



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

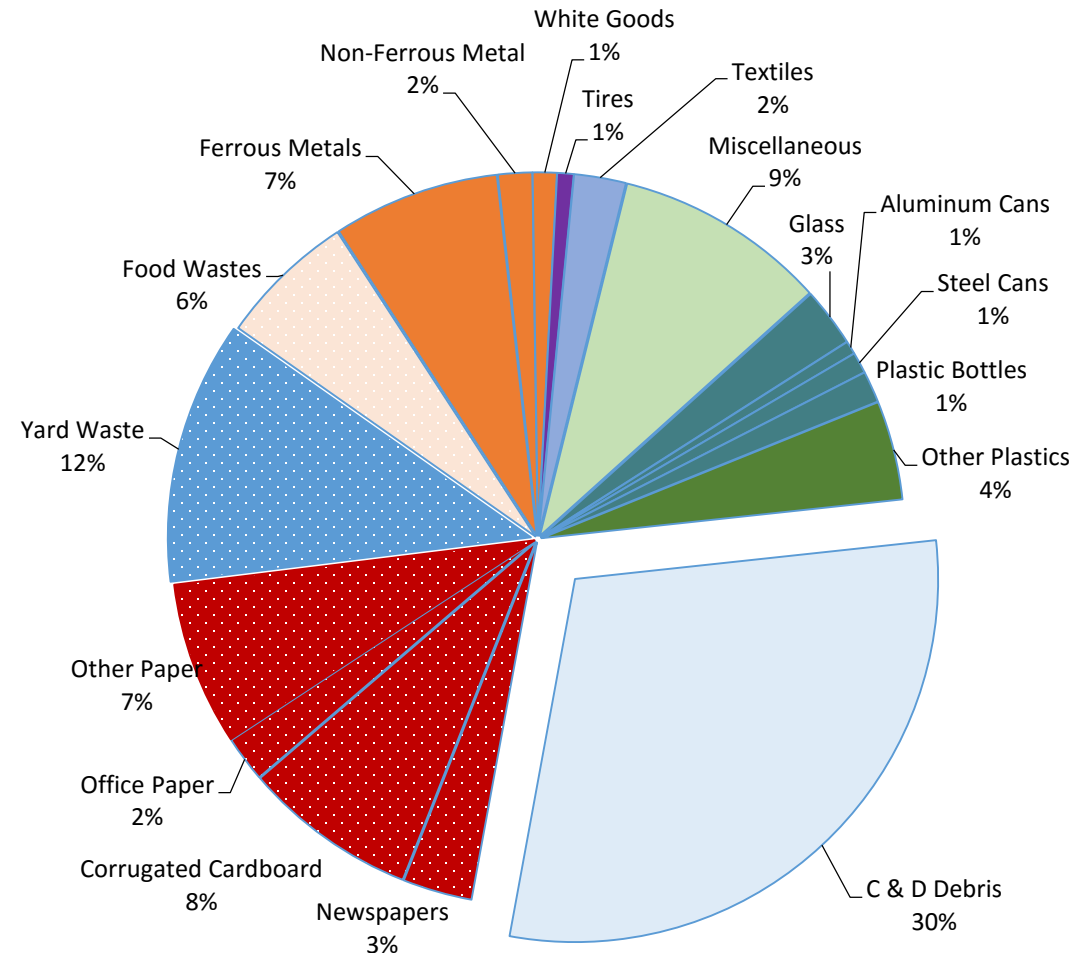
Why focus on Construction and Demolition Debris?





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

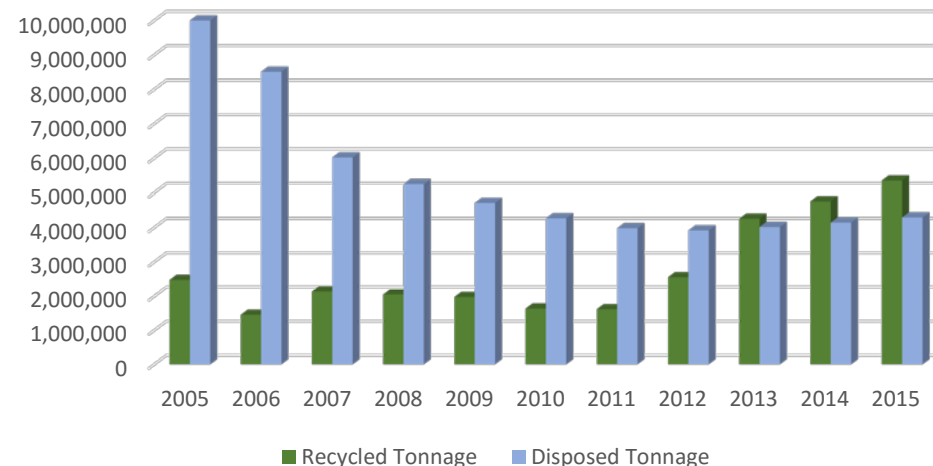




Impacts of Increasing C&D Recycling Efforts

- 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%**

C&D Debris Management
(2005 - 20015)





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 and 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.

Home Search the Site:

Welcome

to the

Florida Department of Environmental Protection's Business Portal. If you don't find what you're looking for please come back as we're continually adding to the site.

I would like to:

Apply To build, repair, operate, discharge, ... see more.	Pay For fees, invoices, park reservations, ... see more.	Sign Up For subscriptions, newsletters, notifications, ... see more.
View Maps, data, reports, ... see more.	Submit Applications for grants and rebates, AGP Admin. Correction, leave feedback, ... see more.	Continue A partially completed business transaction.



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



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road, MS 4555
Tallahassee, Florida 32399-2400

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: 62-701.710(8)(b), F.A.C.

Annual Report for a Construction and Demolition Debris Facility

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

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)
<u>ASPHALT</u>	Used for _____	Subtotal Asphalt _____
<u>CONCRETE</u>	Source: Roads, Bridges, Sidewalks, Curbs _____ Source: Building Construction/Demolition: Used for fill (lake or land) _____ Used for Road base _____ Other Use _____	Subtotal Concrete _____
<u>FINES / RECOVERED SCREEN MATERIALS</u>	Used for _____	Subtotal Fines / RSM _____
<u>WOOD</u>	Daily/Intermediate Cover _____ Waste-to-Energy fuel (see pg. 2 for facility list) _____ Other processed fuel _____ Mulch, compost _____ Final cover _____ Other Use _____	Subtotal Wood _____
<u>LAND CLEARING DEBRIS</u>	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 _____
<u>DRYWALL</u>	All _____	Subtotal Drywall _____
<u>SHINGLES/ROOFING</u>	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
<u>PAPER</u>	Old Corrugated Containers (OCC) Other Paper _____	Subtotal Paper _____
<u>PLASTIC</u>	Plastic containers/buckets All other plastic _____	Subtotal Plastic _____
<u>METALS</u>	Aluminum _____ Other Non-Ferrous (brass, copper, etc.) _____ Steel _____ Other Ferrous _____	Subtotal Metals _____
<u>TEXTILES</u>	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



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

What Counted THEN	What Counts NOW
<p>Concrete from residential/commercial buildings construction or demolition used for:</p> <ul style="list-style-type: none"> • Road Base • Pipe Bedding • Drain Fields • Septic Tanks • Landfill Cell Drainage & Stabilization • Artificial Reefs <p>Wood & Land Clearing Debris used for:</p> <ul style="list-style-type: none"> • Mulch • Compost Final Cover <p>Wood & Land Clearing Debris sent to:</p> <ul style="list-style-type: none"> • Processed Fuel/Biomass Facilities 	<p>Concrete from residential/commercial buildings construction or demolition used for:</p> <ul style="list-style-type: none"> • Road Base • Pipe Bedding • Drain Fields • Septic Tanks • Landfill Cell Drainage & Stabilization • Artificial Reefs <p>Wood & Land Clearing Debris used for:</p> <ul style="list-style-type: none"> • Mulch • Compost Final Cover <p>Wood & Land Clearing Debris sent to:</p> <ul style="list-style-type: none"> • Processed Fuel/Biomass Facilities <p>Concrete from:</p> <ul style="list-style-type: none"> • Roads • Bridges • Sidewalks • Curbs • Storm/Sewer Pipes • Culverts <p>Concrete from building construction or demolition used for:</p> <ul style="list-style-type: none"> • Lake Fill • Land Fill <p>Wood & Land Clearing Debris</p> <ul style="list-style-type: none"> • WTE Fuel • Daily Cover • Intermediate Cover • Landfill Roads Within a Cell <p>Wood & Land Clearing Debris sent to</p> <ul style="list-style-type: none"> • WTE Facilities • Renewable Energy Facilities (other than WTE) <p>Asphalt (not being directly reused)</p>

***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.



FeaturePics.com - 11916958



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
<u>ASPHALT</u>	Sent to a Recycling/Clean Debris Facility _____ Other* _____	_____ Subtotal Asphalt _____
<u>CONCRETE</u>	Sent to a Recycling/Clean Debris Facility _____ Other* _____	_____ Subtotal Concrete _____
<u>ALUMINUM</u>	Sent to a Recycling Facility _____ Other* _____	_____ Subtotal Aluminum _____
<u>STEEL</u>	Sent to a Recycling Facility _____ Other* _____	_____ Subtotal Steel _____
<u>VEGETATIVE MATERIAL</u>	Sent to a Recycling Facility _____ Other* _____	_____ Subtotal Vegetative _____
<u>MIXED WASTE</u>	Sent to a 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



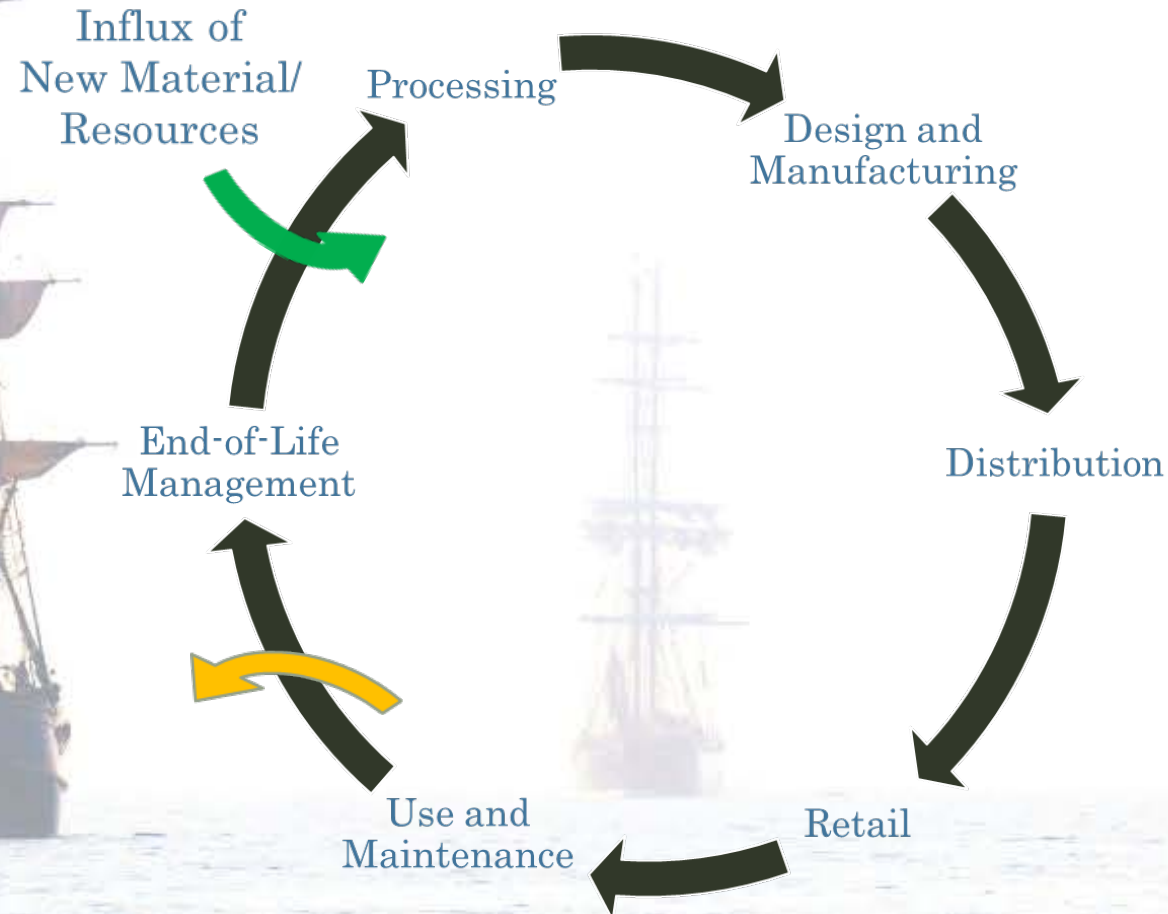


EPA's SMM Strategic Plan: Advancing SMM in the Built Environment

EPA Region 4

Steve Smith

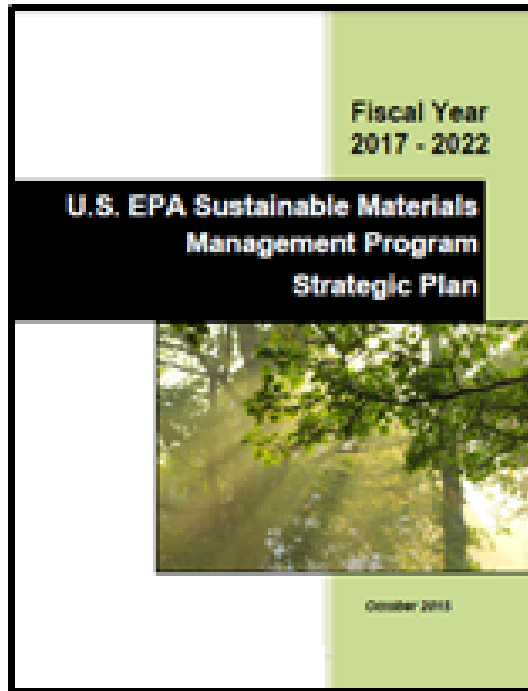
Sustainable Materials Management (SMM)



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

SMM Strategic Plan for FY2017 – FY2022

3 Strategic Priority Areas



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.

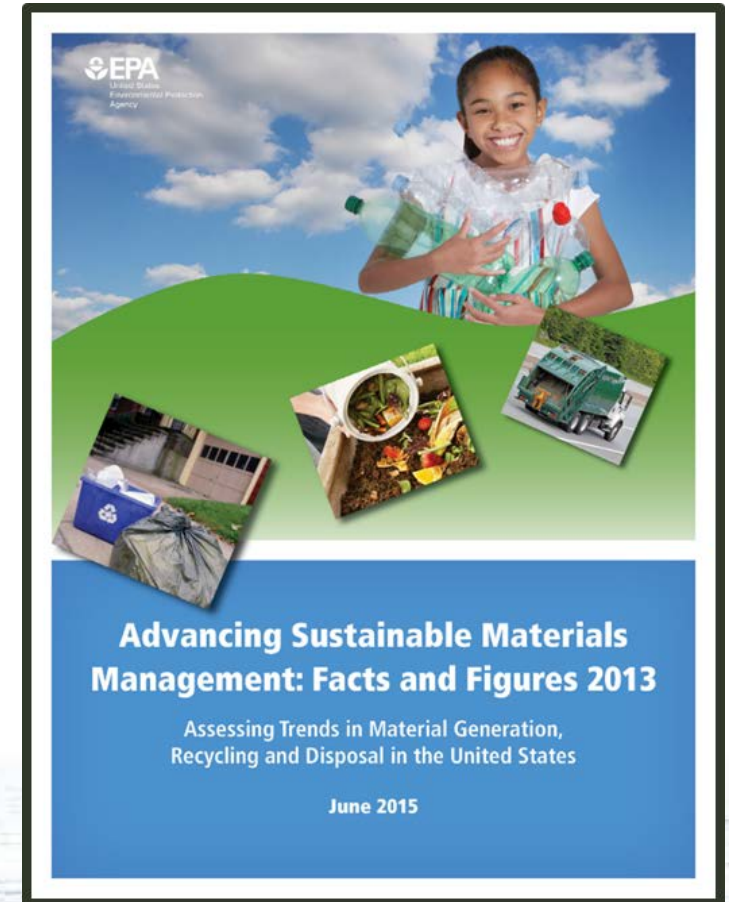
Single-Family Home Life Cycle Impact Analysis



- 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

smith.steved@epa.gov

404-562-8501



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/>



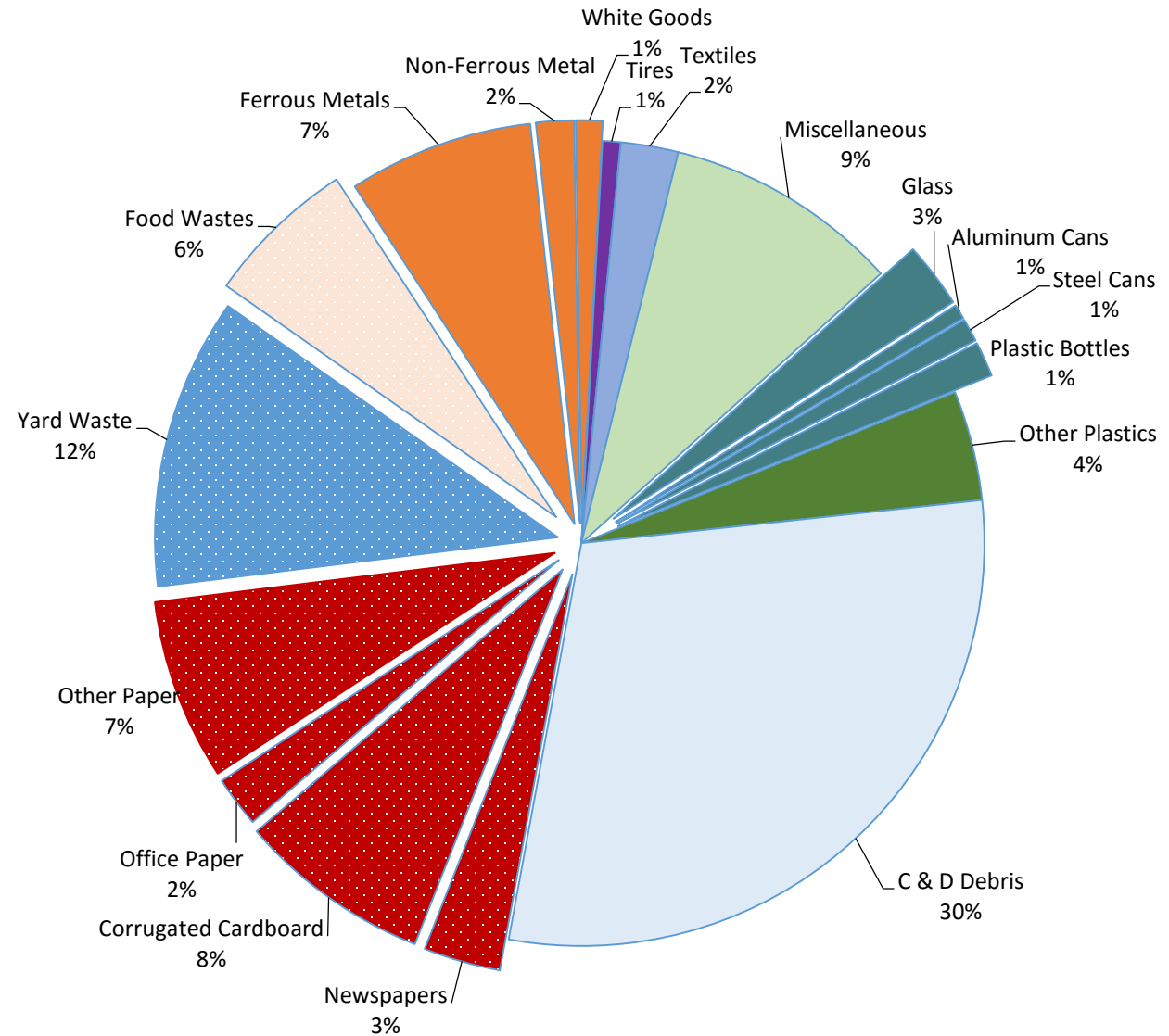
Sustainable Materials Management







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



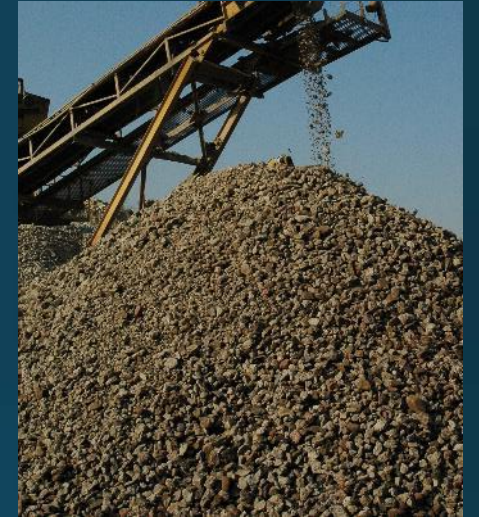
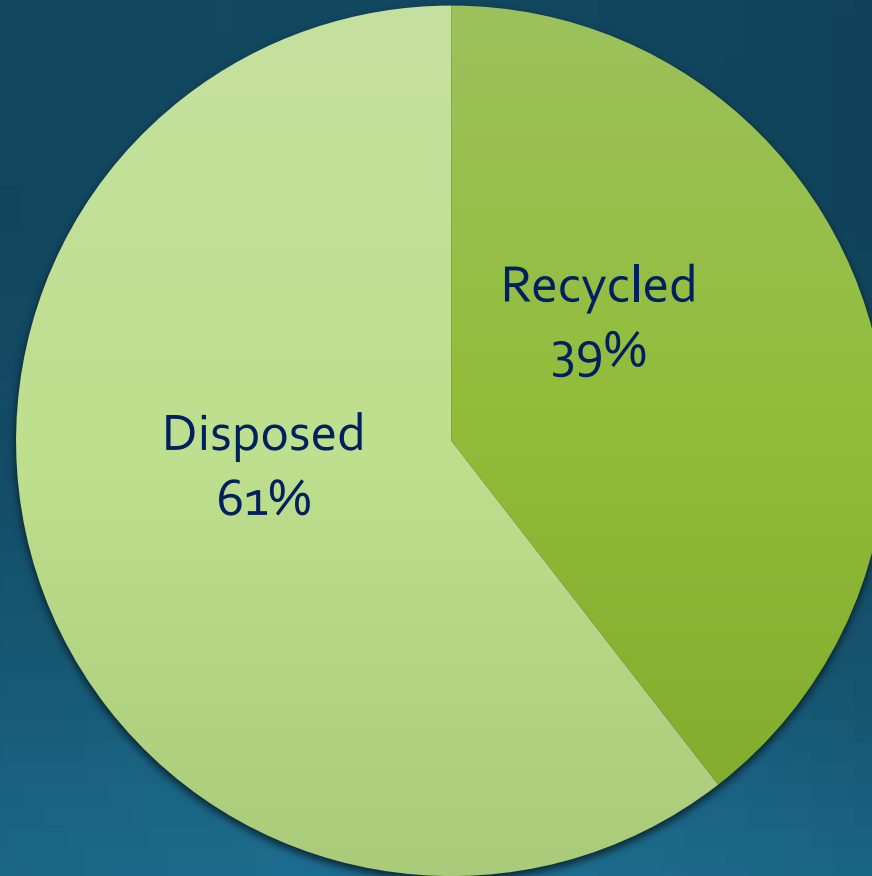
Florida MSW
in 2013

Florida C&D Debris → 2012

Total collected = 6,472,000 tons #

Recycled = 2,556,000 tons

Disposed = 3,916,000 tons



Concrete



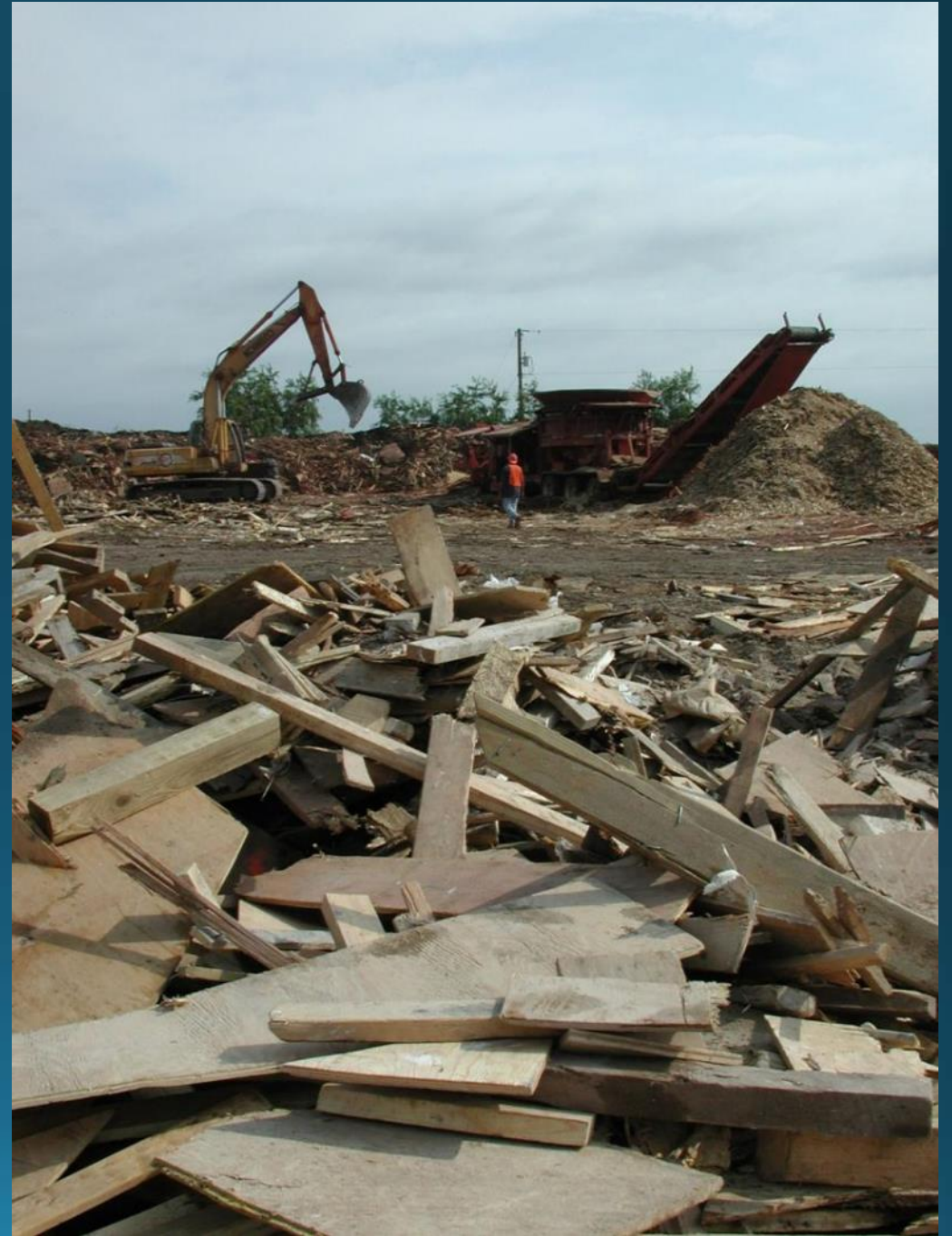
Asphalt Concrete



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











Fines





Wood

Fines

Picking Line



Fines



















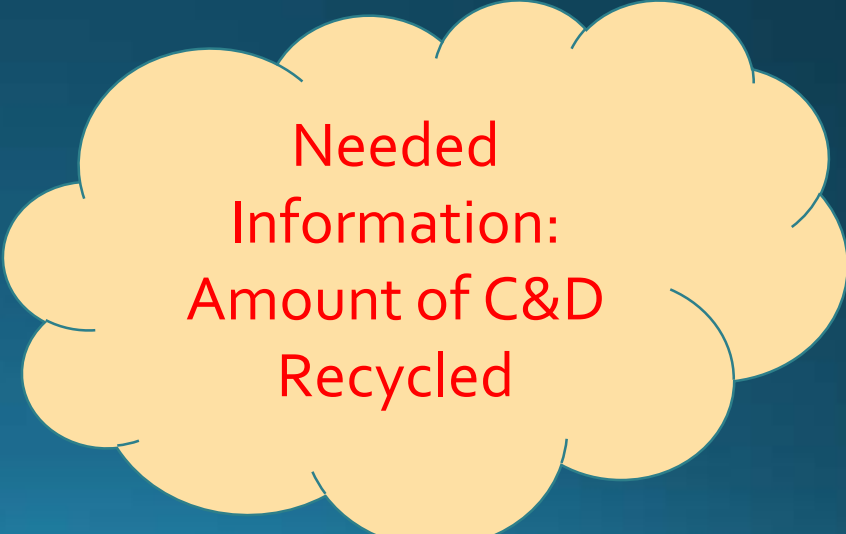






Quantifying the Benefits of Recycling

- 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



Needed
Information:
Amount of C&D
Recycled

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.



Contact Information

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Thank You !





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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