations for the FDEP from TAG Attendees

- Increase coordination efforts with other state agencies (e.g., FDOT, Agriculture, Department of Management Services) for increasing the purchase of targeted recyclable materials (e.g., compost).

- The state should explore ways to create sustainable recycling markets. Not a market that only make sense to one segment of a population. Put more effort into developing efficient and economical markets. Ultimately, the municipal rate payers will pay.

- Less stringent permitting with regards to alternative fuels Grants to industry to evaluate recyclable materials in products (cement, asphalt are good examples....glass for fillers, plastics as fillers too, alternative fuels?)

- Organic fertilizer requirement in spring watersheds to help the market develop. Develop regulations to make asphalt shingles recyclables (4 to 5 percent of our inbound material). Address benzene limits and heavy metals limits in recovered fines and biomass fuel. Eliminate tangible tax on recycling equipment to make more money available to improve processing to create additional products.

- There should be a focus on some way to incentivize recycle efforts.

- To some degree the State is limited in what they can do because the market drives so much of the recycle business. But minimizing barriers anywhere they can might help in some cases. Also act as a communications facilitator and networking hub.

- Provide additional financial incentives to promote recycling, specify preference for recycled products (e.g. compost) in state/local procurements, implement some "penalty" for failure to meet reasonable recycling goals

- Encourage state agencies to use recycled products, compost etc.

- State procurement requirements, research and development grants for targeted materials i.e. organics, education and promotion of benefits of compost use in promoting healthier soils and water

- Guidelines for municipalities and their responsibilities to manage municipal programs to ensure success, education efforts centered on recycling right

- State should develop programs to promote the use of USCC STA compost.

- State procurement requirements, research and development grants for targeted materials i.e. organics, education and promotion of benefits of compost use in promoting healthier soils and water

- Guidelines for municipalities and their responsibilities to manage municipal programs to ensure success, education efforts centered on recycling right

- State should develop programs to promote the use of USCC STA compost.

Current road blocks or impediments to expanding markets for business recycling in Florida

- Innovation within the waste management community

- Cost associated with providing recycling service. Processors are charging more and more to handle recycling materials.

- No one is forced to do it. No mandates. No incentives (tax rebates, etc)

- Not enough incentives for business owners.

- No incentives/penalties. Costs for disposal are generally lower than costs of recycling.

- Low tipping fees in FL, lack of regulatory requirements to use targeted recycle content products

- Programs don't consider recycling of products when preparing Specs. They may address the extent of recycled product may be used in producing their product/service, but seldom address how the waste or used product is to be disposed.

- Geography/transportation; lack of understanding and education among municipal leaders responsible for contract language and assignment of responsibility

- Funding

Recommendations to advance recycling markets for Yard Trash, Compost and Wood.

- Work with FDOT to develop a specification for compost and mulch reuse on roadsides.

- Innovation within the waste management community

- You must find more useful applications of the derived product. In the state of Florida (at least the City of Tampa,) we have ample amounts of vegetative materials and we can't apply the product quick enough to sustain a market. That's why I believe few, if any, true compost facilities in our region have never successfully maintained operations longer than 5 years. Got to ship the product somewhere else or find more useful applications.

- Alternative Fuels

- Market wholesale volumes Statewide, and even out of State, to large scale users such as farms, golf courses and plant nurseries.

- Specify use of compost in state/local procurements.

- State FDOT and FDACS requirements to use and promote use of, review how compost and organic products can assist with water quality improvement, and reduce water usage

Recommendations to advance recycling markets for Plastics.

- Innovation within the waste management community

- #1. We need to change the way we measure the and count plastics recycling. The State of Florida will never reach a true weighted diversion rate for recycling if we keep trying to assess the weighted value by tons. #2. Also, consider adopting a post-consumer materials requirement for products derived from plastics. #3. Amp up the plastics recycling education campaigns.

- Alternative Fuels, Cement filler material

- Encourage cement kilns to use plastic for fuel.

- The multiple categories of recycling plastics is confusing to the general public. As a result, they throw the plastic in the garbage instead of sending it to the recycle company for sorting.

- Focus on increased recovery of plastic used in government construction and road projects. (irrigation pipe, fencing, etc.)

Construction and Demolition Debris Strategic Planning Meeting (July 2017)

Appendix C, Figure 2

Construction and Demolition Debris Strategic Planning Meeting
July 26, 2017

Moderator – Ray Moreau

Welcome – Kim Walker

Speaker – William (Bill) Turley, Executive Director of Construction and Demolition Recycling Association (CDRA)

CDRA a national organization to promote recycling of C&D.

Goal: Find out what stakeholders feel we need to present to the Legislature in order to increase C&D Debris recycling.

Overview of C&D:

- Suffering??? Price of oil
- By weight, C&D materials make up the largest material stream in the U.S.
    - Building related C&D and Road and Bridge C&D
    - 20% increase since 2012.
    - Most recycled waste stream at 73%.
    - Markets are the secret to C&D recycling
    - Direct and Indirect Economic Output

Topics for Today

1. Waste Hierarchy
    a. Reduce, Reuse, Recycling, Diversion, Landfilling
2. Zero Waste Program
3. USGBC and LEED
4. Support renewable energy credits for C&D biomass
    a. Renewable Energy Tax Credits
    b. Renewable Energy Credits (utilities) (REC Market)
        i. Would that increase recycling?

Discussion Topics

Renewable Energy Credits for C&D Biomass

- Tim Townsend – Would renewable energy tax credits increase recycling?
    - Danny: Increase end markets for the C&D materials. Why not a tax credit/break for recycling or buying products with recycled content. Financial incentive.
    - Tim R. (FDOT) - 20 separate DOT approved sources for recycled concrete- for base material. Crush concrete instead of lime rock. They can sell it as FDOT approved material.
        - How do facilities get put on the list of FDOT approved sources? Submit a quality control plan demonstrating how they evaluate the materials and uses and the explain the process used for testing. Maintain as an ongoing process. Once they have an approved quality control plan, then they are on a list of approved sources.
    - Bryce Hill – 17% is painted or treated lumber. If they could find a source for these materials, they would definitely separate it and send it.

Note: More discussion on this topic at the end of the notes under “Additional Discussion Topics”

Recovered Materials List Additions (Concrete, Asphalt, Wood, Other)

- Danny – Against this notion.
- Tim – Asphalt milling a problem? Where contractors are allowed to use the remaining 75% of RAP is an environmental/health concern.
- Tim T. – There is small amount of chemicals that will leak from RAP. It's a matter of assessing risks. The environmental community feels it is negligible. Others, think that even the small concentrations are harmful.
- Capturing the weights of these materials?
    - Tracking weights of materials.
        - Asphalt – National Asphalt Paving Association publishes a state report.
- Fred Nassar – concrete recycling. Must look at our uses. Recycling credits are received for road base, lake and land fill; those are not really good uses for recycled concrete. We must talk incentives.
- John Schert - Florida Local Environmental Resource Association???? (FLARA) Some counties and cities have separate environmental rules.
- Recommendation – we should be counting the direct reuse of materials.
- John – (Miami-Dade DERM) no more wood going into C&D facilities because ammonia was found in the drinking water.
- Tim R. (FDOT) - Non-stress concrete (not required to be structural re-enforced concrete. DOT specifications allow substitutions in that class of concrete. Local governments can require that a certain amount of those types of concrete have recycled content. (for example, a % of concrete aggregate be used in the non-stress concretes (sidewalks).
- Kim – Can see the counties arguing that it would add cost for the counties? Are there any studies.
- Tim R. – Yes, there would be a start-up cost. What is their proximity – transportation cost.
- Danny – What are the impediments? Tim, NONE!
    - Washout – get rid of waste and watering pit that minimizes the cement bonding action. Washout is a weak aggregate.
- Danny – People think that recycled concrete is less inferior to virgin materials.
- Tim R – Group called FACERS (city and county engineers) – They meet to discuss specifications. We could work with them to confirm/verify that recycled concrete is not an inferior product.
    - Lime rock is irreplaceable. Will eventually have to import or open new mines.
    - FDOT will work with cities and counties (send a memo) to ensure that recycled products are not inferior. Will work with their engineers.
- Maribeth – Do we have enough C&D facilities in the state?
    - Yes
- Charlie Latham – Need to also consider local recycling requirements. Some counties have strict requirements making it difficult to do business with them.

Require State Agencies to Prefer Recycled C&D Products

- Already something on the books.
- John Moyle – Glass? Using it in non-stressed concrete?
    - Tim R. – no approved source as of yet. Sustained supply is the problem.

Add a State Surcharge on Disposed, But Not Recycled, Material

- Suzanne – Surcharge on disposal, rebate on what was recycled??
- David Dee – Sounds like a tax.

- Bryce Hill – Already recycling at full potential; not sure if it will make a difference.

Resource Recovery Equipment Tax Incentive
- Yes

Statewide Disposal Ban on C&D
- Similar to Massachusetts, C&D must pass through a recycling facility
    - Probably will not happen

Demolition Permit Bond
- **?**

Remove "Economically Feasible"
- David Dee – keep language as is.
- Fred Nasaar (WM) – the "economically feasible" study is burdensome on the facilities.

Additional comments:
- There is a lack of political will
- There is a lack of infrastructure

<u>Additional Discussion</u>

Karen Moore - Are we happy where we are sitting?
- Willie - Are we capturing everything?
    - Probably not.

Kim – What do you want us to say to the Legislature via the report/plan?
- We are missing recycled tonnage by not including milled asphalt and concrete directly reused onsite.
    - Public Works Directors report,
    - Paving companies
- Incentives – they will drive demand
    - John Moyle – trade incentives
- Make it more attractive to buy recycled.
    - Remove sales tax on products made with recycled content.
- John Moyle – use the existing funds such as fees from battery charge and waste tire charge to incentive more recycling.

FDEP's Organics Recycling Strategic Planning Meeting (June 2016)

Appendix C, Figure 3

FDEP's Organics Recycling Strategic Plan Workshop
06/14/2016

Part 1 – Welcome and Introductions

- Karen welcomed everyone and gave overview
- Introduced Shannan, Henry, Lauren
- Properly managing organics can help us reach our goal of 75%
- Food waste counts as 7% of solid waste stream
- FDEP and RFT and FRP has had a series of webinars to discuss organics
- Looking for ideas to create a strategic plan to submit to state

Part 2 – Webinar 1 and Webinar 2

- Adam introduced himself – neutral facilitator not in organics field
- Yellow paper is code of contact – respect each other. We are all valuable.
- Business cards. Call Karen or Adam with questions
- Name place cards. Stand on edge to speak so we do not have a free for all

Henry

- Works for Karen at DEP, grants, recycling recognition program, recycling loan program, recycling business assistance center, tech outreach function
- Single stream, organics covered in webinars, 75 by 20 listserv to create dialogue and strategy.
- Two webinars both running 1.5 hours. 9 presenters
- 1st state of organics in FL. (webinar online for review)
- 2nd strategies and direction (webinar online for review)
- Go to DEP website on main recycling page. May move to own site in future.

Part 3 – Rolling Up Our Sleeves – A Group Discussion

1. ***Define strategic goals for both small communities (110,000) and large communities. (looked for top 10. Looking out for 1-2 years (3-5 years))***
   - 1.1. Sustainable programs – cost effective, last over time. Protect revenue stream that protects government bonds as we divert materials from landfills to other uses.
   - 1.2. Edible food does not end up in waste stream. Define ways for food recovery, not for profits
   - 1.3. Landfill diversion goals – diverting recyclables out of landfill Greenhouse gases – lower by reducing what goes into landfill
   - 1.4. Cradle to grave accountability by working farmers to look at organic composting side and enrich soils
   - 1.5. Develop infrastructure incentives to divert more organic material (grants, partnerships)
   - 1.6. Help small communities to explore public private partnerships
   - 1.7. Finding ways to reduce barriers for community scale composting city codes, ordinances)

1.8. Identify ways for lower tech systems to encourage (Gainesville Compost) systems for small communities
1.9. Create markets within 70-90 miles of local composting infrastructure.
1.10. Develop a targeted, focused promotional program – with grants/funding
1.11. Citizen education – create awareness. Note job creation and diversion benefits. Advance the political will – engage leaders in the process. It comes down to dollars.
1.12. Stay plugged in to ReFED program and leverage for state of FL
1.13. Find opportunities for business and their leadership to get involved at least those that want to participate. Along national CSR goals with localized strategies.
1.14. Strive to develop efficient COLLECTION systems
1.15. Look at long term infrastructure – design of facilities and facility size/expansion for appropriate capacities
1.16. Develop a series of BEST PRACTICES for communities – large and small… as well as state level. Populate a clearinghouse for information on BMP's.
1.17. Centralized, small community when thinking about communities let's think about what is already available (extension services) and the need for small scale facilities. (not a one size fits all for any program or area.) (if there is such a need)
1.18. Reduce the amount of organics that need to be managed.

Six categories/goals – economics and incentives, policy, generation, diversion (how much and what scale), infrastructure and collection, knowledge and education. DEP needs to look at creating activities among this 6 goals.)

Seventh goal – DEP get state agencies on same page. Karen – statutes already in place and further looking into and will take more power to get there. Collective push from outside organizations.

- The state of Florida is looking to reduce the production of organic material by…. (any given group)?
- Is this ok? We need a defined number and reason for the number.
- We have gotten where we are because we haven't been more specific. What value does this add?
- There is value to letting the local government set their own goals (financially and operationally)
- Focusing on organic material (food waste, trees…)
- Florida set goal of 75% but did not give direction, incentives or assist with goals.
- Florida has different environment and produces more organic material than other states. It rains, things grow…
- If something is mandated, it needs to be communicated what population is getting out of it.
- To reach our goal, we have to include organics.
- Getting everyone on board, will open up new door ways. The end users are plentiful in state. (SWIFT Mud)
- Get kids involved and on board.
- Local levels need more support, there are no mandates or incentives.
- A lot of regulations concerning agencies have been on the books for 10-15 years and have not been enforced.
- Should there be a strategic goal that calls out the public sector? Not how, but do want to?

- Counties have goals, cities should be mandated.
- Counties have been given the 75% goal. This is causing a county/city struggle.
- In the past, the material has been targeted not the generator.
- 360-degree question. Will change the way credits are calculated.
- Is it the diversion of the waste from the highest generators?
- Drive down to counties with the tools to get the job done. Give a picture of what you want a compost facility to look like.
- Revolutionary turn for Florida to focus on largest generators. Create mandates but give incentives. Counties cannot handle on their own. Maybe make a regional thing
- Miriam – doesn't see commercial sector letting happen in Florida.
- How is food waste defined (62701) and how food waste credits are reaching in the 75% goal.
- What is the incentive for meeting the 75% goal?
- To expect the counties to do it all without state help is nearly impossible.
- Struggle with idea of targeting potential sector may work where you have large populations may work but places where there isn't large concentration, where to they take material?
- What is the point for mandating? How do we decide?
- Does food waste need to move into the recovered material category? Because of public health reasons, it needs to be regulated.
- How collection and processing came about because a rule changed. Large business drove that change because their high diversion goals. Small and medium sectors will suffer from mandates.
- Even same industry, very different operations. (hotels that cater versus don't)
- County contracts can specify options for diversion? County contracts can't go into city jurisdiction. Can't mandate chunks of sectors/municipalities.
- If all emergencies are local, all trash is local. Each county needs to develop program.

The purpose of this is to…. Reduce amount of organics generated, diversion, composting, donation.

Advantage in the area of organics is being local. Other recyclables are trucked out of nearby areas.

To do – state follow-up and see what others are doing. A deep dive looking at other state level structures.

2. What policies will drive success?

2.1. We just aren't going to hit 75% and are we going to hit interim goals Only 70% of what we work with, can be recycled.

2.2. Without 75% goal, we wouldn't have hit where we are today

2.3. If DEP creates partnership with other state agencies impacted by ReFED. This will become a priority to other agencies.

2.4. A corporate desire for sustainability. And reporting for OWD. Citizens want too.

2.5. One step begets another. A champion will gain followers. Partnerships

2.6. DEP stepping up and saying this issue is important by listening (DEP submitted a report outlining all of the obstacles) You can generate political will by getting the right people around the table. Which people (organization) would want to move the political will? Mass citizen support can move mountains.
2.7. Organics constitutes a large portion of the waste stream. – a necessary component of the 75% goal.
2.8. Social pressure… competition

3. What barriers must be overcome?

3.1. Definition of "food waste"
3.2. Existing contracts with haulers that do not have provision for the diversion of organics
3.3. State and municipal funding (bonding) mechanisms
3.4. Counties have all the accountability /responsibility but not all of the authority
3.5. Low cost of disposal in FLA…. Also low willingness to pay for alternatives (which in turn is a cause for lacking political will)
3.6. Characteristic of food waste… it is high in volume of water, contamination, odor
3.7. Fear (and disbelief) is an issue. (increasing rates, losing elections, big change… (but FEAR CAN be a resource. Use the power wisely) ☺Solid Waste people get paid for what you put in the ground. Recycling was good while commodities are up but now they are down. LF or WTE pays the bills.
3.8. Culture - What's in it for me? As a consumer, business person, whomever "me" is.. We haven't defined
3.9. Disconnect between local action and corporate CSR goals. Getting more people on program
3.10. Lack of infrastructure
3.11. Regulations or lack of regulation or inconsistent regulation.
3.12. ROI for government investment will make it hard to get state money
3.13. No appetite for mandate
3.14. Little understanding of the state goal (ignorance)
3.15. People do not want to pay… is there education for costs? (tipping fees, environmental fees)
3.16. Apathy…

Some people wonder where this will really go looking at the past and the 2020 goal and what they can do in their jurisdiction.

4. How do we measure progress? What should the state strive for?

4.1. Waste reduction?
4.2. Diversion?
4.3. What's in the collection vehicle?
4.4. What is taken to a food pantry? Food pantry report weight delivered.
4.5. What goes into the front end of the compost facility vs. what goes out?
4.6. We need to have definitions on what is diversion and what is recycled.

4.7. Food banks – what does the stat need to give them to count for credit.Can the state come up with a conversion factor? (1 pallet = ??lbs, grass clippings, bins for backyard composting (Alachua County did phone survey))

5. ***Tactically, what concrete actions can we take to move the needle toward our goals?***
   5.1.
6. ***What do we increase demand for organic material?***
   6.1.

Part 4 – Furthering OWD in the Months Ahead, Wrap-up and Adjourn

Karen adjourned – DEP does here everyone loud and clear and understand that it will take political will. Looking at incentives and mandates (even though no one likes them).

The conversation does not have to stop here. Call Karen and her team to continue discussion. They are pulling something together in the next few months. This is not a consensus but want input from the voice of Florida.

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    - Recommendation: This question in premature because of the recent rule change in registration vs permitting.
    - Recommendation: Industry and Department of Agriculture need to work better together

- Working with Department of Agriculture
    - Who to work with?
        - Marketing representative was at meeting
        - Fertilizer group decline feeling they were not the right group
    - Recommendation: Tie with other issues such as water quality
    - What do we want them to come to the table with?
        - Follow through with statutes to use compost throughout the state
        - Work with water quality folks
        - Find out how many in the fertilizer industry using compost?
            - Educate by using the work “Optimize” rather than “Diminish”
- Food Diversion
    - EPA/Harvard Report
        - Great recommendations for federal, state and local
    - School Share Tables
    - Recommendation: State could take the lead regarding letting the public know about the resources that are currently available such as the various food waste diversion reports.
    - DEP plans to include case studies, etc. in our strategic plan
- Other
    - Include sludge in the definition of MSW
    - DOT usage/involvement
    - DACS involvement
    - Fertilizer taxes associated with compost
        - Guaranteed analysis

FDEP Organics Recycling TAG Meeting (December 2016)

Appendix C, Figure 4

FDEP Organics Recycling TAG Meeting
Teleconference 12/14/2016

Participants
Karen Moore
Shannan Reynolds
Henry Garrigo
Carmen Bruno
Chris Snow
David Hill
Katie Brown
Miriam Zimms
Nanette Warren
Tom Franklin
David Gregory

Introduction

- Discussed 12/9/2016 Market's TAG
    - Sustainable Landscaping Initiative
    - New landscape construction
    - Commercial site new construction
    - Agriculture do away with fertilizers
    - Higher end compost
    - Transportation cost
    - Streamlining permitting
        - Siting facilities in more populous areas
    - Extra points for contractors doing business with the State
    - Procurement mandates at local level?
        - State of Florida should research
    - Combine compost needs with other State needs (ie. Food recovery and water quality)
    - How to incentivize
    - Education
        - Cost of drying biosolids
        - Networking and case studies
        - Advertising/Marketing (i.e. television
    - Mandates and/or subsidies

Economics and Incentives

- Public/Private Partnerships
    - Example - City of Baltimore, Maryland partnering with Violia
        - Reduced the cost of biosolids
        - Cash back to City based on volume sells after meeting threshold
            - 50 cents back to the city
    - State already has existing Public/Private Partnerships
        - Charlotte County contracted with a private vendor (on county site)
        - Lee County
        - Consolidated provides feedstock to various companies making compost
    - Recommendation to encourage partnerships

- Financing
    - Composting is a “unknown” so financing could be tricky
    - Easier to get financing through a governmental agency or “angel” investor rather than through a bank.
        - High failure rate in composting industry due to smell factor
    - Recommendation for a loan program specific to this sector
        - Loan Program
            - FDA targeted to organics recycling
        - Grant Money
            - Research and development
            - Focus on organics waste stream
            - Structure similarly to R&E and Innovative Grants
                - Specific materials
                - If Legislature is more supportive of tying it to the 75% then yes.
                - Let industry drive because they need the help
                - Direct funding towards those materials lacking markets, etc.
                - Innovation?
            - Education: Work with Schools (lesson plans)
                - Potential to expand to businesses
                - Hernando County is working with their local schools.
                - Political education
    - Would Grant/Loan money go to local governments or businesses?
        - Require public/private partnerships
- Flow Control
    - Loss of revenue at the landfill is problematic
        - To overcome – add anaerobic digestion to add more energy to protect revenue. Can’t have food waste going anywhere else though.
    - Does DEP need to address this issue as it relates to economics and incentives. Is it hurting our markets?
        - Bigger issue than organics.
        - Regional issue, not statewide
        - Tough to tackle
        - Not recommended.
    - Seasonality and Tourism impact biosolids; huge challenge
- True Cost of Composting – Cost of Production is Not Covered
    - Lack of Education & Marketing
    - Government
        - Cost involved
        - Sales and marketing
        - Can’t compete with free
    - Economics
        - Compost company might not make as much here in Florida as they would in another state
        - How do we get more compost out of Florida to be used in compost mix by national fertilizer companies (Scotts)?
        - Optimize effectiveness of fertilizers by using compost

Organics Tag Diversion & Generation (March 2017)

Appendix C, Figure 5 -

Organics Tag: March 15, 2017

Diversion & Generation

Participants:

Karen Moore
Shannan Reynolds
Suzanne Boroff
Kim Walker
Tim Vinson
Ian Jurgansen
Carmen Bruno
Chris Snow
Miriam Zimms
Tom Franklin
Alice Varkey
Joe England

Diversion

1. How can the State help to increase the diversion of organics?
    a. Legislation – would like the State to take the lead to develop legislation to encourage diversion.
        i. Use other State's as examples.
    b. Involvement from other state agencies such as Florida Department of Transportation (FDOT) and Florida Department of Agriculture and Consumer Services (DACS)
        i. Teleconference is scheduled between FDEP & FDOT to discuss compost use on April 4, 2017.
        ii. Work to find a contact at DACS.
2. Are local governments able to assist with this effort?
    a. Hernando County – Working on developing a pre-consumer food pilot program with Publix Super Markets (8 stores). Pilot program will either be in partnership with their residential hauler or considering purchasing a truck for transporting and using county labor.
    b. City of Orlando – In a transition state and currently working with Harvest Power. The City emphasizes training and flexibility. They try to provide a cost neutral service by reducing garbage collection cost by increasing recycling efforts.
        i. The City of Orlando has also implemented a Backyard Composting Program and is willing to share their experience and the lessons learned. Recommended ensuring they have a carbon source and provide scales for data collection.
    c. Sarasota County – The County is entering into a partnership with the local Cooperative Extension Services to conduct a post-consumer pilot program. Will be giving out 100 composting bins (Geo Bin) to residents and will also provide the education component. Purpose is to collected data to determine the type and weight of the materials composted. Working with the University of Florida and plan to implement during the summer of 2017.

    d. Hinkley Center project was funded and includes a survey regarding backyard composting.
        i. http://www.hinkleycenter.org/pubs/764-measurement-of-solid-waste-diversion-through-voluntary-backyard-composting-activities-of-alachua-county-residents.html
3. Tax Incentives
    a. Good idea, but also need to focus on markets and the ability to make a product.
4. Small Community Incentives
    a. Limit the garbage collection and increase the collection frequency of recyclables and compost.
    b. Commit funds.

5. Senate Bill 1288 and CS/HB 1133
    a. http://www.flsenate.gov/Session/Bill/2017/01288
    b. http://www.flsenate.gov/Session/Bill/2017/01133

Generation

1. Vista no longer accepting food waste
    a. Last major market – What happened?
    b. Should perform case study.
2. More pre-consumer than post-consumer facilities.
3. Landfills are competitors because of low tipping fees.
4. Scott's contact information?

Other

1. Need for data. How much compost is FL generating? Could be more or less than expecting.
    a. Work with DACs to determine how much compost is sold in the fertilizer area.
2. Schedule a meeting or telephone discussion to discuss the ReFED and Harvard Report and determine what will work in Florida.
3. Review the FORCE website and to contact Miriam for revisions/additions.

State of Florida 75% Recycling Goal TAG Meeting (October 2017)

Appendix C, Figure 6 -

State of Florida 75% Recycling Goal
Technical Advisory Group (TAG) Meeting

Conclusions and Recommendations

Background:

By the end of 2020, the State of Florida is tasked to achieve a Municipal Solid Waste (MWS) recycling goal of 75%. In order to meet the 2020 recycling goal, Florida must find ways to improve and expand recycling. The Florida Department of Environmental Protection (FDEP), with assistance from the Southern Waste Exchange, Inc. (SWIX), held a Technical Advisory Group (TAG) meeting to focus on getting an understanding of the current status and developing actionable items, policies and programs from stakeholders. Participants, in an open and moderated discussion format, discussed and made specific recommendations to the FDEP about what the current impediments to increasing recycling in Florida and what actions the state can take to overcome these obstacles. The meeting goal was to use the information obtained to develop a strategic plan focusing on increasing recycling to present to the legislature.

Conclusions:

The following are conclusions from the discussions.

- Florida current recycling rate is approximately 56%.
- While the increase in the recycling goal has improved in recent years, the consensus of TAG experts is that the state is not likely to reach the 2020 goal of 75%.
- Getting to 75% would require a multi-strategy approach and economic resources.
- Using a weight-based target, as now in place, has inherent limitations, including not having the ability to compare the beneficial or detrimental environmental and energy impacts of specific recyclable materials.
- Single Stream Contamination hinders processing at Material Recover Facilities and effects the marketability and revenue received for recyclables.
- Lack of markets for Glass is a major issue for most counties and municipalities in the state and needs to be addressed.

- Impact or foreign initiative's i.e., China's National Sword may have devastating impacts on recyclable material markets for Florida and the rest of the country.

Recommendations to try and get to 75% recycling goal:

The following are bulleted recommendations/comments from TAG participants. The comments have not been edited and are displayed as inputted into the online comment system or submitted to SWIX for inclusion in this report.

- The Recycling Goal should be left intact as it is now and let the goal sunset in 2020 and adjust then to a sustainable materials management goal using a system that accounts for environmental and energy impacts of all materials.

- The state should consider assisting and encouraging local governments in the construction of more WTE facilities.

- Consider initiating a Bottle Bill in the state.

- Karen spoke of input received from numerous TAGs. That being said, I think the State should assemble a TAG specifically to deal with replacing the 75% tonnage-based goal with something that focuses on source reduction and recycling rather that separating tons that are never recycled. Separating and stockpiling is not recycling.

- *How will an "apples to apples" comparison be made depending on the report mechanisms local governments choose? If a recommendation is made to include SMM, energy measurement, along with weight board. *Any way to have mandatory recycling law, or appropriate ordinance, rule, etc. GREAT JOB TODAY!! * Recycling goal should link to infrastructure and markets that are available. State should support development of more of these. - The challenge is our goal should link to what we can accurately achieve. - How much of weight in state is recyclable in theory? How much recycling can infrastructure and market place support? - Suggest the state re-evaluate the goal...jobs from recycling are important. *Florida is not a level playing field. Disposal cost are more higher in south Florida, making it more cost effective to recycle in the south. In north Florida who pays the increased cost? Taxpayer, Shareholder? How do we incentivize? - C&D targets are over stated. Builders, contractors and haulers are source separating materials with value. It is cost effective to spend millions of dollars for a C&D MRF when you are attempting to recycle residue (with little value)? - Many municipalities do not understand the goal and how the goal impacts each entity (some believe funding is tied to their annual result). - Refocus on recycling 75% of materials with value. We are "End-Market Oriented" when end markets die....at what point does cost override the goal? - Private companies will recycle if there is a financial benefit. Consumers are less likely to recycle if it costs more than landfilling. Markets are less likely to improve unless recycling is mandated. *Should recommend to legislature that goal be

modified after 2020. - Need large and sustained education effort for State's citizens and leaders about waste management and recycling ($$ appropriation needed for this). - Perhaps put more emphases on per capita waste reduction in Florida as a way of tracking progress in source reduction and recycling. *C&D Recycling - RSM Fines = 20% + by weight. - Mandate or intent use as ADC. - Decentivize use of clean fill/mulch/etc. - Landfills underpriced scale rates to attract material undercutting C&D facilities. Tax landfill scale rates and use proceeds to either encompass RSM use as ADC or to subsidize recycling of low margin or negative margin materials. - Require deposits from builders during permitting which are refundable when material is disposed of at "approved C&D facilities". One approval criteria should be achieving a certain diversion rate. - Source seperation/recycling competes with C&D recycling. At construction or demolition projects, high margin materials are cherry picked.....no margin materials are disposed. As source separation and recycling increases, C&D recycling facilities become less feasible as high margin materials is cherry-picked from the C&D stream. - Give 100% credit for concrete used to fill ponds as the pond is filled as apposed to only when the pond is discovered as land. *Definitely believe that SMM need to prioritize approach to state's priorities to approach and make progress towards goal. - Florida needs more policies to drive progress toward the goal. Renewable energy from waste incentives (e.g., grants for anaerobic digestion, pyrolysis). The state need policy support...Massachusetts has a law for commercial food waste disposal ban and recycling. Minnesota has statewide "Pay-As-You-Throw" requirement for all local governments. - The Florida Legislature needs to support local efforts with policy.

- Waste Management recommends: 1. FDEP, the Legislature and stakeholders work together on a statewide redefinition of the 75% goal's measurement transitioning from a weight-based model to a Sustainable Materials Management model utilizing the EPA's WARM model "Energy" calculations to maximize the Environmental Benefit of recycling in Florida while insuring Economic Sustainability. The SMM model should include a cost metric. 2. The emphasis should be on recycling more of "materials that matter environmentally" and also MUST HAVE viable markets. (if there is no market, it is not a recyclable material). 3. Stakeholders should work together to educate Legislators, other industry/business groups, and Florida residents on this "back to basics" recycling goal that focuses on Environmental Benefit and Economic Sustainability.

- * A "cradle to grave" accountability and mentality needs to take shape in the state of FL. * Public information needs to be readily available, streamlined and consistent re: contamination factors and tolerances, resources for material movement and values offered in the grades of commodities. * The Industrial and manufacturing industries need to be under strict mandates to regulate their waste and diversion effects. * Dual and single stream Recycling needs to be a mandatory practice statewide for commercial businesses, libraries, schools, hotels, prisons and hospitals. * Implementing a “pay as you throw” program

incentive for the MSW produced from residential properties. * Events, conventions and attractions that produce a large tonnage of waste should be held to mandatory recycling guidelines and efforts. * Buy back centers for metals, glass, plastic and occ work well. Not only does it offer revenue to be placed back into the consumer loop, it creates jobs and assists in the clean up efforts and education for the environment. * Municipalities should at minimal offer composting opportunities, while engaging the agriculture industry .. farmers, vegetative sites and WTE locations. * It should be promoted by local and state government officials that any city with a high tourist volume, provide diversion opportunities in a transparent way. * All counties in FL should have mandatory regulations for proper diversion of C&D, vegetation and mixed metals. In addition to their due diligence to offer curbside recycling and commercial recycling through drop off sites, dumpsters, carts and compactor services.

- Four (4) suggestions: (1) Keep the 75% goal, as it is in the spirit of the legislature, but instead of having it weight based, can we reach the goal by saying diversion based, i.e. how much waste was generated vs how much waste actually went in to a landfill? (2) Can the state start identifying the land needed for a regional waste system? As the state population grows, and the need to more economically manage the growing waste stream grows along with it, there won't be the open space nor constituent will to cite new landfills or other final resting places. Can land be identified and purchased for private entities to eventually bid for design/build/operate contracts for a web of regional transfer stations that all feed their waste to a (or two or three) central WTE facilities and MRFs? (3) Can there be a study done to see the cost and carbon footprint of recycling specific items (collecting and processing) and compare that to the final outcome and/or revenue received to see if it makes economic sense to collect specific items. (4) What incentives can the state offer businesses to bring glass recyclers here.

- Stick with the 75% recycling goal, but recommend an incorporation and "weight" of SMM that Dr. Townsend spoke of (i.e. tires that go to WTE have a higher energy benefit than getting recycled, so they get an additional credit) - Include organics in recycling numbers - Add language to give counties more leverage on cities' recycling efforts - Provide Counties with statewide resources on technology, programs, grants, etc. that could help with recycling advancements in Counties with fiscal restrictions (i.e. inability to invest in WTE).

- Keep it. Trying to change it, with so few legislators even being aware of it (and it's impact) is a waste of resources. Need to raise awareness first.

- I don't care how we count the material I think we need more markets or ways to move material.

- 1.Categorize concrete and yard waste as certified recycling to increase the material reported and the accuracy of reported tonnages. 2. Create incentives

or penalties for C&D companies to recycle valuable C&D material. 3. Move to SMM or a volume-based reporting method.

- Sustainable Materials Management as a concept does not appear to be developed to any degree that would allow it to be put forward as an alternative to a weight based recycling goal. It is still a very nebulous term with no accepted framework to use and incorporate the variety of possible impact measures i.e. landfill diversion, GHG emission reduction, energy foot print, etc, so as to provide a comprehensive goal for waste reduction/recycling. And be able to communicate it to policy makers and the public. The reason simplified measurement tools like weight based recycling goals are used are that they are easier to understand, measure and communicate. And that is not even perfect due to the many ways and materials that states and communities have to choose from to do the weight based recycling measurements. SMM really does not seem at all feasible if the State is not going to provide any resources to create and target the extreme examples of what should be targeted with education and goals. Oregon appears to be using it to target large impact items in the waste stream to target i.e. carpet, food wastes and one other item with specific goals and programs to achieve something. Even here though it is limited a few items. Still need an over arching type goal to address all of recycling and waste reduction so as to move it along and maintain some requirements. And that is where Florida lacks also. With no enforceable mandates or resources to incentivize getting it done voluntarily, it will not be sustained on any consistent basis statewide past 2020. Some Counties and Cities will still feel compelled as part of their Integrated Waste Management Plans and response to citizen demands to include some form of recycling in their programs, but it won't be consistent or in any way related to a State Goal or effort. One reason there is not a lot of business recycling is because it is not mandated and businesses are not requesting it. And this is almost 30 years into it. The majority of business have very limited recycling other than maybe cardboard. Only bigger businesses have seen the significant financial benefits of recycling and have the space and resources to do it. Many small and mid-size businesses have not committed the resources to get their easily recycled containers and papers out of the waste streams due to the perceived limited financial impact on each individually. Collectively it would be significant though. Businesses should have the same requirements and accessibility to recycling as residential. Those communities that do this have the higher recovery/recycling rates. The state has also softened and stepped back from their earlier requirements for commercial C&D recycling. This needs to be strengthened and supported again to achieve greater C&D recycling and diversion. Requirements for commercial food waste recycling and diversion as well as expanded support for food waste reduction and reuse are also needed. Again it takes resources to increase food waste reduction. The State needs to be more involved and promoting the different national food waste reduction and recovery efforts.

- I am responsible for a Class III landfill and 5 transfer/recycling stations in central Florida. We recycle everything in the waste stream that is profitable for us to remove using basic labor and equipment. Profitability is primarily determined by our cost to retrieve the material and the income we receive from the processor (less transportation). We are able to recycle steel, concrete, aluminum, green waste, and copper that are large enough for use to see and remove from the tipped loads. In order for us to recycle other materials we need to be paid to do so, or we loose money and potentially go out of business. I think the market (locally and globally) has revealed what we (Florida) is able to attain, which is something to not be ashamed of. Lets keep the goal at 75% (weight based) and open the conversation on other ways to look at protecting our resources and environment. I believe this was the big picture view presented by Dr. Townsend and others. I thought the meeting was great and appreciate the opportunity to provide input.

- If the state is serious about making a valid attempt at increasing recycling rates then they should consider implementing more serious policies such as a landfill ban on OCC, mandatory commercial recycling, etc. I think in the long run, moving towards the SMM model is best. The state should also assist with developing domestic markets for recycled commodities.

- Increase competition in the collection and recycling of construction and demolition (C&D) debris to spur innovation and increase C&D recycling rates. Consider these suggestions to Increase Recycling of C&D Debris in Florida. 1. Local regulations: local governments are tasked with solid waste collections. Any legislation offered will not impact or preempt any local collections regulations. 2. Exclusive C&D franchises: offering exclusive franchises guarantees haulers monopolies over certain service areas. In so doing, innovation and competition are obstructed. Exclusive franchises for C&D should be eliminated. 3. Grandfathering provisions: In order not to trip constitutional prohibitions, all current contracts, tipping fees, and all other agreements will be honored until their contractual end. Existing contracts may not be substantially amended or extended. After termination, exclusive franchise agreements for C&D collections will be prohibited.

Appendix D -

County Recycling Plans -

Appendix D - County Recycling Plans

In 2008, the Florida Legislature set a statewide municipal solid waste (MSW) recycling goal of 75% by the year 2020. In 2010, the Legislature further directed that the goal be primarily applied to counties with a population of greater than 100,000. In addition, the Legislature set these interim recycling goals for those counties:

Calendar Year	Interim Recycling Goal
2012	40%
2014	50%
2016	60%
2018	70%
2020	75%

Section 403.706(2)(d), F.S., states that if a county does not achieve an interim recycling goal, the FDEP "may direct the county to develop a plan to expand recycling programs to existing commercial and multifamily dwellings, including, but not limited to, apartment complexes." In addition to the above changes, in Chapter 2010-143, Laws of Florida, the Legislature also introduced Section 403.706(2)(b), F.S., directing that counties implement a program for recycling construction and demolition debris as part of their efforts to attain the recycling goals noted above.

The Department requested County Recycling Plans from large counties not reaching the 2012, 2013 and 2016 interim recycling goals. Copies of these plans are provided below.

2015 County Recycling Plans

Bay County

Bay County Solid Waste
11411 Landfill Road
Panama City Beach, FL 32413
Telephone: (850) 236-2212

August 6, 2015

Shannan Reynolds
Environmental Specialist III
Florida Department of Environmental Protection
2600 Blair Stone Road
MS 4570
Tallahassee, Florida 32399
850/245-8716
Shannan.Reynolds@dep.state.fl.us

RE: Bay County Recycling Plan

Dear Ms. Reynolds,:

Attached for your review is a copy of Bay County's 2015 recycling plan.

Please call or email me at my office if there are any questions. I can be reached at (850) 236-2212 or gogborn@co.bay.fl.us.

Sincerely,

Glenn Ogborn
Solid Waste Superintendent

Bay County Recycling Plan

Current Recycling Activities:

Bay County Waste-to-Energy Facility - Bay County recycles primarily through the Bay County Waste-to-Energy facility (WTE) It is a mass burn unit that utilizes two 250 tons per day, O'Connor rotary combustors to convert waste into steam and ultimately into electrical energy. The facility has been continuously operated since its construction in 1987. On average, the facility produces about 60,000 mW's of electrical energy each year. As long as the facility is operational or the capacity of the unit has not been reached, all municipal solid waste generated within Bay County is processed at the facility.

In 2010, in order to increase our recycling efforts and to comply with the 75% recycling goal, Bay County made a significant financial investment in our recycling program by installing a metals extraction system at the Bay County Waste-to-Energy facility. The extraction system utilizes a system of magnets as well as shaker and eddy current screens to extract both ferrous and non-ferrous materials from the ash residue that remains after the combustion process. The metals are sent to various mills to be recycled and the remaining ash residue is then landfilled at the Steelfield Road landfill.

At the landfill, the ash is recycled for use as daily cover. The amount of ash residue remaining after the combustion process has far less volume that the original amount of garbage prior to combustion. For that reason, the combustion process has dramatically increased the anticipated life of our landfill. The Bay County Steelfield Rd. Landfill was originally estimated to reach capacity in 2019. That estimate is currently out to 2042.

Landfill Recycling Activities - During normal operations, the landfill is primarily an ash mono fill, a repository for the ash residue from the Bay County Waste to Energy facility. The landfill does accept bulky or non-burnable waste. It also accepts vegetative waste such as lawn clippings, leaves, limbs and trees but the vegetative waste is not landfilled. All yard trash such as this is mulched at the landfill and is used to help stabilize side slopes of the Landfill cells. It is also used in the County's parks along hiking trails.

The landfill also recycles appliances and other scrap metals, electronics, used motor oil, gasoline, batteries, and paints. Recycled paints are used to paint structures at all of the

county parks as well at several Department of Correction facilities that are located in the immediate area.

Recycling Drop Off Centers - In addition to our efforts at the Waste-to-Energy Facility and at the landfill, Bay County also operates five recycling drop off sites. The recycling drop off sites are operated to provide a recycling outlet to those who insist on recycling the conventional way, i.e. converting products of one material into other products of the same material. All of the recycling centers accept aluminum and steel cans, plastics, mixed paper and cardboard. We do not recycle glass because there is not a local market that will accept it and the cost to recycle it is prohibitive. The last quote that we received was $40.00 per ton.

Private Recycling Activities - Recycling occurs at other facilities in addition to Bay County owned facilities. The News Herald collects newspaper. Redco Recycling collects Mixed paper, Office Paper, Cardboard and Newspaper. Coastal Metals and Lewis metals recycle metal materials. Large commercial facilities such as Target and Walmart also recycle materials.

Currently, C&D Landfills within the County do not appear to be recycling materials.

Currently none of the local municipalities offer curbside recycling. One of the local waste collectors, Mr. Trash does offer a pay for pick up recycling collection service but it only services a very small percentage of the public

Several years back the Panama City Rescue Mission attempted to provide free curbside collections for recyclables but could not make a financial go of it. The thought was that the revenue generated from the sale of recyclables would cover the cost of collections. This of course was not the case and Bay County ,as well as the City Of Panama City were left to clean up the stockpiles of materials abandoned at the Rescue Mission's processing site.

Recycling Rates:

The current (2014) recycling tonnages and overall recycling percentages are:

2014 Municipal Solid Waste Generation:		
Collected Tons Single Family Units	103,178	Recycled 26,820 tons
Collected Tons Multi-Family Units	45,923	Recycled 11,937 tons
Collected Tons Commercial	222,723	Recycled 57, 895 tons
Total Collected Tons	371,824	Recycled 96,652 tons

With the credits Bay County receives for the operation of the Waste-to-Energy facility this works out to a 49% recycling rate for 2014.

This percentage is higher than for the prior two years. The year 2012's recycling rates were much lower than 2014's rates due to a fire at the Waste to Energy Facility that caused it to be inoperable for most of the year.

Construction and Demolition debris makes up a large percentage of the waste stream within Bay County. In 2014, construction and demolition debris accounted for about 25% of the waste being generated within Bay County. In years past, during periods of time when the area was experiencing heavy construction activities, construction and demolition debris accounted for approximately 50% of the waste materials generated with the county.

Bay County only processes a diminutive amount of construction and demolition debris at its facilities. The majority is landfilled by private companies who operate C&D landfills which are located across the county. Bay County does not control the materials processed at the Construction and Demolition Debris facilities. They are permitted to operate by the State and are issued a license, based on possession of a state permit, by Bay County. The decision as to what and how much to recycle is left up to the permit holder.

If you recalculate the recycling rate for Bay County, minus construction and demolition debris, Bay County's recycling rate is over 77%.

2014 Recycle rate if C&D Material excluded from waste stream:

Total waste collected	371,824 tons
C&D landfill waste excluded	- 92,956 tons
Total MSW handled by Bay County	**278,868 tons**
Total tons recycled	- 96,652 tons
Total tons ash recycled and used for daily cover	-47,275 tons
Total Tons combusted and turned into electricity	-71,602 tons
Total Tons Class 1 Landfill	**63,339 tons**

Percent landfilled/handled by Bay County =(63,339/278,868)*100% = 22.71% landfilled

Total MSW handled by Bay County = 77.29% recycled and combusted

If the State of Florida wishes to achieve the 75% recycling goal they can easily mandate, through permits or otherwise, that Construction and Demolition facilities recycle a certain percentage of their waste streams. The financial impact that such a mandate would have on construction and demolition facilities would be hard to define. It could have minimal impact or it could be devastating to their operation, depending on market conditions for whatever recyclable materials they generate.

In Bay County, the only C&D facility that actively recycles construction and demolition debris is the Trash Rolloff facility. This facility recycles concrete and other materials but does not offer the materials to the public. They are utilized by the owner in support of his construction company's activities.

Recycling Program Funding:

The Bay County Solid Waste Division is operated as an Enterprise Fund. It is solely funded from the collection of tipping fees, the sale of electricity and the sale of recyclables. The current tipping fee is $48.93 per ton and we receive $32.00 per megawatt for electrical energy sold to Gulf Power.

Recyclables themselves do not really generate any real revenue, far less than what it takes to maintain the recycling services that are provided. All of the public sector recycling efforts that occur in Bay County recycling are subsidized by tipping fees or other mechanism. This includes the operation of the Bay County Waste-to-Energy Facility. The Waste-to-Energy conversion process is expensive. It is far more economical to simply landfill waste than it is to try and utilize it as fuel and produce electrical power from it. The operation of the facility is a huge financial commitment that Bay County has made in order to protect the environment and to maximize the usefulness of the materials that enter the waste stream.

The metals extraction system at the Bay County Waste-to-Energy facility was constructed in 2010 for approximately $1.2 million dollars. The revenues gained by its operation were supposed to recoup the units construction and installation cost within its first year of operations. Unfortunately this has not been the case. It is in year five of operation and has just reached a break even state.

The recycling drops off centers are operated at a complete loss. The Solid Waste Division does not receive any revenue for plastics, mixed paper or for cardboard. We are just happy to have a vendor(s) that will take them. Aluminum and steel cans do generate a very small amount of revenue but hardly enough to cover the cost of fuel to collect the containers.

In 2010, the Solid Waste Division investigated the possibility of constructing a Materials Recovery Facility at the Bay County Waste-to-Energy facility. The thought was that we could both increase our recycling rate and increase the efficiency of the facility. This project was quickly scrapped when it was realized that the increase in operating costs would have required us to increase our tipping fees by 66%.

In 2008, Bay County did not have a local vendor that would accept plastics for recycling. In an effort to provide an outlet, the Solid Waste Division initiated an in-house plastics recycling program. We constructed a processing area at the landfill with push walls and

fencing, leased a baler from Waste Recyclers out of Dothan Alabama and utilized convict labor to process the materials. When we ran an analysis comparing expenditures (Labor, Fuel, equipment repairs) to revenues (sale of plastics) we found out that it was costing us about $475.00 per ton to recycle plastics in-house. Thankfully a local vendor began taking plastics so we quickly abandoned our in-house program and now take all plastics collected at our recycling sites directly to them. The vendor does not pay us for the material so we are still losing money on it but at this stage we are happy just to have someone that will take it.

Future plans to expand Bay County's Recycling Programs.

Bay County continues to seek out economically viable recycling options. We have recently made arrangements with a company out of Atlanta that has a proprietary process to extract granular size (less than 5/8ths of an inch) metals from the pre-processed ash and to convert the remaining residue into an aggregate material suitable for use as road base. This project is still in the testing stages. At this point we have shipped approximately 178 tons of Waste-to-Energy ash residues to their facility in Atlanta for testing.

Citrus County

INTRODUCTION

In 2008, the Florida Legislature set a statewide municipal solid waste (MSW) recycling goal of 75 percent by the year 2020. In 2010, the Legislature further directed that the goal be primarily applied to counties with a population of greater than 100,000. In addition, the Legislature set these interim recycling goals for those counties:

Calendar Year	Interim Recycling Goal
2012	40%
2014	50%
2016	60%
2018	70%
2020	75%

In Calendar Year 2012, Citrus County held a Traditional Recycling Rate of 25%, below the rate of 40% as stated in the Florida Statutes. In Calendar Year 2013, this rate climbed to 33%, which was still below the 40% Interim Recycling Goal. For Calendar Year 2014, Citrus County achieved a recycling rate of 44.72%, which was still below the 50% Interim Recycling Goal.

On December 23, 2014, Jorge Caspary, P.G., Director of the Division of Waste Management with the Florida Department of Environmental Protection, penned a *Request for Development and Submittal of County Recycling Plans*, which was sent to those counties which had not obtained the Interim Recycling Goal of 40% for 2012 and 2013. The request is for those counties to submit, in writing, to the Department of Environmental Protection, by July 1, 2015, their plan for increasing their recycling rate. Those counties include: Bay, Citrus, Clay, Escambia, Hernando, Indian River, Lake, Okaloosa, Osceola, Polk, St. Johns, Santa Rosa and Sumter.

At a minimum, the county recycling program plans should include:

- Summary of the services and materials for which you offer recycling such as newspaper, aluminum cans, steel cans, glass, plastic bottles, cardboard, office paper and yard trash;
- Analysis of the percentage of the county's MSW generated by the commercial, multifamily, and residential single family sectors;
- Analysis of any existing recycling programs for the commercial and multifamily sectors, including estimated customer participation rates and recycling rates for each of those sectors;
- Description of the county's implementation, including any planned changes, for your program for recycling construction and demolition debris;
- Description of efforts or opportunities to encourage recycling of yard trash, and other organic materials or mechanically treated solid waste, into compost or mulch that may be made available for agricultural and other acceptable uses;
- Strategy (including general timeframes) for expanding your county's recycling programs, or for creating new programs if needed, as part of your county's efforts to achieve the statewide recycling goals set forth in s. 403.706(2), F.S.; and

- Discussion of any additional steps, initiatives and any anticipated challenges the county foresees would be critical for implementing your strategies to achieve the next interim recycling goal of 60 percent in 2016, and ultimately statewide goal of 75 percent by the end of 2020.

Mr. Caspary's letter is attached as Appendix A for reference.

The document which follows is Citrus County's plan to enhance and increase its Recycling Rate in an effort to meet and exceed the goals as set by the Florida Legislature.

PAST AND PRESENT

Throughout the years considered in this document, the population of Citrus County has hovered in the 140,000 range. During this time, in addition to private businesses offering recycling of various metals, papers, plastic, and construction and demolition debris, Citrus County has had its own recycling program, offering recycling to its residents for the following materials:

1. Newspaper
2. Old Corrugated Containers (OCC)
3. Mixed papers
4. Office paper
5. Glass bottles and jars
6. Aluminum cans and foils
7. Steel cans
8. Plastic bottles
9. Plastics #1 through #7
10. Styrofoam
11. Scrap metal
12. Tires
13. Waste Vegetable Oil (WVO)
14. Waste motor oil
15. Antifreeze
16. Rechargeable batteries
17. Automotive and Small Lead Acid Batteries
18. Yard trash
19. End-of-life electronics
20. Spent fluorescent lamps

Items #1 through #9 are dropped off by residents at the County's seventeen unmanned single-stream recycling centers; three of which have limited hours, while the majority are open to the public twenty-four/seven. A private business, contracted by the County empties the eight-yard containers, and takes the recyclables to a Material Recovery Facility for processing. Curbside recycling is not widely available to the residents of the unincorporated areas of Citrus County, only to residents within the cities of Crystal River and Inverness.

Styrofoam is collected at the Citrus County Central Landfill, and processed there by County staff. Semi-trailer loads are recycled.

Scrap metal is collected at the Central Landfill, and two to three ninety-cubic-yard loads are recycled per week by a private company contracted by the County. In addition, the County's contractor also has rolloff containers, for the collection of scrap metal, at Utilities and at the Fleet complex. In addition, there are several private companies within Citrus County which recycle scrap ferrous and non-ferrous metals.

Tires from the Central Landfill are recycled as Waste-To-Energy by a private business contracted by the County.

Waste vegetable oil (WVO) is collected at the Central Landfill, and recycled by a private company, converting it into biodiesel.

Waste motor oil and used automotive antifreeze are recycled as used commodities by an environmental recycling company contracted by the County.

Rechargeable batteries are collected at the Central Landfill, and shipped to a private company for reuse of the metals and various chemistries.

Yard trash is collected at the Central Landfill, and ground and screened by a private contractor into mulch, for use by citizens, businesses and government.

End-of-life electronics are collected at the Central Landfill, and turned over to a private contractor for reuse of the various components and proper disposal.

Spent fluorescent lamps are brought to the Central Landfill where they are pulverized in a bulb crusher, for recycling of the glass, metal and mercury contained therein.

A copy of the 2014 County Annual Solid Waste Management Report for Citrus County is attached as Appendix B for reference.

The bulk of construction and demolition debris (C&D) in Citrus County has historically been handled at private C&D landfills. Typically, less than twenty percent (20%) has been recycled there, with the great bulk of the stream being landfilled.

FUTURE RECYCLING IN CITRUS COUNTY

The first type of item to be considered for future recycling in Citrus County is the type that will yield a high number of tons for recycling. This would be construction and demolition debris. The type of C&D debris most often coming to the landfill would be used concrete. Concrete rubble, brought to the Central Landfill, can be ground to a workable, beneficial size, such as 2" aggregate size. This recycled material can serve the beneficial purpose as being used as a base for road-construction projects. A nominal fee could be charged at the scale house for its disposal, and the fee could cover the County's costs of having a contractor come on-site to pulverize it. In addition to use by the County, the pulverized recycled concrete could be made available to the citizens, at a nominal cost, for residential projects. It is estimated that approximately 4,000 tons of this specific type of construction and demolition debris could be collected and recycled per year. This item alone, if reflected into the 2014 Citrus County recycling rate, would increase the rate from 44% to in excess of 48%.

Estimated costs: $23,000 per year Implementation Date; Calendar year 2017

Another area to be considered is that of carpet padding recycling. Carpet and padding are considered as "other plastic" for purposes of recycling. There are private companies who would be willing to place a semi-trailer at the landfill where residents could place their old carpet and padding for recycling. The County would bear no expense in this program. Nearby counties are using similar programs with some degree of success. Any amount collected for recycling would equate to tons credited to the County as recycled. It has been estimated that diverting carpet and padding from the waste stream could conservatively eliminate 50+ tons per year from landfill burial. This would result in an increase in the recycling rate in the 1% to 3% range.

Estimated costs: $0 per year Implementation Date; Calendar year 2017

Along this same line, there are private companies willing to place a container at the Central Landfill for the collection of used clothing and other textiles. There are already many places in the County where such containers are placed for the public to recycle their old clothing, but adding this to the recycling performed at the Central Landfill would be a convenience for the citizens. Any convenience in recycling to the citizenry could be expected to show at least a minimal increase in the recycling rate.

Estimated costs: $0 per year Implementation Date; Calendar year 2017

In addition, curbside collection by all certified haulers in the County should be phased in. To mandate this would require universal collection, or franchising. Some of the County's private haulers currently offer curbside recycling, in certain areas of the County. Adding this ease to the citizens has been shown in other municipalities, counties and states to dramatically increase the rate of recycling in their geographical areas. Coupled with curbside collection would be public outreach and education on the curbside program. This two-pronged approach has been shown to

work. The Recycling Partnership (formerly Curbside Value Partnership) estimated that this type of program increased recycling by 25.6% in Orlando, Florida. That type of increase would add approximately 11.25% to the Citrus County recycling rate, based upon the 2014 County Annual Solid Waste Management Report.

Estimated costs: $0 per year **Implementation Date; as directed by BOCC**

It is believed that implementing all the programs listed on this page would bring Citrus County to a recycling rate of approximately 60%, which, coincidentally, is the Statewide Interim Recycling Goal for 2016.

APPENDIXES

Appendix A:	December 23, 2014 Letter of Jorge R. Caspary, P.G., Director of Waste Management Florida Department of Environmental Protection
Appendix B:	2014 County Annual Solid Waste Management Report For Citrus County

Clay County

End-of-Life Materials Management: Clay County Recycling Program Plan

Prepared for:
Clay County Department of Environmental Services
3545 Rosemary Hill Rd
Green Cove Springs, FL

Prepared by:

Jones Edmunds & Associates, Inc.
Gainesville, FL

Innovative Waste Consulting Services, LLC
Gainesville, FL

July 1, 2015

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List of Abbreviations, Acronyms, and Initialisms

ADS	Advanced Disposal Services
BEBR	Bureau of Economic and Business Research
Class I	Municipal Solid Waste, Household & Commercial Garbage
CDD	Construction and Demolition Debris
DES	Clay County Department of Environmental Services
ECC	Environmental Convenience Center
EOL	End-of-Life
FDEP	Florida Department of Environmental Protection
IWCS	Innovative Waste Consulting Services, LLC
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
RERC	Renewable Energy Recycling Credit
SWMF	Solid Waste Management Facility
US	United States
US EPA	United States Environmental Protection Agency
WTE	Waste-to-Energy
WWTP	Wastewater Treatment Plant

1. Introduction

1.1 Project Background

In 2008, the Florida Legislature set a statewide municipal solid waste (MSW) (interchangeably referred to here as *waste* or *materials*) recycling goal of 75% by 2020, and in 2010 the Legislature further directed that the goal be primarily applied to counties with a population of greater than 100,000 in addition to setting interim recycling goals. The legislature established for these larger counties an interim recycling goal of 40% by 2012, 50% by 2014, 60% by 2016, 70% by 2018, and 75% by 2020. Clay County (the County) is the twenty-fifth most populated county in Florida, with an estimated population of 197,400 in 2014 (BEBR 2014) and hasn't achieved the Florida interim recycling goals. In 2014, approximately 195,400 tons of MSW was generated by the County, of which approximately 25% was recycled. The 2012 and 2013 recycling rate for the County was 25% and 27%, respectively. The Florida Department of Environmental Protection (FDEP) has requested all counties that have not met the interim recycling goal of 2012 to submit a recycling program plan documenting strategies to enhance recycling to meet the State-mandated goal(s).

1.2 Scope of Work

The work to develop a County plan involved the review of the state-of-practice of end-of-life (EOL) management of materials generated within the County, review of materials streams (e.g., yard waste, construction and demolition debris), and amounts recycled along with the associated strategies to promote recycling of these material streams in the counties that have achieved a 40% recycling rate in 2013, and identified several approaches utilized by US communities. Based on the review of data and information listed above, a list of options the County may consider in efforts to increase materials recycling to achieve the Legislature-set recycling goal of 60% by 2016, 70% by 2018, and 75% by 2020 as stated in Section 403.706(2)(d), Florida Statutes (F.S.). The Plan development work also identified challenges the County may face with implementing the identified strategies to promote materials recycling.

1.3 Report Organization

This Plan report is organized into six sections. Section 1 introduces the objectives, scope of work, and report organization. Section 2 presents a brief description of the County's population distribution and the amounts and the state-of-practice of EOL management of materials discarded within the County along with details of the current County recycling program. Section 3 describes the strategies to be implemented to expand the County's recycling program. Section 4 discusses the anticipated challenges in increasing the recycling rate from 25% in 2014 to 75% by 2020. Section 5 summarizes the report, while Section 6 lists the references used in developing this report.

2. Materials Collection and Management

2.1 County's Population Distribution

The County is split between an unincorporated area and four municipalities: Orange Park, Green Cove Springs, Penny Farms, and Keystone Heights. As shown in Figure 2-1, approximately 91% percent of the County's total population (197,403 in 2014) resides in the unincorporated areas (BEBR 2014).

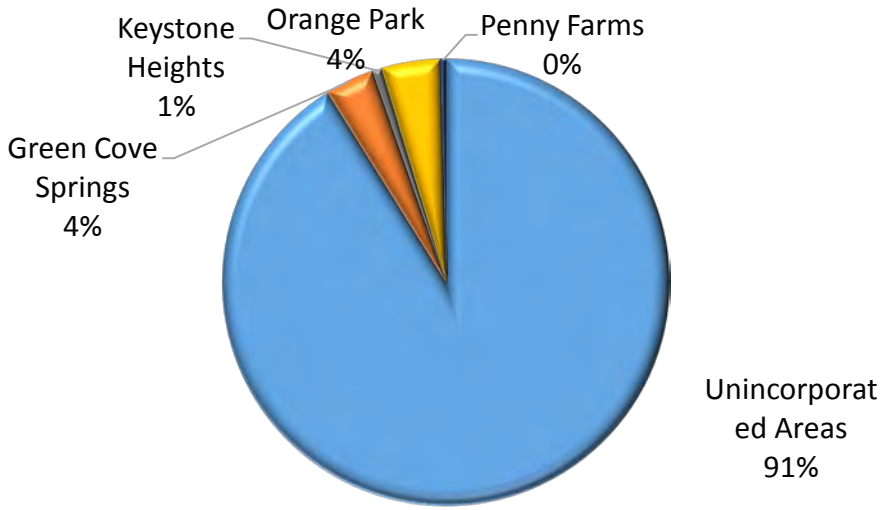

Figure 2-1. Distribution of Population in Clay County in 2014

According to the US Census, the County has approximately 76,350 housing units, out of which approximately 11.8% are multifamily units (US Census 2015a). The County also has 3,596 commercial establishments (US Census 2015a). Based on US Census numbers, the County has approximately 67, 350 single-family housing units and 9,000 multifamily units. Table 2-1 lists an estimated number of single-family, multifamily, and commercial establishments based on the population distribution of the County and its municipalities, percentage distribution of multifamily housing units (11.8%), and number of commercial establishments.

Table 2-1. Estimated Number of Single-family, Multifamily and Commercial Units in Clay County

Area	Single-family	Multifamily	Commercial
Unincorporated Area	62,604	6,965	653
Orange Park	2,093	1,167	2,064
Keystone Heights	218	307	32
Green Cove Springs	2,404	315	815
Penny Farms	29	256	32
Total	67,350	9,007	3,596

Note: Based on the US Census, Orange Park and Green Cove Springs has approximately 35.5% and 11.8% multifamily housing units, respectively (US Census 2015b, c). Based on the US Census, Orange Park and Green Cove Springs have 2,064 and 815 commercial units, respectively (US Census (2015b, c).

2.2 EOL Materials Management

The DES coordinates collection and management of materials and recyclables from single-family residences in the unincorporated area, whereas each municipality controls its own waste collection program. The DES has an exclusive franchise agreement with Advanced Disposal Services (ADS) for collecting waste from single-family residences of the unincorporated area of the County. The agreement requires ADS to deliver the Class I (materials that if disposed of can only be disposed of in a Class I landfill) and Class III ((materials that can be disposed of in a Class III landfill) waste from the unincorporated area of the County to the Rosemary Hill Solid Waste Management Facility (SWMF) (Class I Transfer Station, Materials Recovery Facility (MRF), yard waste processing facility) in Green Cove Springs. The Rosemary Hill SWMF is owned and operated by the DES. ADS also collects, under separate contracts, residential waste from Orange Park and Keystone Heights, whereas Green Cove Springs and Penny Farms collect waste with their own personnel and equipment. The waste collected from the municipalities is also brought to the Rosemary Hill SWMF. All the Class I and construction and demolition debris (CDD) received at the Rosemary Hill SWMF transfer station are transported to a landfill in Georgia, owned and operated by Chesser Island Road Landfill, Inc., which is a subsidiary of Waste Management, Inc.

The waste generated by multifamily residential units and the commercial sector from the unincorporated areas of the County is collected by up to 15 non-exclusive franchised waste haulers, which are overseen by the DES. As with the residential waste collection, the municipalities manage their commercial waste collection using either a single waste hauler or a non-exclusive franchise system. The Orange Park municipality has granted an exclusive franchise to ADS, and Green Cove Springs has recently implemented a non-exclusive franchise system for commercial services. Keystone Heights has an "open market" system wherein approximately 95% of commercial waste is collected by the ADS, while Penny Farms uses ADS exclusively for its commercial waste collection.

The CDD in the unincorporated areas is collected by up to 15 franchised haulers. All of the franchised haulers are required to deliver the waste (including CDD) collected within the County to the Rosemary Hill SWMF, and the majority of that waste is transported to the landfill in Georgia for disposal. ADS also collects yard waste from single-family residences in the unincorporated area, Orange Park, and Keystone. Yard waste collection in Green Cove Springs, and Penny Farms, is accomplished by each municipality's own forces. All of the yard waste collected from residences is delivered to a yard waste processing operation at the Rosemary Hill SWMF, where it is ground into a mulch material. The majority of the mulch processed yard waste material is transported to the Trail Ridge Landfill where it is utilized as daily cover. A small portion of yard waste is used as process fuel at the Gainesville Renewable Energy Center.

DES employs a dual-stream recyclables collection system for all the single-family residences in the unincorporated areas of the County; participation in the program is voluntary. The unincorporated area single-family recyclables are collected by ADS and transported to the Rosemary Hill SWMF. DES also operates four Environmental Convenience Centers (ECCs) where recyclables are also collected from residents. DES's residential recycling program includes newspapers and all inserts, telephone books, hardback and paperback books, magazines, high-grade office paper, junk mail and catalogs, shredded paper, corrugated cardboard, paperboard, all household use plastics (#1 through #7), CDs and CD cases, milk/creamer cartons, soup and broth cartons, juice boxes, steel and aluminum beverage containers. Until September 2014, the recyclables were processed at a MRF located at the Rosemary Hill SWMF. Since October 2014, DES has been selling the mixed recyclables to private entities for further processing and recovery, which has allowed DES to expand the materials categories recycled by the County, e.g., in the existing County operated MRF, Plastics#2 through Plastic #7 could not be recycled. Based on a

participation rate study conducted by ADS, approximately 39% of the unincorporated area single-family residents participate in the residential curbside recycling program.

DES also collects waste tires, used motor and cooking oils, batteries, e-waste, and white goods at the four ECC's and at the Rosemary Hill SWMF. DES does not have any control over recycling programs and practices at multifamily residences and commercial establishments, their participation is voluntary. Based on recent observations by DES staff, some multifamily units in the County participate in recycling programs directly with private entities who offer such services.

In summary, DES controls the flow of a majority of the waste generated in the County as a majority of the waste is generated in the unincorporated areas of the County, which falls under the jurisdiction of DES and the municipalities primarily use DES-franchised haulers, all of whom are required to deliver all of the waste collected to the County-owned facility.

2.3 Current State of Materials Generation and Recycling Rates

This section provides a detailed description of the current state of practice of collection and recycling of waste generated from residential and commercial sectors of the unincorporated and incorporated areas. As all the waste collected in the County is delivered to the Rosemary Hill SWMF, which is equipped with weigh scales to track materials flow in and out of the facility; weigh scale data of the facility was reviewed to determine wastes types and volumes, and the annual waste generation amounts for the various entities of the County. In total, the County generated 195,400 tons of waste in 2014. As depicted in Figure 2-1, residential Class I, commercial Class I (including multifamily), yard waste, and CDD contributes approximately 38%, 35%, 13%, and 14%, respectively, of the total waste generated in the County. Almost 100% of the yard waste was processed and recycled either as landfill daily cover or process fuel. Based on CDD recycling data from commercial activities reported to, and compiled by FDEP, approximately 1,200 tons of CDD were recycled in 2015, which is equivalent to less than 5% of the total CDD generated in the County.

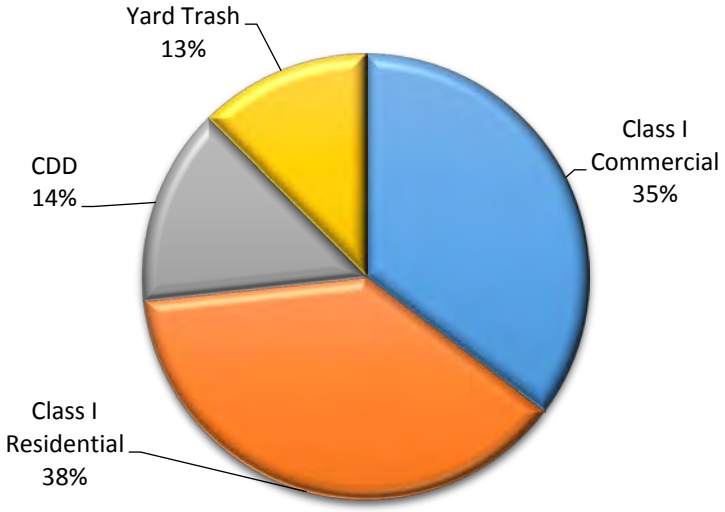

Figure 2-2. Distribution of Waste Generated in Clay County in 2014

Based on data compiled by the FDEP, 23,565 tons of recovered materials (certified amounts and amounts from Walmart and Target stores in the County), excluding CDD and yard waste, were recycled in 2014. Figure 2-3 shows the composition of materials (excluding CDD and yard waste) recycled in 2014. Metals (ferrous and non-ferrous) constituted approximately 50% of the total recovered materials recycled. Paper products (papers and corrugated containers) made up approximately 35% of the total recovered materials recycled.

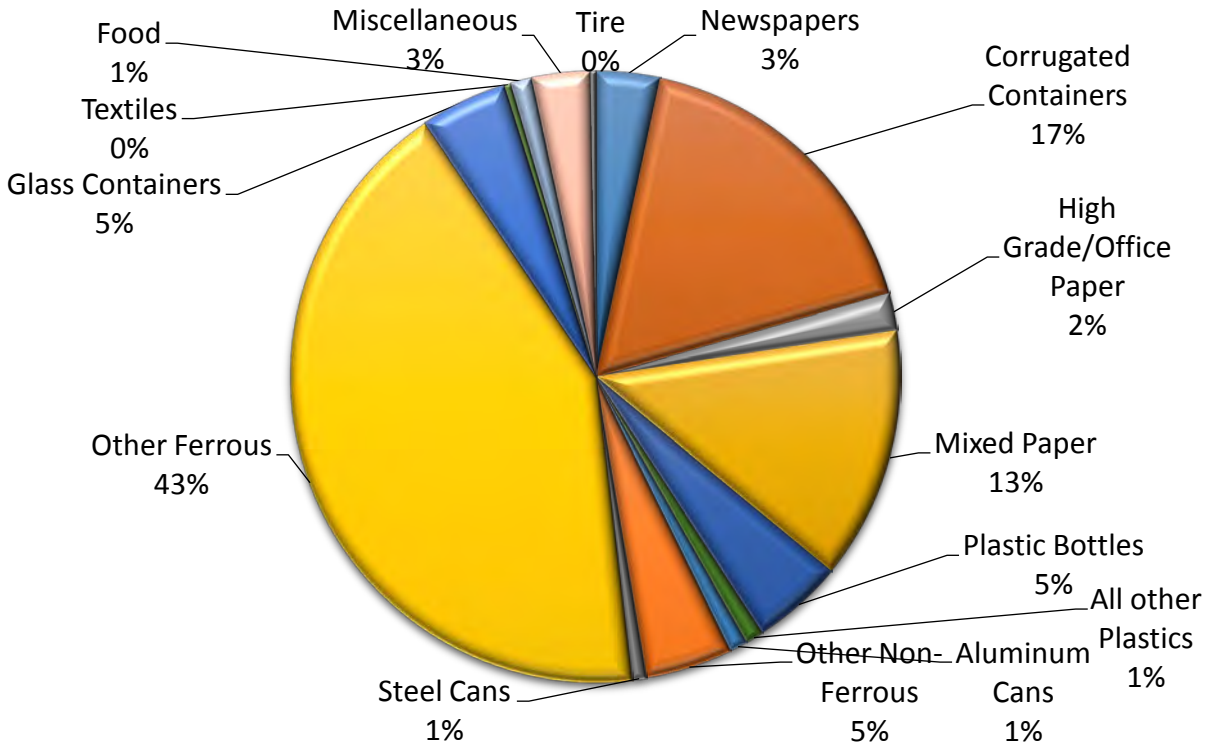

Figure 2-3. Distribution of Recovered Materials Collected in Clay County in 2014

The total amount of recovered materials listed above includes recyclables from residential, as well as, commercial sectors. An estimate of materials originating from residential and commercial sectors was made to assess the contribution of each sector. It should be noted that the municipalities may potentially sell their Class I residential recyclables directly, and may not deliver them to the Rosemary Hill SWMF. DES tracks the amount of recyclables collected from single-family residences located in the unincorporated area. The amount of residuals generated from processing of the collected recyclables is also tracked. The amount of residential recyclables recovered from Class I waste from municipalities was estimated based on recyclables (recyclables collected minus residuals) collection from unincorporated areas single-family residences and the municipalities population distribution data. The amount of recycled commercial Class I waste was estimated by subtracting the Class I residential recyclable amount. Approximately 18,100 and 5,400 tons of recovered materials recycled originated from commercial and residential sectors, respectively.

2.4 Summary

The County is split into four municipalities and an unincorporated area. Approximately 90% of the population resides in the unincorporated areas. DES coordinates waste and recyclables collection from single-family residences in unincorporated areas. DES does not have mandatory recycling programs for single-family, or multifamily residential and commercial sectors. Currently, 39% of the single-family

residential units in the unincorporated areas participate in the curbside recycling program administered by DES. DES does control, to a limited extent, materials collection from single-family residences in municipalities and multifamily residences and commercial establishments in the County, through exclusive (residential), and non-exclusive (commercial) franchise agreements with haulers. The current franchise agreements in the County requires County-franchised haulers to deliver all waste collected in the County to the Rosemary Hill SWMF, a facility owned and operated by DES.

Table 2-1 presents a detailed breakdown of the amount of materials generated and recycled, as well as, the recycling rate for the residential and commercial sectors of the incorporated and unincorporated areas of the County in 2014. In summary, approximately 195,400 tons of waste was generated, of which approximately 49,500 tons were recycled, and the remaining landfilled. The entire yard waste amount was recycled. The materials from the commercial sector represented the second largest stream of materials recycled in the County. Approximately 7% of Class I materials from the residential sector was recycled. Less than 5% of the CDD generated from the County was recycled. Figure 2-4 presents the distribution of waste recycled and landfilled from different sectors. It can be seen that a significant amount of Class I and CDD materials are landfilled. The County collects CDD (including carpet) along with garbage, and has established a limit of 1 cubic yard per week, with no single CDD item longer than 4 feet and a weight no more than 50 lb. It should be noted that the amount of CDD from the single-family residential sector from do-it-yourself projects, discarded with the Class I waste is recorded as Class I waste at the Rosemary Hill SWMF scale-house, since it is included with household garbage collection. Therefore, the actual CDD generated is more than the amount presented in Table 2-3.

Table 2-2. Total Waste Generated and Recycled in 2014 from Residential Unincorporated and Incorporated and Commercial Sectors

Waste Stream	Source	Generated 2014 (tons)	Recycled 2014 (tons)	Recycling Rate (%)
Class I	Residential-Unincorporated	67,072	4,986	7%
	Residential-Incorporated	6,323	443	7%
	Commercial	68,957	18,079	26%
Yard Waste	Residential-Unincorporated	18,346	18,346	100%
	Residential-Incorporated	3,538	3,538	100%
	Commercial	2,408	2,408	100%
Construction and Demolition Debris	Residential and Commercial	27,910	1,233	4%
Miscellaneous	White Goods	98	98	100%
	Tires	358	67	19%
	Others	333	333	100%
Total		**195,363**	**49,531**	**25%**

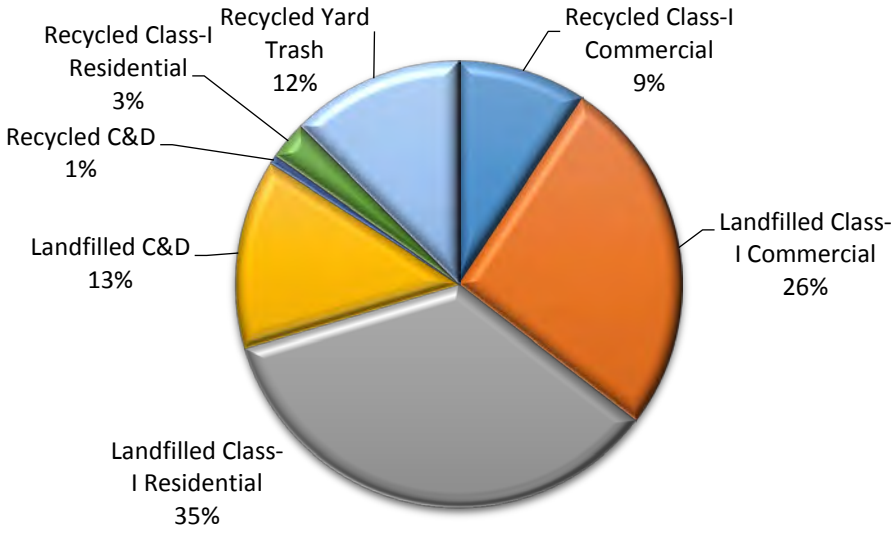

Figure 2-4. Distribution of Waste Landfilled and Recycled in Clay County in 2014

3. Strategies to Expand County's Recycling Programs

3.1 Overview

This chapter evaluates the County's current materials management program with respect to the other Counties in Florida that achieved a 40% recycling rate in 2013; 2013 data were used for the assessment presented in this chapter as 2014 data for the other counties were not available on FDEP's website at the time this report was prepared.

Figure 3-1 presents the per capita waste recycled and discarded rates for all counties in Florida in 2013. The county-wide per capita waste generation in 2013 was 0.93 tons/person or 5.5 lb/person/day, which was over 40% lower than the statewide average per capita waste generation rate of 1.59 tons/person/year. The net recycling rate for the County in 2013 was 27%, which was significantly lower than the Florida recycling rate of 49%. From a material conservation or source reduction perspective, the environmental impact of Clay County's EOL materials management system is expected to be smaller than a majority of the other counties in Florida, as per capita generation is much smaller than several other counties in the state.

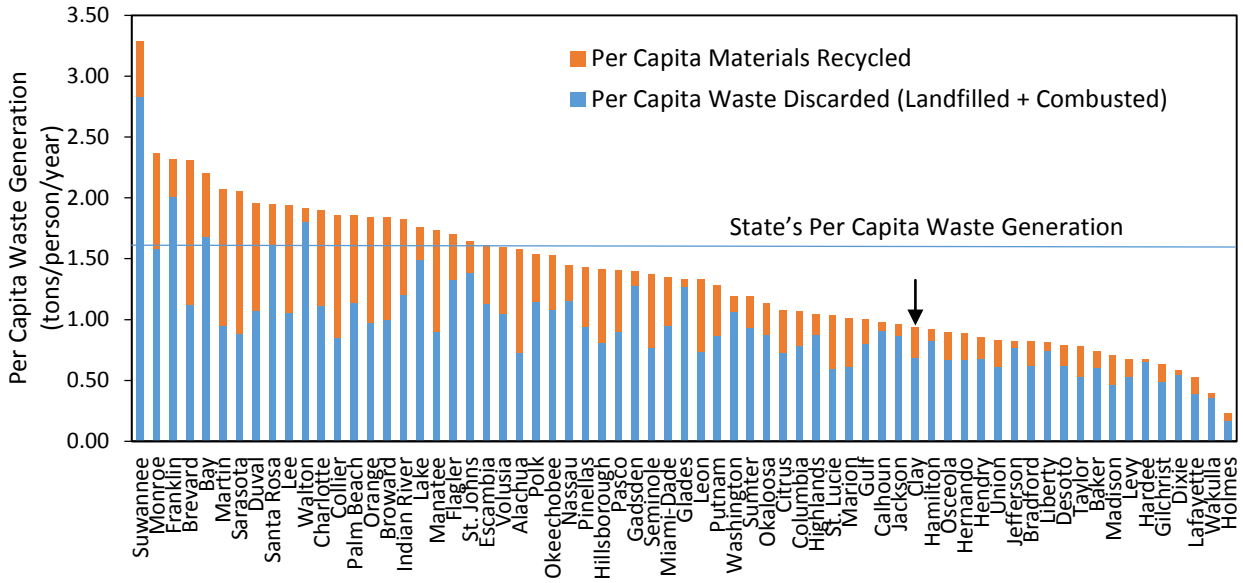

Figure 3-1. Per Capita Waste Generation Rate of Florida Counties in 2013

To achieve the State 75% recycling rate goal by 2020, the County has identified types of waste and sectors where improvement can be made. The County also has quantified the amount of waste that needs to be recycled to achieve the recycling goal by 2020. Additionally, the County has been evaluating the approaches utilized in other Florida counties, counties that have achieved the 2013 interim recycling goal of 40%, to identify potential strategies that the County may employ.

In comparing the amount, and the approaches used by other Florida counties that have met the 2013 interim recycling goal of 40%, it was observed that of the 23 counties that have reached the interim recycling goal, 16 counties (Lee, Collier, Sarasota, Martin, Brevard, Alachua, Duval, Seminole, Marion, Orange, Leon, St. Lucie, Manatee, Broward, Charlotte, and Hillsborough) reached the goal without using Renewable Energy Recycling Credit (RERC). The County does not envision combusting MSW as a way to achieve the recycling goal due to cost issues; the tipping fee at waste-to-energy plants in Florida is significantly greater than current management cost.

Figure 3-2 presents the contribution rates of several material types toward the overall recycling of the 16 counties that have achieved the 40% goal without RERC. As the figure shows, excluding recovered materials, and CDD, only 4 out of 16 counties had a greater cumulative recycling rate corresponding to all the materials than that of the Clay County. The County is recycling all the collected yard waste. The amount of recovered materials (from commercial and residential sectors), and CDD recycled, are the two most significant factors that contribute to a smaller overall recycling rate for Clay County, compared to these other counties.

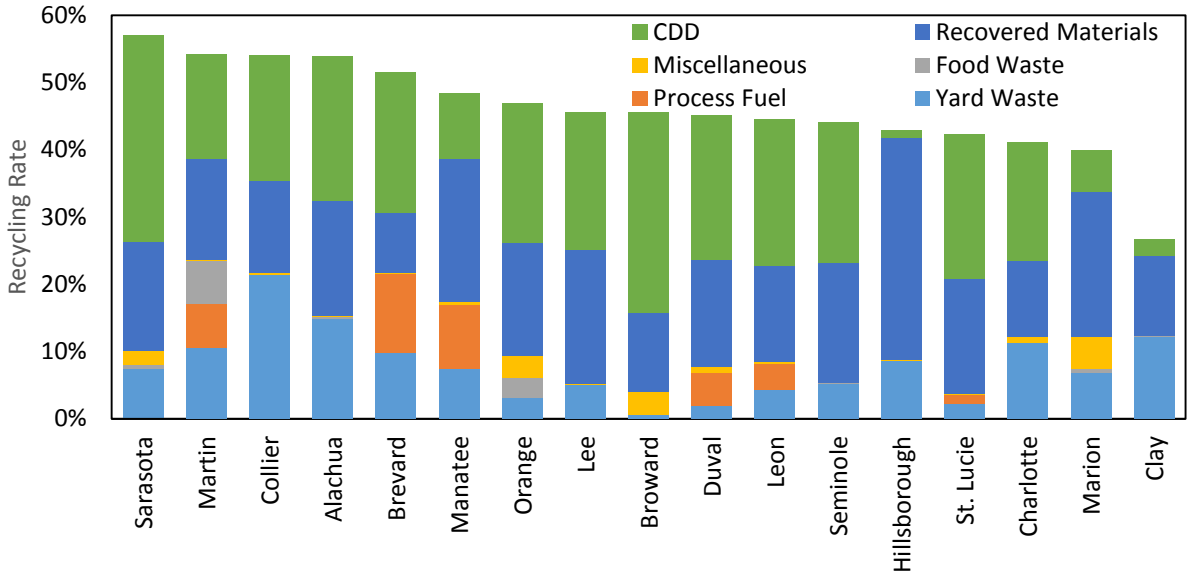

Figure 3-2. Overall Recycling Rate of Clay County and 16 Other Florida Counties that Reached the Interim Recycling Goal of 40% by 2013 without RERC

This chapter presents several options, and the associated strategies that the County is considering to increase the recycling rate. The order of presentation for the scenarios does not necessarily represent preferential hierarchy, and many of these may be implemented simultaneously. Several factors, such as cost, effectiveness of the identified programs/strategies to increase the recycling rate of other Florida counties, and the demographic make-up of the Clay County, would be considered for evaluating the potential implementation of these proposed programs/strategies in the County. The programs that are identified to be most economically, environmentally, and socially sustainable would be considered for implementation to enhance materials recovery and recycling.

3.1 Increasing Class I Commercial Waste Recycling to 50%

As described in the previous chapter, 26% of all the commercial Class I waste was recycled, which represented more than 75% of all the Class I recovered materials in 2014. Figure 3-3 presents a comparison of per capita recovered materials recycled by the identified 16 Florida counties that reached 40% recycling rate without using RERC. The figure shows that the per capita recovered materials recycled for 13 of the 16 counties was approximately two, or more, times that of the County. Therefore, it is anticipated that the County could realize a significant improvement in the overall recycling rate by enhancing source-segregation of recovered materials by commercial entities in the County.

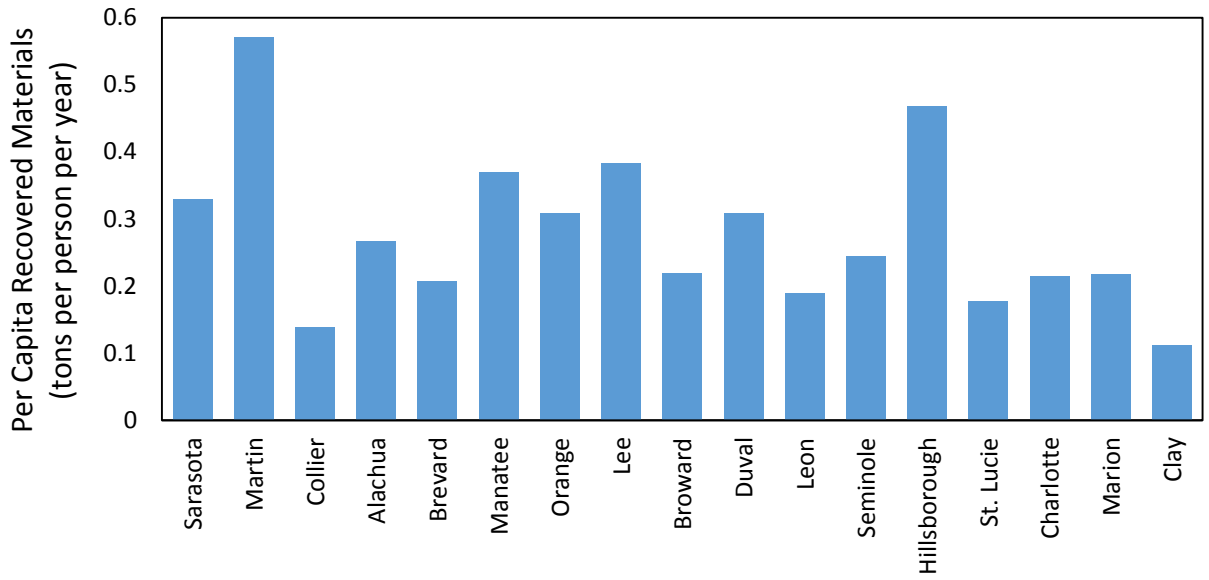

Figure 3-3. Recovered Material Per Capita of Clay County and 16 Other Florida Counties that Reached the Interim Recycling Goal of 40% by 2013 without RERC

The County anticipates that as much as a 50% commercial Class I waste recycling rate is possible, an achievement that would increase the overall recycling rate by 8 percentage points (from the current 25% to 34%). The County is initiating a campaign with entities such as the Chamber of Commerce, Apartment Association, Restaurant Association, and other similar organizations to raise awareness among businesses, and their employees, about the importance and benefits of recycling. The County is initiating efforts to work with franchised haulers to encourage them to offer recycling services to enhance the recovery of business-specific materials (e.g., paper recovery from professional services businesses). The County will be assisting businesses in development of plans specific to their businesses to implement recycling programs at their facilities. The County is also evaluating the development of ordinance(s) mandating that franchise haulers provide recycling services to businesses in the future. Seminole County has implemented a similar ordinance and it has netted reasonable results.

3.2 Increasing Class I Residential Waste Recycling to 25%

Currently, the County provides dual-stream recycling to approximately 63,000 single-family homes in the unincorporated area, which generated approximately 91% of all the Class I residential waste in 2014. Approximately 7% of materials generated by the residential sector were recovered and recycled through the current curbside recycling program. Recycling bins are provided to all single-family homes in the unincorporated area of the County. As described earlier, only 39% of these homes participate in the curbside recycling program. The County has recently started a public education awareness campaign directed at single-family residents, wherein media releases have identified the recyclable items included in the curbside program. The public information pieces have also informed the public of an expansion of recyclable items, primarily consisting of plastics #3 through #7. The County is considering an on-going, active awareness campaign regarding the importance of recycling, in efforts to increase the participation rate and to improve material recovery through the current curbside recycling program in the unincorporated area. The County is developing plans to work with the Clay County School Board to increase awareness, among elementary, middle, and high school students, of the benefits of recycling at school and at home. Further, the County is developing educational materials documenting the benefits of recycling for distribution at community events.

The County continues to evaluate programs such as, Pay-As-You-Throw, and single-stream residential recycling to enhance materials recovery. Although several studies have claimed improved recycling with their implementation of a single-stream recycling program, Sarasota and Alachua counties, which have the highest recycling rates (excluding RERC) in the state, employ a dual-stream program.

Although a quantitative estimate of the increase in the recycling rate associated with active awareness campaigns is not available, active community participation from these awareness campaigns is expected to significantly increase material recovery and recycling. If these active awareness campaigns increase the recycling rate for Class I residential waste from the current 7% to 25%, the overall recycling rate would increase by 7 percentage points.

3.3 Increasing CDD Waste Recycling to 50%

As shown in Figure 3-4, only 15% of CDD was recycled in 2013, which is significantly lower than the counties that achieved a 40% recycling rate (excluding RERC) in 2013; over 95% of the County's CDD was landfilled in 2014. Therefore, the County recognizes the importance of enhancing CDD recycling in increasing the overall recycling rate.

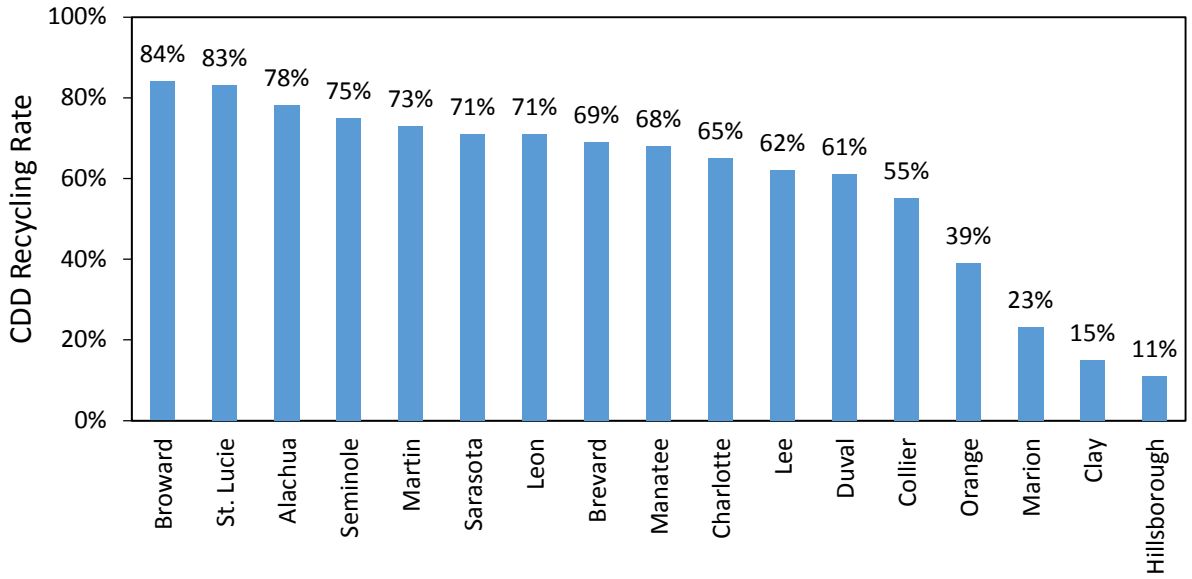

Figure 3-4 CDD Recycling Rate for Clay and 16 Other Florida Counties that Reached the Interim Recycling Goal of 40% by 2013 without RERC

Figure 3-5 shows the average composition of landfilled CDD based on five large-scale CDD composition studies (RW Beck et al. 2010, CDM 2009, CCG 2006, CCG 2008, CCG 2009). It can be seen that wood, roofing debris, and concrete constitute approximately 50% of CDD. The County is considering recovery of targeted materials (wood, concrete, and roofing shingles) to enhance CDD recovery and recycling.

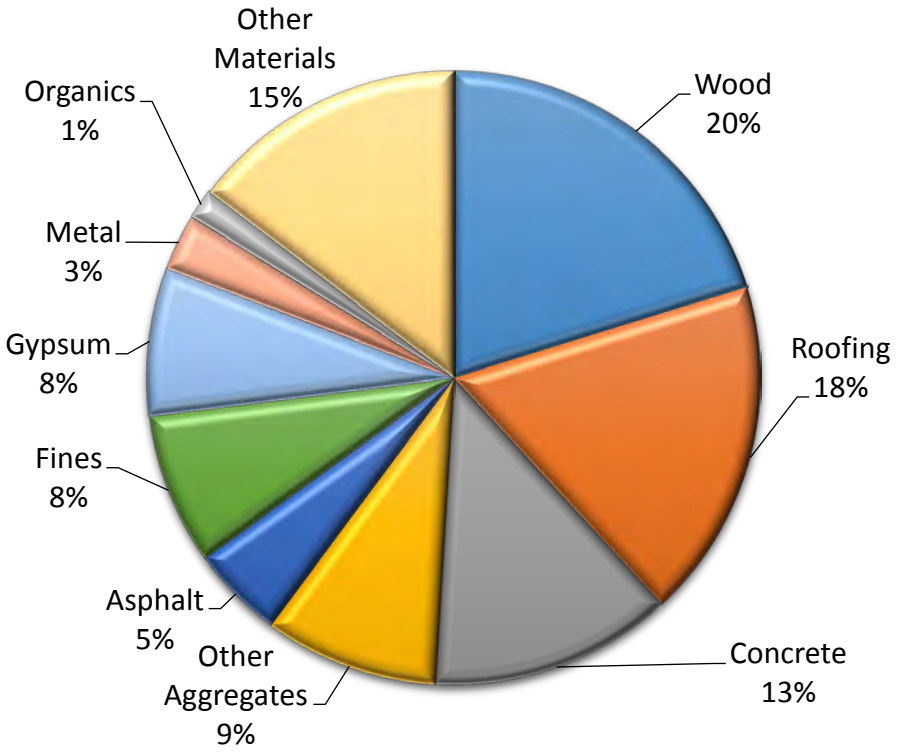

Figure 3-5. Weighted Average Composition of Disposed CDD Based on Results of Five Large-Scale CDD Waste Composition Studies

The County is developing plans to work with building contractors, and franchised haulers, to encourage the development of strategies to enhance CDD recovery and recycling. The County may consider processing selected CDD loads to enhance recovery of wood, concrete, and roofing shingles at the Rosemary Hill SWMF. However, in the near term such activities would be limited due to space constraints. The County would work with Waste Management (contracted operator of the transfer station) to enhance recovery of CDD prior to disposal. Although, some counties in Florida (e.g., Lee County, Seminole County) have implemented ordinances to mandate CDD recycling, several counties have enhanced CDD recovery without any mandatory CDD recycling ordinance (e.g., Alachua County). Increasing CDD recycling rate from the current 4% to 50% would increase the overall recycling rate by 7 percentage points.

3.4 Increasing Class I Commercial Waste Recycling to 75%

The County will evaluate the performance of initiatives described in Section 3.1 and will consider one or more of the following strategies to further enhance recovery and recycling of commercial Class I materials:

- Enhance the awareness campaign with provisions such as conducting business recognition programs in cooperation with the private sector and other local government bodies to recognize businesses that implement innovative approaches to enhance material recovery.
- Work with private and public schools and colleges in the County to implement source-segregation of food scraps in school cafeterias and composting of source-segregated organics. Based on a database compiled by the National Center for Education Statistics there are 47 public schools, 22 private schools, and 6 colleges in the County (NCES 2015). Based on the number of students enrolled in these institutions and established methodologies (CDEP 2001, VANR 2014),

approximately 650 tons of food waste are generated annually by these institutions. Although composting and recycling 650 tons of food waste would not have a significant impact on the overall recycling rate, such a program would be very effective in raising awareness about the benefits of source-segregation and recycling of organics.

- Work with restaurants in County to implement source segregation of food waste. Based on a survey conducted by BEBR, the County has over 300 restaurants with a seating capacity of approximately 25,000 (BEBR 2015a, b). Based on the seating capacity and established methodology (VANR 2014), approximately 14,000 tons of food wastes are generated by restaurants in the County, which represents approximately 30% of the commercial Class I materials currently landfilled.
- Work with hospitals and grocery stores to implement source-segregation and processing of organics from these establishments.
- Implement an ordinance to mandate recycling by businesses. Several Florida counties (e.g., Alachua, Sarasota) that have reached a recycling rate of 40% have mandatory recycling programs for commercial entities; however, the appropriateness of such an ordinance for Clay County would be evaluated based on cost, demographics, nature of its commercial activities and input from the business community.

Although the quantitative impacts could not be estimated, these initiatives are anticipated to significantly increase the recovery and recycling of commercial Class I waste. Increasing commercial Class I materials recycling from 50% to 75% would increase the overall recycling rate by 9 percentage points.

3.5 Increasing CDD Waste Recycling to 75%

If all the four strategies described in Sections 3.1 to 3.4 were successfully implemented, it is anticipated that the County's recycling goal would reach approximately 56%, which would still be short of the Legislature-set interim recycling goal of 60% by 2016. Therefore, the County may then plan to put its efforts into increasing CDD recycling up to 75%, which it estimated would add an additional 4 percentage points in total waste recycling, thus achieving the 60% waste recycling goal. The County anticipates that reaching such a high CDD recycling goal would be very challenging, and would, therefore, first evaluate the performance of initiatives taken as described in Section 3.3 to increase CDD recycling to 50%. The County would consider diverting the CDD to a material recovery facility to enhance recovery of metals, gypsum, and fines apart from wood, concrete, and shingles; however, financial and space limitations may dictate that these steps be deferred to later in the future.

3.6 Increasing Class I Residential Waste Recycling to 50%

To further improve the County-wide overall recycling, the County is evaluating the feasibility of increasing Class I residential waste recycling to 50%. Reaching 50% recycling goal for Class I residential waste would increase the recycling by an additional 9 percentage points, and increase the overall recycling rate to 69% (assuming attainment of goals discussed in Sections 3.1 to 3.5). The County would analyze the performance of initiatives taken to increase residential sector recycling as described in Section 3.2, and consider implementing one or more of the following strategies as determined by the County to be appropriate:

- Provide educational materials twice a year to keep the residents informed and aware of the County-wide recycling efforts and its benefits.
- Initiate a source-segregated organics program for the residential sector.
- Work with a local wastewater treatment plant (WWTP), if equipped with anaerobic digesters, to process source-segregated organics with biosolids. This collaboration would not only benefit

the County's organics recycling program but also benefit the WWTP as shown by a project conducted by East Bay Municipality Utility District, California (US EPA 2015).

- Work with multifamily properties owners (approximately 11.8 % of housing units in the County are multifamily units) and franchised haulers to assist in implementing recycling programs.
- Work with municipalities to enhance the recovery and recycling of residential Class I waste from municipalities. The municipalities contribute approximately 9% of the Class I waste collected from residential sector.

3.7 Increasing Class I Residential Waste Recycling to 65%

In efforts to achieve the Legislature-set recycling goal of 75% by 2020, the County would further analyze the strategies adopted as described in Sections 3.2 and 3.6 and consider implementing additional strategies to increase Class I residential waste recycling to 65%. The increase in Class I residential waste recycling from 50% to 65% would increase the recycling by an additional 6 percentage points, and, including the strategies described in Sections 3.1 to 3.6, the County's overall recycling rate would become approximately 75%. The County would consider processing Class I waste at a mixed waste MRF for additional recovery and recycling of materials. Additionally, the County would consider producing refuse-derived fuel for co-combustion in applications such as cement kiln or electric utility (Rigamonti et al., 2012).

3.8 Summary

Figure 3-5 summarizes the recycling rates that can be achieved by implementing the various strategies described in Sections 3.1 to 3.7. The County-wide recycling rate is anticipated to increase to as high as 75% with the implementation of strategies described above. The County plans to evaluate the environmental, economic, and social impacts of the proposed strategies, and implement the strategies that are found to be sustainable, and not cost prohibitive for the County.

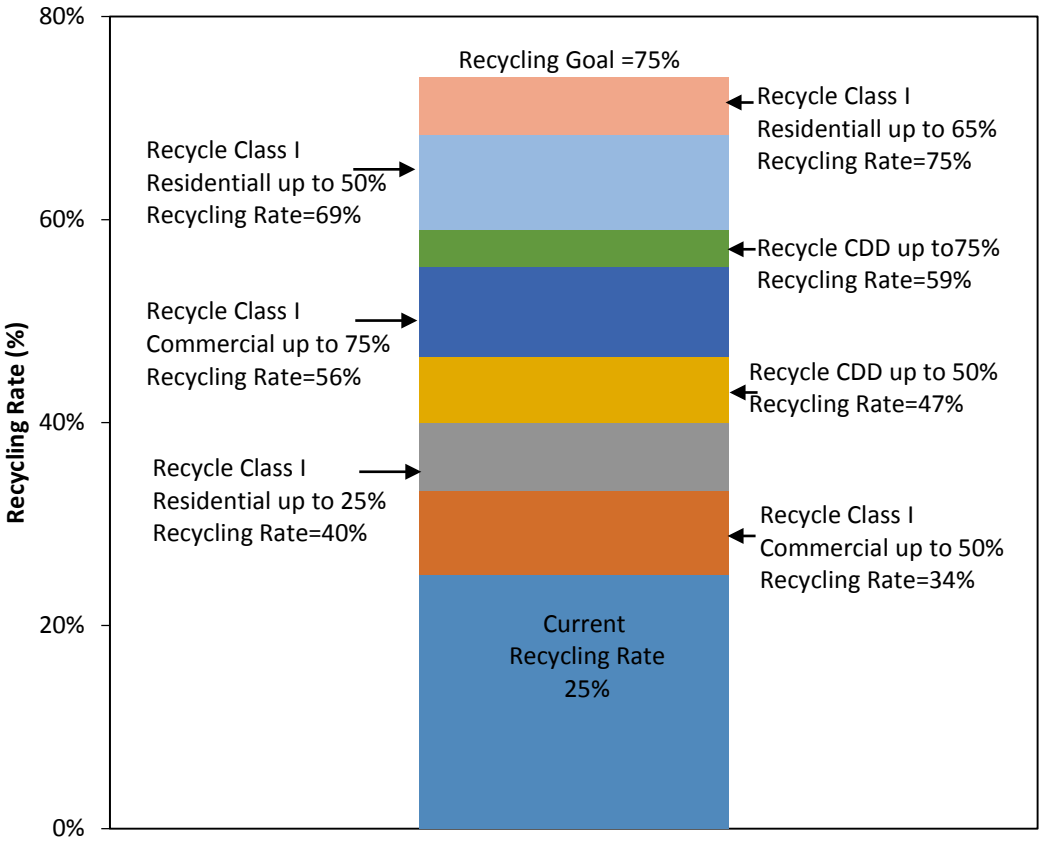

Figure 3-5. Recycling Rates Achieved Through Implementing each Recycling Strategy

4. Challenges

The County recognizes the need to improve its recycling rates for Class I waste generated from commercial and residential sectors, and the overall CDD to achieve an overall recycling rate of 75%. The County desires to target a 75% recycling rate for commercial Class I waste and CDD, and a 65% recycling rate for residential Class I waste. The County envisions progressive evaluation and implementation of strategies as discussed in Sections 3.1 to 3.7 to gradually increase the overall recycling rate from 25% to the goal of 75%. The County foresees the following challenges in achieving a 75% recycling rate in the next 5 years:

1. The total of recycled materials does not include CDD materials processed by source-segregated debris processing facilities, as these facilities, unlike CDD processing facilities, are not required to report quantities of materials processed and recycled. The amounts, if accounted for, may have a significant impact on the overall recycling rate. For example, approximately 50% of the materials recycled in Sarasota County in 2013 (with overall recycling rate of 57% in 2013) are associated with "CDD uncertified tons," which represents the amount of CDD recovered, and recycled, by facilities that are not required to report material quantities to the FDEP; without accounting for this materials stream, the recycling rate of Sarasota County would be less than 30%. The County realizes there will be challenges in tracking the amount of CDD processed by these facilities in the County. In addition, the County sees a challenge in accounting the waste tonnage from the entities that manage less than 600 tons per year of recovered materials and are not required to report their waste stream to the FDEP, which results in underestimation of the recycled tonnage.
2. The County realizes that the lack of a waste-to-energy (WTE) facility near the county negatively impacts the County's ability to increase its recycling rate by obtaining RERCs. The nearest WTE facility (Lake County) is over 100 miles from the Rosemary Hill SWMF. The waste transport cost in combination with a relatively high tipping fee at WTE facilities limits the County's ability to increase the recycling rate with RERC-associated waste combustion for energy recovery.
3. Several of the proposed options, such as mixed Waste Processing and CDD recyclables recovery facilities are expected to involve significant capital investment and operating cost, and will therefore significantly increase in the EOL materials management cost. The County's current material management cost is approximately $47.80/ton for Class I waste, which is comparable to the state average of $43.65 per ton (Green Power Inc). The County foresees a significant challenge in obtaining funding for these efforts.
4. While evaluating the strategies and the recycling rate of other Florida counties that have reached the interim recycling requirement of 40% in 2013 without using RERC, the County observed that it has the lowest per capita recovered materials collection tonnage compared to the other 16 counties (Figure 3.3). Of 16 counties, 13 counties recycle approximately two or more times the commercial and residential sectors, than does the County; however, a large portion of these recyclables comes from the commercial sector. For example, approximately 75% of the County's recycled/recovered materials results from the commercial sector, and only 25% come from residences; in Sarasota County approximately 65% of the recovered materials results from the commercial sector. As presented in Figure 4-1, the per capita recovered material generation is strongly dependent on the number of businesses per capita. Clay County has a significantly lower number of businesses per capita (1 business per 100 persons) than the counties that achieved a 40% recycling rate in 2013. The County foresees that increasing the

recycling rate for Class I waste from the commercial sector will be more challenging for Clay County than for other counties that achieved the 40% interim recycling rate goal.

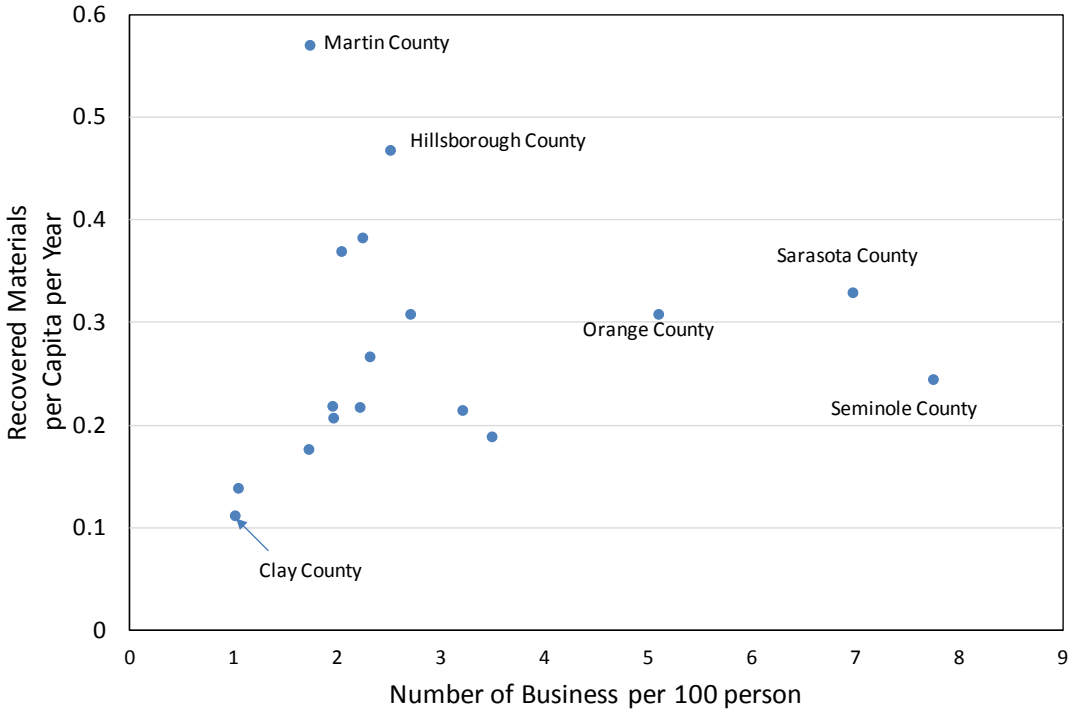

Figure 4-1 Recovered Material per Capita as a Function of the Number of Businesses in Clay County and 16 Other Florida Counties that achieved the 40% Recycling Rate by 2013 without using RERC

5. Summary

This report provides a detailed description of the current state of the County's recycling program and the efforts, and strategies the County is considering to progressively increase the recycling rate from 25% to the 75% goal established by the State. In 2014, the County recycled 25% of all the waste generated, of which 13% was yard waste. Class I waste and CDD contributed the remaining 13% of recycling. All of the yard waste collected was recycled; however, only 26%, 7%, and 4% of all the commercial Class I waste, residential Class I, and CDD, respectively, were recycled. Therefore, the County recognizes an opportunity to increase the recycling rate by improving the recovery and recycling of Class I waste from the commercial and residential sectors, and CDD.

The County is considering implementing multiple strategies to increase the recycling rate while realizing that reaching the 75% recycling goal from the current recycling rate of 25% within 5 years is a significant challenge. The County is envisioning a progressive increase in the recycling rate of various materials. The County is currently developing promotional materials, media releases, etc. to raise public awareness about the importance of, and benefits of materials recycling. In addition, efforts are being made to conduct workshops for residents, businesses, public and private schools; to encourage the processing of CDD to recover wood, concrete, and roofing shingles; to encourage source segregation of organics by schools and commercial establishments such as restaurants; collaborating with WWTP facilities with anaerobic digesters to promote the acceptance of source-segregated organics with biosolids; further investigate materials processing at mixed waste MRFs, and the production of refuse-derived fuel for co-combustion with other fossil fuels (e.g., coal) in applications such as cement kilns.

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Escambia County

Board of County Commissioners • Escambia County, Florida

Patrick T. Johnson, Director
Solid Waste Management

June 16, 2015

Ms. Shannon Reynolds, Environmental Specialist III
Florida Department of Environmental Protection
2600 Blairstone Rd
Tallahassee, FL 32299-2400

Re: Escambia County Recycling Program Plans

Ms. Reynolds:

The following information is submitted in response to your memorandum dated December 23, 2014 requesting Escambia County's future recycling program plans in accordance with 403.706(2)(d) F.S..

1. Summary of the services and materials for which you offer recycling such as newspaper, aluminum cans, steel cans, glass, plastic bottles, cardboard, office paper and yard trash.

All of Escambia County has curbside recycling available upon request.
The City of Pensacola (COP), the Emerald Coast Utility Authority (ECUA), and Mark Dunning Industries (MDI) for the Naval Air Station Pensacola (NASP) collects recycling on all the bases. ECUA also has some drop-off locations. Material accepted in the curbside programs include:

- Aluminum cans
- Aluminum foil and foil pie tins
- Bubble wrap
- Cereal and cracker boxes
- Corrugated cardboard
- Dry pet food bags
- Glass bottles and jars (rinsed, no lids, unbroken)
- Junk mail and envelopes
- Magazines and catalogs
- Metal pots and pans
- Newspapers and inserts
- Office and school paper
- Paperback books
- Phone books
- Pizza boxes
- Plastic bottles (narrow necked)
- Plastic cups, plates, utensils
- Plastic milk jugs

- Plastic produce clam-shells
- Shoe boxes
- Soda cartons
- Steel cans
- Tin cans

The Escambia County Department of Solid Waste Management (DSWM) provides drop-off recycling locations throughout the county. Materials accepted include:

- Paperback books
- Phone books
- Cereal and cracker boxes
- Corrugated cardboard
- Junk mail and envelopes
- Magazines and catalogs
- Newspaper and inserts
- Office and school paper
- Shoe boxes
- Soda cartons
- Office and school paper

Bulky waste pickup and yard trash are standard collection services with COP and ECUA. Yard trash is collected separately and brought to the Yard Trash Processing Area (YTPA). Details of this program will be addressed in #5.

2. Analysis of the percentage of the county's MSW generated by the commercial, multifamily, and residential single family sectors in Escambia County for 2014:

30% Residential Single Family
18% Residential Multi-Family
52% Commercial

3. Analysis of any existing recycling programs for the commercial and multifamily sectors, including estimated customer participation rates and recycling rates for each of those sectors.

Currently all multifamily dwellings have drop-off recycling available and options for recycling services from private companies. COP and ECUA do commercial recycling for a limited number of customers. We estimate 50% of recycling collected is from commercial customers and 13% is collected from multifamily customers. This is an estimate only. There are no onboard truck scales and all loads are collected by same equipment on same route and not tracked by ECUA or COP.

4. Description of the county's implementation, including any planned changes, for your program for recycling construction and demolition debris.

Escambia County currently does not have plans for any type of ordinance or program for recycling construction and demolition debris (C&DD). On a volunteer basis several private sector companies have performed limited C&DD recycling while operating C&DD Landfills. The DSWM does offer free tipping fees for clean concrete, concrete blocks and brick. This material is crushed, screened and repurposed as road building material for areas at Perdido Landfill (PLF) with unimproved roadways.

5. Description of efforts or opportunities to encourage recycling of yard trash, and other organic materials or mechanically treated solid waste, into compost or mulch that may be made available for agricultural and other acceptable uses.

The DSWM operates a YTPA at PLF. Currently all source separated curbside residential yard trash from ECUA and COP is delivered to the PLF YTPA as well as commercial yard trash and limbs and branches from Public Works, School Board and landscapers. Curbside yard trash is processed through a trommel screen to separate compost ready fines/unders from larger organics. The compost ready material is used on intermediate and final slopes at PLF to stabilize soil as well as provide seed and nutrients to grow vegetation. The screened larger/overs are processed through a tub grinder to produce a "dirty" mulch (because of comingled shredded plastic) to be used as an alternate daily cover which also helps with landfill gas production. Clean limbs and branches make clean mulch that is used for roadways at the working face of Class I.

In addition, on April 9, 2015 a Resolution was approved by the Escambia County BCC to allow ECUA to perform organics processing for a bio-solids composting project. ECUA is expected to be on line this fall with the bio-solids composting project. Also, on March 5, 2015 the BCC approved and Interlocal Agreement with COP for delivery of yard waste to the Perdido Landfill. This organic fraction from ECUA and COP has not been available for recycling for approximately three to five years. For this first time in several years, all residential yard waste generated in Escambia County will be recycled.

6. Strategy (including general timeframes) for expanding your county's recycling programs, or for creating new programs if needed, as part of your county's efforts to achieve the statewide recycling goals set forth in s. 403.706(2), F.S.; and Discussion of any additional steps, initiatives and any anticipated challenges the county foresees would be critical for implementing your strategies to achieve the next interim recycling goal of 60 percent in 2016, and ultimately statewide goal of 75 percent by the end of 2020.

In November/2014, the BCC and ECUA generated a joint Request for Qualifications for Mixed Waste Processing and Recycling Services. Seven responses were received and vetted accordingly. On June 25, 2015 a recommendation was approved by both the ECUA and BCC to rank vendors and enter into negotiations for Recycling Services for Escambia County. This process is on-going and, pending a successful contract approval, will increase Escambia County's future recycling rate.

It is understood EC was on track with the 2014 recycling goal of 40% in 2012. Due to the failure of local recycling processor, recycling decreased 2013 and 2014. Contracts with successful processors have been established and recycling has resumed at an improved rate. With processors under contract and the start up of organics recycling, Escambia County's recycling rate is expected to increase for 2016.

Pat Johnson, Director
Escambia County Waste Services

Hernando County

From: Carmen Bruno
Sent: Friday, June 12, 2015 2:04 PM
To: Scott Harper
Subject: RE: Request for Development and Submittal of County Recycling Program Plans

Please see the response to the Departments request for information on the county's plans to meet the seventy-five percent recycling goal.

Currently Hernando County currently has a two part approach to recycling; a residential curbside collection program and community drop off containers. The curbside collection program which includes yard waste is offered to any county resident that has trash service. The community drop-off containers serve both residential customers that self-haul their trash and commercial users that do not have recycling service. The materials collected for both systems include; paper products, paperboard products, white paper, newspaper, corrugated cardboard, plastics 1 thru 7, tin cans, and aluminum cans. The drop-off program also includes glass at select locations.

According to the information submitted by Hernando County for the 2014 annual solid waste management report the percentages are below (data is in tons),

Single family MSW	52,931	33%
Multifamily MSW	9,472	6%
Commercial MSW	96,211	61%
County total MSW	158,614	

Current efforts in Hernando County are focused on residential recycling. A questionnaire is being developed to send to the commercial recycling providers in the county to gauge the services that are available. This data will be important in any future planning for the commercial and multifamily sectors.

The county is setting up a team to evaluate future programs to include in the counties efforts to increase local recycling. Construction and demolition material is approximately twenty-five percent of the waste stream so recycling this material will be looked in this process

The county Recycling Coordinator is currently schedule to take the SWANA compost program that is being offered August of this year in Orlando. This will be the first step of any possible organic efforts that may happen in our community.

The goal of the county is to meet the current recycling goals within the time table set by the state or work as diligently as possible to produce positive results in a timely fashion.

The county is committed to use a mix of existing and emerging methods that are best suited for our citizens with the minimal financial impact.

If you have any questions about any of the steps outlined please feel free to call or email myself or Carmen. Thank you for working with us on this year's report.

Indian River County

INDIAN RIVER COUNTY
SOLID WASTE DISPOSAL DISTRICT

Landfill / Administration / Recycling
1325 74th Avenue SW
Vero Beach, FL 32968

Phone: 772-770-5112
Fax: 772-770-5296

Assessment Fees
1801 27th Street
Vero Beach, FL 32960

Phone: 772-226-1300
Fax: 772-226-1578

June 30, 2015

Shannan Reynolds **Submitted via email: Shannan.Reynolds@dep.state.fl.us**
Environmental Specialist III
Florida Department of Environmental Protection
2600 Blair Stone Road
MS 4570
Tallahassee, Florida 32399

Re: Request for Development and Submittal of County Recycling Program Plans

Dear Ms. Reynolds,

Please find attached Indian River County's Recycling Program Plan, dated June 2015, as requested by Jorge R. Caspary, P.G., Director, Division of Waste Management, Florida Department of Environmental Protection in a letter dated December 23, 2014.

The report outlines the steps Indian River County is taking to achieve the State of Florida recycling goal of 75% recycling by the year 2020.

Please call me at 772-770-5112 if you have any questions.

Sincerely,

H. Mehta

Himanshu H. Mehta, P.E., Managing Director

Cc: Joseph A. Baird, County Administrator
Vincent Burke, P.E., Director of Utility Services

INDIAN RIVER COUNTY, FL RECYCLING PROGRAM PLAN

June 2015

Submitted to:

Shannan Reynolds
Florida Department of Environmental Protection
2600 Blairstone Road
Tallahassee, FL 32399-2400
Shannan.Reynolds@dep.state.fl.us

Submitted by:

Indian River County
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Prepared by:

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Printed on recycled paper

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Section 1
Introduction

In 2008, the Florida Legislature set a statewide municipal solid waste (MSW) recycling goal of 75% by the year 2020. In 2010, the Legislature further directed that the goal be primarily applied to counties with a population of greater than 100,000. In addition, the Legislature set these interim recycling goals for those counties:

Calendar Year	Interim Recycling Goal
2012	40%
2014	50%
2016	60%
2018	70%
2020	75%

Section 403.706(2)(d), Florida Statutes (F.S.), states that if a county does not achieve an interim recycling goal, the Florida Department of Environmental Protection (DEP) "may direct the county to develop a plan to expand recycling programs to existing commercial and multifamily dwellings, including, but not limited to, apartment complexes." In addition to the above changes, in Chapter 2010-143, Laws of Florida, the Legislature also introduced s. 403.706(2)(b), F.S., directing that counties implement a program for recycling construction and demolition debris as part of their efforts to attain the recycling goals noted above.

In 2014, Indian River County (County) completed an update of its Solid Waste Master Plan. As part of this process, the County identified actionable options and opportunities to help the County increase recycling and strive to achieve the State recycling goal.

This document is submitted in response to the December 23, 2014 memorandum from Jorge Caspary, DEP's Waste Management Division Director. As requested in the memorandum, the County did not reach the 40% interim recycling goal in 2012 and is therefore submitting a recycling plan to DEP. The plan provided herein summarizes the action plan outlined in the County's 2014 Solid Waste Master Plan Update and addresses the items outlined in the DEP memorandum.

Section 2
Current Recycling Programs

2.1 Summary of Services and Materials

In 1993, the County entered into Inter-local Agreements (ILAs) with the five municipalities within the County (Fellsmere, Indian River Shores, Orchid, Sebastian, and Vero Beach) that authorize the County's Solid Waste Disposal District (SWDD) to provide a residential recycling program. SWDD offers this service, through its exclusive waste collection franchises, to all County residents and includes the cost of this service in the non-ad valorem assessment. The franchise agreements include providing recycling services to multi-family dwellings; however, not all complexes participate due to space constraints and other reasons. Franchisees are also required to encourage commercial recycling; however, per Florida State law, they are not granted the exclusive right to do so.

Currently, recyclables are collected dual stream in bins. SWDD provides recycling bins; residents are responsible for obtaining them at various locations throughout the County. The following materials are accepted:

- Container bin – plastic containers #1-#7, glass containers, aluminum cans and foil, steel and aerosol cans.
- Paper Bin – newspaper, phone books, envelopes/junk mail, office paper, shredded paper, catalogs/magazines, brown paper bags, chip/paper board, clean pizza boxes, and cardboard.

The County also operates five Customer Convenient Centers (CCC) where residents can self-haul waste, yard trash, bulk waste, and recyclables. In addition to the recyclables collected curbside, the County also accepts tires, white goods/metals, household hazardous waste (HHW), expanded polystyrene, and E-waste.

The various types of recyclables are managed as follows:

- Recyclable fiber and containers are delivered to the SWDD facility, and then transported and processed through a contract with ReCommunity.
- Waste tires received at the landfill and CCCs are stored in the waste tire storage area at the landfill. The County currently contracts with Wheelabrator to remove and process the tires as fuel.
- White goods and scrap metal are accepted at the landfill or removed from incoming waste loads. They are stored separately and, once the Freon has been removed, marketed to Trademark Metals for processing.
- Expanded polystyrene collected at the landfill and CCCs is processed at the landfill using a foam densifier acquired from RecycleTech through a state-funded innovative grant. RecycleTech then collects the condensed polystyrene ingots.

- Household Hazardous Waste (HHW) & electronics (E-Waste) are accepted at the landfill and CCCs. A private vendor, Environmental Quality (EQ), is contracted to properly consolidate, package, and transfer HHW to a permitted out-of-county facility for recycling and disposal. EQ also operates a Small Quantity Generator program for small business waste generated within the County on a fee basis. Businesses are responsible for arranging transport and disposal services with EQ directly.
- Used oil and oil filters are accepted at the landfill and CCCs. The County contracts with Cliff Berry, Inc. to remove and process them.

The County and municipalities collect segregated yard trash from residents on a weekly basis. In 2011, the County signed a 20-year agreement with INEOS to accept and process vegetative waste (yard trash and land clearing debris) and landfill gas from the County's landfill to produce cellulosic ethanol, a form of bioethanol, using gasification and fermentation technologies. SWDD accepts approximately 25,000 tons per year of mulched vegetative debris back from INEOS for use as landfill cover. SWDD also accepts unacceptable waste, defined as containing more than 1% contamination, and ash produced by INEOS as a result of bioethanol production for disposal. The remainder of the vegetative debris is processed by INEOS to produce cellulosic ethanol.

Clean construction and demolition (C&D) debris is currently segregated at the landfill and stockpiled for recycling. Roofing tiles are mixed with dirt and used as road base for access roads at the landfill. A private C&D recycling company, Indian River County Recyclers, Inc., constructed and recently began operating a C&D recycling facility across the street from the County landfill entrance.

The County also partners with Keep Indian River County Beautiful (KIRB), a local chapter of the national nonprofit organization Keep America Beautiful, to conduct public outreach regarding recycling. KIRB hosts a number of public awareness events, including recycling presentations at local schools and electronics collection events, and operates a reuse and exchange center in the Indian River Mall. Residents may donate or acquire items that are re-useable, including home décor items, sports equipment, craft items and supplies, tools, textiles and fabrics, and sewing supplies. Residents may also take these items to the Habitat for Humanity (HFH) store located in Vero Beach.

KIRB also offers collapsible recycling containers and liners for use at special events. Containers are limited to 50, may be used to collect the full range of program recyclables, and are collected the day after the event by KIRB staff. Recyclables are delivered to the CCCs or the SWDD facility.

2.2 Waste Generation and Management

Table 1 provides the estimated breakdown of the quantity of waste generated by single-family residents, multi-family residents, and commercial businesses in calendar year (CY) 2014, as well as the number of units and estimated level of recycling participation. Table 2 provides the types and quantities of wastes generated in the County in 2014 and how each material type was managed (recycled, landfilled, or stockpiled).

Table 1: Waste Generation and Management in CY 2014

Generator	% of Waste Generated	Tons Generated	Tons Recycled	Recycling Rate	Total # Units	Est. # Units Participating Curbside	Est.# Units Participating in Drop-off
Single-Family Residential	56%	151,355	55,908	37%	52,188	31,000	2,583
Multi-Family Residential	21%	56,581	17,056	30%	23,037	18,430	1,152
Commercial	23%	61,974	12,796	21%	3,275	1,539	Not Applicable
Total	100%	269,910	85,760	32%			

Table 2: Materials Management in CY 2014 (tons)

Material Type	Generated	Landfilled	Stockpiled	Recycled	Energy Credit
CLASS I WASTE RECEIVED AT SWDD FACILITY					
Mixed Residential & Commercial Waste	107,479				
Industrial Whole Fruit	3,556				
Boats	2,609				
Grease & Grit	1,655				
Asbestos	82				
Waste Materials from INEOS	58				
Garbage from Yard Trash Facility	20				
Class I Subtotal	**115,458**	**115,458**	**0**	**0**	
C&D DEBRIS RECEIVED AT SWDD FACILITY					
Treated Ties/Poles	91	91			
Mixed C&D Debris & Asphalt	36,821	35,297		1,524	
Clean Concrete & Dirt	8,470		8,470		
C&D Debris Subtotal	**45,382**	**35,388**	**8,470**	**1,524**	
YARD/WOOD WASTE RECEIVED AT SWDD/INEOS					
Dirt & Sod	2,668	2,668			
Yard Trash/Land Clearing/Pallets to INEOS	60,666				
Mulch, Clean Ash & Fine			16,252	12,951	
Dirty Ash		192			
Yard/Wood Waste for electricity production					5,669
Yard/Wood Waste for bioethanol production				25,602	
Yard/Wood Waste Subtotal	**63,334**	**2,860**	**16,252**	**38,553**	**5,669**
RECYCLABLES & SPECIAL WASTES					
Certified Recycling - SWDD	11,553			11,553	
Certified Recycling - Other	20,210			20,210	
Non-Certified Recycling - Mr. Mulch	12,472			12,472	
Non-Certified Recycling - KIRB, HFH	512			512	
Tires	655			655	
Business E-waste	227			227	
HHW	53	53			
Used Oil	54			54	
Recyclables & Special Wastes Subtotal	**45,737**	**53**	**0**	**45,683**	
TOTALS	**269,910**	**153,760**	**24,722**	**85,760**	**5,669**
PERCENT OF GENERATED		**57%**	**9%**	**32%**	**2%**

While the County has the infrastructure in place for universal recycling for single-family and multi-family residents, opportunities exist to increase participation and recovered tonnage. Additional opportunities exist to increase commercial recycling, initiate C&D debris recycling, and explore a more comprehensive organics recovery and processing program. These and other opportunities are more fully discussed in Section 3.

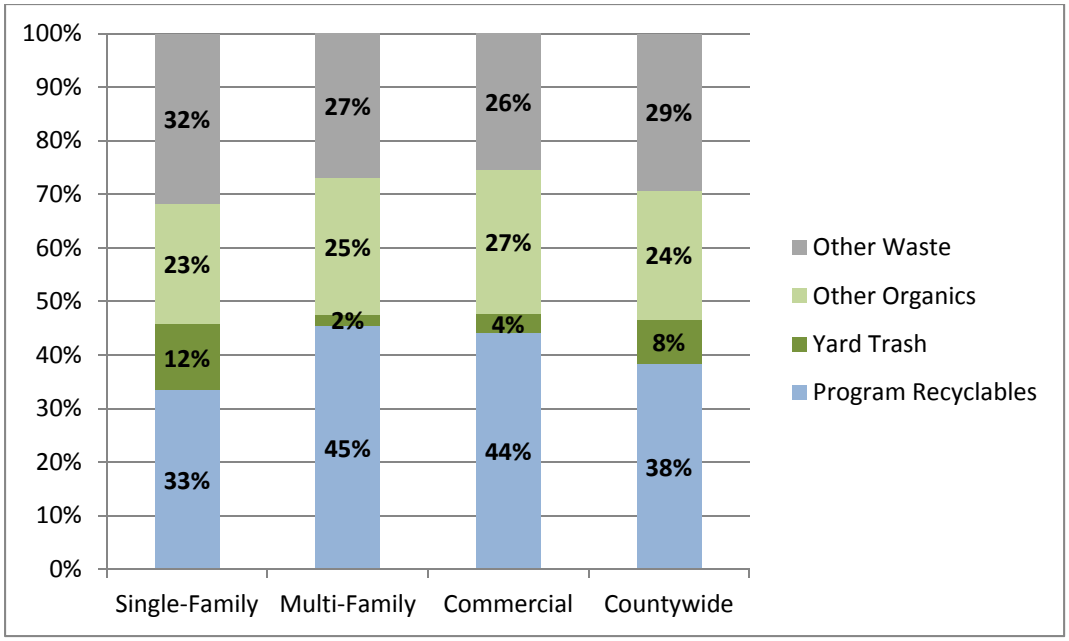
Section 3
Future Recycling Strategy

As mentioned previously, the County completed an update to its Solid Waste Master Plan in 2014. An integral part of this update was developing a strategy to strive to achieve the State's goal of 75% recycling.

3.1 Future Recycling Opportunities

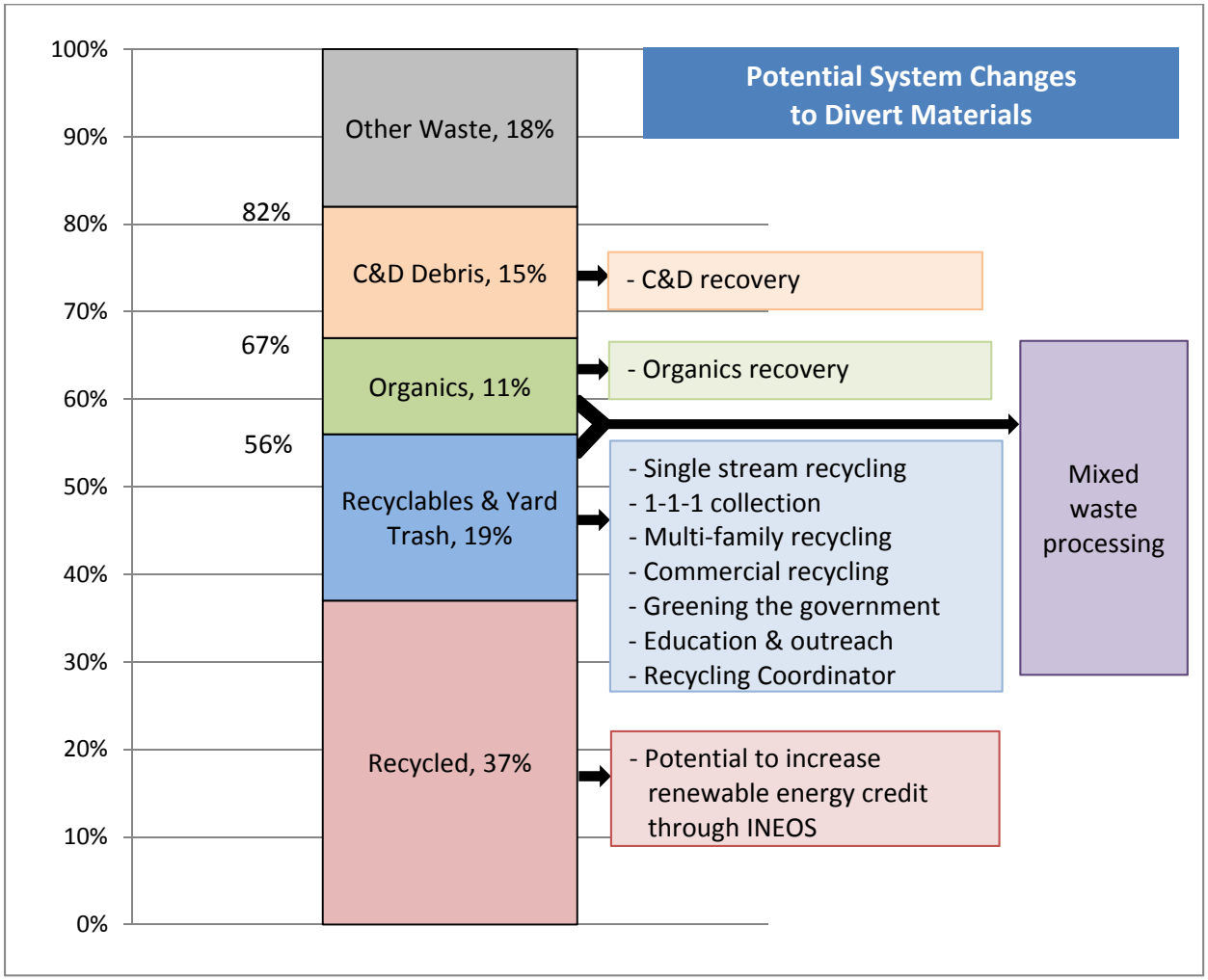
The Master Plan process included completing a comprehensive waste composition study. Base on this study, Figure 1 depicts the relative quantities of recyclable and compostable materials in the waste that is disposed by single-family residents, multi-family residents, and businesses. This data does not include C&D debris or other types of special or segregated wastes received at the SWDD facility. Approximately 46% of the waste disposed by residents and businesses consists of recyclables (38%) and yard trash (8%) that potentially could be recovered through the County's existing recycling infrastructure. An additional 24% consists of other types of compostable materials, primarily food waste and low-grade paper.

Figure 1: Composition of Residential and Commercial Waste Disposed



Based on the composition study results, the types and quantities of segregated materials received at the SWDD facility, and the materials already being diverted from disposal, Figure 2 depicts the types of potentially recoverable materials that are still being disposed and the system changes that present the greatest opportunities to divert these materials from disposal.

Figure 2: Waste Diversion and Recycling Opportunities[1]



3.2 Three-Phase Strategy

The 2014 Solid Waste Master Plan Update outlines a three-phase approach to assist the County in further evaluating and implementing those opportunities determined to be most viable in helping the County chart a pathway toward achieving the 75% recycling goal.

[1] This figure was developed based on CY2013 tonnage; however, CY2014 data is not significantly different.

- **Phase 1 (50% recycling target)** – Phase 1 focuses on improving the existing recycling infrastructure, especially for the residential sector. Even the most effective recycling program will not capture 100% of these materials; therefore, Phase 1 also includes a Request for Information (RFI)/ Request for Proposals (RFP) process to explore the viability of processing technologies that achieve high material recovery rates. The RFI/RFP will seek options for processing mixed Class I waste, as well as C&D debris. Results of the RFI/RFP process will enable the County to evaluate the operational and financial feasibility of utilizing state-of-the-art recovery technologies to help meet the State recycling goal. Specific recommendations for Phase 1 are outlined in Table 3.

- **Phase 2 (60% recycling target)** – Phase 2 is driven by the results of the RFI/RFP in Phase 1. If the process results in viable technologies, then Phase 2 will include taking the necessary steps to initiate implementation, which might include public-private partnerships, updated ILAs, facility permitting and construction, etc. Phase 2 also includes developing and implementing programmatic changes complementary to or, should no viable options result from the RFI/RFP, in lieu of processing technologies. This would include programs designed to increase collection of source-separated recyclables and organics, especially from the commercial sector. Phase 2 recommendations are outlined in Table 4.

- **Phase 3 (75% recycling target)** – Phase 3 is also driven by the decisions made during the previous phases. If technology solutions are pursued, it will entail start-up and ongoing monitoring and fine-tuning of these operations. For programs designed to capture source-separated materials, the County will evaluate and expand these programs as deemed appropriate and economically viable. If the programs have not achieved the desired diversion rates, the Master Plan recommends the County consider establishing and enforcing policies that will help drive recovery, such as disposal bans or recycling mandates. No discussions or decisions on these policies have yet been initiated. Phase 3 recommendations are outlined in Table 5.

Appropriate policies and public outreach and education campaigns will need to accompany each of these phases and programs. Communities achieving high recycling rates typically have staff dedicated to overseeing implementation. Therefore, the Master Plan recommended and SWDD is currently in the process of hiring a full-time staff position dedicated to the waste reduction and recycling program.

Table 3: Master Plan Phase 1 Recommendations to Target 50% Recycling

	RESIDENTIAL	COMMERCIAL	C&D DEBRIS
PHASE 1 - 50% Recycling Target Proposed Timeline – 2015-2016	▪ **Inter-Local Agreements** – work with the municipalities to update and execute ILAs that will commit all tonnage controlled by each entity to a countywide, integrated resource and waste management system ▪ **RFI/RFP Process** – conduct an RFI/RFP process to explore the viability of processing technologies that achieve high material recovery rates		
	▪ **Renewable energy credit through INEOS** – audit INEOS and ensure County is receiving the appropriate energy credit for vegetative debris processed by INEOS ▪ **Curbside collection changes** – convert to carted single stream recycling and weekly garbage collection (new collection agreement commences 10/1/2015) ▪ **Multi-family program** – implement a comprehensive multi-family recycling program that includes technical assistance to property owners or managers ▪ **Comprehensive public outreach** – implement a strategic, comprehensive public outreach campaign ▪ **Recycling program manager** – designate a full-time position to implement program recommendations	▪ **Commercial recycling at not-to-exceed service fees** – in new franchise agreement, require franchisees to collect full range of commercial recyclables upon request at not-to-exceed service fees ▪ **Monitor commercial recycling** – require franchisees to report on commercial recycling activity ▪ **Green County Program** – lead by example by ensuring all County facilities and public schools have effective waste reduction and recycling programs ▪ **County Ordinance** – amend to require new developments to provide for recycling as required by State law ▪ **Small Quantity Generator (SQG) hazardous waste center** - provide a center to receive SQG waste	▪ **C&D debris recycling program** – implement a program to educate contractors of recycling opportunities and benefits, as required by State law
Target Increase in Countywide Recycling Rate	**11%**	**1%**	**1%**

Table 4: Master Plan Phase 2 Recommendations to Target 60% Recycling

	RESIDENTIAL	COMMERCIAL	C&D DEBRIS
PHASE 2 – 60% Recycling Target Proposed Timeline – 2017-2018	▪ **Processing technology implementation** – if the RFI/RFP process results in viable technologies, then initiate implementation, which might include public-private partnerships, updated ILAs, facility permitting/construction, etc. (current recyclables processing contract expires 9/11/2017; current landfill operating contract expires 12/30/2017)		
	The following actions may be taken to complement the selected technologies or in lieu of such technologies if none are deemed feasible:		
	▪ **Residential recycling incentives** – if target recycling rates are not achieved, consider incorporating incentives, such as pay-as-you-throw or a rewards program ▪ **Residential organics program** – 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 trash	▪ **Commercial recycling program** – implement a comprehensive recycling program that includes a recycling toolkit with step-by-step instructions, hands-on technical assistance, and networking opportunities ▪ **Commercial organics program** – initiate a commercial organics program, which will require establishing the collection and processing infrastructure	▪ **C&D debris recycling incentives** - establish policies and incentives to encourage C&D recycling, such as a diversion fee and rebate program
Target Increase in Countywide Recycling Rate	**2%**	**3%**	**6%**

Table 5: Master Plan Phase 3 Recommendations to Target 75% Recycling

	RESIDENTIAL	COMMERCIAL	C&D DEBRIS
PHASE 3 – 75% Recycling Target Proposed Timeline – 2019-2020	▪ **Processing technology start-up** – if processing technologies are implemented, initiate facility start-up and ongoing monitoring and fine-tuning to maximize recovery		
	The following actions may be taken to complement the selected technologies or in lieu of such technologies if none are deemed feasible: ▪ **Comprehensive organics recovery program** – expand organics recovery, such as through universal collection of organics from residents and businesses ▪ **Policies that drive recycling** – if recycling targets are not met, consider establishing and enforcing policies that incentivize or require recycling, such as disposal bans or recycling mandates		
Target Increase in Countywide Recycling Rate	**15%**		

The Board of County Commissioners approved moving forward with elements of Phase 1. The following actions have been initiated:

- SWDD conducted an RFP process for collection services. Beginning October 1, 2015, carted single stream recycling will be provided to all County residents, with the exception of Indian River Shores, which has opted to retain recycling bins. The collection franchise also includes not-to-exceed rates for commercial recycling, as well as greater accountability and monitoring of commercial recycling.
- SWDD is in the process of initiating a comprehensive residential recycling outreach effort in conjunction with the roll-out of single stream recycling.
- SWDD has hired a full-time Recycling Education and Outreach Coordinator.
- SWDD is in the process of developing and entering into new ILAs with municipalities.
- SWDD is in the process of developing an RFI/RFP for processing technologies that achieve high material recovery rates, which will include both mixed Class I waste and C&D debris.
- SWDD has met with INEOS to better understand the tonnage received and how it is processed and accounted for.

SWDD will continue with implementing other aspects of the Master Plan recommendations.

3.3 Implementation and Challenges

Undoubtedly, the greatest challenge is the resources needed to implement program and infrastructure changes needed to achieve high recycling rates. In moving forward with implementing the Master Plan recommendations, the Board of County Commissioners has stressed that all programs must be economically viable and in the best financial interest of the County.

Another key factor is the joint cooperation between the County and municipalities. Development of any future recycling facilities, whether publicly or privately owned, will require a commitment of tonnage. Therefore, a critical first step in this process is executing an updated ILA with each municipality.

The three-phase recycling approach outlined in the Master Plan is intended to be dynamic, with modifications made based on the effectiveness of various programs and as new technologies become available.

Indian River County is committed to reaching the 75% recycling goal. We have already made great strides by initiating the conversion to single stream recycling, hiring a coordinator, and expanding education and outreach. We plan to continue these efforts by encouraging private enterprise and soliciting public/private partnerships to increase waste diversion and recycling in Indian River County.

Lake County

LAKE COUNTY
FLORIDA

July 10, 2015

Florida Department of Environmental Protection
Shannan Reynolds, Division of Waste Management
2600 Blairstone Road
Tallahassee, Florida 32399-2400

RE: Lake County Recycling Plan

Dear Ms. Reynolds:

In response to the Departments December 23, 2014 request for a recycling plan please find attached the Lake County plan. It is our understanding that this information will be incorporated into the DEP report due to the legislature prior to the end of the 2016 session.

Please feel free to contact Mary Hamilton, Interim Sold Waste Division Manager at (352)253-6006 or mhamilton@lakecountyfl.gov or myself at (352)253-6005 or jstivender@lakecountyfl.gov.

Sincerely,

Jim Stivender, Jr. P.E.
Director of Public Works

Attachment

JAS/slb

PUBLIC WORKS DEPARTMENT
P.O. BOX 7800 ◆ TAVARES, FLORIDA 32778-7800 ◆ P 352.253.6000 ◆ F 352.253.6016
Board of County Commissioners ◆ www.lakecountyfl.gov

LAKE COUNTY 2015 RECYCLING PROGRAM PLAN

Lake County is a political subdivision of the State of Florida that is over 938 square miles in area and contains 14 municipalities that are independent of the jurisdiction of the Board of County Commissioners (BCC). Additionally, the Constitutional offices of the School Board, Sheriff, Property Appraiser's & Tax Collector's offices are funded by the BCC, but operate independently.

The DEP accepted April 1, 2014 population of Lake County was 309,736. There were 68,100 units assessed in unincorporated Lake County with an average of 2.47 persons/unit, which equates to a population of 168,207 (representing 54% of the total County population).

Historic Summary of services offered by Lake County Solid Waste Division;

1. Lake County entered into a 25 year commitment with the Waste to Energy (WTE) Facility in 1990, wherein all processable solid waste was required to be delivered for incineration. The County continued a basic recycling program, while meeting the WTE contractual requirements.

2. In 1993, Lake County established mandatory MSW disposal through Exclusive Franchised Haulers and offered recycling collection with 18 gallon bins. The recycling program collected only newsprint, plastic food containers, aluminum cans and clear glass.

3. In 2003, Lake County instituted Universal Collection throughout the unincorporated areas of the County offering weekly curbside collection of household MSW, recycling materials, yard waste along with on-call bulk furniture pick up. Collected recyclable materials consisted of all paper products, cardboard, all plastic containers with a recycling logo, aluminum, steel, tin cans, clear and colored glass containers.

4. In 2010, A Citizens Solid Waste Alternative Funding Task Force was established by the Board of County Commissioners to evaluate existing programs/options and make recommendations for future solid waste operations including; single stream recycling, recycling education, increase reuse of yard waste and mulching.

5. On October 6, 2014, Lake County instituted a once a week, automated curbside collection system with single stream recycling. Every unincorporated County resident was issued two rolling carts with the default size of 95 gallon for garbage and 65 gallon for recycling.

Summary of Materials Recycled:

- All paper / fiber products (junk mail, newsprint, magazines, corrugated cardboard, boxboard)
- All household plastic containers with a recycling symbol
- Aluminum containers
- Steel cans
- Tin cans
- All clear & colored glass

Analysis of MSW generated by commercial, multifamily and single family sectors;

Lake County only collects data for the unincorporated, residential, single-family units and the new program has not provided enough data for an accurate analysis.

Analysis of any existing recycling programs for commercial and multifamily sectors with participation rates & recycling rates;

This information is not gathered at this time.

Description of implementation of C&D recycling and any planned changes;

The Lake County Landfill Facility is a multi-use facility with Class I, Incinerator ash and C&D disposal, Yard Waste processing, and recycling collection wherein we separate metals & other recyclable materials at intake, then accept C&D and other materials for disposal and/or processing.

Efforts to encourage yard trash, other organic waste and/or mechanically treated solid waste into compost or mulch for agricultural or other acceptable uses;

The County implemented new collection and disposal contracts that directed MSW to a landfill and necessitated a separate Yard Trash collection route. Previously, yard trash was mulched and delivered to power producing facilities. After October 2014, all Yard Trash is delivered to the County's Central Landfill Facility, where it is mulched and delivered to a privately operated compost facility.

Strategy (incl. timeframes) for expanding your county's recycling programs;

At this time, there are no plans to expand existing programs.

Discussion of any additional steps, initiatives and any anticipated challenges the county foresees to be critical to achieve the interim goal of 60% in 2016, and ultimately 75% by the end of 2020;

Current 5 year goal is to achieve a 35% recycling rate by 2020 for the unincorporated, single family residential sector of Lake County.

Okaloosa County

Okaloosa County Public Works

State of Florida

September 3, 2015

Jorge R. Caspary, P.G., Director
Division of Waste Management
Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Request for Development and Submittal of County Recycling Program Plans

Dear Sir:

In response to your letter dated December 23, 2014, subject as above, and subsequent email from Shannan Reynolds dated 8-5-15 the following is provided:

- Okaloosa County provides single-stream curbside recycling service to about 38,000 residential customers. Materials collected include all paper products, glass containers, plastics 1-7 except Styrofoam, aluminum cans, and steel cans.
- A breakdown of percentages of MSW generated is as follows: single-family 22%; multi-family 8%; and commercial (includes C&D) 70%
- Residential recycling consists of mandatory curbside recycling provided to approximately 38,000 homes as well as accessibility to drop-off recycling to about 16,000 homes and buy-back services to 65,000 homes. 52% of residential units utilize the curbside service; 18% use drop-off locations; and 2% take advantage of buy-back locations. Multi-family recycling is voluntary. Of approximately 1500 units 30% have curbside service. It is estimated that 10% of the multi-family units use drop-off recycling and that 4% use buy-back services. Commercial recycling is on a subscription basis and about 1% of businesses have a recycling program.
- C&D recycling occurs on a voluntary basis where it proves profitable for the private C&D vendors to separate selected commodities for recycling. Historically, the building industry as well as private C&D owners have opposed mandatory recycling due to the potential for increased operational costs due to capital investments and labor required to sort out materials. Unless C&D recycling is mandated in adjacent counties (and the border state of Alabama) then the industry can choose to take it to an out of county or out of state facility where costs may be less expensive. (Currently municipal recycling programs in the Panhandle are struggling due to poor markets for recyclables.)
- Okaloosa County currently operates the yard trash processing operation for materials generated from residential pickup and from commercial landscapers. This material is

84 Ready Avenue, Fort Walton Beach, FL 32548
Office (850) 609-6168
Fax (850) 651-7397

ground into mulch and used within the inactive landfills for cover and erosion control. The County Recycling Office offers back yard composters at a reduced rate as an incentive for residents to compost at home. This effort is supported by the Master Gardeners through the County Extension Office. While the County has experimented with composting via innovative technology grants through FDEP, the County does not have the finances or manpower to add another process into its yard trash operations.

- The County developed an ordinance in 2013 to franchise commercial collection of waste beginning in 2016. This would have been coupled with the advertisement of residential waste collection and disposal along with 1-1-1 recycling. It was expected that in reviewing RFP responses that the selected vendor would outline a plan to promote commercial recycling through price incentives, etc. In August 2015 the Board reversed its decision to franchise commercial and jointly advertise with residential service. So County staff is in the process of bringing back to the Board bid specs for residential waste collection, disposal, and recycling. Additionally, staff is drafting a non-exclusive franchise ordinance that will select a pool of qualified vendors to service commercial establishments. Staff will look to establish incentives within the non-exclusive language that will encourage recycling.
- Without a viable commercial recycling program it will be difficult to approach the State goal of 60% in 2016 or 75% in 2020. County staff was optimistic that a mixed waste processing facility with a parallel single-stream line would be included in its 2015 Requests for Proposals that it was preparing, but that appears to be questionable for the immediate future. This would have drastically increased the volume of recyclables collected. Hopefully, the technology mentioned will become a reality in the region in the next few years. Until a regional recycling or mixed waste processing facility is established in or near the Panhandle transportation of recyclables to market will pose a significant financial deterrent to cost effective recycling.

Please let me know if you need additional information.

Sincerely,

Jim Reece
Recycling Coordinator

84 Ready Avenue, Fort Walton Beach, FL 32548
Office (850) 609-6168
Fax (850) 651-7397

Osceola County

SOLID WASTE DEPARTMENT

A. Daniel Sheaffer
Manager

Eileen Perez-Calkins
Customer Service Supervisor

Janet O'Berry
Pollution Prevention Coordinator

Eddy Robinson
Recycling Programs Supervisor

Migdalia Thorne
Accounting Technician

Zaylin Diaz Gonzalez
Residential Customer Service Representative

Joe Johnson
Supervisor

Bass Road
Resource Recovery Site
750 S. Bass Road
Kissimmee, FL 34746
(407) 742-7750
(407) 724-7754 Fax

Osceola County

RECYCLED PAPER

August 6, 2015

Florida Department of Environmental Protection
2600 Blair Stone Road
MS 4570
Tallahassee, FL 32399

Dear Shannon,

Enclosed in this packet is the 2015 Recycle Plan/Report. Please feel free to contact me should you have any questions. Thank you.

Sincerely,

Danny Sheaffer
Solid Waste Manager

Osceola County Solid Waste

2015/16 updates and plan

Background:

In September of 2013 Osceola County implemented single stream curbside recycling. Although the Solid Waste Department had provided public drop off sites for recycling since the early 90's curbside recycling was never implemented. As in the past the recycling tonnages for this new service is recorded thru the state's certification of recyclers program. The curbside program did in fact impact the counties recycling rate increasing from 8 % to 30 %. However, county staff had to dig for the correct tonnages as the typical avenue of capturing the tonnage thru the certification of recyclers did not reflect the residential or the commercial tonnage. County staff has met with various franchised haulers to gain insight into their reporting policies and it was discovered that the haulers are not making any effort to make certain the county of origin is correctly recorded when tipping at a final processing site. Based on windshield surveys by county staff there is probably a 60 % participation rate among commercial establishments as far as making the service available. Commercial establishments include resorts and hotels. Confirmation being witnessing a single stream container on site serviced by a commercial approved franchised hauler. Contact is then made with the franchised hauler to determine what site or facility the recyclables are hauled to. It is at that point that questions arise as to the accuracy of the tonnages that are reflected on the states certification of recycler's reports. It appears that the hauling side of the business is not able to make direct hauls from the county of origin only and back to the processing site. It is much more efficient to make a run that includes sites from more than one county. Any attempt to quantify the accurate tonnage from a particular county based on site verification proved fruitless. In addition, route sheets from haulers could not quantify specific volumes as it is all mixed and compacted on one load.

Documenting curbside recycling tonnage proved challenging also. For whatever reason the curbside tonnage simply was not recorded, however after persistence the tonnages were finally documented. It seemed if the county staff wasn't willing to dig for the information, the tonnage simply would go unrecorded.

In fairness it is also difficult to track commercial MSW tonnage. In addition to Osceola county waste streams are hauled to Polk county, Orange county and Lake. It is understood that significant amounts of MSW may not be accounted for in our reporting on Table 1. However, all efforts and methods of collecting data are exhausted each year to the best of our abilities.

Osceola County faces an additional challenge in a huge part of the curbside residential waste stream in the tourist corridor near the attractions. Short term rentals are a huge part of this area. Property and

HOA managers provide 7 day a week garbage collection thru valet services. The challenge is in the area of waste reduction. These areas produce huge volumes of garbage compared to nonshort term rental areas due to 5 and 6 bedroom homes being fully rented on a weekly basis. The typical vacationer consumes more than the traditional occupant. In these same areas where there is no valet 7 day service provided the county faces a challenge with contamination in the single stream cart on recycle day. These loads are quite often rejected at the processing site; therefore no recycling tonnage is recorded.

Summary and Plans:

In summary Osceola County feels the recycling goals set by the state statue may never be met without drastic changes in the reporting methods. However, we also understand that the perfect method may not be out there. Osceola County feels that an opportunity to recycle is being provided to all facets of our community including the cities of Kissimmee and the City of St. Cloud; however we just can't comprehend how the tonnage could ever offset the tremendous amount of MSW that is generated in our tourist corridor. The county will continue to explore options to address the contamination issues. For example formulate a new contract in 2018 that also utilizes automated curbside garbage collection to alleviate contamination and litter issues. At this time the county does not plan on implementing a commercial recycling ordinance. The cost may not be economically feasible for some commercial establishments. Also, as pointed out above a lot of the resort/hotel establishments are already participating in recycling efforts. Staff will continue to collect reportable tonnages and increase efforts thru public information flyers, brochures, door hangars and web based educational tools to both encourage recycling and address the contamination issues.

Summary of the services and materials for which you offer recycling such as newspaper, aluminum cans, steel cans, glass, plastic bottles, cardboard, office paper and yard trash:

Single stream curbside recycling: Osceola County has contracted with two vendors to provide single stream curbside recycling to 58,000 single family and multifamily dwellings in unincorporated Osceola County. Residents are issued a 96 gallon cart to place their recyclables in. Our partners at the City of Kissimmee and City of St. Cloud also provide single stream curbside recycling. In addition to addressing the single family dwellings the cities are able to place single stream bins at multifamily dwellings and small business offices in strip malls.

12 Public Private Drop off Sites located throughout the county. These sites are designed to accommodate the multi-family, single family, commercial, Mobile home RV parks, single family with large cardboard loads. Sites contain roll off containers with sliding doors accepting the single stream waste stream. Popular for residential waste stream for large portions of cardboard that does not fit in curbside can.

Office Paper Recycling: Over 45 Osceola county government offices located throughout the area are provided with bins for collecting the office paper waste stream. Centrally located in break rooms office paper is collected once a week for transportation to a recycling processing site in south Orange county.

Plastic Bottle and Aluminum Can Recycling: Over 45 county government offices are provided with bins for aluminum cans and plastic bottles. Centrally located in break rooms. Collected by solid waste staff once a week and transported to our drop off sites.

Yard Waste grinding and screening for garden soil : The Bass Road yard waste processing site grinds and screens the vegetative waste collected curbside creating a soil amendment that is given away to the public and delivered to schools and community gardens for use. Upon request soil amendment is transported by solid waste equipment and staff to schools and used to create gardens and an educational opportunity.

Kenansville Public Recycling Drop off Site: The solid waste department provides a manned facility for residents of this rural area accepting recyclables from the residential waste stream, waste tires for processing, yard waste for grinding and household chemical collection center for waste oil, paint, old pesticides electronics and TV tubes.

Waste Tire operations: Tires are accepted at our Bass Road processing site at no charge 6 times a year in an effort to alleviate waste tires being illegally disposed at the side of our roadways.

Public Education campaign: (please see packet included) Web site and flyers and pamphlets are provided to civic groups HOA's and handed out at presentations and community events.

Small Quantity Generator Business Compliance inspection program: By performing business compliance inspections the solid waste department educates and provides guidance to the commercial sector on proper disposal and recycling of their waste stream.

Litter Prevention Program: The solid waste department employs a 4 man litter crew which conducts weekly roadway and waterway litter collection and retrieval. The Keep Osceola County Beautiful Campaign allows for civic clubs, students and neighborhood groups the opportunity to organize and conduct litter clean ups in their neighborhoods. Much of the litter is acceptable as recyclables and is recovered for recycling.

Household Chemical Collection Program : The solid waste department operates three full time public drop off sites for the citizens of unincorporated and incorporated Osceola County. These site except waste oil, waste paint, old pesticides, batteries and various household items . (see flyer included)

Analysis of the percentage of the county's MSW generated by the commercial, multifamily and residential single family sectors.

As mentioned above county staff has challenges with another sector called short term rental multifamily and single family that represents a much greater portion of the MSW generated than typical single family and multifamily. Based on that fact it is believed that the short term

rental community generates commercial type tonnages. Therefore, the obvious answer is that the potential for the greatest recovery of recyclables is from the commercial sector.

Analysis of any existing recycling programs for the commercial and multifamily sectors, including estimated customer participation rates and recycling rates for each of those sectors.

As mentioned above by a windshield survey it appears approximately 60 % of the commercial sector in unincorporated and incorporated Osceola County is participating in some form of recycling provided by a franchised hauler or city government trucks and recycles carts. So it appears to be about a 60% participation rate, however staff does not feel comfortable or have enough information to calculate a recycling rate.

Description of the county's implementation, including any planned changes, for your program for recycling construction and demolition debris.

The county has no plans to implement a construction and demolition debris recycling program in unincorporated Osceola County

Description of efforts or opportunities to encourage recycling of yard trash, and other organic materials or mechanically treated solid waste, into compost or mulch that may be made available for agricultural and other acceptable uses;

The solid waste department partners with the University of Florida Extension services and master gardeners to provide a soil amendment derived from the grinding and screening of the curbside yard waste collected from unincorporated Osceola County and the City of Kissimmee. The amendment is then provided at no charge to our citizens, schools and community gardens. The extension office strives to encourage backyard composting through their community outreach classes making citizens aware of the soil amendment provided by the solid waste department.

Strategy (including general time frames) for expanding your county's recycling programs, or for creating new programs if needed, as part of your county's efforts to achieve the statewide recycling goals set forth in s.403.706(2) F.S. and

At this time the county feels the current single stream curbside recycling program and the extremely high participation rates we experience due to once a week garbage collection are sufficient. We are also experiencing tremendous growth We will be looking into our options prior to 2018 when the current curbside contract expires to possibly expand to automated garbage collection to attempt to address the current contamination issues we are experiencing and litter issues in our storm water ponds.

Discussion of any additional steps, initiatives and any anticipated challenges the county forsees would be critical for implementting your strategies to achieve the next interim recycling goal of 60 percent in 2016, and ultimately statewide goal goal of 75 percent by the end of 2020.

As mentioned above the county plans to address the current curbside collection contract in 2018 exploring the option of adding automated curbside garbage collection to the current contract. This is in an effort to address the current contamination issues with the single stream recycling and litter prevention in our stormwater ponds.

Polk County

End-of-Life Materials Management: Polk County Recycling Program Plan

Prepared for:
Polk County Waste & Recycling Division

Prepared by

Innovative Waste Consulting Services, LLC
Gainesville, FL

DRAFT - June 30, 2015

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List of Abbreviations, Acronyms, and Initialisms

BEBR	Bureau of Economic and Business Research
BoCC	Board of County Commissioners
CDD	Construction and Demolition Debris
CCG	Cascadia Consulting Group
EOL	End-of-Life
FDEP	Florida Department of Environmental Protection
IWCS	Innovative Waste Consulting Services, LLC
KCI	Kessler Consulting, Inc.
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
NCLF	Polk County North Central Landfill
RERC	Renewable Energy Recycling Credit
RGS	Ridge Generating Station
RS	Republic Services, Inc.
US EPA	United States Environmental Protection Agency
WRD	Polk County Waste & Recycling Division
WWTP	Waste Water Treatment Plant

1. Introduction

1.1 Project Background

In 2008, the Florida Legislature established a statewide municipal solid waste (MSW) (referred to in this report as *waste* or *materials*) recycling goal of 75% to be reached by 2020. In 2010, the Legislature further directed that the goal be primarily applied to the counties with a population greater than 100,000. Additionally the Legislature set interim recycling goals of 40%, 50%, 60%, and 70% recycling rates by 2012, 2014, 2016, and 2018, respectively, for these counties. Polk County (referred to here as the *County*) is the ninth most populated county in Florida, with an estimated population of 623,174 in 2014 (BEBR 2014) and is committed to working toward the Florida interim recycling goals. In 2014, Polk County generated approximately 990,200 tons of MSW, out of which approximately 30% was recycled. The 2012 and 2013 recycling rates for the County were 37% and 29%, respectively. As directed by Section 403.706(2), Florida Statutes, the Florida Department of Environmental Protection (FDEP) has requested all counties that have not reached or maintained at least the 40% interim recycling goal in 2012 and 2013 to submit a recycling program plan documenting strategies to enhance recycling from the commercial and residential sectors and of the construction and demolition debris (CDD) to meet the recycling goal(s). Polk County Waste & Recycling Division (WRD) contracted Innovative Waste Consulting Services, LLC (IWCS) to assist in preparing this plan presenting approaches and strategies that the County can consider to improve the County-wide recycling rate to achieve the recycling rate goal(s).

As with any government entity, WRD activities are governed by policies enacted by the Board of County Commissioners. With this in mind, WRD has been analyzing several strategies aimed at creating opportunities for sustainable MSW processing. As a result, the County is working on further developing policies to enhance recycling rates through several business models.

1.2 Scope of Work

IWCS reviewed the state-of-practice of end-of-life (EOL) management of materials generated in the County, the materials streams (e.g., Class I waste, yard waste, CDD, and Class III waste), and the amounts recycled to identify the strategies and options for enhancing the County's recycling rate from the current recycling rate of 30% to 75%. For the analysis presented in this report, Class I refers to the materials that if disposed of can only be disposed of in a Class I landfill and Class III refers to the materials that can be disposed of in a Class I or Class III landfill as defined in the Florida Administrative Code. IWCS also reviewed the strategies adopted by various Florida counties that have achieved the 40% recycling rate in 2013 and identified several approaches used by communities in the US to enhance their recycling rate. Based on the review of data and information listed above, IWCS developed a list of options that the County may consider to increase materials recycling to achieve the Legislature-set recycling goals of 75% by 2020. IWCS also identified the challenges that the County can expect in implementing the identified strategies to reach the materials recycling goals.

1.3 Report Organization

This report has six sections: Section 1 introduces the objectives, scope of work, and report organization. Section 2 briefly describes the County's population distribution and the amounts and the state-of-practice of EOL management of materials discarded in the County along with details of the County's existing recycling program. Section 3 describes the strategies to be implemented to expand the County's recycling program. Section 4 discusses the challenges to be anticipated in increasing the recycling rate from 30% in 2014 to 75% by 2020. Section 5 summarizes the report. Section 6 lists the references used in the report.

2. Materials Collection and Management

2.1 County's Population Distribution

The County is split between an unincorporated area and 17 municipalities: Lakeland, Winter Haven, Haines City, Bartow, Lake Wales, Auburndale, Fort Meade, Lake Alfred, Dundee, Mulberry, Davenport, Frostproof, Eagle Lake, Polk City, Lake Hamilton, Hillcrest Heights, and Highland Park (Figure 2-1).

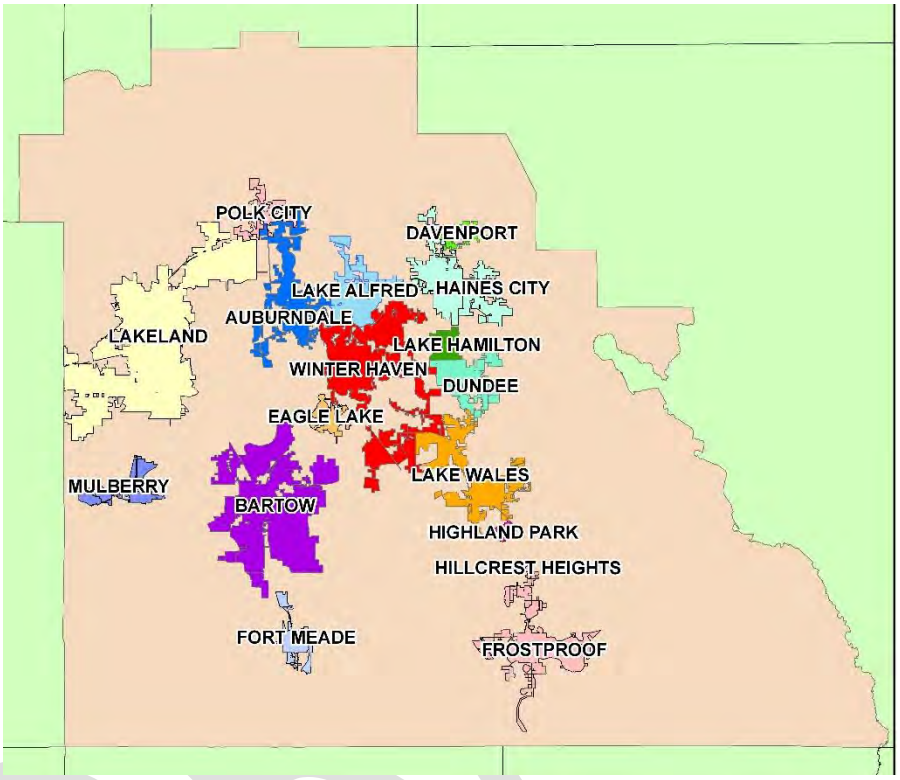

Figure 2-1. Municipalities and Unincorporated Areas of Polk County

Figure 2-2 presents the population distribution among the unincorporated areas and the 17 municipalities. Approximately 62% of the County's population (623,174 in 2014) resides in the unincorporated areas (BEBR 2014). Lakeland, Winter Haven, Haines City, and Bartow have 16%, 6%, 4%, and 3% of the County's population, respectively. Approximately 90% of the County's population resides in the unincorporated areas and these four municipalities.

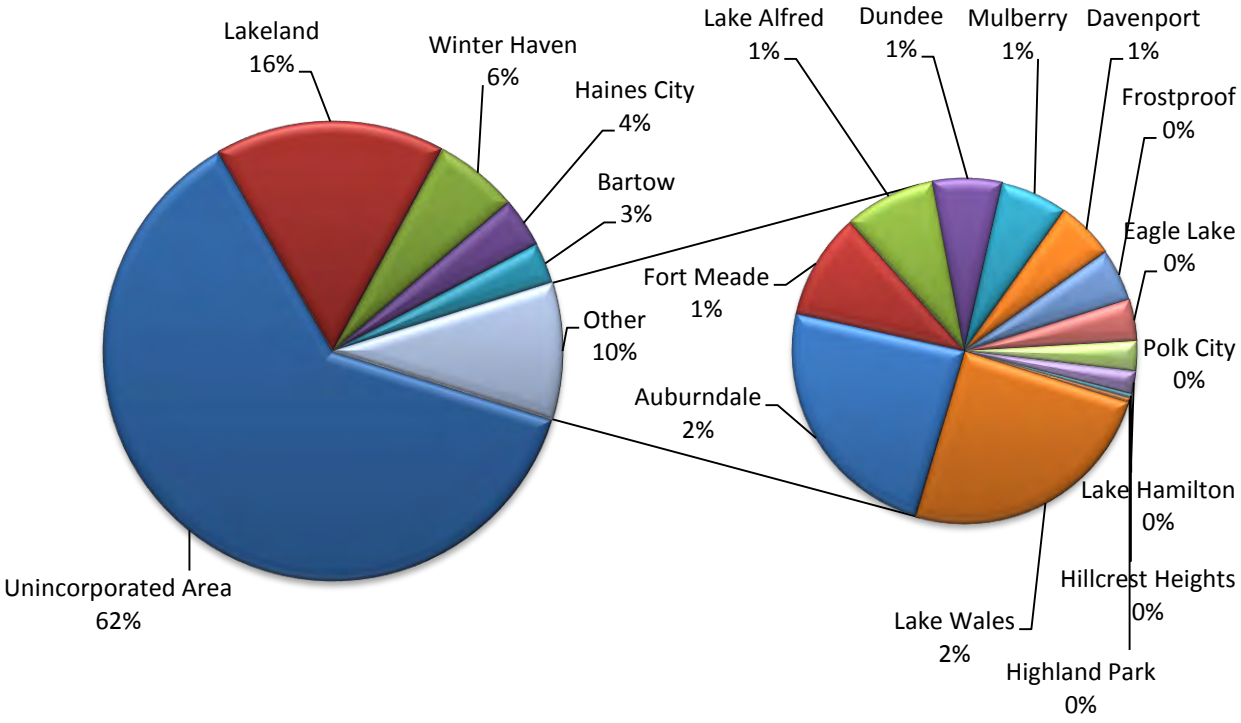

Figure 2-2. Population Distribution in Polk County in 2014

Based on the Polk County Property Appraiser database (Polk County Property Appraiser website), the County has approximately 207,600 residential units, of which approximately 82% are single-family units. Additionally, the County has approximately 27,800 commercial units that include commercial, industrial, agricultural, institutional, government offices, and other commercial units. Figure 2-3, Figure 2-4, and Figure 2-5 show the percentage distribution of single-family residences, multifamily residences, and commercial units, respectively, of the County's unincorporated area and the municipalities. As shown in the figures, the unincorporated area has approximately 64% of the single-family units, 79% of the multifamily units, and 63% of the commercial units of the County. Additionally, the unincorporated area, along with the two biggest municipalities of the County (Lakeland and Winter Haven), has approximately 83% of the total single-family units, 94% of the multifamily units, and 82% of the commercial units.

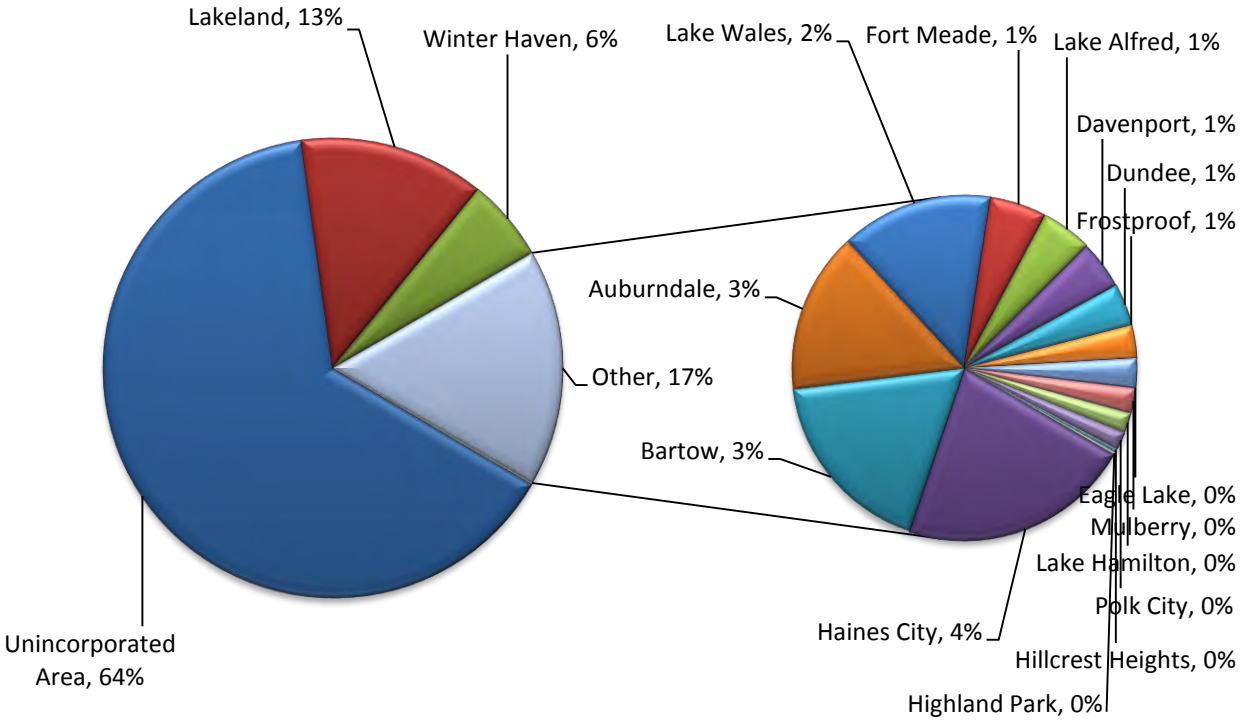

Figure 2-3. Single-Family Units Distribution in the County's Unincorporated Area and Municipalities

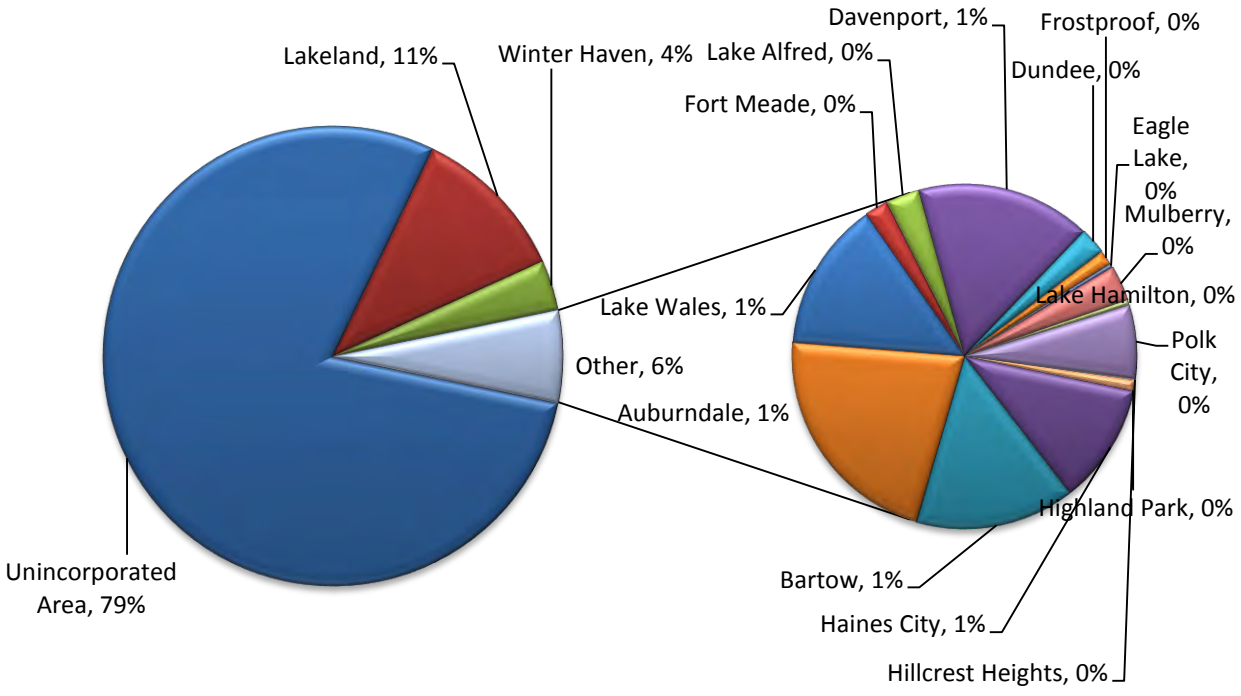

Figure 2-4. Multifamily Units Distribution in the County's Unincorporated Area and Municipalities

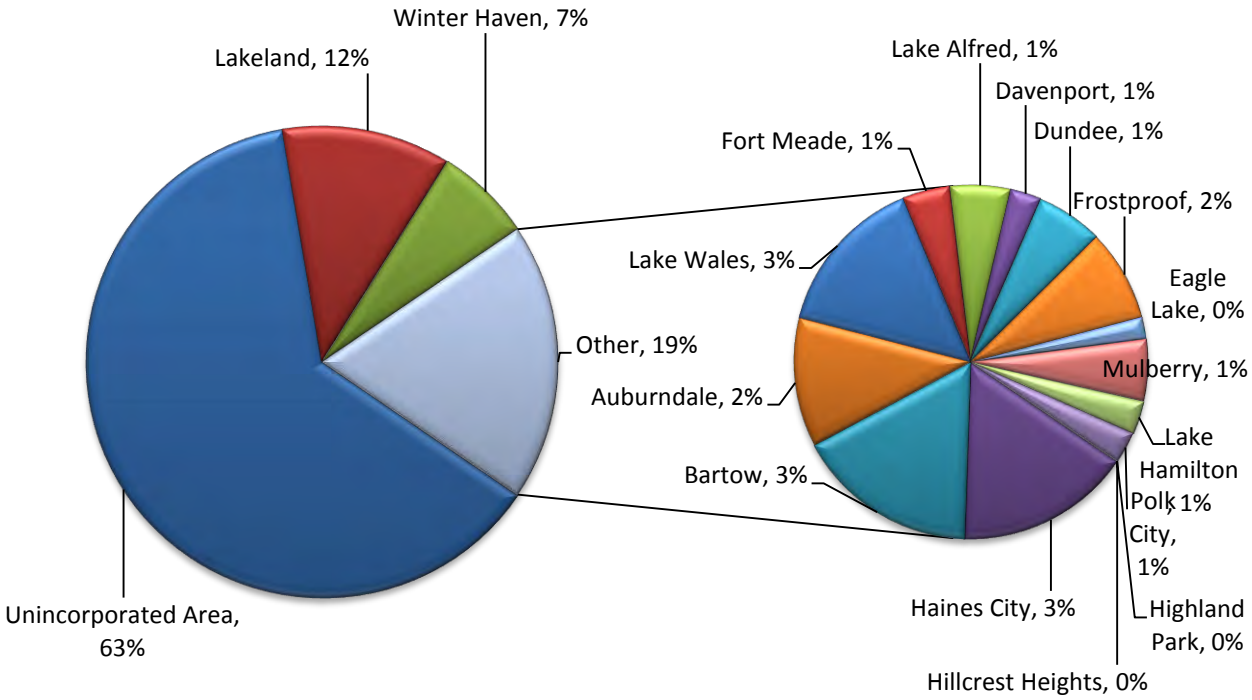

Figure 2-5. Commercial Units Distribution in the County's Unincorporated Area and Municipalities

2.2 EOL Materials Management

This section describes the current solid waste collection and management practices used in the unincorporated area and the municipalities of the County. WRD coordinates waste collection and management services for the unincorporated area while the public works or solid waste departments of individual municipalities coordinate collection and management of waste in the respective municipality. The Republic Services, Inc. (RS) currently collects waste from single-family residences in the unincorporated area under an exclusive franchise agreement with WRD. The agreement requires RS to bring the collected Class I waste from the unincorporated area as well as that collected from elsewhere in the County to the Polk County North Central Landfill (NCLF) for disposal. The waste collection from commercial entities, including multifamily residences, in the unincorporated area is coordinated by WRD through an open-market system.

The WRD has an inter-local agreement with all municipalities in the County except Haines City, Fort Meade, and Davenport. This agreement provides a tonnage-based discount in the tipping fee for residential Class I waste hauled to NCLF; higher tonnages of waste hauled to NCLF result in a lower fee that the municipality pays to the County. Class I waste generated in the County is disposed of at NCLF or Cedar Trail Landfill.

The RS also collects yard waste throughout the unincorporated area and all the municipalities except Lakeland and Bartow, which manage their own yard waste collection programs. The yard waste collected from the unincorporated area is processed at NCLF, while that collected from the municipalities is disposed of at Cedar Trail Landfill or combusted for energy recovery at Ridge Generating Station (RGS) adjacent to NCLF. Some of the yard waste received at NCLF is also sent to RGS for combustion for energy recovery. A majority of the tires collected in the County are also combusted at RGS for energy recovery.

Landfill gas collected from Phase I and Phase II cells at NCLF is combusted at RGS for electricity generation as well. The CDD collection and management is an open market throughout the County and CDD is hauled to various facilities in and around the County, including NCLF and the Cedar Trail Landfill.

The County provides single-stream curbside recycling services to the residents of the unincorporated area for recovery of the following recyclables: glass, paper, corrugated papers and cardboards, newspaper, plastics (#1 to #7), and aluminum and steel containers. Participation in curbside recycling program is not mandatory. The commercial recyclables collection is an open market in the unincorporated area of the County. Almost all of the municipalities also provide single-stream recycling to their single-family residents. Recyclables collected from the unincorporated area are brought to the NCLF and transferred to an off-site Materials Recovery Facility (MRF) owned and operated by Waste Management for processing. Recyclables collected from a majority of the municipalities, including Lakeland, are processed at the RS's single-stream MRF in Lakeland.

2.3 Current State of Materials Generation and Management

This section describes the current state of the County's solid waste generation and recycling from the residential and commercial sectors of the unincorporated and incorporated areas. As discussed in Section 2.2, the solid waste collected throughout the County goes to the NCLF, the Cedar Trail Landfill, the RGS, and multiple CDD facilities. We analyzed the following data to estimate the County-wide waste generation and recycling rates of recovered material, Class I, yard waste, CDD, and miscellaneous waste from various sectors (single-family residences, multifamily residences, and commercial establishments):

i. Recovered materials data reported by FDEP.
ii. NCLF scale-house tonnage data.
iii. Tonnage data reported by Cedar Trail Landfill and RGS.
iv. CDD generation and recycling data reported by FDEP.
v. Number of single-family residences, multifamily units, and commercial establishments in unincorporated and incorporated areas of the County based on the County's property appraiser's database.

The County generated approximately 990,200 tons of solid waste in 2014. Figure 2-6 breaks down the waste streams into several categories as tracked by NCLF, the Cedar Trail Landfill, the RGS, FDEP recovered materials, and CDD data. As shown in Figure 2-6, approximately 71% was Class I waste. Yard waste was 9% and CDD contributed 14%. The Class III and miscellaneous waste was approximately 6% of the County's waste stream

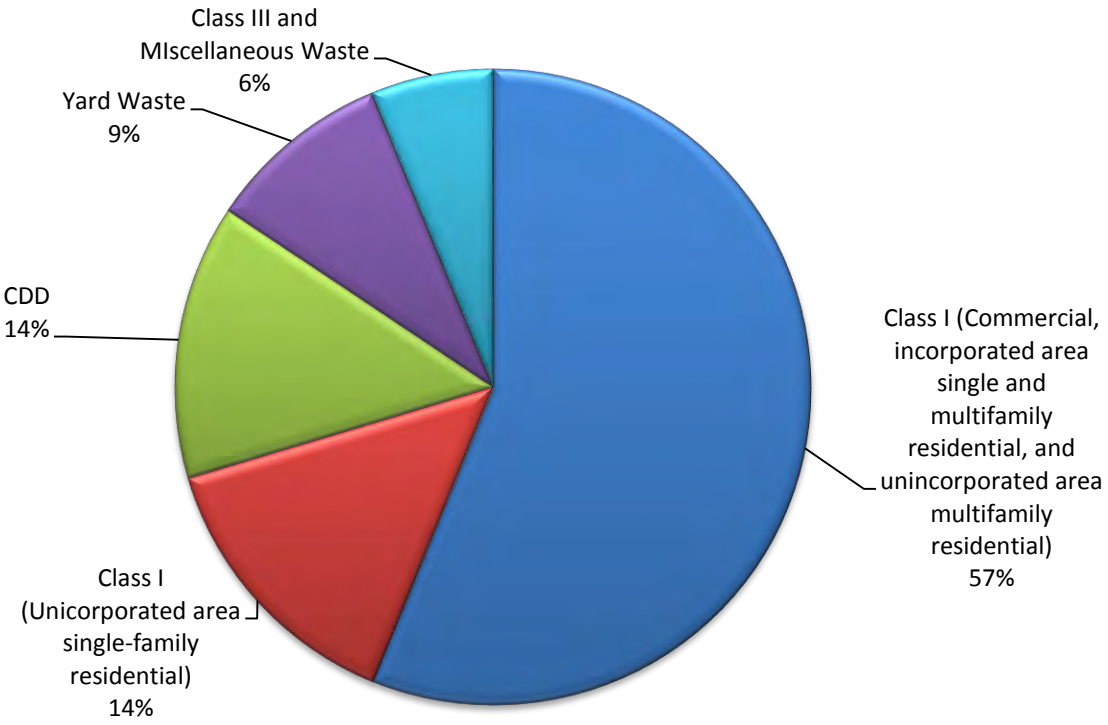

Figure 2-6. Distribution of Waste Types Generated in Polk County in 2014

Class I waste generated from the incorporated area single-family residences, the county-wide multifamily residences, and the commercial establishments received at NCLF is ticketed as "commercial waste." The amount of unincorporated area single-family Class I residential waste and recyclables hauled to NCLF, along with that of a number of single-family residences in the unincorporated area, was used to estimate the Class I waste generation rate per single-family residence (referred to here as the *unit waste generation rate*). This unit waste generation rate was multiplied by the number of single-family and multifamily residential units of incorporated areas to estimate the Class I waste generation rate for single-family and multifamily residences in incorporated areas of the county, respectively. Similarly, the amount of Class I waste generated from unincorporated multifamily residences was estimated by multiplying the number of multifamily units in unincorporated areas by the unit waste generation rate. The Class I waste generation rate from the commercial sector was estimated by subtracting the incorporated single-family residential and county-wide multifamily waste generation rates from the amount tagged as "commercial waste" at the NCLF scale-house.

Figure 2-7 shows the amount of Class I waste generated from the residential and the commercial sectors and the county-wide waste generation rate for CDD, yard waste, and Class III waste. The County's commercial sector Class I waste contributed approximately 44% of the overall waste generated in 2014. The Class I single-family residential waste from the unincorporated area contributed approximately 14% and rest of the residential sector contributed approximately 13% of the overall waste generated in 2014.

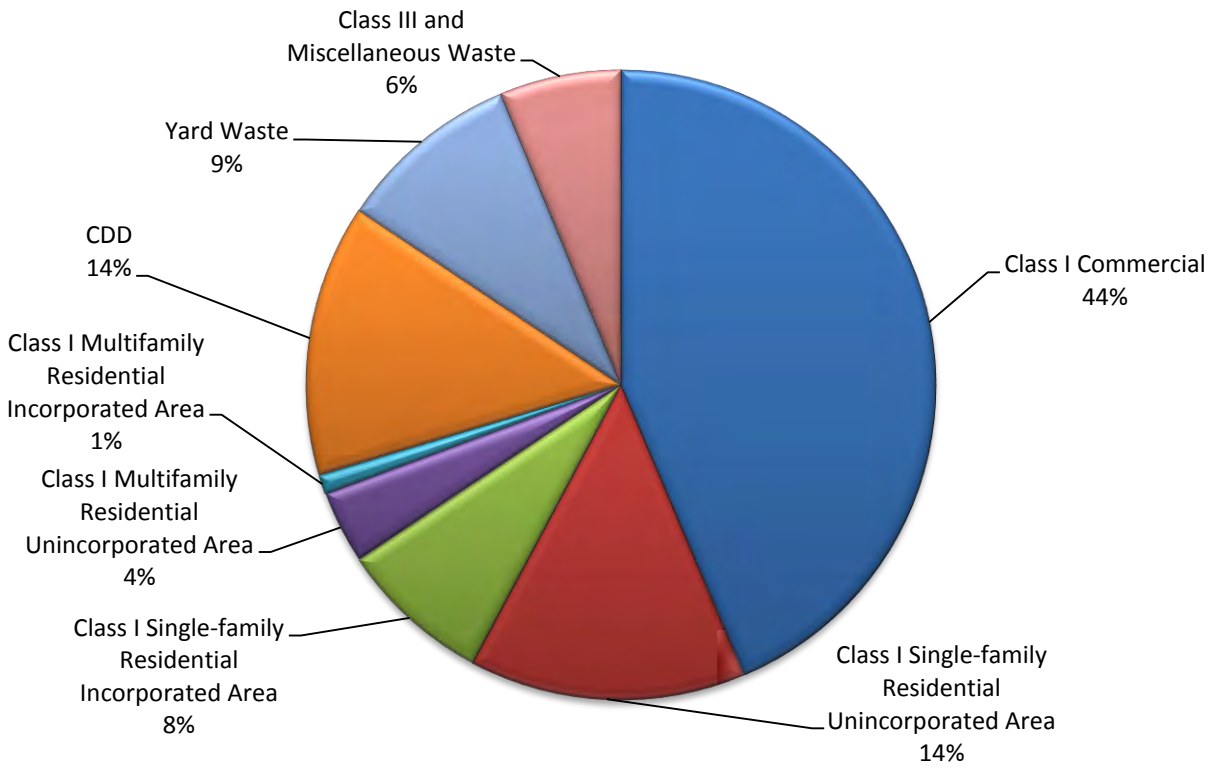

Figure 2-7. Waste Generated in Polk County in 2014 with Distribution of Class I Waste Generated in Each Residential Sector*

**The waste distribution for residential Class I waste was estimated based on the number of units in each area and Class I waste generation rate per single-family residence in the unincorporated area.*

Table 2-1 presents a detailed breakdown of the amount of waste generated and recycled and the recycling rate for the residential and commercial sectors of the incorporated and the unincorporated areas of the County in 2014. The County generated approximately 990,200 tons of waste, of which approximately 263,100 tons was recycled, which is equivalent to a countywide recycling rate of 27% in 2014. Additionally, the County received Renewable Energy Recycling Credits (RERC) associated with energy recovery from tire and landfill gas combustion at RGS. The RERCs associated with energy recovery from landfill gas and tires combustion were equivalent to a 3% additional recycling rate. Approximately 37% of the Class I commercial waste and 8% county-wide residential waste was recycled. The County also generated approximately 138,400 tons of CDD of which approximately 7% was recycled. Additionally, approximately 93,200 tons of yard waste was collected of which 45% was recycled as daily cover or mulch, 33% was used as a process fuel at RGS, and remaining was landfilled. The RGS also used approximately 2,500 tons of tires as process fuel and produced a total of approximately 6,200 tons of ash from combustion of yard waste and tires; the ash was disposed of at the NCLF.

Table 2-1. Waste Streams, Sources, Management, and Generation and Recycling Rates for Polk County in 2014

Waste Stream	Source	Management Facility	Generated (tons)	Recycled (tons)	Recycling Rate
Class I	SFR-Unincorporated	NCLF	140,800	14,200	10%
	SFR-Incorporated	NCLF	77,600	7,900	10%
	MFR-County wide	NCLF	46,800	-	-
	Commercial	NCLF	431,700	158,500	37%
Yard Waste	Residential and Commercial	NCLF	57,300	42,000	73%
		Cedar Trail Landfill	4,900	-	-
		RGS	31,000	31,000	-
CDD	Residential and Commercial	NCLF	17,700	9,000	7%
		Over 10 C&D Landfill facilities including Cedar Trail Landfill	120,700		
Class III and Miscellaneous	Residential and Commercial	NCLF/Cedar Trail/RGS	61,700	500	1%
Ash	RGS*	NCLF	6,200	-	-
Net**			**990,200**	**263,100**	**27%**

*Ash was generated from combustion of yard waste and tires at RGS. **Net waste generated is the total of Class I, Yard Waste, CDD, Class III waste streams. Recycling rate does not include Renewable Energy Recycling Credits.

SFR: Single-family Residence, MFR: Multifamily Residence

Figure 2-8 presents the percentage distribution of landfilled, combusted, and recycled waste in 2014 from different sectors. Approximately 74% of the total waste generated throughout the County was landfilled, of which 21% was generated by the Class I commercial sector. The landfilled Class I waste generated by the County-wide single-family and multifamily units contributed approximately 20% and 5% of the total waste stream, respectively. Commercial Class I waste recycling was 16% of the total waste generated and CDD and yard waste recycling contributed approximately 1% and 7%, respectively. The Class III and miscellaneous waste was, primarily disposed of at the Cedar Trail Landfill, accounted for approximately 6% of all the waste, out of which less than 1% was recycled. The combusted yard waste and tires at RGS accounted for 3% of the County's total waste stream.

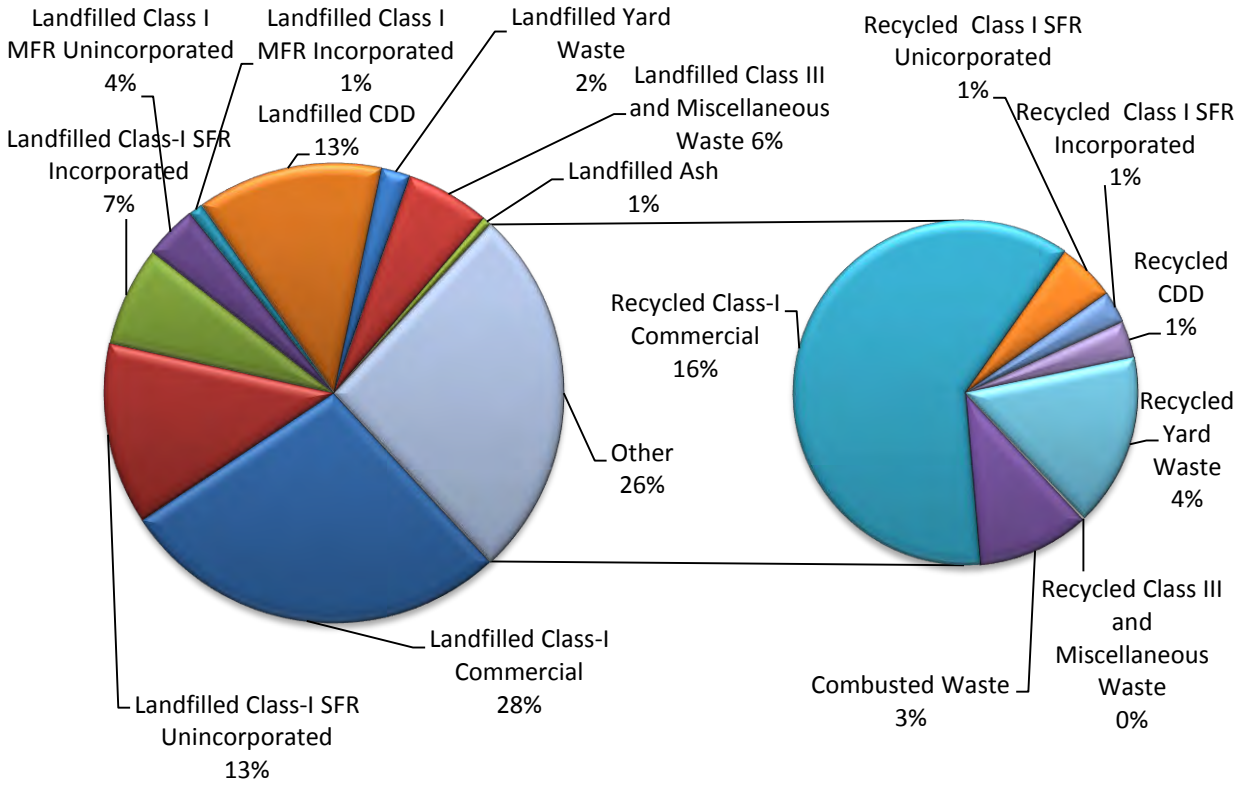

Figure 2-8. Distribution of Waste Landfilled, Combusted, and Recycled in Polk County in 2014

Note: SFR: Single-Family Residence, MFR: Multifamily Residence

As shown in Figure 2-6, the County's waste stream contained approximately 71% Class I waste in 2014 and a waste composition study conducted at the NCLF in 2011 suggested that the county-wide landfilled Class I waste stream contained approximately 88% recyclables such as papers, plastics, metals, glass, compostable materials such as papers, food waste, and yard waste, and CDD (Figure 2-9). Therefore, WRD recognizes an opportunity to increase the recycling rate for these recyclables.

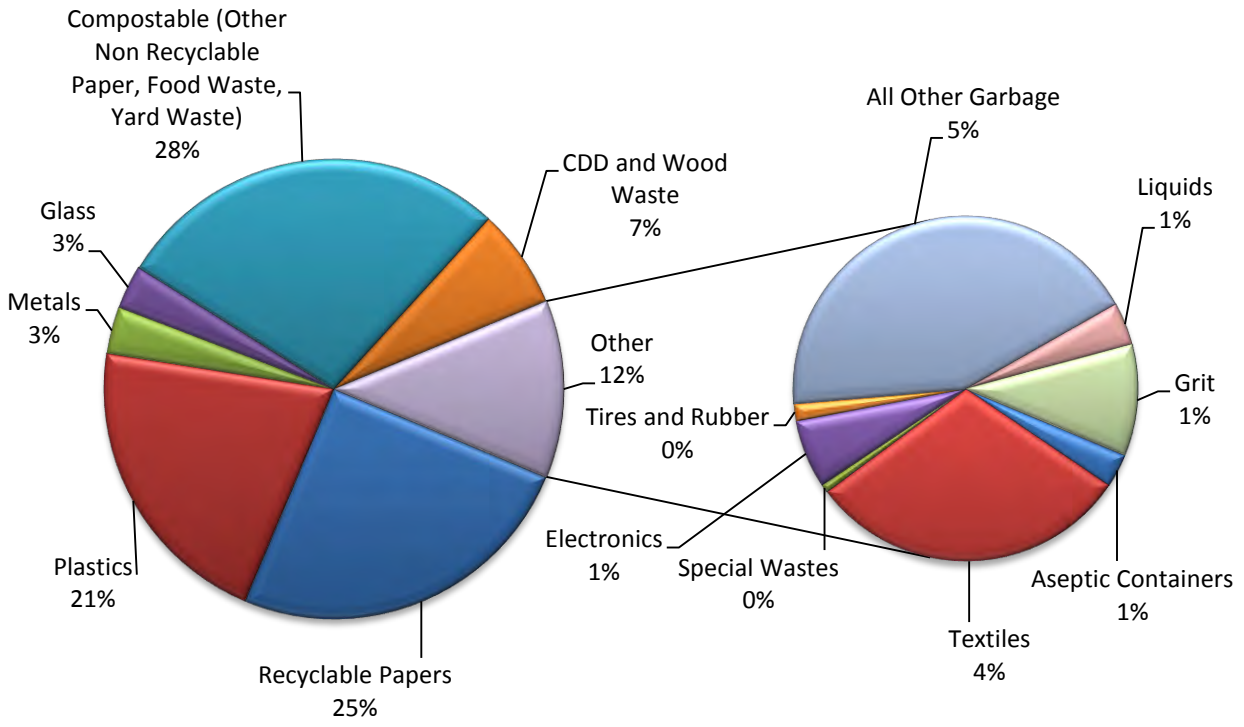

Figure 2-9. Composition of Polk County Waste Stream Landfilled at NCLF (KCI 2011)

2.4 Summary

The County is split between an unincorporated area and 17 municipalities. Approximately 90% of the County's population resides in the unincorporated area, Lakeland, Winter Haven, Haines City, and Bartow municipalities. The County has approximately 171,000 single-family and 36,700 multifamily residences in addition to approximately 27,800 commercial establishments. Approximately 64% single-family residences and 79% multifamily residences and 63% commercial establishments are in the unincorporated area. WRD handles waste management for the unincorporated area while the municipalities manage their own waste management programs. Republic Services, Inc. (RS) currently collects waste from single-family residences in the unincorporated area under an exclusive franchise agreement with WRD and commercial waste is collected through an open-market system.

Class I waste generated within the County is disposed of at NCLF and Cedar Trail. The yard waste collected from the unincorporated area is processed at NCLF and that from municipalities is disposed of at the Cedar Trail Landfill or combusted at RGS. CDD is collected through an open-market system throughout the County. The County and the municipalities do not have a mandatory recycling program and provide single-stream curbside recycling for voluntary participation. Commercial recyclables collection is an open market in the unincorporated area of the County.

The County generated approximately 990,200 tons of solid waste in 2014, of which 71% was Class I waste. The commercial sector contributed approximately 44% of Class I waste generated in the County and the unincorporated area single-family residents contributed approximately 14% of the overall waste generated. The County recycled approximately 27% of its waste in 2014 and received RERC equivalent to an additional 3% recycling rate for energy recovery from landfill gas tires; the remaining waste was landfilled. Commercial Class I waste recycling contributed approximately 16 percent points of the 30%

recycling rate. CDD and yard waste recycling contributed approximately 1 percent points and 4 percent points, respectively. The Class I waste generated from the residential sector contributed approximately 2 percent points of the total waste recycling. The County recognizes an opportunity to improve recyclables recovery from all waste generation sectors.

3. Strategies to Expand County's Recycling Programs

3.1 Overview

This chapter evaluates the County's current materials management program with respect to the other counties in Florida that achieved a 40% recycling rate in 2013. Additionally, the potential scenarios that the County would consider implementing to improve the overall recycling rate and reaching the Florida Legislature-set recycling goal of 75% by 2020 are described. The statewide waste generation and recycling data were obtained from the FDEP's solid waste management annual reports (2013). The most recent data available in the FDEP website were used while comparing the County's solid waste management data with the state average and other Florida counties' data; data for 2014 were not available at the time this report was prepared.

Figure 3-1 presents the rates of per capita waste recycled and discarded for all the counties in Florida for 2013. The County-wide per capita waste generation in 2013 was 1.54 tons/person/year or 8.43 lb/person/day, which was slightly lower than the statewide average per capita waste generation rate of 1.59 tons/person/year (8.73 lb/person/day). The County's recycling rate in 2013 was 29% (including RERC), which was approximately 23 percent points lower than the state's average recycling rate of 49% (including RERC). The Countywide recycling rate for 2014 was 27% and an RERC equivalent to 3% (from the landfill gas and tires combustion at RGS for energy recovery) increased the overall recycling rate to 30%.

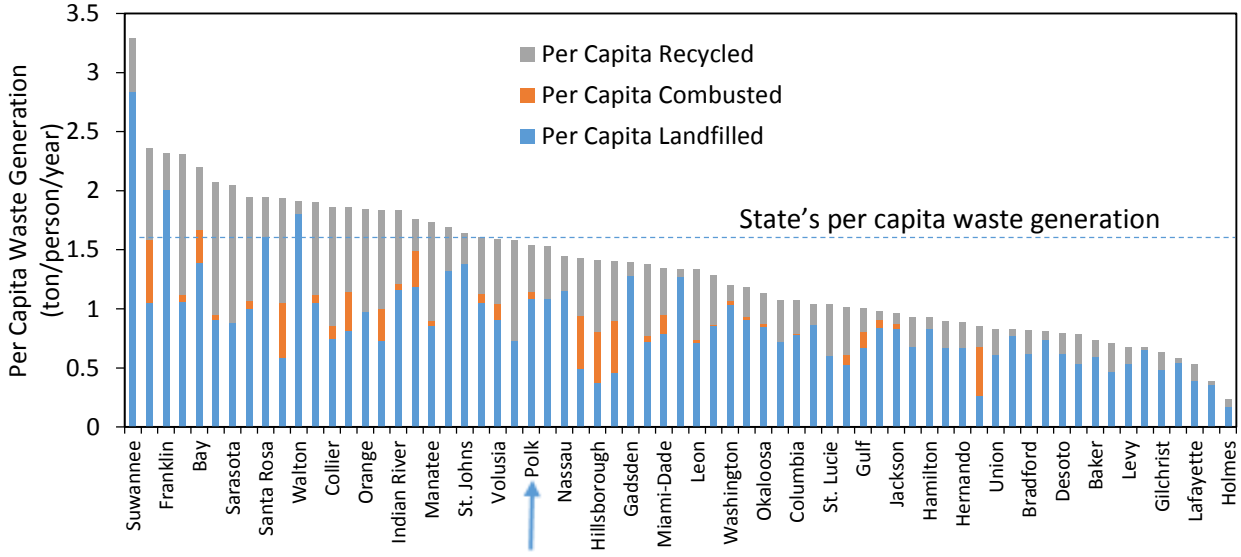

Figure 3-1. Per Capita Waste Generation Rate of Florida Counties in 2014

To achieve the recycling rate goal of 75% by 2020, the County has identified the sectors and the type of waste where significant improvement can be made. The County has also quantified the amount of waste that needs to be recycled to reach the recycling goal by 2020. The County assessed the approaches used by other Florida counties that have met the interim recycling goal of 40% by 2013 (most recent available data in FDEP website) to identify strategies that can be used for Polk County.

While comparing the amount and the approaches used by other Florida counties that have met the interim recycling goal of 40% by 2013, it was observed that out of 23 counties that have reached the interim recycling goal, 16 counties (Lee, Collier, Sarasota, Martin, Brevard, Alachua, Duval, Seminole,

Marion, Orange, Leon, St. Lucie, Manatee, Broward, Charlotte, and Hillsborough) reached the goal without using RERC. Although the RGS (waste-to-energy facility) is in the County and accepts yard waste and tires as a fuel from the County; the County does not envision using waste-to-energy and the associated RERC as the pathway to reach the recycling goal of 75% by 2020.

Figure 3-2 depicts the contribution of several materials toward the overall recycling rate of the 16 counties that achieved the 40% goal without RERC in 2013. The overall recycling rate of the County for all recyclables excluding CDD is either similar to or greater than nine (Lee, Sarasota, Duval, Seminole, Orange, Leon, St. Lucie, Broward, and Charlotte) of the 16 counties. However, unlike Polk County, CDD recycling for these nine counties contributed significantly to the overall recycling rate. For example, recycled CDD contributed more than half of the recycling rate for Sarasota County. Although the recovered materials contribution to the overall recycling rate for the County is in the range of those for the counties that achieved the 40% recycling rate, the County recognizes an opportunity to increase the recycling rate by further enhancing traditional recyclables recovery and recycling. For example, Hillsborough County's recovered materials recycling contributed approximately 33% of the overall recycling rate. Therefore, the County recognizes that improving materials recovery from commercial and residential sectors and enhancing CDD recycling are the two major opportunities to enhance the overall recycling rate.

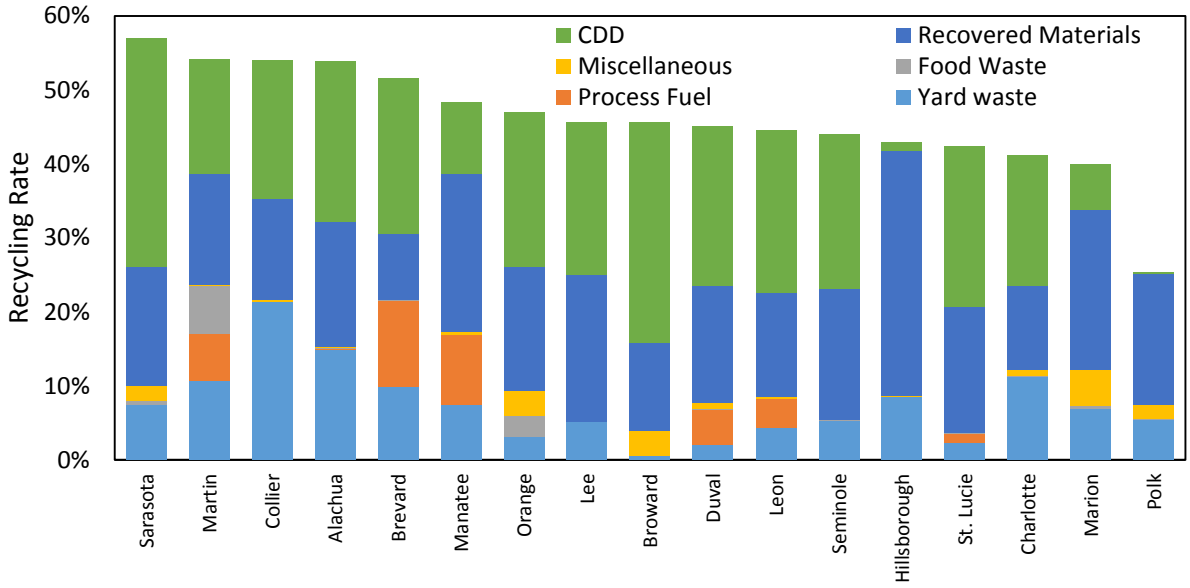

Figure 3-2. Recycling Rate for Polk County and 16 Other Florida Counties that Reached the Interim Recycling Goal of 40% by 2013 without RERC.

Potential programs and technologies for increasing recycling are presented in the chapter. The approaches were focused on increasing recycling of three primary components of the waste streams—commercial waste, residential waste, and CDD—in addition to yard waste and Class III and miscellaneous waste. While CDD may be a component of residential and commercial waste, it is examined distinctly because of its unique characteristics and recycling challenges. Similarly, Class III and miscellaneous waste was examined irrespective of the sector it was generated from. The County developed a series of possible scenarios that it would consider implementing simultaneously or in a stepwise fashion to increase the overall recycling rate. The scenarios are presented in order of expected "ease of implementation" based on technical, economic, or socio-political considerations. Although a cumulative recycling rate is estimated for the sequential implementation of these potential scenarios, many of the scenarios listed in Table 3-1, can be implemented simultaneously and independent of one another.

Table 3-1. Possible Scenarios to Increase Polk County Recycling Rate to 75%

Scenario	Description
Baseline	Existing system (recycling rate approximately 30%)
I	Increasing Class I Commercial waste recycling to 50%
II	Increasing Class I residential waste recycling to 25%
III	Increasing CDD waste recycling to 50%
IV	Increasing yard waste recycling to 100%
V	Increasing Class I commercial waste recycling to 75%
VI	Increasing unincorporated area Class I residential waste recycling rate to 60%
VII	Increasing incorporated area Class I residential waste recycling rate to 60%
VIII	Increasing CDD waste recycling to 75%
IX	Increasing Class III and miscellaneous waste recycling to 50%

The County's potential overall recycling rate after successfully implementing each scenario was estimated based on the County's current waste stream characteristics (amounts and composition) as well as the potential impact that the program or technology in each scenario could achieve. A description of each scenario, potential strategies that would be considered for successfully implementing these scenarios, and limitations of each are discussed in the following sections of this chapter.

3.2 Increasing Class I Commercial Waste Recycling to 50%

As described in Section 2.3, Class I commercial waste represents approximately 44% of all the waste generated in the County in 2014 of which approximately 37% was recycled and the rest 63% was landfilled. The recyclables collection services are available to all the commercial units throughout the County; however, the recycling participation rate for 2013 was estimated to be approximately 50%. The County, therefore, realizes an opportunity to significantly improve the overall recycling rate by increased participation and enhancing recovery of materials from commercial entities of the County. The County is considering targeting a 50% Class I commercial waste recycling rate, which would increase the overall recycling rate from the current recycling rate of approximately 30% to 36%.

To reach the 50% recycling rate target for Class I commercial waste, the County would consider increasing the recycling of waste specific to the commercial sector such as paper. Based on the waste composition study of landfilled Class I commercial waste (KCI, 2011), the recyclable papers contributed to approximately 27% of the landfilled Class I commercial waste stream (Figure 3-3). In 2014, papers contributed to approximately 27% of the County's overall waste stream of which approximately 23% was recycled. Based on these percentage distributions, the County estimated that an additional recovery of approximately 65% of recyclable papers from the Class I commercial waste would increase the Class I commercial waste recycling to 50%. Therefore, the County would consider evaluating and implementing strategies to enhance recovery of recyclable papers from the Class I commercial waste stream.

The County would consider initiating a campaign with organizations such as the Chamber of Commerce to raise awareness among businesses and their employees about the importance and benefits of recycling to the community. The County would also consider initiating efforts to help commercial establishments identify resource-recovery opportunities and tools that help businesses prepare and implement formal recycling programs. The County envisions that increased recyclable collection from the commercial sector would also be dependent upon the demand of recyclables.

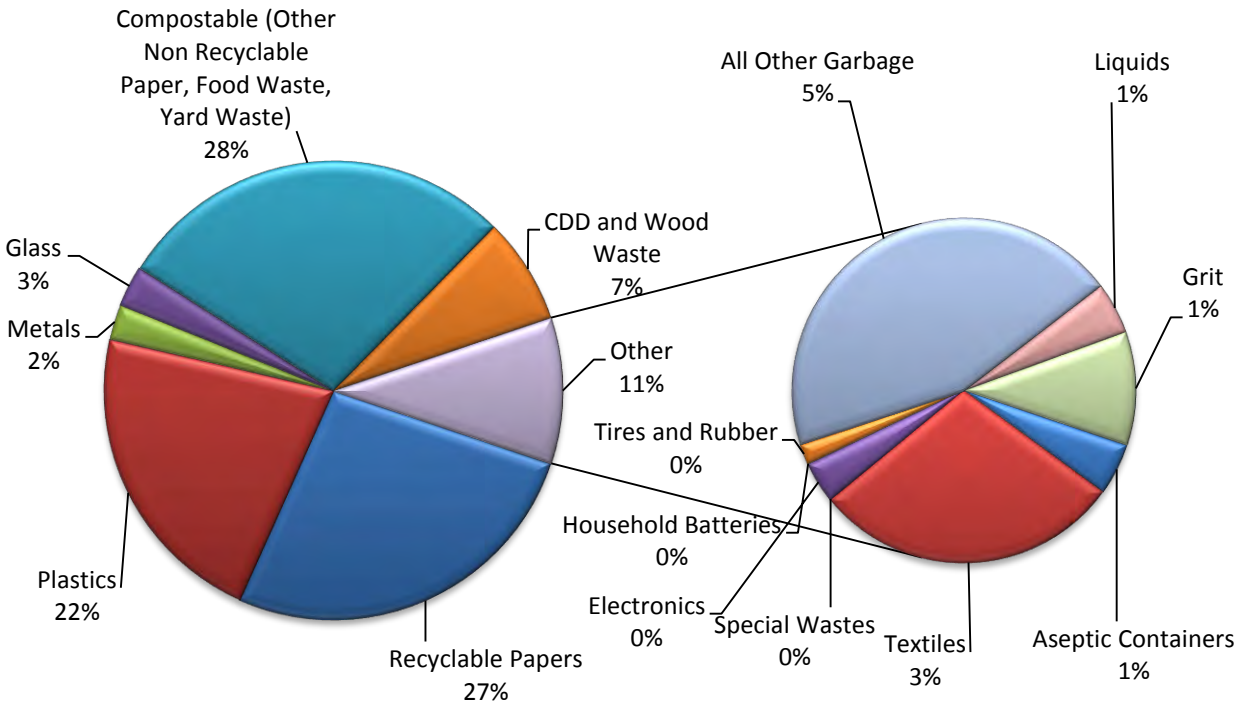

Figure 3-3. Composition of Commercial Sector Waste Stream Landfilled at NCLF (KCI 2011)

3.3 Increasing Class I Residential Waste Recycling Rate to 25%

The County provides single-stream waste recycling to the single-family homes in the unincorporated area that generated approximately 14% of all the waste generated in the County in 2014 of which approximately 10% was recycled. The municipalities of the County have single-stream recycling programs as well; single-family residences of the incorporated area generated approximately 8% of County's overall waste stream of which approximately 10% was recycled. The multifamily units of the County generated approximately 5% of overall County's waste stream in 2014 and almost no recyclables were collected. The overall Class I residential waste recycling rate in 2014 was approximately 8%. In 2014, the participation rate from the County's single-family residences towards recycling program was approximately 90%. The participation rate from multifamily units was estimated to be insignificant as curbside recycling program is not available to a majority of multifamily units in the County. The County recognizes that enhancing the participation and the recovery of materials from residential sector waste can improve the County-wide overall recycling rate.

The County is considering strategies to potentially increase the recycling rate for the Class I residential waste to 25% as an intermediate step in enhancing materials recovery from the residential sector. The County would consider initiating an awareness campaign regarding the importance of recycling to increase the participation rate of the current curbside recycling program in the unincorporated area. WRD would consider working with the Polk County School Board to increase recycling awareness among elementary, middle, and high school students regarding the benefits of recycling at school and home. Further, the WRD staff would consider developing educational materials documenting recycling benefits for distribution at community events. The County would consider having routine communication with residents to remind them about the County's initiatives, programs, recycling infrastructure, and benefits. A study conducted by Everett et al. (1991) observed that personal communication and hand-

delivered/mailed flyers most effectively promoted residential curbside recycling. While personal communication and hand-delivering flyers involve a significant investment of personnel and associated finances, mailing fliers to promote residential recycling could reach every household in Polk County. These flyers could include commitment cards with which households pledge to recycle items that the County accepts as recyclables. Additionally, the County would consider developing and distributing smart phone apps such as an existing app iRecycle developed by Earth911, Inc (Earth911 Inc) to County residents describing what, how, where, and when to recycle.

The County also realizes that these awareness campaigns may first help increase the residential recycling and participation rate but to sustain the increased participation the County would consider continuous recycling awareness campaigns through advertising its recycling efforts using various media such as local TV and radio networks and the County's social media web pages. The County also recognizes the added effectiveness of sending recycling benefits messages developed by school children and would consider implementing a program such as that used by Lakeland where the trash pickup trucks have recycling benefit images drawn by elementary school children (Chambliss, 2013). The County would work with municipalities to increase their residential sector recycling rate to 25%.

Although a quantitative estimate of the increase in the recycling rate associated with active awareness campaigns is not available, active community participation from these awareness campaigns is expected to significantly increase material recovery and recycling. If these active awareness campaigns increase the recycling rate for Class I residential waste from the current 8% to 25%, the overall recycling rate would increase by 4 percent points.

3.4 Increasing CDD Waste Recycling Rate to 50%

In 2014, the County generated approximately 138,400 tons of CDD, which was 14% (Figure 2-6) of the County's waste stream of which approximately 7% was recycled and rest 93% was landfilled. As shown in Figure 3-4, the County recycled only 2% of its CDD in 2013, whereas 13 of the 16 Florida counties that reached the 40% recycling goal without using RERC in 2013 recycled more than 50% of their CDD. The County realizes the importance of increasing the CDD recycling rate to enhance the County's overall recycling rate.

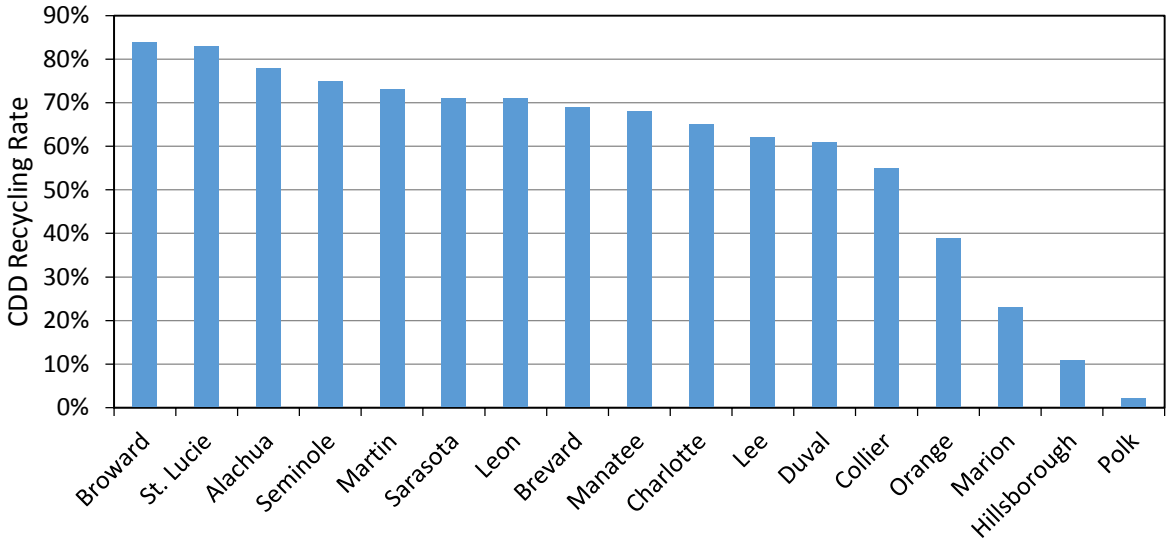

Figure 3-4. CDD Recycling Rate for Polk County and 16 Other Florida Counties that Reached 40% recycling Rate by 2013 without using RERC

To reach the 50% CDD recycling goal, the County would consider recovery of the targeted CDD materials (e.g., wood, concrete). The County evaluated five large-scale CDD waste composition studies (Cascadia Consulting Group (CCG) 2006, 2008, and 2009, CDM 2009, RW Beck et al. 2010) and estimated the composition of landfilled CDD waste materials. As shown in Figure 3-5, the CDD materials wood, concrete, and roofing shingles constitute approximately 50% of the landfilled CDD. Therefore, the County would consider targeting recovery of wood, concrete, and roofing shingles from the County-generated CDD to increase the CDD recycling rate. Recovering 50% of the CDD currently landfilled would increase the County's overall recycling by 6 percent points.

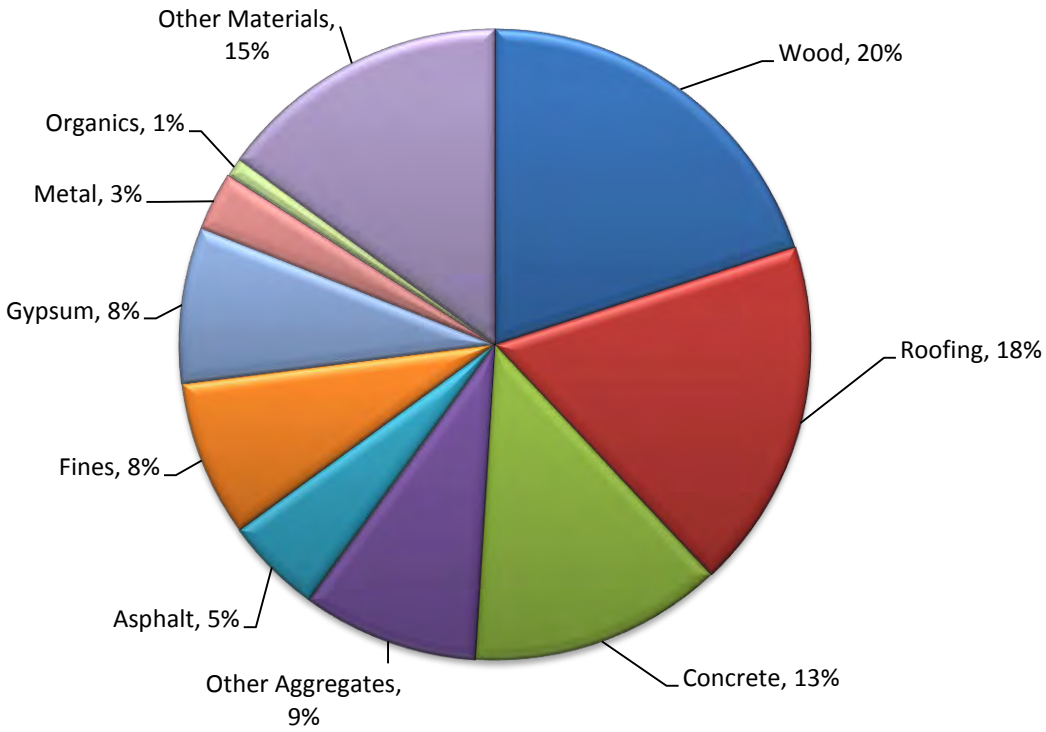

Figure 3-5. Weighted Average Composition of Disposed of CDD Based on Results of Five Large-Scale CDD Waste Composition Studies

The County would work with building contractors, franchised haulers, and operators of the other facilities that accept CDD from Polk County to develop strategies to enhance CDD recovery and recycling. The County would consider the feasibility of promoting and educating the building contractors and franchised haulers for CDD recycling, requiring plans and reports for CDD management, and preprocessing the CDD before landfilling. Although few Florida counties have implemented ordinances to mandate CDD recycling (e.g., Lee County, Sarasota County, and Seminole County), the other 10 Counties that have reached more than 50% CDD recycling goals have enhanced CDD recovery without any mandatory CDD recycling ordinances. It should be noted that the County does not control the flow of CDD and only a small fraction of CDD is disposed of at NCLF. WRD's ability to enhance CDD recycling, therefore, is limited. The County would consider the feasibility evaluation of a mandatory CDD recycling ordinance in enhancing CDD recovery.

3.5 Increasing Yard Waste Recycling Rate to 100%

The successful implementation of strategies described in Sections 3.2 to 3.4 would increase the County's recycling rate to approximately 46%, including RERC. To further increase the County-wide recycling rate, the County would consider programs and strategies to recycle 100% of yard waste. In 2014, yard waste contributed to approximately 9% of the County's waste stream. Approximately 33% of yard waste was combusted, 45% recycled, and 21% landfilled. To increase yard waste recycling, the County would consider composting yard waste or combustion at RGS for energy recovery. The County currently produces mulch, which is offered for free pick up for County residents. The 100% yard waste recycling would add 2 percent point to the County's overall recycling rate and would increase the County's recycling rate to approximately 45%.

3.6 Increasing Class I Commercial Waste Recycling Rate to 75%

The successful implementation of strategies described in Sections 3.2 to 3.5 would increase the County's overall recycling rate to approximately 48%, including RERC. The County would explore strategies to further Class I commercial waste recovery to 75%.

The County would evaluate the performance of initiatives described in Section 3.2 for increasing commercial waste recycling to 50%. The County envisions that a successful implementation of strategies described in Section 3.2 would recover approximately 73% of the recyclable papers from the Class I commercial waste and would leave additional 27% recyclable papers to be recovered. As shown in Figure 3-3, the Class I commercial waste also contains approximately 28% compostable materials such as non recyclable papers, food waste, and yard waste in addition to recyclables such as plastics (21%), glass (3%) and metals (3%). Therefore, the County realizes that a significant amount of waste can be recovered to reach the 75% recycling rate for Class I commercial waste. The County estimated that approximately 90% recovery of all the recyclable papers coupled with 75% recovery of all the compostable materials would be sufficient to increase the Class I commercial waste recycling to 75%. Regardless, the County would consider implementing strategies to recover all type of materials from the Class I commercial waste to reach the targeted 75% recycling rate for the Class I commercial waste. The County may implement one or more of the following strategies to further enhance recovery and recycling of Class I commercial materials:

- Increase its efforts to develop a recycling awareness campaign and consider conducting recycling workshops for businesses, visiting the businesses and guiding them for increased recycling and conducting business-specific recycling training for the employees to improve source segregation of recyclables.
- Look for cooperation from the private sector and other local government bodies to start recognition programs for businesses that implement innovative approaches to enhance material recovery.
- Consider bringing an ordinance for franchise haulers to mandatorily provide recycling containers to businesses. Seminole County has implemented a similar ordinance.
- Consider analyzing the feasibility of bringing an ordinance for mandatory recycling by businesses. Florida counties such as Alachua and Sarasota reached a recycling rate of 40% by 2013 without using RERC and have mandatory recycling programs for businesses; however, the County realizes that mandating recycling from businesses is not the only way to increase recycling, as several Florida counties such as Brevard and Duval have reached the 40% recycling goal (excluding RERC) without mandating commercial sector recycling. The County envisions that political landscape, demographics, and the nature of commercial activities would have to be considered to bring a County-wide mandatory commercial recycling program.

Although the County could not estimate the quantitative impacts of these initiatives, the County anticipates that these initiatives would significantly increase the recovery and recycling of Class I Commercial Waste. Increasing commercial Class I materials recycling from 50% to 75% would increase the overall recycling rate by approximately 11 percent points.

3.7 Increasing Unincorporated Residential Waste Recycling Rate to 60%

Successfully implementing the strategies described in Sections 3.2 to 3.6 would increase the County's overall recycling rate to approximately 60%, including approximately 1% additional RERC that the County will receive by reaching the 50% recycling rate without using RERC. To further increase the recycling rate, the County would consider evaluating the feasibility of processing the Class I residential waste generated from the unincorporated area using strategies such as processing at mixed-waste materials recovery facility (MRF). The primary advantage of using mixed waste MRF is that it is completely independent of the waste generators' recycling efforts and KCI (2009) and Gertman and Bowers (2010) have reported that the technology advancements of MRFs have made them a key recycling improvement strategy by the communities striving to achieve waste diversion rates of 50% or higher.

Based on the KCI 2011 waste composition study, the landfilled Class I residential waste contains approximately 60% recoverable materials including recyclable papers (approximately 22%), compostable papers (approximately 10%), plastics (approximately 20%), metals (approximately 5%), and glass (3%) (Figure 3-6). The County would consider implementing mixed-waste MRF to recover these recyclables from the unincorporated area's Class I residential waste. The County estimated that using mixed waste MRF at 90% recovery for papers, plastics, and metals would increase the unincorporated area Class I residential waste recycling from current recycling rate of 8% to approximately 60%, which would increase overall County's recycling by 6 percent points.

Although mixed-waste MRF seems a technically viable option for increasing the recycling rate, the County realizes that installing and operating a mixed-waste MRF would entail substantial capital investment and needs to be thoroughly evaluated. The County recognizes that the waste processing through a mixed waste MRF may deteriorate the quality of recovered materials.

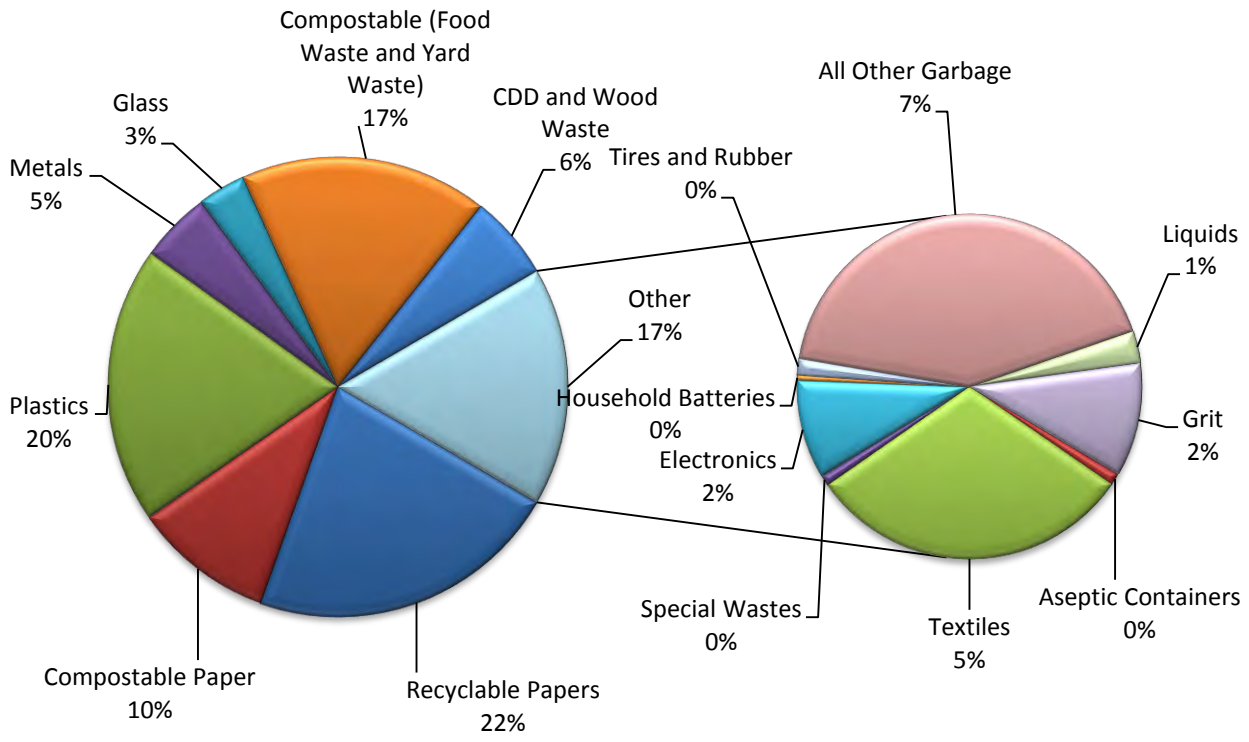

Figure 3-6. Composition of Residential Sector Waste Stream Landfilled at NCLF

Note: The percentage distribution of overall residential sector landfilled waste was calculated using KCI 2011 waste composition percentage distribution for landfilled waste generated from single-family and multifamily units and the total number of single-family and multifamily units in the County.

3.8 Increasing Incorporated Residential Waste Recycling Rate to 60%

If all the strategies described in Sections 3.2 to 3.7 are successfully implemented, the County would reach an overall recycling rate of approximately 66%. To further increase the recycling rate, the County would consider evaluating the feasibility of processing the incorporated area's Class I residential waste using mixed-waste MRF.

As discussed in Section 3.7, the County's residential sector landfilled waste contains approximately 60% of recyclable materials such as papers, plastics, metals, and glass (Figure 3-6). As for the unincorporated area Class I residential waste, the County would consider recovering papers, plastics, and metals from the incorporated area Class I residential waste using mixed-waste MRF. Considering 90% recovery of these recoverable materials using mixed-waste MRF, the County estimated that the incorporated area Class I residential waste recycling would increase from current recycling rate of approximately 8% to 60%, which would increase overall County's recycling by 3 percent points.

Along with the challenges of mixed-waste MRF as described in Section 3.7, the County envisions that using mixed-waste MRF for the Class I waste recycling of the waste generated from incorporated area would have additional challenges because WRD does not have any control over the waste generated from the municipalities. The County would work with municipalities to explore processing their Class I residential waste at a mixed-waste MRF to enhance resource recovery from this waste stream.

3.9 Increasing CDD Waste Recycling Rate to 75%

The successful implementation of strategies described in Sections 3.2 to 3.8 would increase the County's recycling rate to approximately 69%, which would still be short of the Legislature-set recycling goal of 75% to be reached by 2020. To further improve the recycling rate, the County would consider approaches to increase the County-wide CDD recycling rate to 75%. As discussed in Section 3.4, approximately 50% of CDD contains wood, concrete, and roofing shingles and the County is considering targeted recovery of these components of CDD to reach 50% CDD recycling. The remaining CDD contains gypsum, asphalt, metal, fines, and organics that contribute approximately 25% of CDD. To reach the 75% CDD recycling rate, the County would target extracting gypsum, asphalt, metal, fines, and organic waste materials from the CDD by diverting the CDD to an MRF that can recover these materials. Increasing the CDD recycling rate from 50% to 75% would add approximately 3 percent points to the County's overall recycling rate and would increase the County's recycling rate to 72%. It should be noted that due to a lack of control over CDD flow within the County, County's ability to enhance CDD recycling rate is limited.

3.10 Increasing Class III and Miscellaneous Waste Recycling to 50%

To further increase the recycling rate, the County would consider strategies to enhance Class III and miscellaneous waste recycling to 50%. In 2014, Class III and miscellaneous waste constituted approximately 6% of the County's overall waste stream of which more than 99% was landfilled. Therefore, the County realizes that an increase in Class III and miscellaneous waste recycling can significantly contribute to the County's overall recycling rate.

Class III and miscellaneous waste contains recyclable materials such as tires, cardboard, papers, plastics, and metals, in addition to yard trash and CDD. The County would consider processing Class III and miscellaneous waste through the mixed-waste MRF to recover the recyclables. Recycling 50% Class III waste would add approximately 3 percent points to the County's overall recycling and would increase the County's recycling rate to 75%.

3.11 Summary

Figure 3-7 presents the contributions of the individual scenarios toward the overall recycling goal. The County's recycling rate in 2014, including the RERC, was approximately 30%. To increase the recycling rate, the County would consider improving the recycling rate for each type of waste from each sector. The County would consider taking a step-wise approach and at first would target reaching a 50% recycling rate for Class I commercial waste, a 25% for Class I residential waste, a 50% recycling rate for CDD, and a 100% recycling rate for yard waste. The County would further consider targeting a 75% recycling goal for Class I commercial waste and a 60% recycling goal for Class I residential waste. Further, the County would consider targeting 75% CDD recycling and 50% Class III and miscellaneous waste recycling rate goals. The County estimated that the successful implementation of these goals would increase the County's overall recycling rate to 75%.

To improve Class I commercial waste recycling, the County would first target to increase recycling of the commercial sector specific waste such as papers. The County would also conduct recycling awareness programs for the businesses and their employees and may implement an ordinance to mandate recycling from businesses. Additionally, the County would consider initiating an awareness campaign in the residential sector and academic institutions to increase the participation rate of the current single-stream curbside recycling program. The County would also consider programs such as processing residential sector waste using mixed-waste MRF.

To improve CDD recycling, the County would consider implementing programs that target the recovery of specific CDD constituents (i.e., wood, concrete, and asphalt shingles) and would work with building contractors, franchised haulers, and operators of the facilities that accept County's CDD to develop

strategies for enhancing CDD recovery and recycling. The County would consider implementing a mandatory CDD recycling ordinance. The County would consider implementing recycling plans to recover all yard waste by composting or combustion at RGS for energy recovery in addition to enhancing the recovery of Class III and miscellaneous waste.

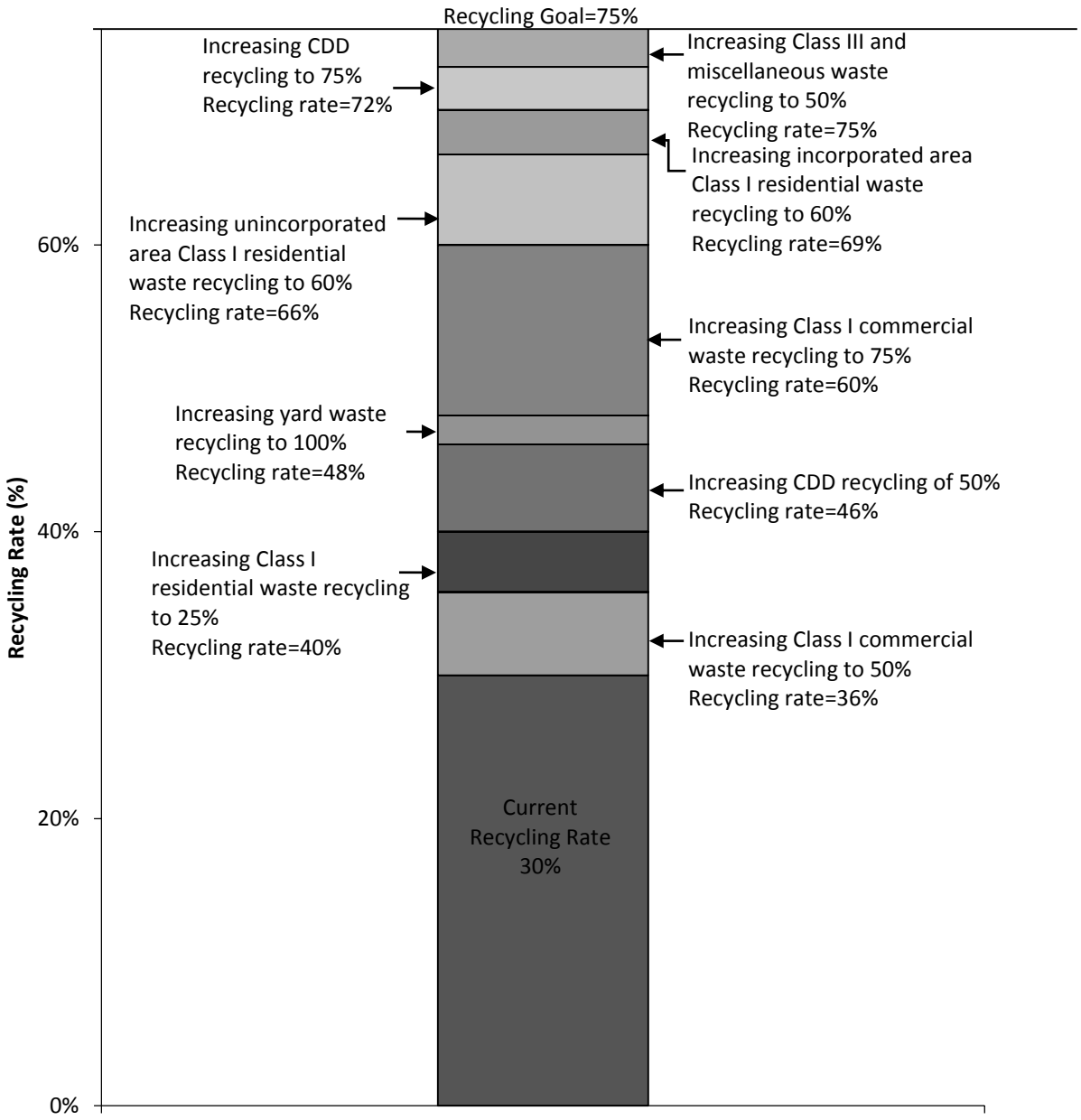

Figure 3-7. Contributions of Scenarios to Overall Recycling Rate

4. Challenges

The County recognizes a need to significantly improve its recycling rates for Class I waste generated from the commercial and residential sectors and overall CDD to increase the overall recycling rate to 75%. The County is actively exploring opportunities to enhance sustainability of materials management by gradually increasing recovery of its Class I commercial waste, CDD, and Class III waste recycling rate to 75% and Class I residential waste and yard waste to 60% and 100%, respectively. The County envisions progressive evaluation and implementation of strategies as discussed in Sections 3.2 to 3.11 to gradually increase the overall recycling rate from the current 29% to 75% by 2020. The County foresees the following specific challenges in achieving a 75% recycling rate:

1. The County foresees that increasing the recycling rate from the current 30% to 75% within 5 years would be a challenge. Many of the options (e.g., constructing a mixed-waste MRF for processing Class I waste) that the County plans to explore in detail would require substantial capital investment and would need to be studied in detail before a decision could be made. In addition, many of the strategies that the County plans to consider are expected to significantly increase the EOL materials management cost. The County's current material management cost is $36.50/ton for Class I waste. The County foresees a significant challenge in financing the facilities needed to enhance the recycling rate.
2. The County's unincorporated area waste management is conducted by the County's WRD; however, it also has 17 municipalities that manage their own waste collection and management program. Implementing the recycling strategies and achieving a County-wide 75% recycling rate would be challenging due to County's (i.e. WRD) lack of control over waste flow from municipalities as well as that of the unincorporated area commercial sector; WRD controls only 14% of the waste generated within the County.
3. The total recycled waste does not include CDD processed by source-segregated debris processing facilities, as, unlike CDD processing facilities, these facilities are not required to report the amount of materials processed and recycled. Including this amount may have a significant impact on the overall recycling rate. For example, approximately 50% of the materials recycled in Sarasota County in 2013 (with an overall recycling rate of 57% in 2013) were associated with "uncertified CDD tons." These uncertified CDD tons represent the amount of CDD recovered and recycled by facilities that are not required to report material quantities to the FDEP; without accounting for this materials stream, the recycling rate of Sarasota County would have been less than 30% in 2013. The County realizes that it will be challenging to track the amount of CDD processed by these facilities in the County.
4. The demand and value of the recyclables is driven by the overall economy and is very dynamic. Davis (2015) reported a significant decline in prices of recyclables in 2015 due to reduced oil prices, a strong dollar, and the weak economy of China. The demand for recyclables has also reduced due to changes in manufacturing practices. Factors such as these have a significant impact on the overall recycling rate and recycling program costs but are beyond County's control. In addition, several recyclables (e.g., glass) do not have a market. To reach the 75% recycling goal, the County would need to recycle almost all the recyclable materials irrespective of market demand.
5. The County considers environmental and economic impacts and the sustainability of the proposed strategies as the primary considerations for decision making. However, the current FDEP recycling rate calculation protocol does not consider material-specific and application-specific

environmental benefits. For example, 1 ton of glass recycled results in the same increase in recycling rate as the recycling of 1 ton of asphalt shingles. However, the environmental benefits of recycling 1 tons of asphalt shingle are expected to be much greater than recycling 1 ton of glass.

5. Summary

This report assesses the current state of Polk County's waste collection and management program. Additionally, it describes the efforts and strategies that the County will consider to progressively increase the recycling rate from the current recycling rate of approximately 30% to 75% by 2020.

The County is split between an unincorporated area and 17 municipalities and approximately 90% of the County's population resides in the unincorporated area along with the Lakeland, Winter Haven, Haines City, and Bartow municipalities. The County has approximately 171,000 single-family residences, 36,700 multifamily residences, and approximately 27,800 commercial establishments. WRD coordinates waste management services for the unincorporated area, while each city/municipality manages its own waste management program. In 2014, the County generated approximately 990,200 tons of waste out of which approximately 27% was recycled, 3% was combusted, and 70% was landfilled. The County obtained approximately 3% RERC for energy recovery from landfill gas tires. The County's waste stream has approximately 71% Class I waste (approximately 44% from the commercial sector and 33% from the residential sector), 14% CDD, 9% yard waste, and 6% Class IIII and miscellaneous waste.

The unincorporated and the incorporated area has a single-stream recycling program. In 2014, the overall recycling rate was approximately 30%; Class I commercial contributed 16%, Class I residential contributed 2%, CDD contributed 1%, yard waste contributed 7% (including process fuel), Class III and Miscellaneous waste contributed 1%, and RERC contributed 3% to the overall recycling rate. Approximately 37% of Class I commercial waste, 10% of single-family Class I residential waste, 7% CDD, 67% yard waste, and 1% Class III and miscellaneous waste was recycled. The County recognizes the opportunities to significantly increase the County's overall recycling rate by improving the materials recovery from the Class I waste of the commercial and residential sectors, CDD waste, yard waste, and Class III waste.

As with any government entity, WRD activities are governed by policies enacted by the Board of County Commissioners. With this in mind, WRD has been analyzing several strategies aimed at creating opportunities for sustainable MSW processing. As a result, the County is working on further developing policies to enhance recycling rates through several business models.

The County would consider implementing multiple strategies to incrementally increase the recycling rate by setting targets based on specific waste and generating sector. At first the County would consider evaluating approaches to reach a target recycling rate of approximately 50% for Class I commercial waste, a 25% Class I residential waste, a 50% CDD waste, and a 100% yard waste. The County would further consider targeting to reach an approximately 75% recycling rate for the Class I commercial waste and process the Class I residential waste using a mixed-waste MRF to reach the interim recycling goal of 60% by 2016. The County would further consider targeting a 75% recycling rate of CDD and a 50% recycling rate of Class III waste to reach the recycling goal of 75% by 2020.

The County would consider initiating awareness campaigns to increase the participation rate from the commercial and residential sectors. Additionally, the County would consider mandating (if required) recycling from commercial establishments. The County would also consider implementing strategies to improve CDD recycling by working with building contractors and franchised haulers. The County would also consider mandatory recycling ordinance for commercial and CDD waste stream. The County would consider composting and combustion (with energy recovery) to enhance the recycling of yard waste.

The County also realizes that increasing the recycling rate from 30% to 75% within next 5 years would be a significant challenge. The County foresees challenges such as tracking materials managed by entities that are not required to submit recycling reports to FDEP, lack of control over waste flow from

municipalities, finding markets for the recycled materials, and financing the strategies to enhance the materials recovery.

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Santa Rosa County

SANTA ROSA COUNTY FLORIDA

ENVIRONMENT DEPARTMENT

RECYCLING PLAN

JULY 2015

DRAFT – JULY 2015

Table of Contents

Section 1 Summary of Services

I. Solid Waste Collection Franchises

Santa Rosa County has franchised solid waste collection services County wide to provide additional solid waste services at lower cost to residents. Beginning in April of 2011, Santa Rosa awarded solid waste collection franchises to Waste Pro and Waste Management for the south end of the county, generally in the Santa Rosa Island / Navarra Beach areas. In 2015 Santa Rosa County BOCC awarded a collections franchise to the Emerald Coast Utilities Authority for the remaining area of Santa Rosa County, generally north of the Yellow River.

Franchise haulers are required to provide the same basic services to all residents of the county who subscript for services.

Basic services include:

- Twice a Week Garbage
- Single Stream Recycling Weekly
- Yard Waste Bi-Weekly
- White Goods / E-Waste / Bulky Waste on demand

II. Santa Rosa County Central Landfill

The Santa Rosa County Central Landfill provides a number of opportunities for residents to recycle or divert Municipal Solid Waste and recoverable materials from the landfill. The two most significant components for residents to recycle or divert materials are the Residential Drop-Off Area and the Household Hazardous Waste (HHW) Facility.

The Residential Drop Off area allows residents to source separate metals, white goods and E-Waste into separate bins for recycling.

The Household Hazardous Waste Facility accepts a significant amount of material for diversion such as waste oil and fuel for use as an alternative fuel, paints, fertilizers and house hold cleaners for reuse through the landfill's Swap Shop.

The HHW Facility also operates a "Materials Exchange Program" that allows residents of the county to donate useable items that otherwise would enter the solid

waste stream for disposal and provides residents access to donated items and various materials accepted by the HHW facility for disposal. Materials currently available in the program are paints, household cleaners, fertilizers, and various automotive products that are still in their original containers and have legible labels.

The Central Landfill also operates a Yard Waste collection area for residents and business to place vegetative debris. This debris is ground into mulch for reuse at Central Landfill as both alternative cover and erosion control. Mulch is also provided free to residents for ornamental use.

III. Jay Green Box Facility

The Jay Green Box Facility provides residents a local disposal option in the north end of the county for MSW, metal and limited Household Hazardous Waste materials.

Section 2 Municipal Solid Waste & Recovered Materials Volumes

Appendix A provides a summary of Class I MSW, Class III waste, and special wastes (asbestos, contaminated soils, wastewater sludge) collected in Santa Rosa County by franchise and independent haulers in the unincorporated areas of Santa Rosa County.

Included in the data is waste accepted from residential self-haulers, the Cites of Gulf Breeze, Milton, and Jay, moderate volumes of Class III and special waste from the neighboring counties of Escambia and Okaloosa and municipal solid waste from the City of Fort Walton Beach.

Appendix B provides data on the volumes of recoverable materials accepted from all sources in Santa Rosa County and includes single stream recyclables (SSR) collected curbside in the franchise areas, materials collected at the Central Landfill Residential Drop-Off area, yard waste and land clearing debris.

Section 3 Commercial and Multifamily Recycling Programs

Santa Rosa County requests information from permitted haulers to track residential and commercial customers, however, the county does not at this time track individual components of commercial waste into business or multifamily residential units that utilize commercial services for MSW or recycling services.

Appendix C provides data on residential and commercial customers as provided by the franchise waste haulers and is valid as of April 2015.

Section 4 Construction & Demolition Debris Recycling

Santa Rosa County currently accepts clean concrete that is utilized for stormwater projects or ground for use as road base materials. The county is currently working with two truss manufactures to accept source separated non-treated wood waste generated during the manufacturing of trusses to be ground with yard waste.

Section 5 Yard Trash Recycling

Yard Trash is collected by franchise haulers throughout the county for delivery to Central Landfill for processing. Residents and commercial customers may also deliver Yard Waste directly to Central Landfill for processing. Grinding of yard waste is currently contracted out under a "call as needed" agreement with a commercial woody waste processing company. Yard Trash is ground by the vendor and stored on site for use as alternative cover and erosion control material. The landfill also provides mulch free to residents for decorative use.

Section 6 Landfill Gas to Compressed Natural Gas (CNG)

A Landfill Gas (LFG) Collection and Recovery System was installed in 2012 and is currently operational at Central Landfill. The system consists of 30 horizontal gas extraction wells, a horizontal collector, and candle stick flare for thermal destruction of collected landfill gas.

The county is currently designing a LFG to Energy system to convert methane to a compress natural gas (CNG) alternative fuel. The system is envisioned to have two "fast fill" dispensers at the entrance to Central Landfill and be available 24/7 for public use. It is expected that the primary usage of the CNG fuel will be local MSW hauling companies with occasional residential use.

The collection and reuse of landfill gas to produce CNG will provide a significant reduction in both landfill gas emissions and fossil fuels used by commercial waste hauling tracks. Production of CNG is expected to generate additional revenue for landfill operations and contribute to maintaining a cost-effective method for disposal of MSW for residents of Santa Rosa County.

Section 7 Future Program Expansions

Santa Rosa County is currently researching a number of options to improve recycling, the must successful of which has been the implementation of the solid waste franchises which provided curbside single stream recycling county wide.

The county is developing an information program that encourages residents to develop backyard composting facilities to divert household organic waste.

The county is also completing a rate study and 10 year master plan that will help establish disposal rates and polices that support a sustainable Solid Waste Management Plan for Santa Rosa County that may provide additional funds to expand recycling and reuse program.

Section 8 Challenges and Conclusions

While recycling has been a major component of Intergraded Solid Waste Management for a number of years, significant challenges remain in meeting recycling goals. Primary in those challenges is the lack of local end users of recyclable materials. Collection of recyclables through curbside single stream programs is very convenient for residents, but creates problems in the marketing of recyclable materials such as OCC and paper products due to contamination issues.

The collection and processing of other materials such as glass and metals create problems due to weight if the materials must be transported over long distances to a processing facility.

There are two major roadblocks to increasing recycling volumes:

Frist, the low revenue value of recyclable materials, coupled with an unpredictable market that makes it challenging, if not impossible, to process and market recyclables at a profit that can support recycling operations.

Secondly, and perhaps the biggest obstacle is the idea that everything that goes to a landfill that is purchase and used be residents and business is recyclable. While that statement may technically be true, if you also count burning MSW, recyclables and vegetative debris to produce energy as recycling, it is not based in reality. With the advent of single stream or one bin recycling what we wind up with far too often is actually another container of MSW or at best a mixed load of recyclables, garbage and items with no recycling potential or value that significantly increase the cost of processing and reduces the market value of the end product.

The initial set up of a recycling facility cost tens if not hundreds of millions of dollars, far outside the reach of most counties and municipalities to fund. Even for profit companies are failing at recycling, most notable is Waste Management's recent decision to shut down several large recycling facilities after significant monetary loss.

In addition the idea that recycling is a self-supporting process is a falsehood. Just like MSW collections and landfilling, recycling cost money, someone be it the generator, consumer, local governments or private enterprise must pay for the service.

Until we move to a market based or market driven recycling system, one that only collects and processes materials that not only have a known recycling potential <u>BUT also have a local, stable market and positive monetary value,</u> achieving a sustainable recycling program is problematic.

APPENDIX A

SANTA ROSA COUNTY MSW

Actual Tons Per Month, CI & CIII		
	Class I	Class III
Jan. 13	9,160.35	2,759.83
Feb.	8,142.26	2,463.62
March	8,563.19	3,088.93
Apr.	9,679.36	3,355.34
May	10,376.98	3,387.06
June	8,915.75	3,359.20
July	10,754.55	3,419.76
Aug.	9,515.47	3,363.32
Sept.	8,783.24	3,293.01
Oct.	9,160.76	3,345.54
Nov	8,413.82	3,460.10
Dec.	9,397.47	2,827.96
Jan. 14	9,254.43	2,839.40
Feb.	9,553.46	3,465.69
Mar.	9,963.44	3,945.58
Apr.	11,586.36	3,984.98
May	11,942.34	8,289.32
June	10,475.25	5,305.01
July	11,923.37	4,577.06
Aug.	9,355.06	4,612.25
Sept.	9,434.43	4,659.85
Oct. 14	9,450.89	4,304.16
Nov.	8,140.30	3,808.97
Dec.	9,805.08	3,847.86
Jan. 15	9,131.32	4,248.15
Feb.	8,402.27	4,094.91
Mar.	10,364.29	5,145.04
Apr.	10,460.43	5,904.62

Average Tons Per Day, Class I & III			
	Class I	Class III	Total
Jan. 13	339.27	102.22	441.49
Feb.	339.26	102.65	441.91
March	329.35	118.81	448.16
Apr.	372.28	129.05	501.33
May	384.33	125.45	509.78
June	356.63	134.37	491.00
July	398.32	126.66	524.97
Aug.	352.42	124.57	476.99
Sept.	337.82	126.65	464.47
Oct.	339.29	123.91	463.20
Nov	336.55	138.40	474.96
Dec.	361.44	108.77	470.21
Jan. 14	342.76	105.16	447.92
Feb.	398.06	144.40	542.46
Mar.	383.21	151.75	534.96
Apr.	445.63	153.27	598.90
May	442.31	307.01	749.32
June	419.01	212.20	631.21
July	441.61	169.52	611.13
Aug.	359.81	177.39	537.20
Sept.	362.86	179.23	542.09
Oct. 14	350.03	159.41	509.45
Nov.	325.61	152.36	477.97
Dec.	363.15	142.51	505.66
Jan. 15	338.20	157.34	495.54
Feb.	350.09	170.62	520.72
Mar	398.63	197.89	596.51
Apr.	402.32	227.10	629.43

APPENDIX B

RECOVERED MATERIALS SUMMARY

Recovered Materials (Tons)						
	3. White Goods	4U. No. Tires (Number of Tires)	12. Mulch	6. Burnable Weight	6C. Burnable Wt Comm.	50. Recycle (SSR)
Jan. 13	0	288	10.28	147.06	3.64	780.89
Feb.	0	271	17.62	165.21	4.58	579.8
Mar.	0	385	13.95	253.13	22.88	632.6
Apr.	0	300.1	33.55	281.32	23.43	680.35
May	0	313	18.58	286.56	26.36	687.85
June	5.03	308.4	10.78	239.79	36.98	655.72
July	4.8	373	11.02	209.23	25.37	746.26
Aug.	0	365	6.41	204.4	22.41	723.72
Sept.	0	376	2.34	170.85	30.6	662.18
Oct.	0.32	363.6	1.82	211.65	29.8	697.06
Nov.	0.22	413	3.34	164.45	23.78	691.98
Dec.	0.03	266	9.51	98.25	24.08	818.63
2013 Totals	10.4	4022.1	139.2	2431.9	273.91	8357.04
Jan. 14	0.29	312	4.33	111.66	21.33	759.58
Feb.	0.61	405	9.11	182.49	27.16	686.4
Mar.	0.44	490	32.93	247	18.81	698.78
Apr.	0.15	428	35.07	306.07	53.04	1,010.15
May	0.14	595	23.95	274.61	24.31	634.3
June	0.07	472.1	11.24	296.59	16.92	544.43
July	0.48	329.5	19.22	231.04	113.41	767.75
Aug.	1.92	313	14.69	238.63	138.11	666.4
Sept.	0.11	294.4	2.84	196.6	107.79	720.86
Oct.	0.09	426	6.06	191.64	177.74	683.94
Nov.	0.21	409	10.37	151.55	151.64	567.12
Dec.	0.15	368	17.57	139.73	82.5	766.11
2014 Totals	4.66	4842	187.38	2567.61	932.76	8505.82

RECOVERED MATERIALS SUMMARY (CONT.)

Recovered Materials (Tons)						
	3. White Goods	4U. No. Tires (Number of Tires)	12. Mulch	6. Burnable Weight	6C. Burnable Wt Comm.	50. Recycle (SSR)
Jan. 15	0	370.3	11.24	145.51	121.68	729.44
Feb.	0.66	260.4	8.81	169.07	173.69	653.25
Mar.	0.59	526	26.97	249.4	160.49	774.19
Apr.	2.09	300.4	32.47	273.66	212.64	756.59
May	0	307	26.36	264.6	219.2	802.8
Jun						
Jul						
Aug						
Sep						
Oct						
Nov						
Dec						
2015 Totals	3.34	1764.1	105.85	1102.24	887.7	3716.27

NOTES:

1. All materials quantities are in tons with the exception of Material Type “4U. Nu. Tires” which list the number of individual tires received.
2. Volume of “50. Recycle (SSR)” in **red** is total volume of recyclable materials diverted to the Class I disposal area after failure of West Florida Recycling in Escambia County.
3. Material categories “6. Burnable Weight” and 6C. Burnable Weight Comm.” is vegetative materials, residential yard waste, commercial landscape and land clearing debris that were ground for mulch or disposed of by burning in the county’s Air Curtain Incinerator. The Air Curtain Incinerator is currently shut down and scheduled for decommission and removal in the fall of 2015. After removal of the Air Curtain Incinerator all vegetative debris with be ground for mulch.

APPENDIX C

Residential & Commercial Customers by Hauler

Hauler	Residential Customers	Commercial Customers
Waste Management of Florida	12,019	1,574
Waste Pro of Florida	7,620	653
Emerald Coast Utilities Authority	20,000*	37
Allied Waste Service of North America	2,359	630
J & L Garbage Service	350	10

*Current Estimate

Seminole County

SEMINOLE COUNTY, FL
RECYCLING REPORT

September 2015

SEMINOLE COUNTY
FLORIDA'S NATURAL CHOICE

Submitted to:

Seminole County
1950 State Road 419
Longwood, FL 32750

Prepared by:

Kessler Consulting, Inc
14620 N. Nebraska Avenue, Bldg. D
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Section 1
Introduction

In 2008, the Florida Legislature set a statewide municipal solid waste (MSW) recycling goal of 75% by the year 2020. In 2010, the Legislature further directed that the goal be primarily applied to counties with a population of greater than 100,000 and also set the interim recycling goals listed below.

Calendar Year (CY)	Interim Recycling Goal
2012	40%
2014	50%
2016	60%
2018	70%
2020	75%

Additionally, the Legislature included several provisions in the law to assist local governments in expanding recycling programs.

- Counties and municipalities are encouraged to form cooperative arrangements for implementing recycling plans in order to reach the recycling goals (§403.706(2)(a), F.S.).
- Counties are to implement a program for recycling construction and demolition (C&D) debris as part of their efforts to attain the recycling goals noted above (§403.706(2)(b), F.S.). The law further requires that, to the extent economically feasible, all C&D debris must be processed prior to disposal, either at a permitted material recovery facility (MRF) or a permitted disposal facility (§403.706(9)(g), F.S.).
- Newly developed property receiving a certificate of occupancy, or its equivalent, on or after July 1, 2012 that is used for multifamily residential or commercial purposes, must provide adequate space and an adequate receptacle for recycling by tenants and owners of the property. This provision is limited to jurisdictions with established programs that provide recycling receptacles and regular pickup services for those receptacles (§403.706(2)(c), F.S.).

If a county does not achieve an interim recycling goal, the Florida Department of Environmental Protection (DEP) "may direct the county to develop a plan to expand recycling programs to existing commercial and multifamily dwellings, including, but not limited to, apartment complexes" (§403.706(2)(d), F.S.).

Based on the annual report submitted to DEP, the 2014 Seminole County (County) recycling rate was 38% for traditional recycling plus 4% renewable energy recycling credits for a total of 42%. This falls short of the 50% interim recycling goal. Therefore, pursuant to the December 23, 2014 letter from Jorge R. Caspary, Director of the Division of Waste Management, the County is required to submit a recycling program plan to DEP by October 1, 2015.

This report is designed to assist the County with preparing a recycling plan to meet DEP's requirements and includes the following:

- Summary of services and materials for which the County offers recycling.
- Analysis of the percentage of the County's MSW generated by the residential, multifamily, and commercial sectors.

- Analysis of existing recycling programs and estimated participation and recycling rates for each sector.
- Identification of opportunities and actionable items to encourage and increase recycling within each sector for:
  - Recyclables
  - Yard trash and organics
  - C&D debris
- Identification of policy, programs, and infrastructure changes that the County could potentially implement to take advantage of these opportunities.

In addition to the items listed above, when submitting a recycling plan to DEP, the County will need to identify what actions the County is committed to take and provide a timeline for implementation.

Section 2
Current Recycling Programs

Seminole County covers a geographical area of 345 square miles and is located in the Greater Orlando Metropolitan Area in central Florida. The County had an estimated population of 437,000 people in 2014 with almost half its population living in the unincorporated areas of the County.[1] Although it is the third smallest county in Florida by total area, it is one of the fastest growing counties in population because of its location and viable, progressive, and diverse setting for economic growth and residential development.

The Solid Waste Division provides oversight of the County's solid waste system, which includes:

- Managing the County's Landfill and Central Transfer Station.
- Providing for residential garbage collection services in the unincorporated areas of the County.
- Authorizing companies to perform commercial solid waste collection and C&D debris collection services in the unincorporated areas of the County.
- Operating two recyclables drop-off centers for residents and businesses.
- Managing a variety of programs for special waste management.

2.1 Existing Collection System

The County's Solid Waste Division provides oversight of garbage and recycling collection services for the unincorporated areas of the County. Through three exclusive franchises, the County provides universal curbside residential collection service for single-family homes with four different service level options. The current residential collection franchisees are Advanced Disposal, Waste Pro, and Waste Services Industries.

Commercial collection is restricted to non-exclusive franchises of which the County currently has seven franchisees (including the three residential haulers). The Solid Waste Collection Franchise Agreement classifies multifamily waste as commercial. Multifamily and commercial recycling is provided on a subscription basis by the non-exclusive franchisees, rates are not regulated, and franchisees are only required to "exercise best efforts to provide recycling services."

Collection services for C&D debris and miscellaneous waste includes an additional 13 permitted haulers. C&D debris recycling is not required.

The County and seven municipalities have entered into Inter-local Agreements (ILAs) that direct the flow of waste through the County's Central Transfer Station or Osceola Road Landfill. Five of the municipalities direct residential recyclables to the Central Transfer Station and the County provides a recycling revenue share back to these cities based on the County's recycling processing agreement.

Each municipality provides for its own universal curbside residential collection within the municipal boundaries. All municipalities, with the exception of Altamonte Springs, contract with a service provider for collection services; City crews service Altamonte Springs residences and businesses. Table 2-2

[1] University of Florida, Bureau of Economic and Business Research, 10/15/2014.

presents the residential collection services by jurisdiction including level of service, type of collection, volume limits/container sizes, rates (contract and customer), and exclusive franchise type.

The majority of collection programs within the County accept unlimited amounts of recyclable materials in dual stream, meaning that fiber is separated from containers by the residents and placed in separate 18-gallon recycling bins. However, Lake Mary and Oviedo both have single stream programs that allow all materials to be combined into one container.

The following materials are accepted in the County's recycling program:

- Pasteboard (i.e., cereal boxes, empty paper towel and toilet paper rolls, soda boxes, beer boxes, tissue boxes, gift boxes, pizza boxes and shoe boxes)
- Brown paper grocery bags (no wax, no wet strength material, no liners)
- Corrugated cardboard
- Newspaper, supplements, magazines, catalogs, and telephone books
- Box board, carrier stock, white and colored paper
- Plastic containers #1-7
- Glass bottles and jars (clear, green and brown)
- Aluminum cans
- Steel cans and tin household containers, such as food cans

Table 2-1 provides an analysis of the residential curbside recycling programs by jurisdiction based on the average annual pounds of recyclables per household collected in CY 2014. The two municipalities with carted single stream recycling collection (Lake Mary and Oviedo) report substantially higher recycling rates on a per household basis.

Table 2-1: Analysis of Residential Curbside Recycling Programs, 2014

Jurisdiction	Annual Tons of Residential Recyclables	Average Number of Households[1]	Average Pounds per Household per Year
Altamonte Springs	973.66	6,725	290
Casselberry	832.00	7,787	214
Lake Mary	1,459.73	4,902	596
Longwood/Sanford	1849.29	4,800/12,601	213
Oviedo	3,884.25	11,500	676
Winter Springs	1,725.13	11,248	307
Unincorporated County	10,393.12	67,153	312
Countywide	21,209.16	126,716	335

[1]*As reported to the County (April 2015)*

Table 2-2: Seminole County Residential Solid Waste and Recyclables Collection Programs

Jurisdiction	Level of Service[1]	# of HH	Type of Collection	Garbage	Recycling	Yard Waste	Bulk Waste	Contract Rate[2]	Customer Rate	Exclusive Franchise Type	Contract Expiration	Service Provider
Altamonte Springs	2-1-1	6,725	Manual	Unlimited; customer-provided containers	DS; 18-gallon bins	Unlimited	Unlimited free 2 weeks each year; other upon call with charge	N/A	$20.75	N/A	N/A	City
Casselberry	2-1-1	7,787	Manual	Unlimited; customer-provided containers	DS; 18-gallon bins	Maximum 15 bags per week	Small items may be placed curbside; larger items on call	$13.40	$18.42	Residential	3/31/2018	Waste Pro
Lake Mary	1-1-1	4,902	Automated	Unlimited; 95-gallon cart	SS; 65-gallon cart	Not to exceed 4cy per pickup	Not to exceed 4cy per pickup	$13.96	$18.00	Residential & Commercial	44620	Waste Pro
Longwood	2-1-1	4,800	Automated	Unlimited; 95-gallon cart	DS; 18-gallon bins	Unlimited	On call with charge	$17.86	$19.11	Residential	12/31/2017	Waste Pro
Oviedo	1-1-1	11,500	Automated	Unlimited; 95-gallon cart plus up to 8x per year add'l container	SS; 95-gallon cart	Limited to 8cy every 60 days	Upon request up to 2 collections per month; limited to 8cy every 60 days	$17.66	$19.64	Residential	43738	Republic
Sanford	2-1-1	12,601	Manual	Unlimited; customer-provided containers	DS; 18-gallon bins	Unlimited	Unlimited	$15.53	$18.40	Residential & Commercial	5/31/2018	Waste Pro
Winter Springs	2-1-1	11,248	Automated	Unlimited; 95-gallon cart with additional containers	DS; 18-gallon bins	Unlimited	Unlimited; extraordinary amount will be charged	$13.98	$18.10	Residential & Commercial	43524	Waste Pro
Unincorporated County	2-1-1	67,153	Manual	Unlimited; customer-provided containers	DS; 18-gallon bins	Maximum 15 containers per week	Unlimited; on call	WP = $13.40 AD = $12.52 WP = $14.50	$17.92	Residential	3/31/2018	Advanced Disposal (AD) & Waste Pro (WP)
	2-1-0		Manual			Not included		WP = $12.44 AD = $12.35 WP = $14.06	$17.42			
	1-1-1		Manual			Maximum 15 containers per week		WP = $11.77 AD = $11.90 WP = $13.20	$16.92			
	1-1-0		Manual			Not included		WP = $10.48 AD = $11.62 WP = $13.02	$16.33			

[1]Level of Service indicates the number of pickups per week of residential solid waste, recyclables, and segregated yard waste.

[2]Rates are provided by municipal or County personnel or included in each respective contract. Direct comparison between rates is cautioned due to differences in services provided and other contract terms.

2.2 Countywide Recycling Programs

The County also offers a variety of countywide voluntary programs to encourage recycling.

- Recycling Drop-off Facilities

The County operates two recycling drop-off locations, one at the Central Transfer Station and the other at Seminole County Landfill. The program is available to residents and businesses. The same items accepted in the County's residential recycling program are accepted at the drop-off facilities.

- Mattress Recycling

The County partners with Mustard Seed of Central Florida, a nonprofit furniture and clothing bank, for the recycling of waste mattresses and box springs. Waste mattresses and box springs may be dropped off at the Central Transfer Station at no cost to the customer.

- Used Oil

Residents (not businesses) may drop-off used oil at the Central Transfer Station as well as a variety of automobile maintenance or parts stores.

- Tire Recycling

Whole tires are accepted at the Seminole County Landfill. The tires are shredded and chipped and used in the manufacture of playground surfacing and as a mulch alternative, or also as an alternative fuel source.

- Residential Electronics Recycling

Residential electronics are accepted at the Central Transfer Station free-of-charge from residential households. The electronics recycling program is available to all County residents for e-scrap generated in a home.

- White Goods Recycling

White goods (appliances) are accepted at the Seminole County Landfill for recycling. Properly prepared white goods are recycled by a scrap metal dealer.

- Yard trash Processing

Yard trash is processed at the Seminole County Landfill. It is ground in a tub grinder to form mulch and is used as an alternative fuel source. Yard trash is also diverted and used as landfill cover.

- C&D Debris

C&D debris is accepted at the Seminole County Landfill. The majority of C&D debris is diverted and used as temporary landfill road material.

2.3 Waste Generation by Sector

As reported by the County in Re-TRAC, Table 2-3 provides the estimated breakdown of the quantity of waste generated by single-family residents, multifamily residents, and commercial businesses in CY 2014, as well as the number of units and estimated level of recycling participation. The County

calculated the tons of waste generated and recycled by using sector waste generator percentages from the 2003 waste composition study, which in turn was based on the County's 2002 report to DEP.

Table 2-3: Waste Generation by Sector, CY 2014 (per DEP report)

Generator	Waste Generated (tons)	% of Waste Generated	Tons Recycled	Recycling Rate	Total # Units	Est. # Units Participating
Single-Family Residential	243,554	45%	93,165	38%	141,895	74%
Multifamily Residential	92,009	17%	23,523	26%	52,214	18%
Commercial	206,109	38%	81,400	39%	34,351	25%
Total	541,672		198,088	38%	228,460	

To provide a more accurate sector analysis, KCI calculated the waste generated by sector based on the County's Solid Waste Management (SWM) report and DEP Recovered Materials Report.[2] The County tracks residential tonnage separately in the solid waste system; however, MSW collected from multifamily units and commercial customers are commingled. For the purposes of this analysis, only recyclables and yard trash collected curbside were allocated to single-family residential. Because it was impossible to ascertain what percentage of the other materials reported in DEP's Recovered Materials Report originated from single-family residents versus multifamily/commercial, these were allocated to multifamily/commercial.

Table 2-4: Waste Disposal and Recycling by Sector, CY 2014 (recalculated)

Generator	Waste Disposed (tons)	% of Waste Disposed	Tons Recycled	Recycling Rate
Single Family Residential	139,008	42%	57,197	29%
Multifamily/ Commercial	162,084	48%	119,364	42%
C&D Debris	31,992	10%	24,390	43%
Total	333,084		200,951	38%

Note: The source of some recycled materials could not be determined; therefore, allocation between sectors is estimated.

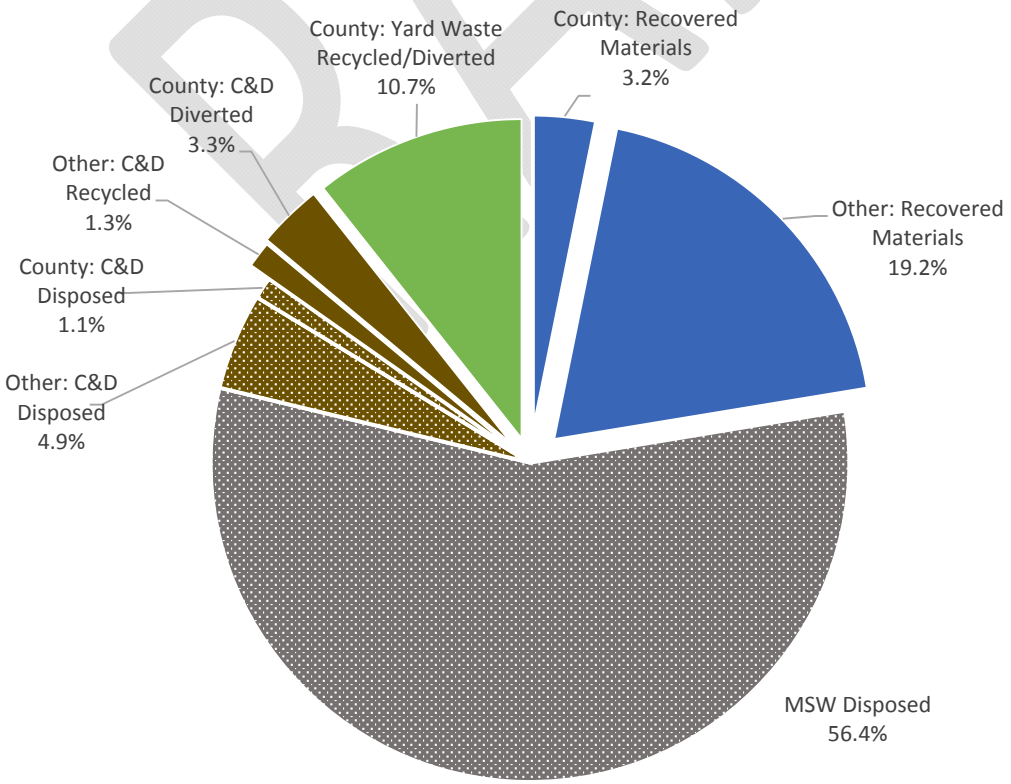
In addition to not breaking out multifamily residential waste and recyclables from commercial, the recalculated sector analysis presented n Table 2-4 identified other issues that further affects the accuracy of the sector analysis.

[2] Tonnage data in the DEP report and SWM report did not match exactly; however, resolving these differences was beyond the scope of this project.

- Allocating all materials in DEP's Recovered Materials Report, with the exception of recyclables and yard trash collected curbside, to the multifamily/commercial sector results in a recycling rate of 42% for this sector, which seems unreasonably high. Therefore, some of these recycled tons likely originated from single-family residents.
- The potential exists that some recyclables are being double-counted. Specifically, County recyclables processed by Waste Management pursuant to the processing contract should have been reported by Waste Management. However, the tonnages do not align and DEP instructed County staff to simply add these tons to those already included in DEP's Recovered Materials Report.
- In 2014, C&D debris encompassed 27.5% of the State's municipal waste stream. The County's reported C&D is significantly below the State average. Given the apparent rate of growth and development in Seminole County, it is possible that not all C&D generated in the County was reported as such.

For the purpose of this analysis, KCI used the recovered materials tonnage numbers that were reported to DEP and the MSW disposal tonnages from the SWM report. Figure 2.1 illustrates the total waste generated in the County in CY 2014 and how it was managed, including all materials that flow through the County's solid waste management system and DEP certified materials. Based on this information, the County's recycling rate was 38%. The County received additional renewable energy credits for tons used in waste-to-energy and landfill gas for an adjusted recycling rate of 42%. The additional renewable energy credits are not reflected in Figure 2-1.

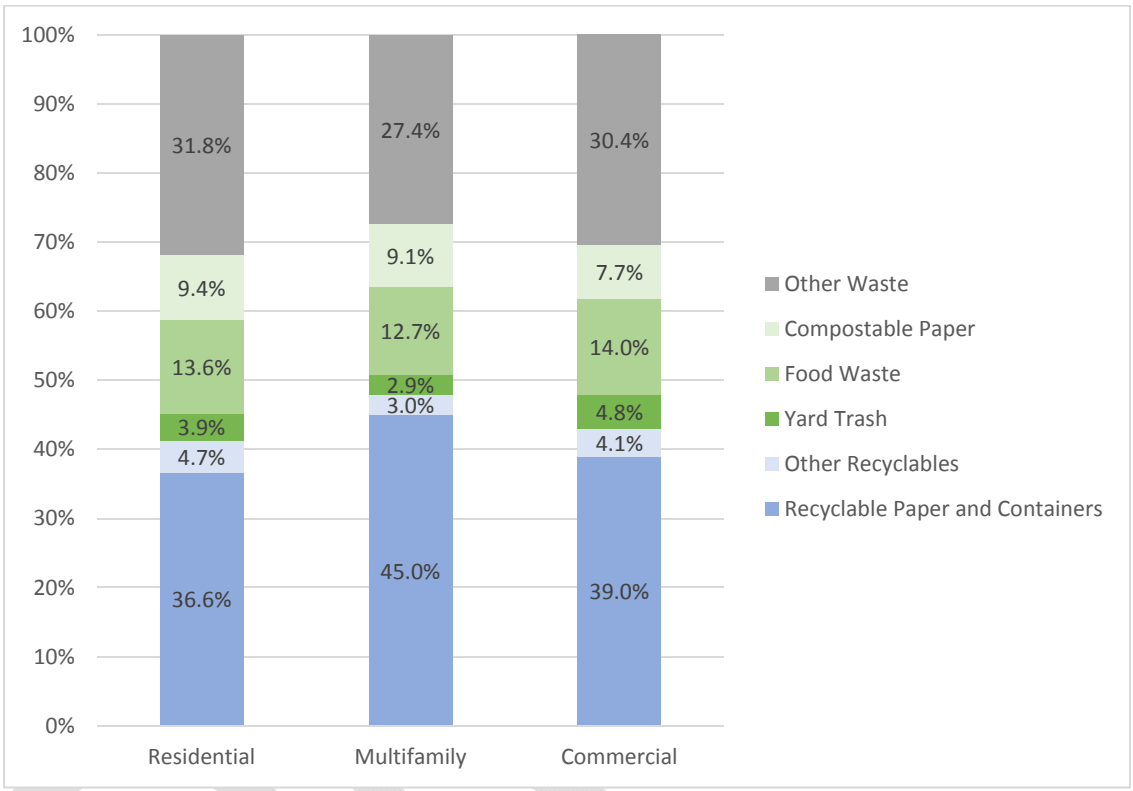
Figure 2-1: Waste Generation and Management, 2014 (% by weight)



2.4 Waste Composition

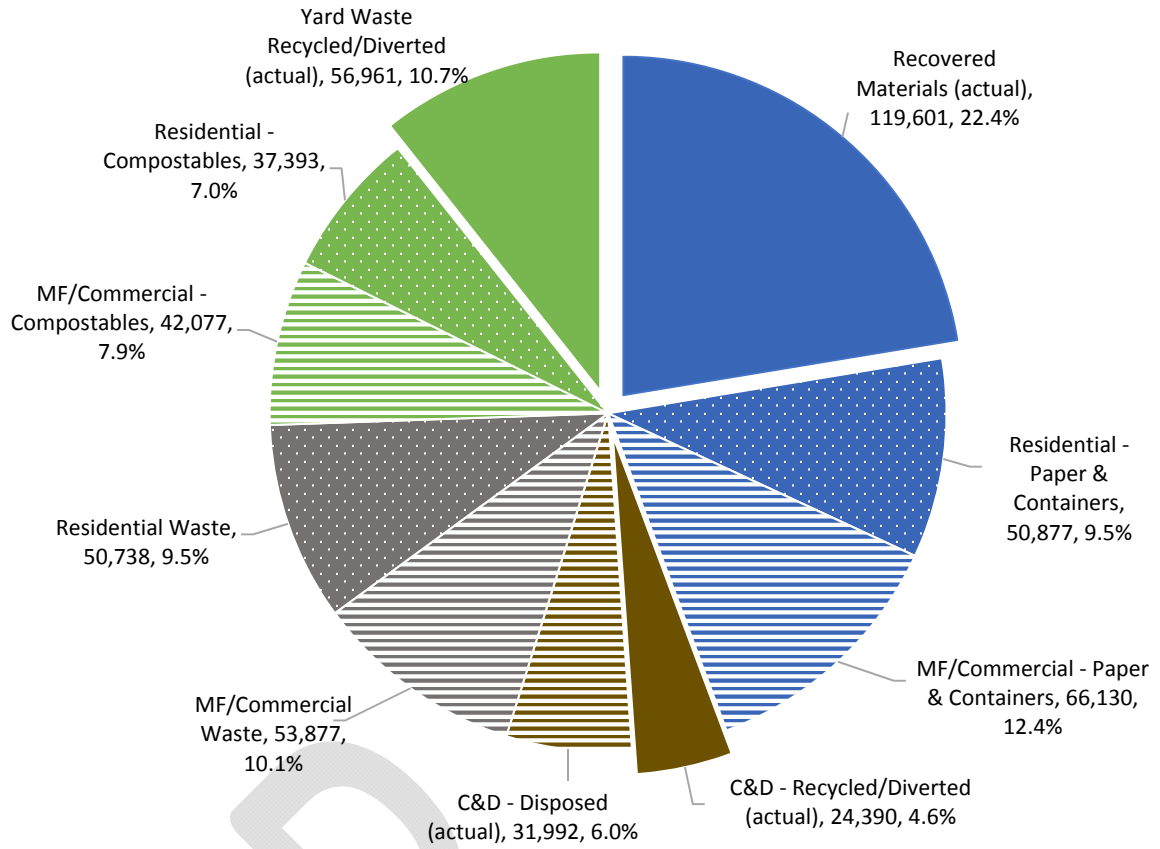
Understanding what is in the waste that is disposed is key to identifying what can potentially be diverted. The County's most recent waste composition study was conducted in 2003. Based on the results of this study, Figure 2-2 depicts the composition of residential, multifamily, and commercial MSW that was disposed.

Figure 2-2: Composition of MSW Disposed Based on 2003 Study



Although likely outdated, this was the only available composition data and was therefore utilized by KCI for this analysis. The 2003 waste composition data was applied to the quantities of MSW disposed in 2014. For the purposes of this analysis, an assumption was made that the multifamily/commercial waste stream consisted of 30% multifamily waste and 70% commercial waste. The resulting analysis is provided in Figure 2-3, which depicts the estimated composition of all waste generated in the County in CY 2014. This figure helps identify the greatest opportunities for increasing waste diversion and, therefore, serves as a guide for the types of programs and technologies that have the potential to yield the most significant waste diversion impacts.

Figure 2-3: Estimated Composition of Waste Generated Countywide, CY 2014 (tons, % by weight)



Note: For the purpose of this chart:

- *Paper & Containers includes newspaper, corrugated paper, office paper, magazines/glossy, other recyclable paper, PET and HDPE bottles, plastic bottles #3-#7, bulky rigid plastics, tin/steel and aluminum cans, and glass containers.*
- *Other Recyclables includes aseptic containers, non-container plastics, other plastic containers, EPS food service and packaging, white goods/small appliances, ferrous and nonferrous metals, and electronics.*
- *Compostables includes low-grade paper, contaminated paper, tissue, yard trash, and food waste.*
- *Waste includes retail bags, plastic film, Styrofoam, plastic utensils, other glass, textiles, household hazardous wastes, household batteries, fluorescent light bulbs, C&D debris, tires and rubber, all other garbage, grit, and liquids.*

Realizing the potential implications of using dated waste composition data, some preliminary findings can be drawn from Figure 2-3:

- Nearly 22% of total waste generated consists of recyclable paper and containers that could be recycled through the County's existing infrastructure by expanding residential curbside recycling programs and developing and implementing multifamily and commercial recycling programs.
- Approximately 15% of total waste generated consists of compostable materials, including food waste, yard trash, low-grade paper, contaminated paper, and tissue. Food waste makes up more than half of the compostable materials.

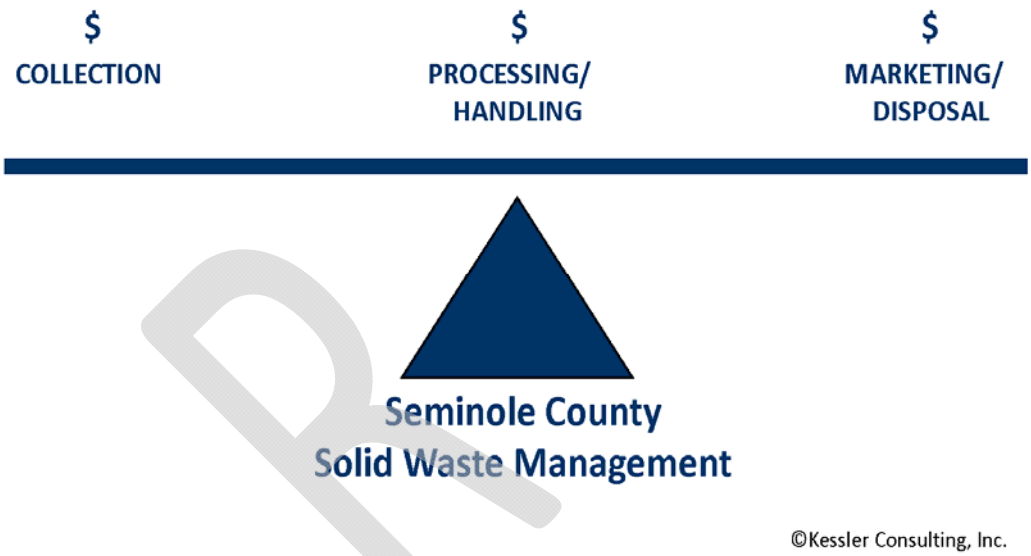
- All other residential and commercial MSW amounts to about 20% of the waste stream, indicating that nearly all potentially recyclable paper and containers, compostable materials, and C&D debris would need to be recovered to achieve the State 75% recycling goal. Achieving a 100% recovery rate is not realistic; therefore, the County may need to take a closer look at other types of materials that are currently being disposed and consider policies, programs, and technologies that either capture these materials for beneficial use or discourage their generation.

Establishing a pathway to achieve the State's 75% recycling goal by 2020 will require a fundamental change in how waste is perceived. It will require rethinking what traditionally has been regarded as garbage and treating all materials as resources instead of discards.

Section 3
Recycling Opportunities

Collection, processing, and marketing/disposal are interrelated elements of a solid waste management system (see Figure 3-1). The collection segment consists of public and private entities that collect or accept materials generated by residents, businesses, and institutions. Processing includes sorting and recovering recyclables, mulching and composting yard trash, and processing other discarded materials for beneficial use. The recovered commodities are then marketed and the solid waste is disposed. All three elements have a cost and are critical to maintaining a balanced, sustainable solid waste management system. Changes to one of these elements will impact the others; therefore, all three need to be looked at together to ensure a cohesive, sustainable, and cost-effective solid waste management system for the County.

Figure 3-1: Balancing the Business Components of Solid Waste Management



The infrastructure is in place for countywide curbside residential recycling; however, based on Figures 2-2 and 2-3, opportunities exist to increase participation and recovery tonnage. Additionally, opportunities exist to implement formal multifamily and commercial recycling programs, initiate C&D debris recycling, and explore a more comprehensive organics recovery and processing program. Strategies, programs, and policies that have been utilized in other jurisdictions to take advantage of similar opportunities are discussed in this section.

Worth noting is that the County's current solid waste business model primarily relies on tipping fees as a funding source. Establishing programs, policies, and infrastructure to strive toward 75% recycling will in turn reduce tons to disposal and associated tipping fees. Therefore, unless the County implements a system whereby materials and/or energy resources are recovered after the waste is tipped (e.g., mixed waste processing), the County may also need to restructure its solid waste system business model to ensure solid waste budgetary needs are met as more tons are diverted from disposal.

3.1 Fundamental Program Elements

Making progress toward the State's 75% recycling goal will require leadership, direction, and support. For the County to develop a sustainable recycling program and leverage its existing resources, expand programs, and develop and implement new strategies, the following fundamental program elements are recommended:

- **Dedicated Recycling Staff:** Communities achieving high recycling rates typically have staff dedicated to implementing programs that drive diversion. Currently, the County does not have the staff resources to effectively implement the recycling opportunities outlined in this section. If the objective is to achieve 75% recycling, then the level of staffing should be commensurate with managing that percentage of the waste stream.
- **Waste Composition Study:** The pathway to success needs a data roadmap. The County has not conducted a waste composition study since 2003, and the composition of the waste stream has undoubtedly changed over the past 12 years. A current waste composition study will provide more reliable data on which to base recycling program and infrastructure decisions. As mentioned previously, Figures 2-3 is based on the 2003 composition study, but can easily be updated when more current composition data becomes available. This would provide more accurate estimates of the quantities of potentially recyclable or compostable materials available for recovery.
- **Long-Term Inter-Local Agreements (ILAs):** Cooperative arrangements allow entities to combine or share resources to better achieve goals and avoid costly duplication of effort. The ILAs between the County and seven municipalities have automatic annual renewals unless terminated by mutual agreement or written notice (90 days to a year prior depending on the specific ILA). The long-term commitment to the County's solid waste system is needed to ensure the financial viability of the system. In addition, for the County to reach the 75% recycling goal, joint cooperation between the County and municipalities is a key factor and is encouraged by Florida Statute (§ 403.706(2)(4), F.S.). Cohesive, countywide programs enable consistent outreach and education messaging, provide economies of scale, and enhance overall effectiveness.

The County will be in a stronger position to move forward with its recycling plan with the combined benefits of leadership, direction, and support.

3.2 Residential Recycling

As noted in Table 2-1, residential curbside recycling programs in the County have yielded 213 to 676 pounds of recyclables per household per year, with an overall average of 335 pounds. Municipalities with carted single stream recycling programs (Lake Mary and Oviedo) have achieved recovery rates at the high end of this range (near 600 pounds per household per year or higher), which is indicative of effective curbside recycling programs. If all households in the County with curbside service recycled 650 pounds of recyclables annually, an additional 20,000 tons of material would be diverted and the recycling rate would be increased by 4%. According to Figures 2-2 and 2-3 (which again are based on dated waste composition data), 36% of residential MSW disposed consists of recyclable paper and containers, and recovering these recyclables would increase the overall County's recycling rate by up to 9.5%.

A basic approach to increasing residential recycling is to make the program as convenient as possible, ensure residents know how to properly and wholly participate in recycling, and provide incentives (non-financial and/or financial) to recycle. Jurisdictions with some of the most effective programs have also established policies to drive recycling in the form of mandates and bans. The following programs, policies, and strategies have been demonstrated to increase curbside recycling rates and are further discussed in the following subsections:

- Carted collection of single stream recyclables
- Single service option of 1-1-1
- Pay-As-You-Throw (PAYT) pricing structure
- Comprehensive and ongoing education and outreach
- Recycling rewards program
- Mandates and bans

3.2.1 Carted Collection of Single Stream Recyclables

Converting from dual stream bins to single stream recycling carts offers collection efficiencies to the hauler and has been demonstrated to increase recycling tonnage as validated by Lake Mary and Oviedo's recycling programs. Depending on how effective the recycling program prior to conversion, communities implementing single stream carts typically experience recycling tonnage increases ranging from at least 50% to more than 100%. For example, after KCI assisted Charleston County, South Carolina with converting to cart-based single stream collection, the county realized a 115% increase in recyclables.

Carted single stream recycling offers the following advantages:

- Increased convenience to residents – sorting by fiber and containers is not required, only one trip to the curb is needed, and carts are easily rolled to the curb instead of being lifted or carried, which can be difficult for disabled or elderly residents.
- Two to five times the capacity of an 18-gallon recycling bin (depending on the cart size) – encourages greater participation and increased materials recovery.
- Improved aesthetics – larger, standardized containers eliminate overflowing bins.
- Lidded carts – help control vermin, protect recyclables from the rain, and eliminate "nosey neighbor" concerns.
- Small footprint – provides increased volume without increasing storage requirements (see Figure 3-2).
- Allows for program expansion – sufficient space to handle additional materials, such as aseptic containers and rigid plastics.
- Improved collection efficiencies – servicing a single cart requires less time than two bins and optimizes vehicle payload.
- Increased worker safety – workers remain inside the truck, which substantially increases worker safety.
- Compatible with RFID technology – The use of radio frequency identification (RFID) technology not only provides service verification information (useful for monitoring

franchisee performance), but also enables easy tracking of recycling participation rates, which in turn can be useful in targeting outreach and education efforts.

Figure 3-2: Comparison of Recycling Bin and Cart Capacities and Footprints

Although the County's residential franchise agreements do not expire until March 31, 2018, the County could potentially negotiate with the franchisees to implement carted single stream recycling prior to that time. The County's processing contractor, Sun Recycling, operates a single stream MRF; the contract merely requires at least 180 days' prior notice if the County intends to convert to single stream. The five municipalities with dual stream programs could continue to deliver dual stream recyclables to the Central Transfer Station or also work with their service providers to convert to single stream. In addition, Lake Mary and Oviedo could be provided the option of having their service providers deliver single stream recyclables to the Central Transfer Station as well.

3.2.2 Single Service Option of 1-1-1

The County currently offers four service options for residents in the unincorporated areas of the County. Two options provide twice per week collection of garbage and two options provide once per week collection of garbage. Weekly garbage collection is an increasing trend in Florida and has been a standard in other parts of the United States. A clear advantage is a reduction in service fee; however, weekly collection also provides an incentive to recycle. For example, Polk County, Florida converted from twice to once per week garbage collection in October 2010 and realized an 18% increase in recycling tonnage the first year, even with no change in its recycling program. When combined with conversion to cart-based single stream recycling, the incentive to recycle is further increased. The most common concerns regarding once per week garbage collection include odor and vermin; however, the numerous Florida communities with weekly garbage collection demonstrate that these concerns are unfounded.

In some communities that have implemented effective organics recovery programs (yard trash and food waste), the frequency of garbage collection has been even further reduced to every other week or even monthly. Diverting putrescible waste for processing and beneficial use not only reduces the amount of garbage disposed, but also eliminates the need for frequent pickup.

3.2.3 Pay-As-You-Throw (PAYT) Pricing Structure

PAYT, also known as unit-based pricing, is a system that charges a household based on the amount of garbage disposed rather than utilizing a fixed rate per household regardless of the quantity of waste set at the curb. It treats solid waste services more like other utilities, such as water and electricity, by basing fees on usage. PAYT has traditionally been used in commercial waste services where pricing is based on the container size and frequency of collection (i.e., cubic yards of waste collection).

Most PAYT programs are volume-based systems using garbage carts of varying sizes (e.g., 35, 65, and 95 gallons). Residents have the freedom to "right-size" their collection service by selecting the cart size for the amount of garbage they typically generate in a week. Service fees are based on the size of the cart selected. The wider the service fee differences between the cart sizes, the greater the financial incentive for residents to recycle more and dispose of less.

In a comparison study of three Massachusetts cities working simultaneously to increase recycling, one using PAYT and two implementing Recyclebank (a rewards program further discussed in Section 3.2.5), the PAYT community realized three times the diversion increase over the communities that implemented Recyclebank.[3] According to a nationwide study, the relative cost per ton diverted for a PAYT program ranged from $0.10 to $10.00, but the cost per ton diverted in a Recyclebank program ranged from $6.00 to $300.00.[4]

Both the U.S. Environmental Protection Agency and DEP endorse PAYT because it provides three primary, interrelated benefits: environmental sustainability, economic sustainability, and equity. However, few communities in Florida have taken advantage of PAYT. KCI is aware of at least four programs in Florida (Alachua County, Gainesville, Plantation, and Lakeland).

3.2.4 Comprehensive and Ongoing Education and Outreach

A comprehensive, ongoing public education and outreach campaign is an essential component of an effective residential curbside recycling program. Residents cannot fully participate in the program if they are not aware of how to participate and the types of materials accepted.

When surveying the municipalities, KCI identified a lack of clear instructions regarding how recyclables are to be set out for collection. City websites do not clearly define recycling programs and most staff were not knowledgeable about whether materials need to be separated or not. One city staff person informed us that residents can throw everything in one bin and their service provider will sort materials curbside; the same service provider reported that residents are required to sort fiber and containers and place the materials in separate bins. Additionally, the County's 2014-2015 Residential Solid Waste Management Collection and Disposal Services brochure does not clearly instruct residents to place paper and commingled containers in separate bins.

The County and the five municipalities that direct recyclables to the Center Transfer Station should have a consistent message, including what materials are accepted and how they need to be separated. Ideally, if all jurisdictions convert to single stream, a consistent, cohesive, countywide education and outreach campaign would be implemented. Key elements of an effective public education campaign include pre-planning, targeting the audience and

[3] U.S. EPA, Pay-As-You-Throw Spring 2009 Bulletin, pg. 5.
[4] Lisa Skumatz, et. al., "Recycling Incentives: Part 1," *Resource Recycling*, February 2011, page 20.

stakeholders, branding, messaging, utilizing technologies such as the internet with websites and social media, developing a public relations and media utilization plan, and expanding community involvement and visibility.

3.2.5 Recycling Rewards Program

Various types of recycling rewards programs exist that encourage recycling; however, as mentioned above, other strategies, such as a PAYT system, appear to be more effective at incentivizing recycling and at a lower cost. With recycling rewards programs, a local government can develop and implement its own, customized rewards program, or purchase a rewards system through a private vendor.

Some communities have developed a monetary rewards program to encourage citizens to recycle. For example, each week, month, or any other time interval, a household is randomly selected and rewarded for its recycling efforts. The intent is to encourage residents to participate in recycling weekly in hopes of winning. In addition, coverage of the reward winners provides free recycling advertising through public media such as local newspapers, radio, and television.

For example, Morehead City, NC randomly selects ten customers each month. The first one "caught" recycling is awarded a $50 cash voucher that is credited to their solid waste bill. At the end of each year, all monthly winners' names are placed into a hat. The first three names drawn receive $500, $200, and $100 cash prizes, respectively. Although information regarding the effectiveness of this rewards program was not available, a city representative indicated that the impact of converting from recycling bins to biweekly collection of 95-gallon recycling roll carts was far greater and resulted in about a 42% increase in recycling tonnage.[5]

Many private companies also offer recycling rewards programs that are available for purchase, such as Recyclebank, Recycling Perks, Republic Reward$, and other programs offered by individual collection service providers. Although Recyclebank claims to increase recycling rates by 15% in communities that have made no other infrastructure changes,[6] several communities, including Cincinnati, OH and Knoxville, TN, terminated their partnership with Recyclebank due to lower than anticipated results.

Two common criticisms of recycling rewards programs, especially those that provide redeemable points, are (1) they perpetuate the erroneous idea that recycling is free or should generate revenue and (2) they are counter-productive to waste reduction in that they reward coupons to purchase more products, thereby encouraging consumption rather than conservation.

3.2.6 Mandates and Bans

Communities with some of the highest recycling rates have employed recycling mandates or disposal bans. Disposal bans for items such as lead-acid batteries, used oil, and yard trash have had demonstrated success. Some states and communities are also utilizing this tool to ban disposal of various types of recyclables as well. For a mandate or ban to be effective, an enforcement mechanism needs to be established and actively implemented.

[5] Robin Gollehon, conversation on August 21, 2015.
[6] Recyclebank, *2013 A Year in Review*.

Local decision-makers are often reluctant to implement such mandates or disposal bans until voluntary options have been exhausted. Should the County wish to further explore recycling mandates and/or disposal bans, more detailed research would be needed to identify the most effective strategies and approach.

3.3 Multifamily and Commercial Recycling

The County does not appear to have a comprehensive multifamily or commercial recycling program. According to the County's 2014 Annual Report to DEP, of the 52,214 multifamily units in the County, only 3% (1,575) had access to curbside collection and only 18% (283) of those participated in the recycling program. Of the 34,351 commercial businesses, only 25% (8,588) had scheduled recycling collections and 15% (5,152) had on-call recycling collections.

The County awards nonexclusive commercial franchises for the collection of multifamily and commercial wastes; therefore, the waste streams are collected together and accurate information regarding each stream individually is not available. According to the 2003 waste composition study, approximately 45% and 39% of multifamily and commercial MSW disposed, respectively, consist of recyclable paper and containers. Combined, recovering recyclable paper and containers generated by the multifamily and commercial sectors has the potential to increase the County's recycling rate by up to 12% (see Figure 2-3).

Multifamily and commercial recycling programs face many of the same obstacles, whether real or perceived. These include cost, space limitations, level of effort, aesthetics, and the need to continually provide recycling education to a transient tenant-base or ever-changing staff. These issues may make recycling more challenging, but are not insurmountable.

A variety of approaches can be used to increase multifamily and commercial recycling, ranging from technical assistance to incentives to mandates. Communities that appear to have the greatest recycling success hold businesses and property owners responsible, at least to some degree, for recycling. Based on case studies of commercial recycling programs in communities claiming high recovery rates, the programs, policies, and strategies listed below are further discussed in the following subsections for further consideration by the County:

- Ordinance to provide recycling space and receptacles
- Universal recycling
- Technical assistance
- Economic incentives
- Non-economic incentives
- Lead by example – government, event and public space recycling
- Mandates and bans

3.3.1 Ordinance to Provide Recycling Space and Receptacles

State law requires that "newly developed property receiving a certificate of occupancy, or its equivalent, on or after July 1, 2012, that is used for multifamily residential or commercial purposes, must provide adequate space and an adequate receptacle for recycling by tenants and owners of the property."[7] It applies to counties and municipalities that have an established

[7] § 403.706(2)(c), F.S.

recycling program that provides recycling receptacles to residences and businesses and regular pick-up services for those receptacles. To address space limitations in the future, the County Planning Department should require that newly developed properties comply with State law by providing adequate space and receptacles for recycling. Appropriate placement and co-locating recycling containers with garbage containers makes it more convenient for residents and may eliminate aesthetic concerns.

3.3.2 Universal Recycling

Currently, nonexclusive franchisees are only required to "exercise best efforts to provide recycling services" to multifamily and commercial customers at service fees set by the franchisees. The County could establish universal recycling programs for multifamily complexes and businesses, similar to that which already exists for residents with curbside service. Although State law prohibits a local government from requiring commercial establishments to use a specific recycling company, the County could require its nonexclusive franchisees to provide a base level of service that includes a minimum level of recycling service. Similar to universal curbside recycling, the service fee would include providing that service, but the customer is not mandated to participate.

Alternatively, the County could incorporate multifamily and commercial collection into its exclusive collection franchise. The County would need to comply with State law regarding displacing existing service providers (§403.70605, F.S.). As with the nonexclusive franchise, the right to collect commercial recyclables could not be exclusive to the franchisees, but franchisees could be required to provide this service as part of their base level of service. Including multifamily and commercial collection in the exclusive franchises would provide economies of scale that should result lower service fees, enable the County to better control the fees charged for recycling and waste collection, and allow the County greater oversight of all services.

3.3.3 Technical Assistance

Business owners and property managers have numerous and competing priorities, and might not have the technical knowledge to establish an effective recycling program. Communities with the most progressive programs have helped fill this role by providing technical assistance to property managers and business owners. While workshops enable staff to reach a larger audience, working directly with multifamily complexes and businesses is often needed to bring about desired results. Various types of assistance can be provided, including the following:

- Onsite waste audits.
- Toolkit, including step-by-step instructions for setting up a recycling program, waste audit instructions, list of recyclables to target, list of service providers, and sample education and promotion materials (multi-lingual if appropriate) such as flyers, magnets, brochures, container labels, newsletter articles, posters, and other items that will help promote recycling. Toolkits can be printed and/or be made available on-line.
- Workshops for property managers and business owners.
- Direct business assistance, which might include development of in-house collection logistics, employee training, and customized education and outreach materials.

- Right-sizing waste collection services to help complexes and businesses realize potential cost savings from recycling by reducing container size or frequency of garbage service as the quantity of waste decreases.
- Purchasing recycling receptacles.

The ability to provide this level of technical assistance would require the County to have dedicated, trained recycling staff as previously discussed in Section 3.1.

3.3.4 Economic Incentives

Cost is typically one of the most important factors to property managers and business owners. Various types of direct economic incentives are being utilized to incentivize multifamily and/or commercial recycling and waste reduction. Provided below are several examples:

- Controlling recycling service fees. Numerous examples exist in Florida of franchise agreements that set commercial recycling service fees. This is generally more effective if the franchisee is required to provide recycling service since a low service fee could create a disincentive for the franchise to actively market this service.
- Direct discounts could be provided to complex or business owners or managers. For example, San Francisco offers diversion discounts to multifamily buildings that sort materials correctly and reduce the volume of materials sent to the landfill. The diversion discount takes into consideration the total capacity (volume in gallons) of recycling provided in relation to total capacity (volume in gallons) of trash and recycling. The maximum diversion discount is 75% of the monthly bill.
- Fees could be charged to complex or business owners that do not recycle. For example, Lee County, Florida requires all business owners to establish an onsite recycling program that includes a service agreement for recycling collection, internal collection containers, documented education program, and other requirements. If a business is found to be out of compliance, they first receive a warning and educational material and assistance. If the business is out of compliance during a follow-up visit, advance disposal fees (ADFs) ranging from $100-$500 may be assessed monthly until the business is compliant.
- Economic incentives for recycling can be provided to franchisees. For example, bonuses can be paid or lower franchise fees charged to franchisees that meet specified recycling goals or tonnages. Conversely, fines or fees could be imposed if thresholds are not met.

Any type of financial incentive program would need to be thoroughly evaluated and properly designed to insure it incentivizes the intended result without any unintended consequences.

3.3.5 Non-Economic Incentives

Non-economic incentives to encourage multifamily and/or commercial recycling generally rely on providing positive advertising for the complex or business that would in turn promote its image and enhance future business. This type of program generally works best if business stakeholders are involved in its development, promotion, and implementation. It can require significant staff resources and results generally take longer to be realized and might not be as effective as other types of programs and incentives.

To complement its other commercial recycling activities, Sarasota County established the Green Business Partnership (GBP) Program in 2006 to use positive messaging to encourage sustainable, environmentally sound business practices. The GBP Program assists, certifies, recognizes, and promotes environmentally responsible businesses. An onsite assessment is required for certification. Approximately 200 businesses have reportedly been certified as Green Business Partners.

3.3.6 Lead by Example – Government, Event and Public Space Recycling

Local governments should "lead by example" by implementing comprehensive and visible recycling programs in all government facilities, at public events, and in public spaces. These programs serve as models to other businesses and as reminders to the general public about recycling. These programs can also be testing grounds for identifying new or expanded waste diversion opportunities.

While detailed plans would be needed for each type of program, standard best practices include the following;

- "Twin the bins" – waste receptacles should always be paired with recycling receptacles.
- Clear signage on all containers.
- Clear instructions to participants.
- Comprehensive plans that include environmentally preferable purchasing.
- Upfront planning.
- Ongoing monitoring and assistance.

County solid waste staff could assist other departments, municipalities, and event planners with the design and implementation of waste prevention, recycling, and organics recovery programs at events and public places. The County could purchase and loan containers for recycling at events or secure a partnership with an organization that provides event recycling support.

Leading by example sends the message that the County is committed to waste diversion and recycling.

3.3.7 Mandates and Bans

As with residential recycling, communities that report some of the highest traditional (not including waste-to-energy) recycling rates in the U.S. generally have policies in place that mandate certain recycling or ban the disposal of certain materials.

As mentioned previously, banning the disposal of various types of hazardous or toxic materials, as well as yard trash, is common in many locations. Some states and local governments also require all businesses to recycle traditional recyclables, such as corrugated cardboard, office paper, containers, etc. The most successful programs (San Francisco and San Jose) also target commercial organics and require that businesses segregate organics for composting. Organics recycling is discussed in more detail in Section 3.4.

Most mandates and bans were phased in over time, preferring to use notifications and technical assistance to encourage compliance first. After an initial grace period, they then utilize Code

Enforcement staff to monitor compliance and have the ability to impose fines or fees on non-participating businesses.

3.4 Organics Recovery

The County currently operates a yard trash recycling program. The program is responsible for recycling or diverting all residential and commercial yard trash that is managed by the County, which equates to almost 11% of waste generated in the County. Based on the 2003 waste composition study, food waste comprised 13-14% of residential and commercial waste disposed. An additional 3-5% was yard trash and 7-9% was compostable paper (see Figures 2-2). Capturing these residential and commercial compostable materials for processing and beneficial use has the potential to increase the County's recycling rate by up to 15% (see Figure 2-3). To strive for a 75% recycling goal, the County will need to recover this material.

Developing a comprehensive organics recovery program requires the same three elements as any other program: collection, processing, and marketing. A detailed organics recovery plan specific to Seminole County would need to be developed; however, key concepts and considerations are discussed in the following subsections.

3.4.1 Organics Collection

Food waste and other compostable materials can be collected separately or with yard trash, or they can be recovered through a mixed waste processing facility, which is discussed in Section 3.6. Fully established segregated collection programs generally include three collection streams (trash, recyclables, and organics) or two streams (dry waste and wet organic waste) with the dry waste processed to recover recyclables and the wet waste going to some form of organics processing.

The same strategies and policies outlined above for incentivizing residential and commercial participation in recycling would also apply for encouraging collection of segregated organics.

Many communities initiate organics collection by first conducting a food waste pilot program. KCI previously discussed such as pilot with County staff, including development of a composting operation at the Seminole County Landfill. Commercial businesses typically targeted during a pilot program include restaurants, supermarkets, and schools, which produce high volumes of food waste and generally have more control over source-separation. After successful completion of the pilot, the program can then be expanded. To reach even higher diversion rates, some jurisdictions have banned the disposal of food waste. For example, Connecticut, Massachusetts, and Vermont, as well as numerous local governments, ban the disposal of commercial food waste.

3.4.2 Organics Processing

Various methods of organics processing are in use today, ranging from no or low technology options to comprehensive and technologically advanced systems. The County could choose to develop an organics processing system or to work with a private sector partner.

- **Windrow composting** involves piling feedstock materials into elongated rows either outside or in a building, and turning them periodically based on time and temperature factors. This is by far the most common method of composting in the United States and Canada for yard

trash and source-separated food waste. Windrow composting is fairly flexible and can be accomplished with turning equipment ranging from a front-end loader to specialized windrow turning machines.

- **Aerated static pile composting** involves placing air blowers and/or ducts under a pile of organic materials in order to maintain aerobic conditions. The pile is capped with an insulating blanket of wood chips or other material and not disturbed until the active composting process is complete.
- **The Modified Static Aerobic Pile (MSAP) method** combines both static pile and windrow composting methods, which minimizes the need for mechanical turning while still maintaining aerobic conditions and excellent pathogen kill. This method accelerates the process with the use of an organic catalyst and creates a high quality compost product. The MSAP method was developed by Harvest Quest International, Inc. and is currently being applied in a yard and food waste composting operating in numerous locations throughout the U.S., including Florida. This method has received EPA approval for meeting the 503 requirements for biosolids.
- **In-vessel composting** refers to enclosed systems such as large rotating tubes or elongated bays with mechanical turning machines and forced aeration systems. Such systems are typically used to compost manures, food waste, and biosolids; with very large systems also used to process MSW. They are not conducive to composting solely yard trash. Benefits of in-vessel composting include the ability to contain feedstocks, such as food waste and biosolids, that might attract birds or generate odors. In-vessel systems tend to be more technologically advanced and therefore have higher capital and operational costs.
- **Anaerobic digestion (AD)** is a biological process that takes place in the absence of oxygen. AD produces methane, which can be recovered for use as a biogas fuel. The solid digestate typically undergoes subsequent aerobic composting. Numerous different AD technologies are available. Historically, AD has been used primarily for wastewater treatment and manure. With regard to source-separated organics from solid waste, dozens of AD facilities operate in Europe and several are currently under development in the United States.

The costs and complexity of organics management systems increase substantially as the move is made from windrows to in-vessel composting, to anaerobic digestion. In general, aerobic in-vessel systems generally cost twice as much to implement, operate and maintain compared to windrows. Anaerobic systems can cost upwards of three times as much.[8]

3.4.3 Organics Marketing

Numerous uses exist for high-quality, processed organic materials. As a soil amendment, it improves the texture, porosity, water holding capacity, and organic content of the soil. Compost is often distributed in bulk with pickup at the composting facility by the end-use market. The product can also be bagged and sold.

While some facilities give end-product compost to the public at no cost, other facilities enjoy revenue from both public and professional markets. The market value of mature yard trash compost in Florida ranges from $10.00 to $26.00 per cubic yard.[9]

[8] Per conversation with Darren Midlane, Technical Director at Harvest Quest International.
[9] *Composting News*, April 2012, page 6.

The volume and quality of the compost produced will impact which end-users will be targeted and their acceptance of the product. Potential users of compost include the following:

- County or city facilities, parks, and recreation areas
- Golf courses
- Local landscapers and gardeners
- Resorts
- Farmers
- Residents

A market research study to identify the realistic geographic boundary of the marketplace and assess the potential demand for it by end-users within that boundary would be an integral part of developing a comprehensive organics recovery plan. In addition, a marketing strategy would be necessary to target the most promising end-users.

3.5 C&D Debris Recycling

According to the 2014 Annual Report to DEP, C&D debris comprised 10.6% of the waste generated in the County. Of the C&D debris directly managed by the County, about 75% was used as temporary landfill road base. Approximately 59% of C&D materials were transferred out-of-county and about 21% of that was recycled. Table 3-1 provides a snapshot of three out-of-County facilities that received C&D debris generated in Seminole County. The County's tipping fee for C&D debris ($33.17/ton) is higher than those at these facilities; therefore, some haulers find it economically advantageous to travel the additional distance for the lower tipping fee.

Table 3-1: Out-of-County C&D Facilities That Receive County Materials

	4 Jays	GEL	Mt. Dora
County / Facility	Volusia / Landfill	Volusia / MRF	Lake / Landfill
2014 Tons Received	6,392	6,921	19,730
Tipping Fees			
Mixed C&D	$5.00/cy	$25.00/ton	$4.50/cy $9.00/cy (hard-to-handle)
Concrete Only	Free	Free	$5.00/cy
Landscape/Brush	$5.00/cy	$23.00/ton (wood) $30.00/ton (stumps/trees)	$6.50/cy $6.00/cy (land clearing)
Materials accepted	Non-soluble, non-hazardous C&D and yard trash (no land clearing)	Wood debris, C&D, roofing, asphalt, concrete, masonry, aluminum, steel, OCC, ONP	C&D and land clearing debris
Facility Capacity	200 cy/day	1,200 tons/day	No restriction
Onsite Capability	Concrete grinding; wood grinding	Concrete grinding; wood grinding	Wood and metal recycling
Distance from County Landfill	27 miles	27 miles	37 miles

Combined, approximately 43% of the C&D debris generated in the County was recycled or diverted from disposal. Recycling the remaining C&D debris that was disposed has the potential to increase the County's recycling rate by up to 6% (see Figure 2-3).

The Florida Legislature acknowledged the importance of C&D debris in achieving the State's 75% recycling goal by requiring each county to implement a program for recycling it.[10] State law further requires that, to the extent economically feasible, all C&D debris must be processed prior to disposal, either at a permitted MRF or a permitted disposal facility.[11]

C&D debris recovery can occur by either source-separating materials at the work site or delivering mixed C&D debris to a processing facility for separation. Either approach can be effective, but they require different policies and infrastructure for implementation.

- **Source-Separation:** The County could establish mechanisms that encourage or require building contractors to segregate C&D debris for recycling. These mechanisms generally fall into three categories: regulation, incentives, or education (see Table 3-2). An example of a combined regulatory and economic approach can be found in Lee County, Florida. The county encourages contractors of significant projects (construction projects greater than $90,000 and remodels/alterations greater than $10,000) to submit a C&D management plan prior to construction. Demonstration of diversion/disposal of all C&D materials is required as a final check-off prior to final inspection. If 50% of C&D debris has not been recycled, the contractor incurs a diversion fee based on the type and size of the project. The county's 2014 DEP report identifies a 62% C&D diversion rate. Actual diversion may be higher as the county allows contractors to repurpose clean concrete as fill, which DEP does not count toward diversion. The county's Solid Waste Division Deputy Director reports that the program has good participation due to ease of participation and reporting, as well as well-trained staff to implement the program.

Table 3-2: Mechanisms Utilized to Increase C&D Debris Recycling

Regulation	Incentives	Education
o Disposal bans o Mandatory recycling o Permit requirement o Require C&D processing facilities meet recycling targets o Mandatory Green Building standards	o Diversion security deposits o Differential tip fees for segregated materials o Material exchanges o Grants or low interest loans	o Education and technical assistance o Educate by example through government building projects o Voluntary Green Building programs

- **Mixed C&D Debris Processing:** In lieu of source-separation, the County could require that all C&D debris generated be processed at a recycling facility prior to disposal. Minimum recycling requirements would need to be set for these facilities. Enforcement could be challenging since the majority of C&D debris is disposed out-of-county. The County could develop C&D recycling facility or work with a private sector partner. For example, Martin County, Florida reported the highest traditional recycling rate in Florida in 2014 (62 percent) in part because of a public-private partnership with C&D recycler R3. In 2009, Martin County selected R3 to run C&D recovery operations at the county-owned Palm City Transfer Station. R3 is required to recover at least 65 percent of the almost 46,000 tons of C&D debris received annually, for which Martin County pays

[10] § 403.706(2)(b), F.S.
[11] § 403.706(9)(g), F.S.

$32.50 per ton. The county reports that R3's diversion rate is between 70-77% depending on what materials are being held at any given time. R3 is entitled to all recovered materials, excluding clean concrete, and revenue from those materials. Some C&D processing facilities achieve even higher recovery rates. For example, Sun Recycling, which owns and operates ten C&D facilities in South Florida, reportedly recycles 90 percent of materials received at these facilities.

3.6 Mixed Waste Processing and Recovery Technologies

Even the most effective recycling programs will not capture 100% of recyclable and compostable materials; therefore, mixed waste processing and other alternative conversion technologies have gained attention in recent years as communities strive to achieve higher recycling goals.

A mixed waste MRF recovers recyclables from the mixed municipal waste stream. Because of technological advancements in processing equipment, today's mixed waste MRF is a far cry from the "dirty MRF" of the past. State-of-the-art mixed waste MRFs have the ability to divert up to 75% or more of waste from disposal. Mixed waste MRFs can process the entire waste stream or just a portion of it, such as commercial waste. Of the existing mixed waste MRFs, many complement existing recycling programs rather than replace them. In fact, MRFs that process mixed waste often include processing lines for single stream recyclables.

Mixed waste facilities achieving the highest diversion rates generally produce recyclables (e.g., paper, metal, glass, and plastic commodities), organics for further processing through composting or anaerobic digestions (AD), and residuals for disposal or subsequent conversion using an alternative technology.

Other alternative conversion technologies fall into two general categories: biological/chemical and thermal (see Table 3-3). Numerous companies offer alternative waste conversion technologies, many with unique individual capabilities and limitations. Development of these technologies are in various stages, with some in operation on a demonstration or commercial scale worldwide. In most cases, biological/chemical and thermal technologies require segregated materials or some degree of pre-processing prior to the core technology.

Table 3-3: Emerging Waste Management Technologies

Category	Technology
Biological/Chemical	Anaerobic Digestion
	Hydrolysis/Fermentation
	Mixed Waste Composting
High-Temperature Thermal	Gasification
	Plasma Arc Gasification
	Pyrolysis
	Hydrothermal carbonization

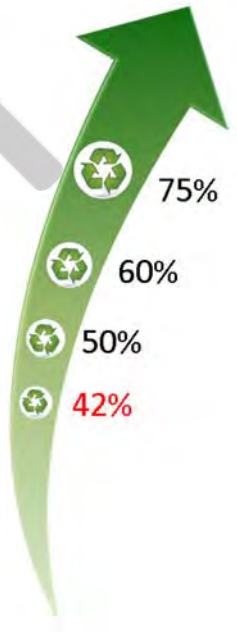
If the County chose to consider a mixed waste processing facility or some other form of alternative technology solution, a detailed analysis of the economic viability would be needed. If deemed viable, it would need to be integrated into the County's long-term resource management plans.

Section 4
Proposed Approach

Section 3 of this report identifies recycling opportunities that exist in Seminole County and programs, policies, and strategies that could be implemented to take advantage of these opportunities. The County will need to decide which elements it wishes to pursue and develop a comprehensive recycling plan based on those elements.

KCI recommends a phased approach to evaluating and implementing those opportunities determined to be most viable in helping the County chart a path toward achieving the State's 75% recycling goal. Table 4-1 organizes the opportunities identified in this report into a proposed three-phase approach for the County's consideration. Results of each phase will help shape the elements of subsequent phases.

- **Phase 1 (50% recycling target)** – Substantial opportunities exist to increase recovery of recyclable materials and yard trash from the residential and multifamily/commercial sectors; therefore, Phase 1 focuses on program and infrastructure changes that target these materials. The proposed Phase 1 approach also initiates planning to expand organics recovery beyond yard trash and to develop C&D debris recycling incentives.
- **Phase 2 (60% recycling target)** – In proposed Phase 2, the organics and C&D debris recovery strategies developed in Phase 1 would be implemented. If recycling targets for traditional recyclable materials have not been met, incentives should be considered, especially for the multifamily/commercial sector.
- **Phase 3 (75% recycling target)** – During proposed Phase 3, various programs and policies implemented in the previous two phases should continue to be monitored and improved upon. If programs have not achieved desired recycling rates, then the County should consider establishing policies that will help drive recovery, such as disposal bans or recycling mandates.



This proposed three-phase approach is intended to provide a basic framework to assist the County in more clearly defining a path toward achieving the State's 75% recycling goal. More detailed plans would need to be developed to implement the various programs and strategies the County elects to pursue. Appropriate policies, infrastructure, and public education and outreach will need to accompany each of these programs and strategies. Achieving a high recycling rate will require a commensurate commitment of staff and resources.

Furthermore, this proposed approach is intended to be dynamic, with modifications made based on the effectiveness of various programs and as new technologies and equipment become available. As part of monitoring program effectiveness, the County should conduct waste composition studies periodically to assist in identifying appropriate program and infrastructure modifications that might be needed to recover materials that are still being disposed.

Achieving 75% recycling will require rethinking what traditionally has been regarded as garbage and treating all materials as resources instead of discards. It will require altering the status quo and committing to fundamental changes in how these materials are managed.

Table 4-1: Proposed Three-Phase Approach Toward 75% Recycling Goal

	RESIDENTIAL	MULTIFAMILY/ COMMERCIAL	C&D DEBRIS
PHASE 1 - 50% Recycling Target	▪ **Dedicated recycling staff** – hire staff necessary to implement the programs and strategies selected by the County to increase recycling ▪ **Waste composition study** – conduct study to more accurately evaluate the composition of disposed waste streams and identify potentially recyclable materials ▪ **Long-term ILAs** – work with municipalities to ensure the commitment of waste and recyclables to an integrated, countywide resource management system ▪ **Evaluate alternative technologies** – consider evaluating alternative processing/recovery technologies that could impact recovery program planning		
	▪ **Carted collection of single stream recyclables** – negotiate with franchisees to potentially convert prior to contract expiration ▪ **Single service option of 1-1-1** – limit service to weekly collection of garbage, recyclables, and yard trash ▪ **PAYT** – establish pricing structure based on volume disposed (ideally using carted garbage collection) ▪ **Comprehensive education and outreach** – implement strategic, comprehensive E&O campaign	▪ **Ordinance to provide recycling space and receptacles** – required of new developments per State law ▪ **Universal recycling** – establish base level of service that includes recycling ▪ **Technical assistance** – provide direct technical assistance to complexes and businesses ▪ **Lead by example** – establish model recycling programs in government buildings and public events and spaces ▪ **Food waste pilot** – pilot recovery and processing of commercial food waste ▪ **Organics program planning** – develop comprehensive organics recovery plan	▪ **C&D debris recycling education** – implement program to educate contractors of existing recycling opportunities and benefits ▪ **C&D recycling program development** - initiate research and development of an incentive program
PHASE 2 - 60% Recycling Target	▪ **Residential organics program** – establish infrastructure and initiate collection and processing of food waste and other organics ▪ **Recycling incentives** – if recycling targets are not met, consider incorporating incentives, such as a rewards program	▪ **Multifamily/commercial organics program** – establish infrastructure and initiate full-scale collection and processing of organics ▪ **Recycling incentives** – if recycling targets are not met, develop and implement economic and/or non-economic incentives	▪ **C&D debris recycling incentives** - establish policies and incentives to encourage C&D recycling, such as a diversion fee and rebate program
PHASE 3 - 75% Recycling Target	▪ **Ongoing monitoring and program expansion/enhancement** – continue to identify and implement program and infrastructure changes that strive to divert additional materials from disposal ▪ **Ongoing education and technical assistance** – continue to promote waste diversion programs and educate residents and businesses ▪ **Policies that drive recycling** – if recycling targets are not met, consider establishing and enforcing policies that further incentivize or require recycling, such as disposal bans or recycling mandates		

St. Johns County

RESPONSE OF ST. JOHNS COUNTY TO THE FDEP "REQUEST FOR DEVELOPMENT AND SUBMITTAL OF COUNTY RECYCLING PROGRAM PLANS" MEMORANDUM OF DECEMBER 23, 2014.

BACKGROUND: The recycling program in St. Johns County is administered through the Solid Waste Management Department, a unit of the Public Works Department. The standards and operation of the county program applies only to the unincorporated areas of the county. Two of the three incorporated areas of the county – the City of St. Augustine and the City of St. Augustine Beach- operate or contract out for their recycling services. The Town of Hastings is served by Advanced Disposal.

St. Johns County was one of the first counties in Florida to implement mandatory curbside collection of residential MSW. Recycling, yard waste and white goods collection services are also included in the annual MSW assessment.

The recycling services made available under the mandatory curbside collection program were, and are, voluntary. A "Recycling Revolution" campaign accompanied the start-up of the curbside program. It is logical to assume that the county recycling rate increased as a result of this action.

From the outset of the curbside program, the Solid Waste Department understood that recycling within the commercial sector was vital to improving the county recycling rate. To that end, the Solid Waste Ordinance then in force was amended to include mandatory recycling requirements for commercial entities. The commercial program established by the ordinance amendment set up a three year schedule for assessment, initiation, operation and reporting that would be implemented with the assistance of county staff.

However, the program was never implemented before the program deadline, so the mandatory commercial recycling provisions of the Solid Waste Ordinance were deleted by the County Commission.

In respect to the "minimum" inclusions for county recycling plans enumerated in the FDEP memorandum:

Newsprint, mixed paper, office grade paper, all ferrous and non-ferrous metals, glass, plastic bottles, cardboard, yard trash, and textiles can be collected and recycled by any individual or entity in St. Johns County.

The percentages of MSW generated by the various sectors delineated by FDEP terminology are listed in the annual reports. The commercial sector produces a substantial proportion of county MSW, and with the exception of certain "spikes" (which occur occasionally, but never annually), that sector generally produces less recycling than residential sources.

At present, all commercial and multifamily recycling is voluntary. These components have access to paid services but participation is not widespread. There are currently no umbrella associations composed of business, industrial, and manufacturing interests that might negotiate more favorable group rates for recycling services. Additionally, apartment and condo management companies are reluctant to add recycling costs to already high rents and condo fees.

SJC July 2015 Recycling Plan

Composting is part of every recycling presentation given by the current recycling coordinator. A compost bin sale held several years ago produced encouraging results. Yard debris collected under the curbside program is taken to facilities which must post an annual recycling increase of 5%. We believe FDEP should consider giving a recycling credit based on bona fide compost bin sales, which would be an incentive for counties to subsidize compost bin sales and programs.

In June, 2015 St. Johns County arranged for the delivery of 95-gallon and 35-gallon recycling carts to 73,457 curbside collection addresses, with cart service replacing bin service on July 6, 2015. Based on their previous experience, the franchise haulers believe that the larger containers will significantly increase residential recycling.

St. Johns County has little industrial and manufacturing infrastructure compared to other large Florida counties. There are over 15,000 local business tax receipts entities listed by the tax collector, but most of these are small businesses, cottage industry, service providers and the like. Most C&D and yard debris is generated by residential building and land clearing. For the county to meet state recycling goals, all commercial components that produce or exceed a certain established level of MSW must participate. With the residential cart program now rolling out, the county may have a clearer idea of how to proceed with commercial recycling by the end of this year.

Any discussion of "mandatory" rules and fees will of course be subject to local political considerations beyond the scope of the solid waste department. Incentives or rule changes on the state level would be helpful. For instance, any county with a bona fide HHW program should be given bonus recycling points for keeping HHW out of the MSW stream (most HHW is recycled). The compost bin incentive has already been cited above. To achieve recycling goals, there needs to be movement by all sides involved.

St. Lucie County

St. Lucie County Recycling Plan

Prepared by: Allison Macdonald

- St. Lucie County offers a curbside single stream recycling program to all residents which allows for cardboard, newspaper, office paper, plastic containers/bottles, steel cans and aluminum cans to be recycled. In October 2014, the County finished construction of our Single Stream Recycling Facility in which all material in the county comes to for processing. St. Lucie County has also implemented a program called the "Recycling Challenge" which residents have the opportunity to win $100 for recycling properly. This program motivates residents to recycle, aides in getting cleaner material and essentially allows us to maintain a low contamination rate.

  Residents have one day a week pick-up for yard waste. The yard waste is brought to the county's landfill and is then grinded down and delivered to a cogeneration power plant or utilized in the agricultural industry.

- St. Lucie County's generated MSW is as follows:
  Single Family Residential: 44%
  Commercial: 31%
  Multi-Family: 25%

- Single stream recycling is available to the commercial and multifamily sectors. These programs are encouraged by the county and staff makes the extra effort to meet with such persons. Approximately 35% of the multifamily units and 18% of the commercial sector participate in a recycling program.

- St. Lucie County has begun excavating the construction and demolition debris disposal area. This will allow us to recycle the metal, sell the wood once grinded and reuse the dirt for landfill cover. Once the proposed gasification facility is constructed and in operation, certain material will be used as feedstock.

- The recycling of yard waste is a component of our educational campaign in which we present to all visitors who tour our facility as well as in the school presentations. Yard waste will also contribute to the feedstock of the gasification process once constructed.

- St. Lucie County is putting an exorbitant amount of effort, along with our contractor Green 3 Power, to construct a gasification facility on our landfill site. The tentative schedule projects the construction to begin within the next 6 months pending the permitting process.

  It is also important to note that during the construction of the single stream facility, the C & D Processing Facility was retrofitted to process curbside recycling. During this time period, the construction and demolition material was not able to be processed and went to the c & d hill. With both of these systems in operation along with our additional ongoing efforts, we see no reason that our recycling rate will not increase.

- We will be launching a new educational campaign in which we will utilize promotional funds to encourage and assist schools to increase their recycling efforts. A recycling program will also be implemented at next year's County Fair. The County Fair's theme for next year is "Preserve the

fun…Recycle when done!!" This will be another opportunity to recycle and also educate the residents of St. Lucie County.

2017 County Recycling Plans

Alachua County

Alachua County Recycling Program Plan for Meeting Florida's Recycling Goals

November 2017

Alachua County currently offers recycling for glass, metal, plastics, OCC, mixed paper and cartons. These items are collected both curbside and at the 5 rural collection centers. Additionally, yard waste collected curbside is recycled into mulch. Concrete is also processed by a local private business.

Recycling and waste reduction is promoted heavily through a contract with a local advertising firm which produces both print and film content. The Alachua County Office of Waste Alternatives also promotes through social media and traditional public education efforts. Alachua County was also one of the first counties in Florida to implement a Pay-as-you-throw-system which allows residents to reduce their garbage cart size and incentivizes recycling.

MSW is generated by the following groups:

Generator Type	**Collected Tons**	**Percent Total Tons**	**Traditional Recycled Tons**	**Traditional Recycling Rate**
1. Residential Single Family	58989	10.4	19832	33.6
2. Residential Multi-Family	33470	5.9	11253	33.6
3. Commercial	473431	83.7	267789	56.6
4. County Totals	565890	100	298874	52.8

Multifamily units currently fall under the mandatory commercial recycling ordinance and is enforced in the unincorporated areas of Alachua County. County inspectors have no Jurisdiction in the municipalities, which can pose a problem as most of the multi-family units are located within the City of Gainesville.

Construction and demolition debris recycling is currently one of our problem areas. The is no C&D MRF in the area and most of the C&D haulers own their own landfills and incur no costs to dump at their own facilities. These two factors limit the lengths that these haulers will go to recycle C&D. We are currently looking at options to include C&D in the mandatory commercial recycling ordinance.

Meeting the 2018 goal of 70% recycling may not be possible without a combination of mandatory C&D recycling and adding a waste-to-energy component. Currently the county's comprehensive plan prohibits the burning of garbage within Alachua County.

Duval County

City of Jacksonville, Florida

Lenny Curry, Mayor

Department of Public Works
Solid Waste Division
1031 Superior Street
Jacksonville, FL 32254
(904) 255-7500
www.coj.net

ONE CITY. ONE JACKSONVILLE.

November 9, 2017

Ms. Shannan Reynolds
Florida Department of Environmental Protection
Waste Reduction/Recycling Section
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Reference: **Duval County Recycling Plan**
Calendar Year 2016 Recycling Rate

Dear Ms. Reynolds:

Attached please find the FDEP County Recycling Plan for Duval County as required to be submitted per Section 403.706(2)(d), Florida Statutes. The plan is being submitted because Duval County did not achieve the interim recycling goal of 60% by year 2016.

If you have any questions, please contact the undersigned at (904) 255-7500.

Sincerely,

CITY OF JACKSONVILLE
PUBLIC WORKS DEPARTMENT, SOLID WASTE DIVISION

Eric B. Fuller
Environmental Programs Manager

Cletus Kuhn
Solid Waste Specialist

DUVAL COUNTY RECYCLING PLAN

DUVAL COUNTY, FLORIDA

November 9, 2017

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DUVAL COUNTY RECYCLING PLAN
DUVAL COUNTY, FLORIDA

1.0 INTRODUCTION

On behalf of Duval County, the City of Jacksonville has completed this County Recycling Plan for Duval County as required to be submitted per Section 403.706, Florida Statutes. The plan is being submitted because Duval County did not achieve the interim recycling goal of 60% by year end 2016. For calendar year 2016, Duval County had a recycling rate of 52%.

In 2008, the Florida Legislature set a statewide municipal solid waste (MSW) recycling goal of 75% by the year 2020. In 2010, the Legislature further directed that the goal be primarily applied to counties with a population of greater than 100,000. Additionally, the Legislature set interim recycling goals as follows: 40% by year 2012; 50% by year 2014; 60% by year 2016; 70% by 2018; and 75% by year 2020. The recycling rate for Duval County over the past five years has been as follows: 50% in year 2012; 52% in year 2013; 50% in year 2014; 50% in year 2015 and 52% in year 2016.

On August 7, 2017, the Florida Department of Environmental Protection (FDEP) sent a memorandum to large counties that did not meet their 2016 interim recycling goals and requested that they submit a county recycling plan to FDEP by October 9, 2017. On September 20, 2017, FDEP sent an email to large county recycling coordinators stating that the recycling plan due date had been extended to November 10, 2017 due to Hurricane Irma.

2.0 SOLID WASTE MANAGEMENT AND SUMMARY OF RECYCLING SERVICES

Duval County consists of five cities including the City of Jacksonville, the City of Atlantic Beach, the Town of Baldwin, the City of Jacksonville Beach and the City of Neptune Beach. All waste generated in Duval County that requires disposal in a Class I solid waste disposal facility is flow controlled to City of Jacksonville-owned Trail Ridge Landfill per City of Jacksonville Ordinance Code Section 386. The City of Jacksonville maintains inter-local agreements with the other cities within Duval County for the disposal of their Class I waste. There is no flow control within Duval County for other forms of waste such as construction and demolition debris or recyclable materials. Each city within Duval County is responsible for handling the collection of their waste and recyclables. The management of solid waste facilities within Duval County is under the purview of the City of Jacksonville per Ordinance Section 380, Part 1. The City of Jacksonville prepares and submits the annual recycling report to FDEP on behalf of Duval County.

Significant efforts and expense have been undertaken by the cities within Duval County to recycle municipal solid waste (MSW). Currently, all cities within Duval County offer single stream recycling for Duval County residents that is picked up at least every other week. Single stream curbside recycling includes materials such as office paper, newspaper, magazines, paper bags, cardboard, plastics # 1-3, 5 and 7, milk containers, juice boxes, glass (green, brown or clear), aluminum cans and steel cans. Traditional curbside recycling (excluding yard trash) represents approximately 4-5% of all Duval County recycling.

The majority of yard trash generated in Duval County is collected curbside from residents and taken to Trail Ridge Landfill where it is currently mulched and used as daily cover in accordance with the landfill's permit conditions. The usage of mulched yard trash for cover material has historically accounted for approximately 5-10% of Duval County's overall recycling rate.

Tires are collected from City of Jacksonville residents at curbside at no additional charge. The tires collected are taken to Trail Ridge Landfill's tire storage area and eventually transported to Ridge Generating Station in Auburndale, Florida where they are incinerated for energy and hence count as recycling credit. In addition, tires that are hidden in loads that are dumped at the working face of the landfill are pulled off the landfill, placed in the tire storage area and taken to Ridge Generating Station for incineration/recycling. Lastly, for the past four years (2014-2017), the City of Jacksonville has held a tire buyback event where Duval County residents can bring in waste tires and receive payment for each tire. This tire buyback event is held in order to encourage residents to clean up the County of waste tires, reduce the blight caused by tires and reduce breeding grounds for mosquitoes. The City of Jacksonville funds this effort and it is scheduled to occur again in 2018. This event has averaged the collection of over 21,400 tires per year which are eventually taken to Ridge Generating Station for incineration and Duval County recycling credit.

The City of Jacksonville offers free pick-up of appliances at curbside for its residents. The appliances that are collected curbside are taken to a metals recycler which ultimately provides additional recycling credits for Duval County.

The City of Jacksonville offers free drop off of household hazardous wastes to all Duval County residents. Household hazardous wastes accepted includes gasoline, motor oil, cooking oil, antifreeze, electronic wastes, batteries, paints, pesticides, herbicides, fluorescent bulbs, and pool chemicals. The City of Jacksonville has a household hazardous waste facility that is open year round, five days a week and eight hours each day. In addition to the stationary facility, the City of Jacksonville holds 12 remote collections events at various areas of the County for residents to bring in their household hazardous wastes. Many of the household hazardous wastes that are collected are ultimately recycled.

3.0 ANALYSIS OF MUNICIPAL SOLID WASTE GENERATED

The vast majority of MSW generated in Duval County originates in the City of Jacksonville. The percentage of MSW generated for each city within Duval County for the year 2016 was as follows: City of Jacksonville 93%; City of Atlantic Beach 2%; Town of Baldwin <1%; City of Jacksonville Beach 3%; and the City of Neptune Beach 1%.

A further breakdown of the MSW generated by the various commercial, multi-family and single family residential sectors for the year 2016 was as follows: residential single family 21%; residential multi-family 5%; and commercial 74%. The percentage of overall recycling attributed to the various commercial, multi-family and single family residential sectors for the year 2016 was as follows: residential single family 31%; residential multi-family 9%; and commercial 60%.

City of Jacksonville Ordinance Section 380, Part 5 makes residential recycling mandatory. Seven compliance inspectors and officers oversee the curbside collection efforts by the City and its three subcontract residential haulers. The City has made a significant investment to maximize the curbside recycling effort by entering into new contracts with all three subcontract residential haulers to use automated collection efforts and equipment. The effort has resulted in an approximate doubling of the tonnage of recyclable materials that are collected at residential curbsides over the past several years. The City has invested in this effort by authorizing the subcontract haulers to purchase new automated collection trucks and 96 and 64 gallon recycle containers as part of their new contracts. The City has also directly invested in this effort by purchasing new collection trucks and recycle containers for its core service area. This investment by the City literally represents millions of dollars pledged to increase recycling rates to meet the

state's recycle goals. It is currently estimated that approximately 60% of the county residents participate in recycling. Recycling participation rates amongst residents appear to vary based on geographical and economic areas of the county. Recycling rates in the core city area and in the more rural areas of the county tend to have the lower participation rates while the more affluent suburb areas have the higher participation rates.

Commercial/multi-family recycling is currently done on a voluntary basis and is not mandated by ordinance. Small commercial establishments that receive city service have high participation rates but services are only offered to small commercial establishments. Participation and recycling rates amongst the commercial/industrial sector that handles yard trash and construction and demolition debris (particularly concrete) appears high, especially with favorable economic conditions. The commercial recycling market for metals and cardboard appear to be steady but many other commercial recycling markets are depressed.

4.0 SOLID WASTE MANAGEMENT FACILITIES AND RECYCLING

Duval County has one of the most comprehensive solid waste management facilities program in the state of Florida. City of Jacksonville Ordinance Section 380, Part 1 outlines the duties of the City in regulating solid waste management facilities within Duval County. All solid waste management facilities are required to have a Certificate of Public Convenience and Necessity ("CON") issued by City Council in order to operate. This certificate covers all different types of solid waste management facilities including landfills, C&D recycling facilities, concrete recycling facilities, vegetative debris/yard trash mulching/recycling facilities, biomedical waste sterilization facilities and incineration facilities. Each of these facilities is required to weigh all incoming and outgoing materials and provide monthly reports to the City of Jacksonville's Solid Waste Division. The operation of these solid waste management facilities results in a large portion of the commercial recycling percentage within Duval County. Recycling of materials at these facilities is incentivized by the City of Jacksonville by waiving our $7.16 per ton host fee on all incoming materials that are recycled.

4.1 Landfills

The landfills located within Duval County follow the FDEP's procedure on recycling materials that are economically feasible to do so. Because the recycling market is currently depressed, the recycling of materials that are taken to the County's various landfills do not represent much in the way of recycling based on incoming waste streams. Landfills do, however, provide opportunities for recycling by utilizing mulched yard trash as daily cover and the opportunity for collection of landfill gas (discussed in Section 5).

4.2 Construction and Demolition Debris

There are numerous C&D recycling facilities located within Duval County including three full C&D recycling facilities, ten concrete/clean debris recycling facilities and two shingle recycling facilities. Concrete recycling facilities typically recycle over 98% of all incoming materials. Shingle recycling is currently limited by the amount of recycled shingles that can be effectively mixed to create asphalt or can be utilized on FDOT roadways. A large roadway construction project occurred in Jacksonville at the south end of the Fuller Warren Bridge for Interstate 95; however, despite a large portion of the demolished concrete roadway being recycled, it did not count as part of Duval County's recycling rate because all of the demolished concrete was processed and reused on the same site and therefore the demolished concrete was not considered MSW for recycling calculation. F.A.C 62-716 states: "Asphalt or other byproducts from road

building or maintenance that are directly reused as part of an associated works project are also not considered municipal solid waste".

4.3 Yard Trash/Vegetative Debris

The City of Jacksonville currently regulates seven yard trash/vegetative debris facilities within Duval County. The facilities are spread over various areas of the county which provides disposal/recycling opportunities for companies performing land clearing operations, landscape maintenance and similar type activities. The recycling rate for these facilities is in excess of 95%. Recent challenges of finding facilities which accept mulched vegetative debris for use as boiler fuel has put a strain on the economic viability of these facilities. Many facilities which historically used vegetative debris as boiler fuel are looking to natural gas as a fuel source. Additionally, Alachua County's energy facility in north-central Florida has shut down or has operated intermittently which has further reduced the choices of mulching facilities to find end users of their recyclables.

5.0 WASTE TO ENERGY

The City of Jacksonville's existing Trail Ridge Landfill has a waste to energy (WTE) plant that utilizes the landfill gas for the production of electricity by six (6) engines that use landfill gas as the fuel source. This is the primary source of Duval County's renewable energy recycling credits. The City of Jacksonville has a three party agreement with Trail Ridge Landfill, Inc. (a.k.a. Waste Management) as the operator of the landfill, Arias Gas which operates the WTE plant, and the City which is the permit holder for the Title V air permit and owner of the landfill. The three party agreement details the responsibilities of the parties as it relates to the operation of the landfill and gas destruction via the electric-generating engines. The City receives $193,500 per year for the sale of the gas and spends approximately $400,000 to 500,000 per year on expanding the gas system as waste is placed both horizontally and vertically within the disposal units. The three party agreement allows the WTE plant to install up to six additional engines for a total of twelve (12) engines that can convert the landfill gas to electricity. The plant currently produces enough electrical output to power a little over 5,000 homes and would increase when the additional engines are added. Each of the engines can produce 1.6 megawatts of power for a total of 19.2 megawatts of power. The landfill infrastructure has a house load of approximately 0.5 megawatts which would allow the WTE plan to produce approximately 18 to 18.7 megawatts of power at full engine capacity. The City of Jacksonville recently invested over 2.6 million dollars in the replacement of gas collection wells, headers, manifolds and ancillary piping including pumps and condensate sumps to maximize gas flow to the plant.

6.0 RECYCLING ANALYSIS AND STRATEGIES FOR INCREASING RECYCLING RATE

6.1 Traditional Recycling

An analysis of Duval County's recycling statistics verses those of other counties with higher recycling rates was conducted. Traditional recycling rates of other counties' commodities were very similar to Duval County with the exception of the commodities of yard trash and construction and demolition debris. Generally speaking, the traditional recycling rates of other counties that had high recycling rates had commodity recycling percentages that were no more than 3% higher than Duval County with the outliers of yard trash and construction and demolition debris. As indicated previously, Duval County is one of the few counties in Florida that actually independently regulates solid waste management facilities in their county and requires them to

weigh their materials on an incoming and outgoing basis. Other counties rely on estimated cubic yard or tonnage amounts of yard trash and construction and demolition debris. Based on this analysis of traditional recycling commodities, it does not appear that other counties with higher recycling rates are significantly ahead of what Duval County is currently doing. Further, it would appear that other counties with higher rates may have had large construction projects in their area or had high estimates of their yard trash and construction and demolition debris recycling tonnages.

6.2 Waste to Energy/Renewal Energy Recycling

Several counties in Florida that are currently making their 60% recycling goal are doing so based on high waste to energy (renewable energy) credits. These high waste to energy credits provide some large counties with up to 27% of their recycling total. The renewable energy recycling credits for these counties are received based on the incineration of their trash. Duval County currently has a city-owned landfill that has permitted capacity for approximately another 25-30 years. The cost of landfilling is significantly less expensive than the incineration technology currently available. Investing in waste to energy technology through trash incineration would require significant capital investment for Duval County and does not appear feasible at this time. Duval County regularly monitors the cost of waste to energy processes and meets with vendors to discuss their products when new technologies are identified. As previously discussed in Section 5 of this report, Duval County has recently invested a considerable amount of money in increasing the landfill gas production at Trail Ridge Landfill to bolster our county's renewable energy credits. We have also examined the possibilities of implementing landfill gas collection systems at older disposal sites; however, economic conditions (including the low price of natural gas) have made this pursuit not economically viable.

6.3 Strategies for Increased Recycling

Duval County currently provides an extensive amount of recycling opportunities for the residents of Duval County. Curbside single stream recycling, appliance recycling, tire recycling and household hazardous waste collection and recycling are all provided. Recycling is not a revenue generating activity based on current markets and these programs should be viewed as a substantial effort and commitment by Duval County to recycling. Residential recycling is mandatory per City of Jacksonville ordinance; however, recycling participation rates are estimated to be around 60%. The City of Jacksonville is examining outreach and education methods to increase participation rates amongst residents with code enforcement a possibility as a last resort. Public service announcements, mailing of flyers, community outreach through local organizations, and social media campaigns are all being looked at for possible implementation in 2018.

Multi-family and commercial recycling is not currently mandated within Duval County. The City of Jacksonville provides collection service to a small number of multi-family units and small commercial establishments but many of the multi-family and commercial units throughout the county rely on the private owners to provide any sort of recycling services. Market conditions are currently the main driver of such recycling services and this mostly means an additional cost to owners of commercial properties. The City is examining the potential to require mandatory recycling for multi-family units or for newly permitted/constructed facilities to have a dedicated space for recycling dumpsters to serve their residents. Recycling in the commercial/industrial sector for yard trash and construction and demolition debris appears steady but there may be opportunities for increased recycling amongst commercial office facilities and small businesses. The City of Jacksonville is examining policy for ways to promote, incentivize and/or mandate recycling within the commercial sector.

Waste to energy/renewable energy recycling credits are currently provided to Duval County through collection of landfill gas and subsequent conversion to energy at Trail Ridge Landfill. The City of Jacksonville has worked toward maximizing the gas collection at the landfill and hence maximizing our available renewable energy credits. Limited opportunities currently exist for Duval County to increase renewable energy credits without significant capital expenditures toward incineration technologies. Duval County will continue to monitor and track technologies for cost effectiveness of waste incineration technologies.

7.0 STATEWIDE OPPORTUNITIES FOR REPORTING AND INCREASED RECYCLING

In examining ways for increased recycling potential and opportunities statewide, several possibilities were identified that could be provided to assist counties in reaching their goals. Below are some suggestions for consideration:

- The FDEP currently requires registered vegetative debris facilities to provide their annual tonnage amounts in July for the previous year. Changing the reporting requirements of these facilities to a time period earlier in the year (say February or March) would allow this information to be included on county recycling reports.
- Providing recycling credit for used oil recycling and providing counties with the amounts (gallons or tons) of used oil recycled by county.
- Providing recycling credit for vehicular (car/boat/truck, etc.) batteries and providing counties with the amounts (tons) of batteries recycled by county.
- Provide greater enforcement and availability of the reporting of textile recycling by county. It appears that many facilities required to report their textile recycling are not providing this information.
- It appears that FDEP is allowing some counties to include items such as asphalt and the fact that residents are mulching grass as recycling credit. If these alternant sources of recycling credit are available, it is suggested that FDEP provide these recycling methods (and others) to all counties so that they may also utilize these methods of reporting. Asphalt recycling could be a significant source of recycling credits.
- Provide regulatory incentives and benefits for waste to energy technologies to potentially expand this market in terms of tire and shingle incineration to create energy.
- Consider providing renewable energy recycling credits for counties utilizing solar power for electric generation.

8.0 CONCLUSIONS

Duval County has expansive recycling programs currently in place offering county-wide single stream recycling of a large variety of recoverable materials, tire recycling, appliance recycling and household hazardous waste collection and recycling. Analysis of Duval County's traditional recycling verses other large counties that are currently achieving the state goals indicates that Duval County matches up well with these other counties except in the areas of yard trash and construction and demolition debris. Duval County has a comprehensive solid waste management system for the tracking of yard trash and construction and demolition debris tonnage – perhaps the most comprehensive system in the state. It would appear that other counties with higher rates may have had large construction projects in their area or had high estimates of their yard trash and construction and demolition debris recycling tonnages. Other large counties currently

achieving their state goals are doing so based on high renewable energy credits from the incineration of trash. Duval County currently has permitted landfill space of another 25-30 years which is more economical than incineration. Duval County has invested heavily in the gas collection system at the City's Trail Ridge Landfill to increase the amount of gas collected and subsequent energy creation. Strategies being researched as potential areas to increase our recycling percentages include increased awareness/education programs through a variety of methods and potential policy changes to increase/mandate commercial recycling.

There are significant hurdles to achieving a 60 plus percent recycling rate including a depressed recycling market, cross-contamination of single-stream recyclables, capital costs for implementing programs and the current economic practices and policies of foreign market end users of bulk recyclable materials. Without "new" recycle methods and materials, it will be extremely difficult for counties such as Duval that rely more on traditional recycling for the majority of its credits to reach the state's ultimate recycling goals. Duval County has identified several suggestions for FDEP to consider that may be a benefit to all counties in increasing their recycling percentages. Duval County will continue to look at ways of providing an efficient and cost-effective solid waste management system that includes an emphasis on recycling.

Escambia County

Board of County Commissioners • Escambia County, Florida

Patrick T. Johnson, Director
Waste Services Department

Escambia County Recycling Program Plan

On August 7, 2017 Escambia County Waste Services Department received notification from the Florida Department of Environmental Protection (FDEP) concerning the interim recycling goal of 60% by 2016. It is understood that FDEP needs to comply with Legislative directives and report the State's which did not obtain the 2016 interim goal. Additionally, FDEP may request from counties who fail to meet interim goals a plan to expand recycling within their jurisdictions.

Upon review of the data provided in the FDEP's 2016 Annual Report it appears many counties did not meet the interim goal. Additionally, far less counties met the goal with respect to through traditional methods.

Eleven counties which have been successful were interviewed by Escambia County Waste Services Department to evaluate and determine best management practices to meet recycling goals. Based on the information obtained, it appears there is no "one size fits all" scenario. Successful programs utilize a variety of approaches. However, counties with the highest and most consistent recycling rates appear to be those with a substantial waste to energy (WTE) component.

Escambia County's effort to meet recycling goals are primarily traditional. The county's existing program includes but is not limited to a residential collection program, composting program, yard waste program, materials recovery program (MRF), E-waste recycling, a small waste-to-energy component, concrete crushing, drop-off centers, and private held commercial recycling activities. Calculations pertaining to the 2016 recycling rate did not include nine month's operation of the public owned MRF or any data from a private owned MRF.

Additionally, due to inexpensive disposal options, a large volume of Construction and Demolition Debris to include land clearing debris was landfilled. Multi-Unit dwellings and Commercial recycling was minimum. The CDD and multi-unit dwellings represent areas for improvement.

Concerning traditional recycling efforts, it appears from the data collected by FDEP for 2016, 4 of 36 large counties have achieved 60% through traditional means/methods. It may not be a fair assumption that counties across the state can consistently achieve 60% recycling without significant investment and/or risk. Based on review of the data provided, the counties with the highest recycling rates have large incineration facilities and have not been able to achieve 60% with traditional recycling. As requested, and per the outline provided by Division Director F. Joseph Ullo, Jr. P.E., of the minimum information required, please accept the following as it pertains to Escambia County:

• Summary of the services and materials for which you offer recycling such as newspaper, aluminum cans, steel cans, glass, plastic bottles, cardboard, office paper and yard trash;

Volunteer residential curbside collection of recyclables is offered in the incorporated and unincorporated areas as well as nine Drop Off Centers strategically located throughout the county. Republic Services offers commercial recycling of cardboard and office waste paper only. These materials are typically processed through one of three MRF's. Additionally, residential yard trash is collected curbside and composted or beneficially reused.

• Analysis of the percentage of the county's MSW generated by the commercial, multifamily, and residential single family sectors;

For Escambia County, the percentage of MSW generated from the commercial sector is approximately 52%, MSW generated from residential sector approximately 30%, MSW from multifamily is approximately 18%.

• Analysis of any existing recycling programs for the commercial and multifamily sectors, including estimated customer participation rates and recycling rates for each of those sectors;

Existing privately operated recycling programs are economically driven. In addition to typical scrap processors, Republic Services offers a recycling program for the commercial sector and operates a small MRF accepting fiber only. Emerald Coast Utilities Authority (ECUA) offers recycling for the commercial sector which accepts a large menu of items processed at a publicly owned/operated MRF. Private Commercial participation rates are minimum. Until 9/2016 there has been no operational MRF in the county accepting anything other than fiber. Participation and recycling rates are as follows:

- Estimated customer participation rate for commercial sector is approximately 6%. Data required for this estimate extremely difficult to obtain from the private sector.
- Estimated customer participation rate for multifamily sector is approximately .3%.
- Estimated customer recycling rate for commercial sector is approximately 73%.

- Estimated customer recycling rate for multifamily sector is approximately 7%

• Description of the county's implementation, including any planned changes for your program for recycling construction and demolition debris;

No changes are currently planned. Due to the low cost of CDD disposal in our region, processing appears not economically viable. Feasibility of soliciting for CDD and LCD processing will be evaluated.

• Description of efforts or opportunities to encourage recycling of yard trash, and other organic materials or mechanically treated solid waste, into compost or mulch that may be made available for agricultural and other acceptable uses;

Expansion of local compost operation is underway. This project will increase volumes of yard trash recycled. Effort will be made to contact LCD generators to track volumes and destinations.

• Strategy (including general time frames) for expanding your county's recycling programs, or for creating new programs if needed, as part of your county's efforts to achieve the statewide recycling goals set forth in s. 403.706(2), F.S.;

Strategic goals to be implemented calendar years 2018/19:

- Solicit feedback from Commercial Solid Waste Franchised haulers concerning the low participation rate in the commercial sector
- Interview/screen large employers within Escambia County concerning recycling programs
- Evaluate establishing long term contracts with local government partners for MRF, composting and yard waste operations
- Evaluate feasibility of CDD/LCD processing
- Evaluate increasing number of recycling Drop Off Center locations
- Continue to verify all applicable recycling data is being provided to FDEP

• Discussion of any additional steps, initiatives and anticipated challenges that are critical to implementing your strategies to achieve the next interim recycling goal of 70 percent in 2018, and ultimately statewide goal of 75 percent by the end of 2020.

An additional step anticipated to achieve the next interim recycle goal is to survey businesses in the county to verify all applicable data is being submitted to FDEP. In addition, because Escambia County now has an operational MRF with processing capacity, we have inserted contract language within commercial franchise agreements encouraging waste collection providers to offer recycling services to their customers.

Significant challenges critical to achieving the recycling goal are:

- Obtaining data from private sector operations that is typically deemed proprietary by the companies
- With limited staff, it is very difficult to conduct labor intensive research efforts for new waste diversion activities in our community with a result of very low increases in the recycling rate
- Based on informal rate surveys of CDD processors in Florida, it is apparent CDD landfilling in this region is much less expensive than processing. Also, there has been significant private investment made into a permitted, unopened CDD landfill located in Escambia County
- The requirement that all wastes need to be accounted for in the County tonnage, yet certain wastes are excluded from non-certified recycling numbers based on origin (e.g. bio solids mixed with compost)
- Unstable market for sale of commodities
- The current recycling credit calculation method appears to not allow credit for positive impacts to reducing carbon footprint resulting from recycling

On behalf of the Escambia County Waste Services Department, I would like to thank FDEP and staff who have been very helpful assisting Escambia County along with other counties, through education and outreach activities. Their commitment and dedication to share best management practices and promote recycling across the state have served us well. Thank you and keep up the good work.

Regards,

Patrick Johnson, Waste Services Department

Flagler County

Flagler County General Services
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Flagler County Recycling

Flagler County is a small rural county with just over 100,000 residents. The county unincorporated areas plus cities and towns all use private waste service providers for trash collection and voluntary recycling pick-up. Our contracts call for the pick-up of recyclables, but we have no control over the material once it has been collected. Under these current contracts it will be hard to increase the level of recycling to reach the state goals. The reasons being the voluntary status of these programs and the lack of a market for recyclables except for aluminum cans and high quality paper. The remaining items such as plastic bottles and cardboard boxes have become hard to even give away. We all know that China is no longer accepting the variety and volume of recyclable materials that they have in the past.

The suggestion will be made that waste provider contracts be reevaluated before they are automatically renewed to determine ways to improve the current recycling programs of the waste providers being used. An examination of competitors recycling programs will also need to be done to see if they are having more impact in the areas they provide service. The bottom-line has largely been the determining factor with these contracts in the past.

This will have to change in the future. One thing we would not support is paying companies to accept recyclables.

We would like to see the state accept that this program was overly ambitious and that either the population thresholds be increased to about 300,000 or the recycling percentage be lowered to the 40 to 50 percent range. We do not have the funds or the personnel to put together and run a recycling program in this county. There would also be a large public outcry if we were to make recycling mandatory and levy fines for non-participation to residents and businesses. It’s time to pause and reevaluate goals in an ever changing world market.

Indian River County

INDIAN RIVER COUNTY, FL RECYCLING PROGRAM PLAN

November 2017

Submitted to:

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Florida Department of Environmental Protection
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Submitted by:

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Section 1
Introduction

This document is submitted in response to the August 17, 2017 memorandum from F. Joseph Ullo, Jr., P.E., Division Director at the Department of Environmental Protection (DEP). As requested in the memorandum, Indian River County (County) did not reach the 60% interim recycling goal in 2016 and is therefore submitting a recycling plan to DEP to provide valuable information that can be incorporated into their strategic plan for the upcoming year. The plan provided herein summarizes the current recycling programs in the County, as well as opportunities and plans to expand our recycling programs.

Section 2
Current Recycling Program

2.1 Summary of Recycling Services and Materials

Indian River County did not achieve the 60% recycling goal for 2016; however, our recycling rate increased significantly in the past year, rising from 34% in 2015 to 53% in 2016. This increase was due to the addition of C&D recycling data in the private sector that was not previously reported, as well as changes that were implemented in the County recycling program in October 2015. These changes include hiring a designated staff member for recycling education, transitioning to single stream recycling collection, changing to once-a-week garbage collection in unincorporated county, and increasing the number of countywide recycling collection events for IRC residents.

As of October 2015, recyclables are collected in a carted single stream recycling program. Every resident was delivered a 64 gal. recycling cart with the option to upgrade or downgrade the size after a 3 month trial period. All recyclable materials are combined into one container and acceptable items include newspaper, office paper, cardboard, aluminum cans, steel cans, glass, and plastics #1-7 (with a few exceptions). We do not accept Styrofoam, plastic bags/films, bottle caps or shredded paper in our curbside recycling program. All single-stream recyclables are shipped offsite and processed in Fort Pierce, FL at Tropical Recycling.

The County operates five Customer Convenient Centers (CCC) where residents can self-haul waste, yard trash, bulk waste, and recyclables. In addition to the recyclables collected curbside, the County also accepts tires, white goods/metals, household hazardous waste (HHW), expanded polystyrene, and electronic waste at the CCCs and the main landfill.

The various types of recyclables are managed as follows:

- Single-stream recyclables are delivered to the SWDD facility, and then transported and processed through a contract with Tropical Recycling.
- Waste tires received at the landfill and CCCs are stored in the waste tire storage area at the landfill. The County currently contracts with Wheelabrator to remove and process the tires as fuel.

- White goods and scrap metal are accepted at the landfill or removed from incoming waste loads. They are stored separately and, once the refrigerant has been removed, marketed to Trademark Metals for processing.
- Expanded polystyrene collected at the landfill and CCCs is processed at the landfill using a foam densifier acquired from RecycleTech through a state-funded innovative grant. RecycleTech then collects the condensed polystyrene ingots for recycling purposes.
- Household Hazardous Waste (HHW) & electronics (E-Waste) are accepted at the landfill and CCCs. A private vendor, US Ecology, is contracted to properly consolidate, package, and transfer HHW to a permitted out-of-county facility for recycling and disposal. US Ecology also operates a Small Quantity Generator program for small business waste generated within the County on a fee basis. Businesses are responsible for arranging transport and disposal services with US Ecology directly. NWI Recycling is contracted to transfer and recycling the E-Waste.
- Used oil and oil filters are accepted at the landfill and CCCs. The County contracts with Cliff Berry, Inc. to remove and process them.
- Propane Tanks are accepted at the landfill and CCCs. The County contracts with Pargas to remove and process them.

The County and municipalities collect segregated yard trash from residents on a weekly basis. Up until January 2017, vegetative waste (yard trash and land clearing debris) was sent to INEOS where the vegetation and gas from the County's Landfill were processed to produce cellulosic ethanol, a form of bioethanol, using gasification and fermentation technologies. SWDD accepted approximately 26,000 tons of mulched vegetative debris back from INEOS that was used as landfill cover. Ash produced by INEOS as a result of bioethanol production and "unacceptable waste," defined as containing more than 1% contamination, were sent back to the landfill for disposal.

The large increase in IRC's recycling rate from 2015 to 2016 can be credited to the addition of recycling data from three large C&D debris companies in the private sector that was not previously being reported. In contrast, 100% of the C&D material that came to the County landfill was disposed. Clean concrete is segregated from C&D at the landfill where about 75% of the clean concrete is continually stockpiled. The remaining percent is recycled as landfill road base material, which is utilized in and on the active site to facilitate various traffic patterns

2.2 Analysis of Generated MSW

In 2014, Kessler Consulting conducted a waste audit of material coming into the County landfill and assisted Indian River County in updating its Solid Waste Master Plan. Using the information from the audit and factoring in the new single stream recycling program, Kessler Consulting worked with the County to construct a breakdown of the waste generated in Indian River County in 2016 (see Figure 1).

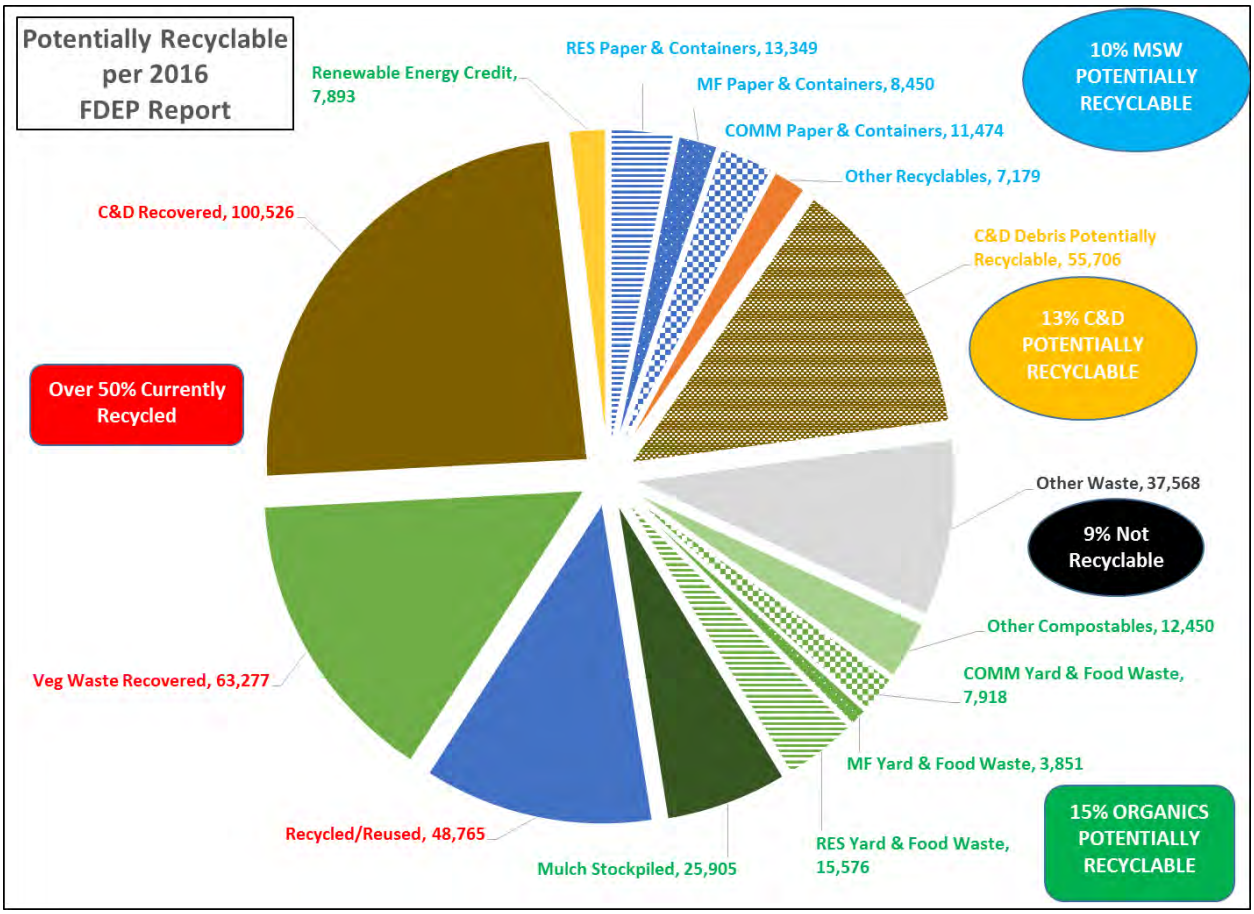


Figure 1. Breakdown of waste generated in Indian River County and analysis of potentially recyclable material.

2.3 Multi-family Recycling Program

Carted recycling pick up services for multi-family residences are paid for through the annual solid waste assessment fees. Using the waste audit from 2014 as a guideline, the County estimated the participation rate for multi-family communities in 2016 was approximately 80% and the recycling rate was 30%. The transition to single-stream recycling may have increased the participation rate slightly and the County will work with the Franchise hauler to update the participation estimate for 2017.

There are several challenges to recycling in multi-family communities. Messy disposal areas, confusion as to what can be recycled, and insufficient space for recycling containers could lower the amount of material that is getting recycled and can even cause property managers to discontinue recycling services altogether. In order to address these issues the County and Franchise hauler are working together to provide onsite visits, one-on-one discussions with the property managers, and offer educational materials and presentations to the residents.

2.4 Commercial Recycling Program

Based on data from the US Census Bureau and our local hauler companies, staff estimates that approximately 18% of the commercial businesses in IRC are signed up for curbside recycling services. Commercial recycling is not mandatory and many commercial businesses chose not to recycle because of cost and/or space limitations. Indian River County, Ordinance Section No. 914.14 (14) (g) states that "all dumpsters shall be enclosed on all sides." An enclosure would not only make the footprint of the

outdoor container larger, but it also adds an additional cost to setting up a recycling program. Business owners do not want to "pay for an extra service," much less pay for enclosures or startup costs, such as indoor containers or indoor collection equipment. The transition to single steam recycling would help alleviate some of these obstacles and onsite visits and education may be more successful in encouraging business owners to implement recycling services.

Section 3
Expanding the Recycling Program

3.1 Yard Waste, Composting and C&D

In total, Indian River County generated 419,888 tons of MSW, 39% which was landfilled and 9% of which was stockpiled yard waste or clean concrete. As of April 2017, the County no longer stockpiles large quantities of vegetative cover material per a new contract with its vegetative contractor. The majority of the vegetative material is now being shipped off-site to be composted and used in the development of pasture lands with a smaller quantity being left at the landfill on an as-needed basis to be used for cover.

On July 13, 2017, the FDEP issued Permit Number 0128769-025-SO-24 to Indian River County which includes an approved Operations Plan for a C&D recycling facility. Also in July 2017, staff requested and received approval from the IRC Board to issue a Request for Proposal (RFP) to obtain bids for implementation of concrete and C&D recycling at the landfill. Staff is currently working on issuing the RFP.

3.2 Expanding Multi-family and Commercial Recycling Programs

At this time, the Indian River County Commission does not feel that a mandatory commercial recycling mandate is right for Indian River County. Instead, the County will focus its efforts on visiting multi-family communities and commercial businesses to specifically address the real or perceived obstacles outlined in the previous section. The transition to single stream recycling directly raised the County's outgoing recycling tonnages by 42% in one year, and it also alleviates some of the obstacles faced by multi-family and commercial businesses.

For commercial businesses, recycling pickup services are part of the open market and haulers are competing for customers. To encourage commercial sign ups, Waste Management launched a promotion where new customers received free recycling services for September, October and November 2017 when they signed up for a 12 month subscription. The County utilized this opportunity to work with Re-TRAC in order to set up a database where businesses can voluntarily track the fullness of their garbage and recycling containers. The goal of the software was to help businesses identify opportunities to "right size" their garbage and recycling services to maximize services and reduce cost. Ideally, the County can use this information to identify the types of businesses that would see the least financial impact from the addition of recycling services. Outreach efforts will be focused on these types of businesses to increase the likelihood of successfully increasing commercial participation rates.

3.3 Expanding County Parks and School Recycling Programs

As part of the County's contractual franchise agreement, the County worked with their Franchise hauler to establish recycling at seven highly-used County parks in July 2016. These seven parks served as a pilot

project and were monitored for contamination issues and public use. After a year of observation, the program appears to be efficient and contamination is relatively low. The County is in the process of bringing recycling to eight additional County beach park. In a separate effort by Keep Indian River Beautiful (KIRB), a grant from Zephyr Hills enabled KIRB to purchase recycling containers for four highly used city parks in the City of Vero Beach in March 2017.

The County is also working with the School District of Indian River County to initiate a pilot recycling program at four of the twenty public schools. The School District currently pays for the pickup of a 6-yard recycling dumpster at each school, but recycling containers inside the building are mostly absent. The pilot program would provide a well-developed standard recycling program that features recycling containers in the classrooms, a practical plan for custodial staff to collect the recyclables, and a robust cafeteria recycling program. The County is working with the School District to acquire two monetary grants in order to initiate the pilot program in December 2017.

3.4 New Education Programs

The importance of education cannot be stressed enough. The purpose of the County's educational efforts are 3-fold 1) to encourage recycling participation through positive and consistent messaging, 2) to direct residents where to go to get more information, and 3) to minimize contamination by making residents aware of what materials are acceptable and what is not. In addition to traditional print and radio advertisements, the County expanded its outreach efforts to include a poster at a local movie theatre and a 30 second video commercial aired on Comcast TV that would bring recycling information directly into residential homes.

The County's online presence has been amplified by updating the website, sending recycling messages in an online weekly newsletter, adding our events to online calendars, and running pop-up advertisements on the website for the Vero Beach Chamber of Commerce. In January 2018, the County will launch a new initiative where an informational postcard will be mailed to 78,000 residential addresses in Indian River County. The postcard has general information as well as a link to a 15 question survey to collect valuable information from the residents in order to improve the existing recycling programs.

Section 4
Conclusion

The Indian River County Board of County Commissioners has stressed that all programs must be economically viable and in the best financial interest of the County. The Board feels that there are still opportunities to raise our recycling rate through traditional recycling methods and Indian River County will not pursue new renewable energy options or non-vegetative composting programs at this time. Instead, the County will continue its efforts to raise the recycling rates by discontinuing the stockpiling of vegetative waste, pursuing options to recycle our C&D material, and focusing on outreach and educational efforts to encourage voluntary participation in the recycling program. With the actions outlined above, we hope to reach the 65% recycling rate by 2017 and see a continual rise in our overall recycling as we reach out to the residential and business sectors to implement recycling programs. Indian River County will continue to strive towards the 75% recycling goal by 2020; however, the economic feasibility of pursuing aggressive recycling options and costly technologies will continue to be a challenging factor in achieving this goal.

Leon County

Leon County Recycling Program Plan

This report has been prepared for the Florida Department of Environmental Protection on behalf of Leon County, in compliance with Section 403.706(d) of the Florida Statutes. It was submitted on October 19, 2017.

I. Summary of Recycling Services and Materials

Leon County (and the City of Tallahassee) offer single-stream recycling to all residents and businesses. Recyclable materials include paper, cardboard, aluminum cans, steel scans, glass, plastic bottles and containers. Yard waste is collected curbside by the City's and County's collector, Waste Pro, as are bulk items. Yard debris is mulched at the Leon County Solid Waste Facility. Leon County also offers Household Hazardous Waste collection at the Solid Waste Facility, where items such as batteries, light bulbs, electronics, paints, oils, and chemicals are accepted. Leon County also operates four Rural Waste Service Centers in strategic parts of the County. Unincorporated residents may drop off recycling, trash, bulky items, yard debris, and HHW at all rural waste sites.

II. Analysis of MSW by sector

In 2016, 42% of the County's recycling tonnage was C&D, 30% was yard debris, and the remaining 28% tonnage was single-stream recycling from commercial and residential. Curbside single-stream tonnage only accounted for 5% of the overall tonnage, where 23% came from commercial recycling.

26% of MSW is residential, and 74% is from the commercial sector.

III. Analysis of Recycling Programs for Commercial and Multi-Family

Recycling is available for all commercial businesses and multi-family residents, in unincorporated Leon County and within the City of Tallahassee. In unincorporated Leon County, all recycling and MSW goes through Waste Pro. Commercial units must pay an additional fee for a recycling bin and service. In the City of Tallahassee, the city operates commercial and multi-family recycling. Although the County and City have single-stream recycling, the City provides paper/cardboard-only bins for businesses that request them. The City also provides free single-stream barrels for small businesses. 55% is the estimated residential recycling participation rate for the County (including the City), 22% for multi-family, and 10% for commercial.

IV. Description of C&D Recycling

Currently, there is one main C&D recycling facility in Leon County – Marpan Recycling. Two other smaller recycling facilities, Crowder and Solomon, also work in Leon County. Unfortunately, much of the C&D that is brought to Crowder and Solomon are thrown in a pit, which has significantly affected the County's recycling rate in the past few years. The only planned changes for the next year are to make more contacts with these recycling facilities as well as other unknown smaller facilities to discuss recycling options and perhaps capture more numbers that have not previously been captured.

V. Description of Yard Debris and Organics Recycling Opportunities

Currently, all unincorporated yard debris is taken to the Leon County Solid Waste Facility and mulched. The majority of the mulch goes to Bay County to be used as boiler fuel, whereas a small portion is given back to residents for recycling. Staff has reached out to the City of Tallahassee and other large organizations to see if the mulch can be used more locally, but no interest was expressed. The City of Tallahassee previously took all yard debris to the Solid Waste Facility for mulching, but recently has been landfilling the yard debris due to an increase in tipping fees. The City of Tallahassee last year was considering exploring composting their yard debris along with biosolids, but has made no changes as of yet.

VI. Strategy for Expanding County's Recycling Programs

In order to reach the statewide 75% recycling goal, and the benchmarks in odd years, the County will need to ramp up commercial recycling in the whole County. This effort will require a partnership and shared vision with the City of Tallahassee, as the majority of commercial businesses are located within City limits. Discussions have begun preliminarily. The County has begun working on a Green Business Guide to give to unincorporated businesses starting later this year; this will hopefully give businesses the information they need to make reduce waste in their operations.

In 2020, the County's collection agreement with Waste Pro will end, and the County will go out to bid. Staff is discussing the opportunities to offer a more economic option for commercial recycling in the new contract.

As C&D recycling makes up a large majority of the County's recycling tonnage, staff will work on engaging C&D recyclers in better understanding the barriers to recycling. This process will begin at the end of this year.

V. Discussion of Additional Steps, Challenges, and Strategies

In the past two years, the County has worked diligently on education materials to better educate the public on best practices for recycling and waste reduction. A recycling video was created last year for students of all ages, and recycling curriculum was created for grades 3-5. Staff is working on the best way to ensure that these materials are used frequently in the classroom.

There are several challenges that the County faces in terms of reaching the 75% recycling goal, including that:

- The County does own or operate the landfill where all MSW is sent, so has little control over operations or decisions
- The County does not own or operate the recycling facility, so has little control over operations or decisions
- The County does not own or operate a hauling or collection service, so has little control over operations or decisions
- The County does not have a WTE facility within a couple of hundred miles, nor the capital to invest in such infrastructure
- The City of Tallahassee contains the large majority of businesses and residents, but has different recycling goals than the County

A few additional steps that the County is considering are:

- Researching the potential of implementing mandated commercial recycling
- When the current collection contract expires in 2020, editing the contract to make it easier for businesses to recycle
- Engaging the City of Tallahassee on recycling efforts to create a unified vision and strategy
- Engaging the C&D collectors and recyclers in order to capture more numbers in coming years
- Increasing education and outreach efforts for organics waste reduction in the residential and commercial sectors

Leon County has included the 75% recycling rate in its strategic priorities for the next five years, and is dedicated to finding the best path to achieve this goal. For further questions, please contact Tessa Schreiner at (850) 606 -5021.

Manatee County

COUNTY RECYCLING PROGRAM PLAN

DATE: November 7, 2017

TO: Shannan Reynolds, Environmental Consultant
Florida Department of Environmental Protection

FROM: Scott Wood, Recycle and Special Waste Supervisor

SUBJ: **Manatee County 2016 Recycling Program Plan**

This plan is in response to the August 7, 2017 letter from F. Joseph Ullo, Jr. requesting the development and submittal of a County Recycling Program Plan from large counties that did not meet the State's 2016 interim recycling goal.

1. BACKGROUND

In 2008, the Florida Legislature set a statewide municipal solid waste (MSW) recycling goal of 75% by the year 2020. In 2010, the Legislature further directed that the goal be primarily applied to counties with a population of greater than 100,000. In addition, the Legislature set interim goals for 2012, 2014, 2016, and 2018. Counties that do not reach and maintain these interim goals, based on their annual calendar year recycling rates, are requested to submit Recycling Program Plans to the Florida Department of Environmental Protection (FDEP).

Table 1 provides the various tiers of the State recycling goal and Manatee County's (County) reported recycling rate for each year. The County met the 2012 and 2014 State goals, but failed to achieve the 2016 goal of 60%. Therefore, the County is submitting this County Recycling Program Plan as required by Section 403.706 of the Florida Statutes.

Table 1: Florida Recycling Goal and Manatee County Recycling Rate

Year	State Goal	Adjusted Recycling Rate*	Goal Achieved
2012	40% by December 31, 2012	40%	Yes
2013	Same as above	51%	Yes
2014	50% by December 31, 2014	51%	Yes
2015	Same as above	52%	Yes
2016	60% by December 31, 2016	55%	No
2018	70% by December 31, 2018	TBD	TBD
2020	75% by December 31, 2020	TBD	TBD

* Includes renewable energy recovery recycling credits

This plan addresses the seven requirements specified by the FDEP in the letter from F. Joseph Ullo, Jr. dated August 7, 2017.

2. SUMMARY OF THE SERVICE AND MATERIALS FOR WHICH THE COUNTY OFFERS RECYCLING

In late 2016, the County implemented a countywide single stream recycling program aimed to increase diversion of curbside recyclables from the residential sector. During the first year of the single stream program, 48% more recyclables (approximately 8,900 tons) were collected than during the previous year.

The County's carted single stream program was launched in October 2016 after more than a year of planning and coordination. The County also implemented a comprehensive education and outreach program to complement the transition from dual to single stream. The County recently purchased a new van (pictured) that has been wrapped to promote the single stream recycling program as it travels the community. The graphic below details the materials accepted in the County's single stream program.

In addition to the County's curbside single stream program, the County operates 10 recycling sites where residents can deliver single stream recyclables and a comprehensive recycling center at the Manatee County Landfill. The County also provides informational resources to encourage commercial recycling.

Additional details regarding these programs and those within the municipalities are provided in the following sections.

3. MSW GENERATION BY SECTOR

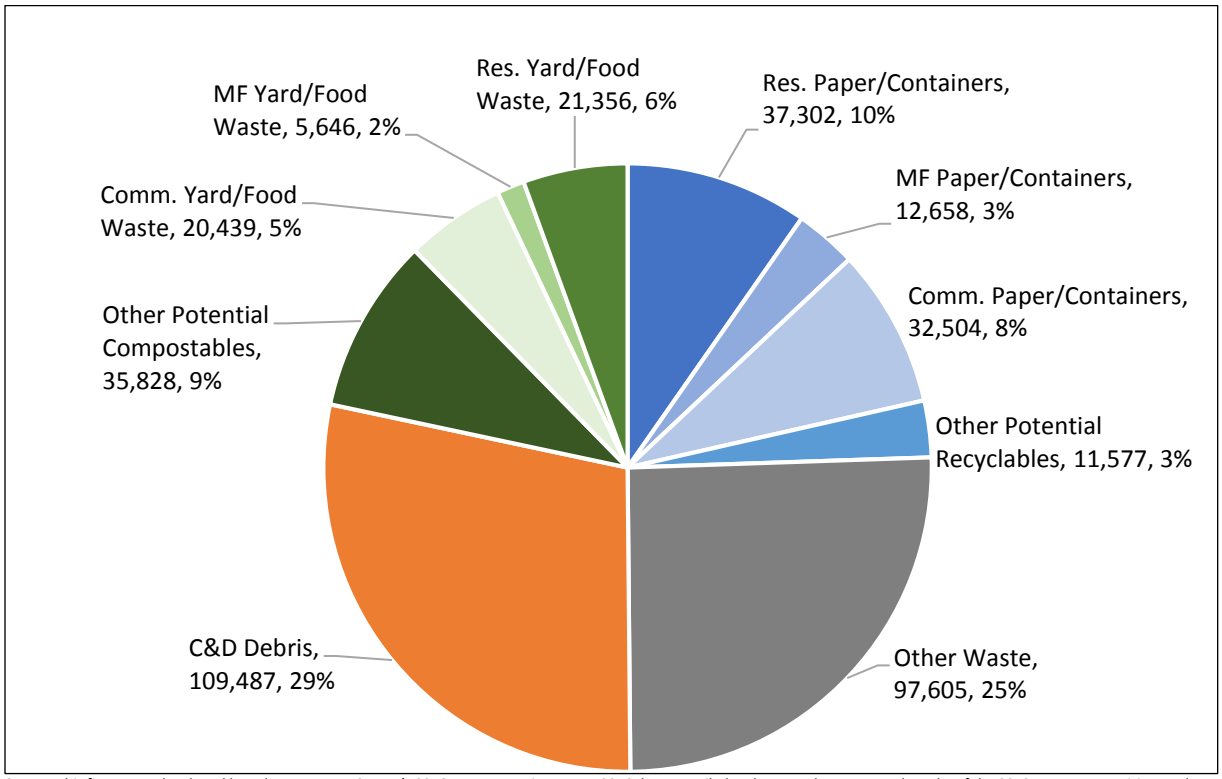
As reported in the County's 2016 Solid Waste and Recycling Annual Report, a total of 798,377 tons of MSW waste were generated countywide in 2016. Of that, 395,797 tons were diverted from disposal. The County's scale house system at the Lena Road Landfill currently tracks incoming tonnage (landfilled) by sector (commercial or residential) and origin (unincorporated county or municipality). Tonnage data for the multi-family residential sector has been estimated based on the number of multi-family residential units in the County. Table 3 details the County's MSW generation and disposal tonnage by sector.

Table 2: Countywide MSW Generation and Disposal by Sector, 2016 (tons)

Sector	Generated	Recycled	Disposed
Single Family	131,463	18,464	112,999
Multi-Family	47,544	2,051	45,493
Commercial	619,370	375,282	244,088
Total	798,377	395,797	402,580

To identify the greatest opportunities to increase recycling, results of the County's 2012 waste composition study (WCS) were applied to the 2016 disposal tonnage. Figure 1 provides the results of this analysis and identifies recycling opportunities by generator and material type. An estimated 24% of the waste disposed in 2016 consisted of recyclable materials and another 22% consisted of compostable materials (i.e., food waste, yard waste, and non-recyclable paper). In addition, 29% of waste disposed was C&D debris. Based on various audits of construction and demolition (C&D) debris, at least half of this material is likely recyclable.

Figure 1: Estimated Composition of Waste Landfilled in 2016 (% by weight)



Source: This figure was developed based on Manatee County's 2016 waste quantity report, 2016 data compiled and reported to FDEP, and results of the 2012 waste composition study conducted by KCI for the County. Note: Other Potential Recyclables include ferrous and nonferrous metals, polystyrene, electronics, and white goods (appliances). Other Potential Compostables consist of non-recyclable (low-grade) paper.

4. EXISTING RECYCLING PROGRAMS

Curbside Residential Recycling Programs

As stated in Section 1, the County currently offers single stream recycling to all single-family and multi-family households. All single-family homes in the unincorporated county currently have access to participate in the program. Only 45 households of more than 100,000 refused to participate in the new program. Of the multi-family units in the unincorporated county, 92% have recycling service.

The following recycling programs are available to municipal residents.

- Anna Maria Island – single stream recycling program collected in carts.
- Bradenton – dual stream recycling program collected in bins.
- Bradenton Beach – single stream recycling program collected in carts.
- Holmes Beach – single stream recycling program collected in carts.
- Long Boat Key – single stream recycling program collected in carts.
- Palmetto – single stream recycling program collected in carts.
- Trailer Estates – single stream recycling program collected in carts.

Drop-off Recycling Program

The County operates 10 recycling sites where residents can deliver single stream recyclables and a comprehensive recycling center at the Manatee County Landfill that accepts the following items:

- Tires
- Yard Waste
- Scrap Metals
- White Goods
- Electronic Waste
- Paint
- Batteries

Commercial Recycling

As required by State law, commercial recycling in the County is operated as an open market. County businesses may select their recycling vendor. Recycling vendors offer different services at different rates. The County encourages interested businesses to research all vendors and choose a company that works best for them. The County's website offers information and resources to help businesses initiate a recycling program. The website also has a list of recycling vendors and contact information.

In addition to the common recyclables such as cardboard, mixed paper, bottles, cans, and glass associated with a single stream recycling program, the commercial sector also actively recovers the following items through private sector initiatives:

- Yard Trash
- Scrap Metals & White Goods
- Tires
- Textiles
- Construction & Demolition Debris
- Food Waste
- Electronic Waste & Batteries
- Paint

5. CONSTRUCTION AND DEMOLITION DEBRIS

On a tonnage basis, C&D debris offers one of the greatest opportunities to increase the County's recycling rate. The quantity of C&D debris generated can fluctuate widely year to year. In 2016, approximately 109,500 tons of C&D debris were landfilled. Only about 11,500 tons of this were disposed at Manatee County's landfill as part of the mixed residential and commercial waste stream; the remaining 98,000 tons went to private landfills. Based on visual audits of C&D debris conducted at other locations and on recycling rates reported by some C&D processing facilities, at least half of C&D debris typically consists of materials that could potentially be recycled. This includes materials such as untreated wood, concrete, scrap metal, cardboard, select plastics, carpet, mattresses, asphalt shingles, and rock/gravel/grit.

Because most of the C&D debris generated in Manatee County is delivered to private facilities, the County plans to implement the following strategies to try to increase recycling of this material:

- Staff will work to establish recycling targets with local collection service providers to generate awareness and incentivize material diversion.
- Staff will provide technical assistance to construction companies and raise awareness of opportunities to recycle or reuse construction and demolition materials such as concrete, wood, steel, and cardboard. Staff will encourage companies to implement additional ways to divert material from landfills.
- Staff will actively seek out and identify additional companies that offer C&D debris recycling and diversion to ensure that all non-certified recycling tonnage is being tracked and credited to the County.
- The County also plans to initiate work on a Solid Waste Master Plan. As part of the planning process, additional options to increase material recovery from the C&D debris stream will be evaluated.

6. YARD TRASH AND ORGANIC MATERIALS

The County currently grinds yard waste, sends the majority offsite as fuel, and recycles the remainder as mulch. Over 93% of the yard waste generated in the County was diverted from disposal in 2016.

Food waste recovery was limited to only a few large waste generators in the County.

In 2016, the mixed residential and commercial waste stream landfilled by the County contained an estimated 47,400 tons of food waste (37,300 tons) and yard waste (10,100 tons).

Planned actions related to organic materials recovery include the following:

- Staff will actively seek out and identify additional businesses within the County that are currently recovering food waste and/or other compostables to ensure that all non-certified organic recycling tonnage is being tracked and credited to the County. Staff will first identify organic waste processors and work to identify feedstock providers within Manatee County.
- Staff will continue to educate residents about the benefits of separate yard waste collection.
- Additional options to increase organic materials recovery, potential impacts on the existing solid waste system, and economic feasibility will be evaluated in the master planning process that the County hopes to initiate.

7. RECYCLING PROGRAMS

In 2016, the mixed residential and commercial waste stream landfilled by the County contained an estimated 82,500 tons of recyclable paper and containers and 11,500 tons of other potentially recyclable materials. This may be somewhat overestimated because the WCS on which this analysis is based was conducted in 2012, before the County implemented single stream recycling.

Through its solid waste franchises, the County has a system in place for collection and processing of single-family and multi-family residential recyclables. The key to capturing additional residential recyclables is encouraging participation in the program, both in terms of the number of residents who recycle as well as asking residents to recycle to the maximum extent (i.e., recycle all types of materials accepted in the program).

State law prohibits a local government from awarding any entity the exclusive right to collect commercial recyclables. However, the County's franchise agreements require the franchisees to collect commercial recyclables, on a nonexclusive basis, upon request by the customer. It also sets not-to-exceed service fees for this service.

The following actions are anticipated as part of a comprehensive residential and commercial recycling education and outreach campaign:

- Work with Solid Waste Enforcement, neighborhood services, USF extension office, and Keep Manatee Beautiful to educate and implement outreach programs to schools and educational organizations. Solid Waste Enforcement staff will be utilized to conduct waste audits for the commercial sector and explain cost savings through recycling and right-sizing waste containers and service levels.
- Update County's recycling website to add clarification and thorough instructions for residential and commercial recycling.
- Provide residential and commercial how-to guides that are streamlined with clear information and guidelines.
- Incorporate more advertising through social media, websites, billboards, etc.

- Integrate ways to schedule landfill tours and education and outreach events into the County's recycling website.
- Educate local businesses to cut costs on garbage disposal by recycling and promote the value of the environmental impact.
    - Conduct annual audits of commercial facilities.
    - Incorporate more recycling advertising campaigns via newspaper, radio, website, YouTube videos, social media, and television to target the commercial industry.
    - Utilize the web site www.mymanatee.org/bizrecycling to educate local businesses of the ability to use their existing garbage collector to obtain recycling services and to provide a list of competitive recycling vendors to meet their needs.
    - Distribute commercial recycling brochures incorporating formulas of examples of waste audits and the ways to cut costs on solid waste disposal.
- Research ways or find grants to incorporate incentives or rebates to increase commercial recycling for local businesses.

8. NEXT STEPS AND ANTICIPATED CHALLANGES

As noted in Section 2 and Figure 1, additional recycling opportunities (traditional recyclables, organics, and half of the C&D debris) represented an estimated 60% of waste that was landfilled in 2016 and approximately 29% of all waste generated in the County in 2016 (materials recycled plus waste disposed). Initiatives the County plans to undertake to strive to recycle more of these materials have been outlined in this plan. However, to achieve the State's 75% recycling goal, the vast majority of these materials would need to be captured. The practicality and economic feasibility of this will be further evaluated during the master planning process the County is planning to initiate.

Key challenges that are anticipated as the County strives to increase our recycling rate are summarized below:

- Funding to establish the necessary infrastructure and to encourage innovation is probably the greatest challenge. The State could help address this issue by reinstating recycling grant programs for infrastructure development, innovation, and market development.
- Tracking C&D debris and yard trash recovery when not all debris is going to a certified C&D Landfill or processing facility. For example, the County has one concrete processing facility that will not share its tonnage data with County staff because the Public Works Department does not purchase its aggregate materials. All counties would benefit from a FDEP program that tracks all C&D debris recovery and yard trash processing activities. If the FDEP identified these facilities, through past county submissions, and developed a method to track tonnage and include the recovery data in the Certified Construction and Demolition Reports, all county solid waste management data would be more transparent and comparable. A similar program and report would be beneficial for yard trash processing facilities.
- Ensuring strong markets for existing recyclables and expanding markets for additional commodities is also critical. Given the closure of overseas markets for some commodities, developing domestic markets is critical. In addition, to continue to expand recycling programs, viable commodity markets are needed for additional materials such as plastics 3-7. Other states have played an active role in attracting businesses that utilize recovered materials through organizations such as North Carolina's Recycling Business Assistance Center (RBAC). Florida's

RBAC could be re-established to help attract private industry interest and investment in the State's recycling infrastructure.

- Garnering participation in the commercial sector. In an open market for recycling services, the County is challenged with businesses that do not want to pay for recycling even though staff explains the benefits of right sizing collection service to offset the initial costs. Providing the County resources necessary to develop and maintain ongoing education and outreach efforts and technical assistance to commercial businesses and institutions is also challenging. The State could assist by developing technical assistance materials such as how-to guides and best management practices; conducting a statewide education and outreach campaign to promote recycling; developing case studies, conducting demonstration programs, and providing model policy ordinances.

Marion County

Marion County
Board of County Commissioners

Solid Waste

5601 SE 66th St.
Ocala, FL 34480
Phone: 352-671-8465
Fax: 352-671-8491

November 09, 2017

Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attn: F. Joseph Ullo, Jr., P.E., Division Director

Subject: Marion County Florida Recycling Program Plan

In 2009, Marion County completed a Solid Waste Management Plan. This plan concluded the following:

- Marion County was consistently exceeding the 30% recycling goal that had been in effect prior to 2008.
- Marion County may need to consider additional actions if it were to achieve the goal of 75% recycling, enacted by the legislature in 2008.
- Among the actions to be considered by the County would be the implementation of improvements at several of our citizen's recycling centers.

Since the drafting of that plan, Marion County has significantly improved its rate of recycling, which in 2011 exceeded 45%, and is currently at 54%. We feel part of this success can be traced to the construction of a single stream recovered materials processing facility through our contract requirement with Waste Pro, our contractor collecting recyclables under contract from our recycling centers. The recycling rate increase may also be attributed to structural improvements and amended operational hours at the centers, making it more convenient for households to practice recycling.

Recycling rates are calculated by dividing the total tons of material recycled by the total tons generated within the County. Marion County has surpassed the first two milestone goals of the 2008 legislation. However, it may prove more challenging to achieve the future milestones for a number of reasons, as described below:

1. Mostly rural nature of the County – Marion County's unique utilization of eighteen (18) recycling centers reflects our rural nature. The recycling centers allow the County's households access to solid waste and recyclables collection at low cost, whereas the distance between homes in this rural setting would make curbside collection of waste and recyclables relatively expensive, in comparison to collection in more densely populated counties. The County's achievement of over 50% recycling in the absence of significant curbside collection is a statement of our effort, and a testament to the effectiveness of our recycling centers and the willingness of the County's residents to separate and bring their recyclables to a location where they can be properly managed.

2. Marion County decided to defer utilization of Waste to Energy/Waste Conversion Technology. During our 2009 preparation of our Solid Waste Management plan, the County was approached by vendors promising low cost conversion of our waste into energy. In response, the County issued a request for proposals for the vendors to demonstrate their capabilities to achieve what they had promised. The County received only three responses, and none where in compliance with the minimum demonstrations required. It was concluded that the technologies being proposed were quite promising, but not to the point at which the County should stake its solid waste future through investment in what, to that point, had yet to be proven for a waste flow similar in magnitude to that of Marion County. The County elected to continue to the landfilling of waste until such time the promising technology comes of age.

3. The Commodities Marketplace – Recycling requires not only the separation of materials for purposes of recycling, but the subsequent utilization of the received materials. In 2008, when recycling legislation was drafted, that value of the component recycling materials was significantly greater than today. At current levels, the collective value of the recovered materials is generally far less that the cost of separating these materials in a single stream facility. Florida communities are incurring the impact of this imbalance each time a recyclables contract renewal is addressed. It is not unusual for Counties to be required to pay for the management of recovered materials, as opposed to receiving revenue for those same materials.

4. Changes in what constitutes recycling – Perhaps the most significant change in what constitutes recycling is the inclusion of waste to energy processing. Counties relying on waste to energy as the primary means of waste processing are much more likely to be able to achieve the 75% goal. Additionally, the use of recovered materials for alternative landfill cover is now eligible for recycling credits, and our landfill is to be closed in early 2020, removing this "market" for recovered materials from our future.

5. Construction and Demolition Debris (C&D) Recycling – Marion County does not operate a construction and demolition debris facility, although there are three privately-owned/operated facilities within the County. Analogous to the 75% recycling goal, these C&D facilities will be required to recycle only when it is economically feasible to do so. The legislature recognized that achievement of the 75% goal included significant reliance on the recycling of C&D materials, and C&D facilities are also facing challenges in commodities pricing.

6. Organics Management – Achievement of the 75% goal may require the segregation of the organics faction (primarily food waste) from the remainder of the waste stream for subsequent composting of fuel generation. Organics waste management is practiced to a limited extent around the United States. The City of Montgomery, Alabama reached agreement with a vendor to implement organics processing as a component of its solid waste management process. Organics management was never implemented and the facility abruptly closed after substantial investment. Separate organics management may be considered analogous to waste conversion technology; promising, but not quite ready for implementation in Marion County. Our neighbor, Alachua County is taking steps toward trying organics management, and their success would bode well toward the utilization of the same approach in Marion County and elsewhere in Florida.

How may Marion County approach additional improvement of its recycling rate?

1. Marion County does not have control over commodity pricing, but to an extent may negotiate with our recycling services provider additional materials to be added to the single stream mix if and when such materials improve in value. We will continue to monitor market conditions with this in mind. Nationally, more efforts like those of the Carton Council to have manufacturers more accountable and responsible for packaging.

2. Continue our efforts to identify in-county recycling activities. We currently work diligently to identify activities in which material is recovered and reused. These efforts should remain proactive to identify unreported recyclable as it is possible that our recycling rate may be above what is reported. We have identified one potential recycling source in the quantity of recycled materials generated by commercial and industrial establishments that is being recycled, but not currently reported. This effort will require extensive and exhaustive efforts to contact the individual concerns.

3. Promote curbside collection of recyclables. Although Marion County has experienced a modest decrease in population, the long term expectation is for population growth. Collection of both waste and recyclables becomes more attractive in more urbanized areas where population density make it financially feasible. This will only happen when the County Board and the affected residents agree it is time to implement.

4. Marion County will be utilizing our transfer facility to export our municipal solid waste once capacity is achieved with the Baseline Landfill. Feasibility of allocation of tipping floor space for the recovery and stockpiling of readily recyclable materials, such as clean cardboard, as it arrives within the facility.

5. Marion County will continue to track the progress in alternative means of waste processing and disposal, including organics management within Alachua and other counties. If, or when, organics management and/or waste conversion technology is or are proven and financially feasible, we will consider implementation, being every cognizant of our disposal agreement with The Heart of Florida Landfill.

6. Marion County will continue to be proactive in education programs through schools, organizations, and directly through our citizens. This program includes on-site tours of recycling facilities, both collection and processing. Additionally, the County will continue its participation in local events by providing recycling collection containers and staffed displays. We have just completed the wrapping of two (2) vans with recycling messaging and graphics.

Summary of Services and Materials

A. County currently offers single stream recycling services at eighteen (18) recycling centers and two (2) drop-off locations. We currently accept in the single stream collection boxes:

- Plastics 1-5 and 7
- Cardboard
- Paper
- Glass
- Tin Cans
- Aluminum

Our recycling centers also accept:

- Electronics – recycled through A1 Assets
- Scrap Metal – recycled through Trademark Metals
- White Goods – R-134 extracted and recycled through No-Vent, metal recycled through Trademark Metals
- Textiles – recycled through FLSA
- Batteries – Lead Acid recycled through Trademark Recycling
- Batteries – Rechargeable through Call2Recycle
- Fluorescent and Compact Fluorescent Bulbs – recycled through Lighting Resources
- Used Oil – recycled through Synergy

- Yard Waste – collected and moved to Baseline Landfill and reduction and recycling through Raynor-Shine

Marion County supports a Gas-to-Energy Operation at Baseline Landfill producing electricity through fueling of generators from our landfill gas.

B. County MSW Analysis – 2016 Data

TOTAL	RESIDENTIAL	MULTI-FAMILY	COMMERCIAL
413,235 Tons	177,802 Tons	41,110 Tons	194,323 Tons

C. Recycling Programs Analysis – 2016 Data

TOTAL	RESIDENTIAL	MULTI-FAMILY	COMMERCIAL
198,263 Tons	87,856 Tons	16,096 Tons	94,311 Tons

D. Opportunities to Encourage Recycling of Yard Trash

Marion County currently offers collection of yard waste from the residents of unincorporated areas at our eighteen (18) recycling centers. Our five municipalities assess and provide services to their residents. We recycle 100% of our yard waste. It is collected by our own trucks and brought to our yard-waste management area at Baseline Landfill. We are currently under contract with Raynor-Shine for reduction and hauling for recycling every two (2) months. Raynor-Shine recycles the reduction materials as follows:

- Mulch as a fuel source and commercial mulch
- Fines in compost processing
- Current efforts yielding 25,000 tons of yard waste annually.

Marion County will continue to be diligent in our efforts to provide recycling services to our residents. We are facing an uphill challenge in reaching the next goals established by legislation. We will approach this challenge using the Best Management Practices, dedicated to balancing the financial impact and political pressures.

Sincerely,

Mike Sims
Solid Waste Director

Okaloosa County

Okaloosa County Public Works

State of Florida

August 11, 2017

F. Joseph Ullo, Jr., P.E., Director
Division of Waste Management
Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Request for Development and Submittal of County Recycling Program Plans

Dear Sir:

In response to your letter dated August 7, 2017, subject as above, the following is provided:

- Okaloosa County provides single-stream curbside recycling service to about 32,000 residential customers. Materials collected include all paper products, glass containers, plastics 1-7 except Styrofoam, aluminum cans, and steel cans.
- A breakdown of percentages of MSW generated is as follows: single-family 22%; multi-family 8%; and commercial (includes C&D) 70%
- Residential recycling consists of mandatory curbside recycling provided to approximately 32,000 homes as well as accessibility to drop-off recycling to about 16,000 homes and buy-back services to 65,000 homes. 52% of residential units utilize the curbside service; 18% use drop-off locations; and 2% take advantage of buy-back locations. Multi-family recycling is voluntary. Of approximately 1500 units 30% have curbside service. It is estimated that 10% of the multi-family units use drop-off recycling and that 4% use buy-back services. Commercial recycling is on a subscription basis and about 1% of businesses have a recycling program.
- C&D recycling occurs on a voluntary basis where it proves profitable for the private C&D vendors to separate selected commodities for recycling. Historically, the building industry as well as private C&D owners have opposed mandatory recycling due to the potential for increased operational costs due to capital investments and labor required to sort out materials. Unless C&D recycling is mandated in adjacent counties (and the border state of Alabama) then the industry can choose to take it to an out of county or out of state facility where costs may be less expensive. (Currently municipal recycling programs in the Panhandle are struggling due to poor markets for recyclables.)
- Okaloosa County currently operates the yard trash processing operation for materials generated from residential pickup and from commercial landscapers. This material is ground into mulch and used within the inactive landfills for cover and erosion control. The

84 Ready Avenue, Fort Walton Beach, FL 32548
Office (850) 609-6168
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County Recycling Office offers back yard composters at a reduced rate as an incentive for residents to compost at home. This effort is supported by the Master Gardeners through the County Extension Office. While the County has experimented with composting via innovative technology grants through FDEP, the County does not have the finances or manpower to add another process into its yard trash operations.

- The County has established a non-exclusive franchise ordinance that will select a pool of qualified vendors to service commercial establishments. Staff will look to establish incentives within the non-exclusive franchise that will encourage recycling. Additionally, a new ordinance also requires the registration of recyclers and construction and demolition debris facilities.
- Without a viable commercial recycling program it will be difficult to approach the State goal of 70% in 2018 or 75% in 2020. A new solid waste contract effective April 1, 2017 included the replacement of 18 gallon recycling bins with 96 gallon roll-carts. It is anticipated that this will boost recycling figures. The County is utilizing a new recycling facility in Escambia County owned and operated by Emerald Coast Utility Authority (ECUA). The addition of the 96 gallon roll-carts for recycling positions the county to transition to 1-1-1 service in the future. Commissioners faced opposition to eliminating 2-1-1 while approving the larger recycling containers. County staff still has an expectation that a mixed waste processing facility with a parallel single-stream line is a viable option for this region within the next five years. This will have a drastic impact on the volume of recyclables collected and processed from both the residential and commercial waste stream.

Please let me know if you need additional information.

Sincerely,

Jim Reece
Recycling Coordinator

84 Ready Avenue, Fort Walton Beach, FL 32548
Office (850) 609-6168
Fax (850) 651-7397

St. Johns County

RESPONSE OF ST. JOHNS COUNTY TO THE 2017 FDEP "REQUEST FOR DEVELOPMENT AND SUBMITTAL OF COUNTY RECYCLING PROGRAM PLANS" MEMORANDUM.

BACKGROUND: The recycling program in St. Johns County is administered through the Solid Waste Management Department, a unit of the Public Works Department. The standards and operation of the county program applies only to the unincorporated areas of the county. Two of the three incorporated areas of the county – the City of St. Augustine and the City of St. Augustine Beach- operate or contract out for their recycling services. The Town of Hastings is served by Advanced Disposal.

St. Johns County was one of the first counties in Florida to implement mandatory curbside collection of residential MSW. Recycling, yard waste and white goods collection services are also included in the annual MSW assessment.

The recycling services made available under the mandatory curbside collection program were, and are, voluntary. A "Recycling Revolution" campaign accompanied the start-up of the curbside program. It is logical to assume that the county recycling rate increased as a result of this action.

From the outset of the curbside program, the Solid Waste Department understood that recycling within the commercial sector was vital to improving the county recycling rate. To that end, the Solid Waste Ordinance then in force was amended to include mandatory recycling requirements for commercial entities. The commercial program established by the ordinance amendment set up a three year schedule for assessment, initiation, operation and reporting that would be implemented with the assistance of county staff.

However, the program was never implemented before the program deadline, so the mandatory commercial recycling provisions of the Solid Waste Ordinance were deleted by the County Commission.

In respect to the "minimum" inclusions for county recycling plans enumerated in the FDEP memorandum:

Newsprint, mixed paper, office grade paper, all ferrous and non-ferrous metals, glass, plastic bottles, cardboard, yard trash, and textiles can be collected and recycled by any individual or entity in St. Johns County.

The percentages of MSW generated by the various sectors delineated by FDEP terminology are listed in the annual reports. The commercial sector produces a substantial portion of county MSW, and with the exception of certain "spikes" (which occur occasionally, but never annually), that sector generally produces less recycling than residential sources.

At present, all commercial and multifamily recycling is voluntary. These components have access to paid services but participation is not widespread. There are currently no umbrella associations composed of business, industrial, and manufacturing interests that might negotiate more favorable group rates for recycling services. Additionally, apartment and condo management companies are reluctant to add recycling costs to already high rents and condo fees.

SJC Recycling Plan background:

Composting is part of every recycling presentation given by the current recycling coordinator. A compost bin sale held several years ago produced encouraging results. Yard debris collected under the curbside program is taken to facilities which must post an annual recycling increase of 5%. We believe FDEP should consider giving a recycling credit based on bona fide compost bin sales, which would be an incentive for counties to subsidize compost bin sales and programs.

In June, 2015 St. Johns County arranged for the delivery of 95-gallon and 35-gallon recycling carts to 73,457 curbside collection addresses, with cart service replacing bin service on July 6, 2015. Based on their previous experience, the franchise haulers believe that the larger containers will significantly increase residential recycling.

St. Johns County has little industrial and manufacturing infrastructure compared to other large Florida counties. There are over 15,000 local business tax receipts entities listed by the tax collector, but most of these are small businesses, cottage industry, service providers and the like. Most C&D and yard debris is generated by residential building and land clearing. For the county to meet state recycling goals, all commercial components that produce or exceed a certain established level of MSW must participate. The response to the residential recycling cart program, which replaced standard curbside bins starting in June, 2015 has been encouraging, but greater progress can only be achieved by a much higher level of involvement by the commercial sector.

Any discussion of “mandatory” rules and fees will of course be subject to local political considerations beyond the scope of the solid waste department. Incentives or rule changes on the state level would be helpful. For instance, any county with a bona fide HHW program should be given bonus recycling points for keeping HHW out of the MSW stream (most HHW is recycled). The compost bin incentive has already been cited above. To achieve recycling goals, there needs to be movement by all sides involved.

St. Lucie County

St. Lucie County Recycling Program Plan
November 9, 2017
Prepared by: Ally Berry

1. Summary of the services and materials for which you offer recycling such as newspaper, aluminum cans, steel cans, glass, plastic bottles, cardboard, office paper and yard trash:

Single stream curbside recycling is available for single family residences in Unincorporated St. Lucie County, the City of Port St. Lucie and the City of Fort Pierce. Single stream recyclables can be put in 64 gallon carts for weekly curbside pickup. Haulers bring the commodities to the St. Lucie County Baling & Recycling Facility for sorting and baling.

Approximately 90% of single family residents participate in single stream curbside collection.

Single stream recyclables are also collected from County office buildings, St. Lucie County Public Schools, participating multi-family units and other participating commercial buildings.

Residents who live in multi-family units, condos or apartments without recycling services may bring single stream recyclables to the Recycling Drop-off Station at the SLC Baling & Recycling Facility. Residents of single family homes also utilize the Drop-off Station when they have a lot of flattened cardboard boxes after a move or simply too many single stream recyclables to fit into their recycling cart on a given week.

Below is a list of Single Stream Recyclable Materials:
Aluminum Beverage Cans, Foil and Trays
Corrugated Cardboard Boxes
Empty Aerosol Spray Cans
Food Cans – Tin & Steel
Glass Jars and Bottles
Metal Cookie Sheets
Metal Lids from Pots & Pans
Metal Pots & Pans
Paper Products such as:
- Office Paper
- Newspaper and Advertisements
- Envelopes / Mail / Junk Mail
- Magazines / Catalogs / Phone Books
- Paperboard Boxes – Examples: Cereal, Pasta, Tissue Boxes

Plastic Bottles and Jugs (numbers 1-7) such as:
- Beverage Bottles and Jugs
- Detergent & Fabric Softener Bottles and Jugs
- Soap & Shampoo Bottles
- Squeezable Condiment Bottles

Plastic Food Containers & Tubs (numbers 1-7)

Yard Waste/Vegetative Debris is also picked up curbside at single family homes weekly in Unincorporated St. Lucie County and the City of Port St. Lucie. This yard waste/vegetative debris is brought to the SLC Baling & Recycling Facility for processing and used as landfill cover.

Other Recyclable Items/Material can be brought in to the St. Lucie County Baling & Recycling Facility for recycling, as listed below. Many materials are accepted from both residents and businesses of St. Lucie County and several items can be brought in free of charge.
Cell Phones
Construction & Demolition Debris
End-of-Life Electronics
Fluorescent Bulbs

Lead-Acid Batteries (vehicle batteries)
Metal Appliances/Scrap Metal
Propane Tanks
Rechargeable Batteries
Tires
Used Motor Oil
Used Antifreeze
Used Gasoline
Yard Waste/Vegetative Debris

In 2016 & 2017 St. Lucie County ran advertising campaigns to encourage recycling while educating the public and new residents about proper single stream recycling to reduce contaminates and dangerous items from being placed in single stream recycling carts. Messaging also includes information about recycling items such as end-of-life electronics, plastic bags, propane tanks and rechargeable batteries.

Similar to the County's 2015 "Recycling Challenge" promotion to educate the public about what to place in the new single stream recycling carts, the City of Fort Pierce developed and implemented the "Do More Blue" recycling initiative in 2016. The "Do More Blue" program also awarded cash incentives to promote their new single stream recycling program.

2. Analysis of the percentage of the county's MSW generated by the commercial, multifamily, and residential single family sectors:

St. Lucie County's generated MSW is as follows:
Commercial = 31%
Multi-Family = 24%
Single Family Residential = 45%

3. Analysis of any existing recycling programs for the commercial and multifamily sectors, including estimated customer participation rates and recycling rates for each of those sectors:

Single stream recycling is available for the commercial sector and multi-family units, however space limitations are common among these sectors. Extra effort is made by County staff and our hauler to meet with these sectors to encourage recycling programs. Recyclables can be brought to the St. Lucie County Baling & Recycling Facility if recycling systems cannot be tailored to fit the space allowed at a complex.

Approximately 18% of the commercial sector participates in recycling.
Approximately 35% of multi-family units participate in recycling.

4. Description of the county's implementation, including any planned changes, for your program for recycling construction and demolition debris:

Incoming Construction & Demolition Debris is processed to separate recyclable and reusable materials such as dirt, metal and wood. Dirt is reused as landfill cover. Metal goes out to a recycling facility. Wood is chipped/mulched to be used as landfill cover. We plan to continue this process.

The County has also been mining the existing C & D debris disposal area since 2015 to recover recyclable and reusable material. Mined dirt is reused as landfill cover. Mined metal goes out to a recycling facility. Mined wood is chipped/mulched to be used as landfill cover. We plan to continue this process.

5. Description of efforts or opportunities to encourage recycling of yard trash, and other organic materials or mechanically treated solid waste, into compost or mulch that may be made available for agricultural and other acceptable uses:

Single family home residents in Unincorporated St. Lucie County and the City of Port St. Lucie have yard debris collected by the hauler one day a week. The material is brought to our facility for recycling/processing. It is mulched and beneficially used as landfill cover material.

Commercial lawn maintenance and tree trimming companies are encouraged to bring their yard debris to our facility. Accounts can be set up for them for easy payment.

The St. Lucie County Environmental Education and Community Outreach Division at the Oxbow Eco-Center and the local University of Florida IFAS Extension Office often hold educational workshops and events for the public to learn more about recycling, re-purposing, reusing materials and sustainable use of natural resources. They have information available about composting yard debris/organic materials for home use.

6. Strategy (including general timeframes) for expanding your county's recycling programs, or for creating new programs if needed, as part of your county's efforts to achieve the statewide recycling goals set forth in s. 403.706(2), F.S.:

In 2018, the St. Lucie County Solid Waste Baling & Recycling Facility will continue running local educational print ads, electronic media advertising, social media posts and promoting the informational videos regarding proper single stream recycling and how to recycle other items that cannot be placed in single stream carts, but can be recycled at other locations or brought to the SLC Baling & Recycling Facility.

The County "Recycling Challenge" will start up again in 2018 with cash give-a-ways to promote proper single stream recycling. This program motivates residents to recycle and helps us maintain a low contamination rate.

St. Lucie County public schools also have single stream recycling carts and encourage education about recycling. County staff are available to speak to classes of students, assisting teachers with education efforts.

The St. Lucie County Board of County Commissioners has an in-house recycling program to encourage recycling by all county employees and visitors to County buildings. Single stream recycling carts are easily accessible in hallways of County buildings. This program will be expanded in 2018 with additional efforts to encourage employees to take all single stream recyclables to the nearest hallway cart instead of throwing them in their office trash can.

The County is seeking a new contractor to construct a gasification facility at our site to reach our ultimate goal of reducing the amount of landfilled material while producing a fuel or fuel substitute.

7. Discussion of any additional steps, initiatives and anticipated challenges that are critical to implementing your strategies to achieve the next interim recycling goal of 70 percent in 2018, and ultimately statewide goal of 75 percent by the end of 2020.

A challenge of reaching the goal is the reduction of the amount of recyclable materials used in packaging of consumable items. Many companies have reduced the amount of plastic, paper, metal and cardboard used in their packaging due to public outcry of over packaging. One example of this is the reduction and/or elimination of materials used for multi packs of bottled water. Several companies indicate on their packaging and bottles that they have reduced the amount of plastic used in manufacturing each bottle, thus making the bottles lighter. This reduces the measurable weight of inbound recyclables. Several

companies have also eliminated the corrugated cardboard base in multi packs of bottled water, thus completely eliminating a measurable inbound recyclable.

Many people now use colorful and trendy washable tumblers with lids and refill them throughout the day, thus cutting down on the amount of bottled beverages purchased since these tumblers can be refilled from one large container or refilled with tap water.

Another obstacle reaching the statewide goals has and will continue to be the shift of consumer packaging away from rigid containers such as bottles, cans and jars to flexible easy-open plastic pouches that are not recyclable at most single stream facilities.

The reduction of material used in consumer container production is beneficial in that it conserves natural resources, but the ultimate goal of reaching the statewide recycling goal of 75% by the end of 2020 will be difficult with the reduction in the amount and weight of measurable recyclable commodities.

Volusia County

Volusia County Recycling Program Plan

Current Traditional/Total Recycling Credit Rate:

The County of Volusia is currently at 42%

Summary of the services and materials for which you offer recycling such as newspaper, aluminum cans, steel cans, glass, plastic bottles, cardboard, office paper and yard trash:

The County of Volusia currently offers residential services for the recycling of newspaper, glass jars and bottles, aluminum and steel cans, plastic bottles, cardboard, office paper and yard trash for individuals residing in unincorporated Volusia County. Commercial accounts are also provided with the opportunity to recycle items listed above through private haulers. Commercial Recycling is mandatory in Volusia County. Municipalities throughout Volusia County have residential recycling programs in place with dual sort recycling. We have also implemented in a quarterly lunch and learn, a series of communication meetings where we meet with cities in our county to discuss what we can do together to increase recycling in our county. In addition to providing curbside recycling for residents we also accept unlimited recyclable materials at the Tomoka Farms Road Landfill and West Volusia Transfer Station which is open Monday – Saturday for the convenience of our residents. We offer traditional recycling and we have implemented a Household Hazardous Waste Center that accepts used paint, electronics, used motor oil and other household chemicals for reuse. For the residents that reside in areas that do not offer curbside recycling collection the County provides 14 residential recycle drop off sites fire stations throughout Volusia County, including used motor oil recycling igloos. Twice a year we offer free Household Hazardous Waste Events for residents throughout the County. See below what was collected at our most recent event in April 2017:

Ormond Beach

Customers - 368
Paint collected - 2115 lbs.
Reuse chemicals - 470 lbs.
Fluorescent bulbs - 278 lamps
Lead acid batteries/ gel cells - 910 lbs.
Propane tanks - 7
Haz Waste for disposal - 1000 lbs.
Small batteries (single use and rechargeable) - 100 lbs.

DeBary

Customers - 700
Paint collected - 4555 lbs.
Reuse Chemicals - 890 lbs.
Fluorescent bulbs - 382 lamps
Lead acid batteries/ gel cells - 1645
Propane tanks - 14
Haz Waste for disposal - 2000 lbs.
Small batteries single use and rechargeable) - 150 lbs.

Analysis of the percentage of the county's MSW generated by the commercial, multifamily, and residential single family sectors:

Residential Single Family

Collected Tons	Percent Total Tons	Pounds Per Capita Per Day	Recycled Tons	Percent Recycled
476,614	45	5.27	201,074	42%

Residential Multi- Family

Collected Tons	Percent Total Tons	Pounds Per Capita Per Day	Recycled Tons	Percent Recycled
148664	14	1.64	43,586	29%

Commercial

Collected Tons	Percent Total Tons	Pounds Per Capita Per Day	Recycled Tons	Percent Recycled
436,607	41	4.83	199,489	46%

Analysis of any existing recycling programs for the commercial and multifamily sectors, including estimated customer participation rates and recycling rates for each of those sectors:

The County currently has a mandatory commercial and multifamily recycling ordinance in place to increase recycling. As indicated in our annual report of 2016 residential multi- family recycle rate is 29% and commercial recycling rate is at 46%. After meeting with several businesses throughout Volusia County staff has noticed a large amount of misunderstanding and misinformation concerning recycling. We feel that education on the importance and benefits of recycling will result in an increase in voluntary compliance with this mandate. The County anticipates an increase in commercial and multifamily recycling as a result of an increase in voluntary compliance of this ordinance. After much consideration and research on the purchase of sorting equipment, Solid Waste Division staff has implemented an economically feasible alternative practice of utilizing spotters to remove cardboard, tires and metal and place the recyclables in dumpsters located on Class III disposal cells.

Description of the county's implementation, including any planned changes, for your program for recycling construction and demolition debris:

The County is researching the possibility of the implementation of future programs for recycling construction and demolition debris. As of now we have in place a minimal fee of $13.00 per ton for clean roofing material in an attempt to encourage the proper disposal of this type of material. We are always actively seeking new ideas for the recycling of construction and demolition debris by networking and attending workshops that focus on C&D.

June of this year our Management Specialist, Brooke Bennett attended an RFT Webinar presented by the University of Florida. The webinar discussed the Hinkley Center project that the University of Florida is working on to asses achieving Florida's 75% recycling goal. As well as the progress made on the project, the next steps to achieve the outcomes of the project, and the projects impact on Florida's recycling.

In July of this year, we were also present at FDEP Strategic Planning Meeting held in Jacksonville to discuss the management of Construction and Demolition Debris in Florida. The goal of this meeting was to use the information obtained to develop a strategic plan focusing on increasing C&D Recycling to present to the legislature.

We also attended the 75% Recycling Goal Technical Advisory Group (TAG) Meeting on October 11, 2017 to further discuss the issues preventing the increase of recycling in Florida and what actions the state can to take removes these stumbling blocks. Information obtained at this meeting will be used to develop a strategic plan that will be presented to the legislature.

Description of efforts or opportunities to encourage recycling of yard trash, and other organic materials or mechanically treated solid waste, into compost or mulch that may be made available for agricultural and other acceptable uses:

Yard trash is ground and the maximum amount that is allowed to be reused as landfill cover is used. We also provide residents with the opportunity to utilize ground yard trash as mulch free of charge.

Strategy (including general timeframes) for expanding your county's recycling programs, or for creating new programs if needed, as part of your county's efforts to achieve the statewide recycling goals set forth in s. 403.706(2), F.S.:

As of January 2017 the County of Volusia has implemented several changes and additions to their recycling program to increase the County's recycling rates and expand the current program.

1. The County of Volusia hired Brooke Bennett as the Management Specialist for the Solid Waste Division. Mrs. Bennett is focusing on creating, developing and implementing programs to increase commercial and multi- family recycling.
2. Municipality Lunch N' Learn Series - With the creation of this new position the County has been able to designate an individual that's main goal is to increase commercial recycling. We meet every quarter with surrounding municipalities to foster relationships between the cities and the county. Staff will work in partnership with the cities to encourage an increase in commercial recycling to network and communicate our ideas. These meetings so far have proved very successful and resulted in the sharing of commercial recycling report to ensure accurate reporting and to capture all the tonnage generated in Volusia County.
3. Game Day Challenge- This program was developed by Keep America Beautiful. After meeting with Bethune Cookman University administration and staff we feel BCU's participation is good for morale and encourages students and staff to increase recycling efforts on campus as well as at football games. Schools receive nationwide recognition on KAB's website and in Volusia County they will be recognized on the County website and other social media accounts.

4. Volusia Recycles- the Volusia Recycles Program encourages commercial recycling participation by offering free solid waste and recycle audits for business and multifamily units interested in recycling. Interested customers submit applications and receive education and guidance on implementing recycle programs in their place of business and even receive recognition from the county via the County website and other social media platforms.
5. Recycle Bowl - This program is also a Keep America Beautiful recycle program targeted for Elementary, Middle and High School Students. Very similar to the Game Day Challenge students will compete locally and nationally for recognition and prizes in an effort to educate and increase recycling in Volusia County Public Schools with the hope that students will take their information home to their parents and further develop residential curbside recycling.
6. In addition to connecting with other local cities in the County, the management specialist has attended several Chamber of Commerce meetings throughout the county to educate commercial business on the benefits and potential cost savings of recycling
7. Due to the importance of proper reporting, staff has reached out to several non-certified recycling centers in the county to capture those numbers as recycling credits and received cooperation from them as well as cooperation from surrounding cities that will provide reports from their recycle haulers.

All of the aforementioned programs are in place or will be rolled out in August or September 2017.

Discussion of any additional steps, initiatives and anticipated challenges that are critical to implementing your strategies to achieve the next interim recycling goal of 70 percent in 2018, and ultimately statewide goal of 75 percent by the end of 2020:

In addition to attempting to maximize traditional recycling efforts, Volusia County is also looking to implement a renewable natural gas program to tap into all resources. We have submitted a request for proposal (RFP) for beneficial use of gas. We are looking to implement this program as soon as we complete the proposal and contract negotiation process and all other necessary steps to ensure successful implementation. The County anticipates an additional 7 - 10% increase in our recycling rate.

Volusia County is currently updating our 10 year master plan and have sought the assistance of consultants in order to exhaust all available resources to reach the state recycling goal of 75%. We have aggressively pursued all opportunities to increase our recycling such as the continued education opportunities mentioned above and utilizing spotters in order to capture all available recyclables, but like many other counties throughout the state reaching the very aggressive goal of 75% established by the legislature will be very difficult to achieve. Our current recycling rate does not include any type of WTE credits because we currently do not have a facility. Not being able to include an asset such as WTE facilities puts us at a great disadvantage compared to other counties that do have these facilities which equates to higher recycling rates as they are able to count these facilities towards their total recycling rates.

We plan to continue to further educate ourselves on implementing future potential strategies that will help us reach that 75% goal.

Despite our numerous efforts, staff anticipates the expected challenges from commercial accounts unwilling to comply with the mandatory ordinance. It is critical that we approach this subject carefully to minimize negative feedback.

Staff anticipates the implementation of all programs paired with increased voluntary compliance of the mandatory recycling ordinance will result in an increase in recycling.

Appendix E

DEP Guidance Memorandum -

Single Stream Recycling Contamination to Recycling and Solid Waste Directors from F. Joseph Ullo (December 2, 1025)

Appendix E, Figure 1

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

Memorandum

TO: **Recycling and Solid Waste Directors**

FROM: **F. Joseph Ullo, Jr. P.E., Director**
Division of Waste Management

SUBJECT: **Single Stream Recycling Contamination**

DATE: **December 2, 2015**

Florida counties have been given the responsibility of implementing a recycling program within their boundaries under s. 403.706, Florida Statutes (F.S.). Large counties, defined as counties having more than 100,000 in population, are responsible for implementing recycling programs to meet the statewide 75% recycling goal by 2020. The state, counties, municipalities, and the solid waste and recycling industry have been working hard to make significant strides toward this statewide goal.

In an effort to reach the 75% recycling goal, many counties and municipalities have instituted single stream recycling programs. Single stream recycling programs have been successful by providing increased curbside collection efficiency while also increasing residential participation and the amount of recyclables collected. While there are many advantages to incorporating single stream recycling, it has not consistently yielded positive results for the recycling industry. Coupled with other trends in the industry, single stream recycling has also resulted in the collection of unwanted materials and poorly sorted recyclables, resulting in increased contamination of recycled materials.

Contamination hinders processing at Material Processing Facilities (MRFs) when unwanted items are placed into recycling bins. For example, many residential customers may not understand that while retail plastic bags are recyclable, they are harmful to the automated equipment typically used to process and separate recyclable materials from single stream collections. While MRFs are equipped to handle some non-recyclable materials, excessive contamination can undermine the recycling model resulting in additional sorting, processing, energy consumption, and other increased costs for recycling due to equipment downtime, repair, or replacement needs. In addition to increased recycling processing costs, contamination also results in poorer quality recyclables, and increased rejection and landfilling of unusable materials.

Appendix F
References

Appendix F – References

Florida Statutes

Section 403.706, F.S.
http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=403.706&URL=0400-0499/0403/Sections/0403.706.html

Section 403.7065, F.S.
http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=403.7065&URL=0400-0499/0403/Sections/0403.7065.html

Section 403.7032, F.S.
http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=403.7032&URL=0400-0499/0403/Sections/0403.7032.html

Section 288.021, F.S.
http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=288.021&URL=0200-0299/0288/Sections/0288.021.html

Section 403.707, F.S.
http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=403.707&URL=0400-0499/0403/Sections/0403.707.html

Section 403.715, F.S.
http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=403.715&URL=0400-0499/0403/Sections/0403.715.html

Section 403.714, F.S.
http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=403.714&URL=0400-0499/0403/Sections/0403.714.html

Section 62-709.201, F.A.C.
https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-709

Resources

Re-TRAC
https://connect.re-trac.com/

SWIX WasteXchange.org
http://wastexchange.org/

Florida Organics Recycling Center for Excellence (FORCE)
www.floridaforce.org

SCrAP Program
https://erefdn.org/school-cafeteria-waste/

SWIX Florida Organics Recycling Workshop 1/24/17:
http://southernwasteinformationexchange.com/florida-organics-recycling-workshop-january-24-2017-proceedings/

Appendix G

Energy, Climate Change and Economic Security Act of 2008

Appendix – Energy, Climate Change and Economic Security Act of 2008

403.7032 Recycling.--
(1) The Legislature finds that the failure or inability to economically recover material and energy resources from solid waste results in the unnecessary waste and depletion of our natural resources. As the state continues to grow, so will the potential amount of discarded material that must be treated and disposed of, necessitating the improvement of solid waste collection and disposal. Therefore, the maximum recycling and reuse of such resources are considered high-priority goals of the state.
(2) By the year 2020, the long-term goal for the recycling efforts of state and local governmental entities, private companies and organizations, and the general public is to reduce the amount of recyclable solid waste disposed of in waste management facilities, landfills, or incineration facilities by a statewide average of at least 75 percent. However, any solid waste used for the production of renewable energy shall count toward the long-term recycling goal as set forth in this section.
(3) The Department of Environmental Protection shall develop a comprehensive recycling program that is designed to achieve the percentage under subsection (2) and submit the program to the President of the Senate and the Speaker of the House of Representatives by January 1, 2010. The program may not be implemented until approved by the Legislature. The program must be developed in coordination with input from state and local entities, private businesses, and the public. Under the program, recyclable materials shall include, but are not limited to, metals, paper, glass, plastic, textile, rubber materials, and mulch. Components of the program shall include, but are not limited to:
(a) Programs to identify environmentally preferable purchasing practices to encourage the purchase of recycled, durable, and less toxic goods.
(b) Programs to educate students in grades K-12 in the benefits of, and proper techniques for, recycling.
(c) Programs for statewide recognition of successful recycling efforts by schools, businesses, public groups, and private citizens.
(d) Programs for municipalities and counties to develop and implement efficient recycling efforts to return valuable materials to productive use, conserve energy, and protect natural resources.
(e) Programs by which the department can provide technical assistance to municipalities and counties in support of their recycling efforts.
(f) Programs to educate and train the public in proper recycling efforts.
(g) Evaluation of how financial assistance can best be provided to municipalities and counties in support of their recycling efforts.
(h) Evaluation of why existing waste management and recycling programs in the state have not been better used.