Highlights of CalRecycle's 2014 Waste Characterization Study

CalRecycle Monthly Public Meeting
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Presentation in 3 Parts

- Background
- Study Overview – Methods and Data Collected for 2014
- Highlights of Results

Part 1 - Background

- What is waste characterization?
- Why it is important?
- How is it done?
- CalRecycle studies 1999-2008

What is Waste Characterization?

- Determine what's placed in discard streams – disposal, recycling, composting
- Determine types and amounts of paper, food, glass, metal, etc. in each stream
- Field sampling and sorting of materials, and other field measurements

Why is it important?

For effective diversion programs and waste management strategies, need to know:

- Not only WHAT is in the waste stream, but WHERE it came from
- How the waste stream changes over time
- Current information to support policy decisions

How to do a Waste Characterization Study

Two methods used in 2014:

- Facility based method – take samples of materials at sites where they are delivered, such as landfills or transfer stations
- Generator based method – take samples of materials at sites where they are generated, such as businesses or households

How to do a Waste Characterization Study (cont.)

Once samples are taken from desired stream:

- Sort materials
- Record weights
- Collect other data such as source of waste, volumes, etc.
- Compile and analyze data
- Report results

CalRecycle Studies 1999-2008

1999 – First statewide study :

- Disposal amounts and composition for the residential, commercial, and self-hauled sectors and statewide overall waste stream
- Details on business types – used generator based sampling for commercial

2004 – Similar to the 1999 study but smaller, all sectors done through facility based sampling (no generator details for commercial waste)

See CalRecycle Waste Characterization Studies website for details on all the studies:

http://www.calrecycle.ca.gov/WasteChar/WasteStudies.htm

CalRecycle Studies 1999-2008

2006 – Four targeted studies

- Commercial sector details for select business groups, generator based sampling, including recycling data
- Also studies done on construction and demolition waste, commercial self-haul, and Materials Recovery Facility (MRF) residuals – facility based sampling

2008 – Similar to 2004 study (facility based sampling only), included special studies on divertibility/condition of materials disposed, asbestos in roofing, plastic bags

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Part 2 - Overview of the 2014 Study

Two main studies:

Statewide characterization of disposed waste by sector – repeat of 2008 study, facility based sampling (Task 1)

Generator based characterization of the commercial waste by 16 business groups and multifamily waste, both disposal (Task 2) and diversion (Task 4)

- included special data collection and analysis to assess overall recovery of materials through source separation - Task 3 (related to mandatory commercial recycling and MRF processing)

Generator Based Study – Methods and Data Collected

Disposal Study (Tasks 2) and
Comprehensive Diversion Study (Task 4)

Pre-Field Work – Business Groups

Select business groups based on Federal NAICS* Codes

- Focus on business types that are major employers in CA
- Group business types with similar waste streams (like office-type businesses)
- Separate large organics generators
- Group businesses that have smaller employment and atypical waste streams (like utilities, mining, pipeline transportation)

*North American Industry Classification System

CalRecycle 2014 Business Groups for Waste Characterization Study

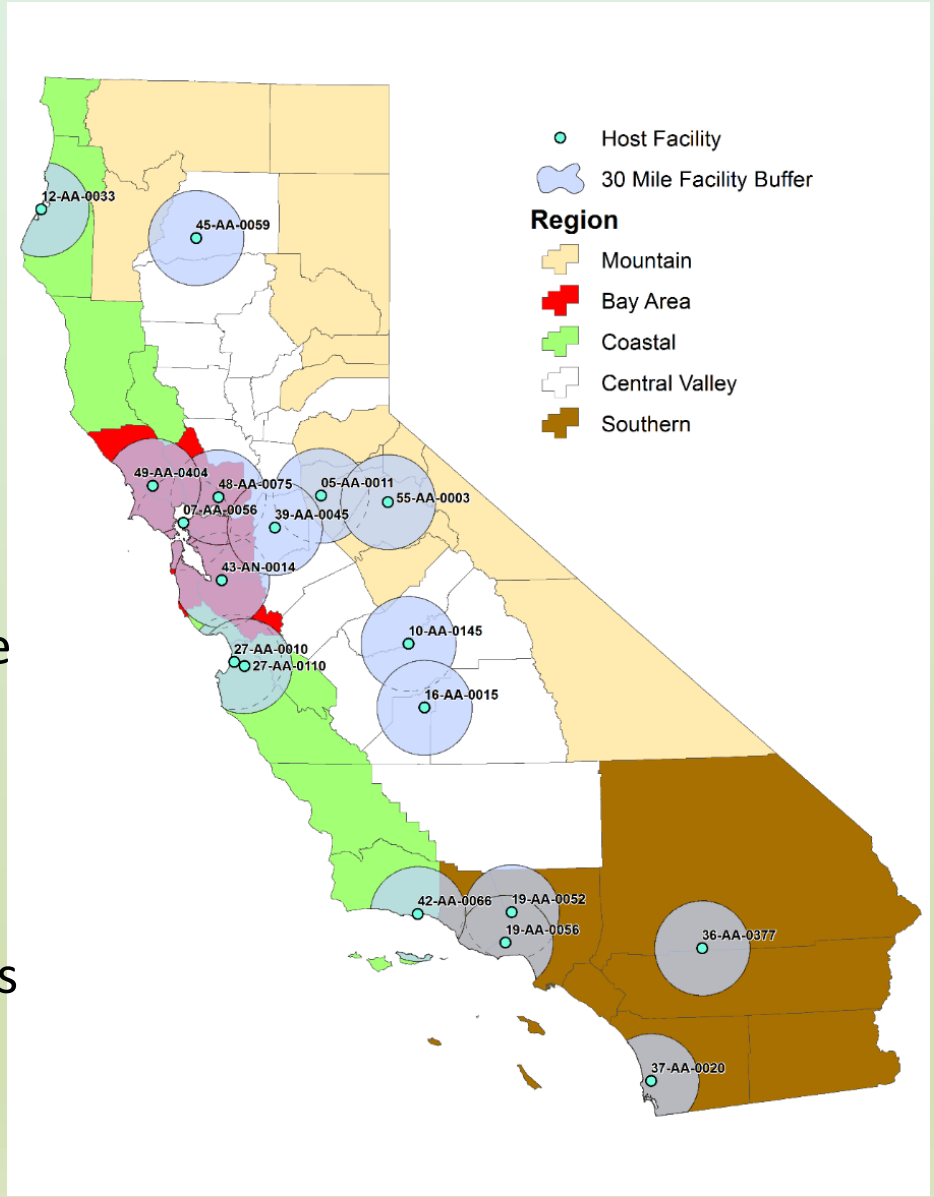
Arts, Entertainment & Recreation	Manufacturing - All Other	Services - Management, Admin., Support, Social
Durable Wholesale & Trucking	Medical/Health	Services - Professional, Technical, Financial
Education	Public Administration	Services - Repair and Personal
Hotels/Lodging	Restaurants	Not Elsewhere Classified
Manufacturing - Electronic Equipment	Retail Trade - Food & Beverage Stores	Multifamily
Manufacturing - Food; & Nondurable Wholesale	Retail Trade - All Other	

Pre-Field Work – Sampling Plan

- 850 Disposal Composition Samples – 50 businesses or multifamily sites per group
- 430 Diversion Composition Samples (all diversion was measured) – 25 businesses per group, but 30 for multifamily; chosen randomly from the 850 used for disposal sampling
- 230 sites for special analysis of source separation programs – analyzed “bin-based” recycling/ composting only; chosen randomly from the 450

Pre-Field Work – Sampling Areas and Business Recruitment

- Used same regions as previous studies
- 4 sampling areas per region – 20 total
- Sampling area "nodes" based around solid waste facilities for sorting and disposal of samples
- Gracious cooperation by facilities to be "base camps" for sorting
- Sampling occurred during 4 seasons – really, every month of the year
- Business lists from each node used to randomly call and recruit business sites



Field Work for Generator Based Sampling

Generator Waste and Diversion Characterization

- Measure amounts of materials present in bins
- Take samples
- Transport and sort waste samples at solid waste facility
- Sort recyclables on-site
- Also gather information on diversion apart from recycling/organics bin service
- Record all field data

Disposal Field Data Collection

RECYCLE
ONLY
RECYCLE
ONLY
CAUTION
CAUTION

DANGER
OPEN
PIT

BLUE DEF
Duralast
Supreme
5W-30

Diversion Field Data Collection

SINGLE-STREAM RECYCLING

PRIORITY
MAIL
Medium Flat Rate Box

MID VALLEY DISPOSAL
RECYCLABLES ONLY
SOLO RECICLABLES
RECYCLABLES ONLY

RECYCLE CART

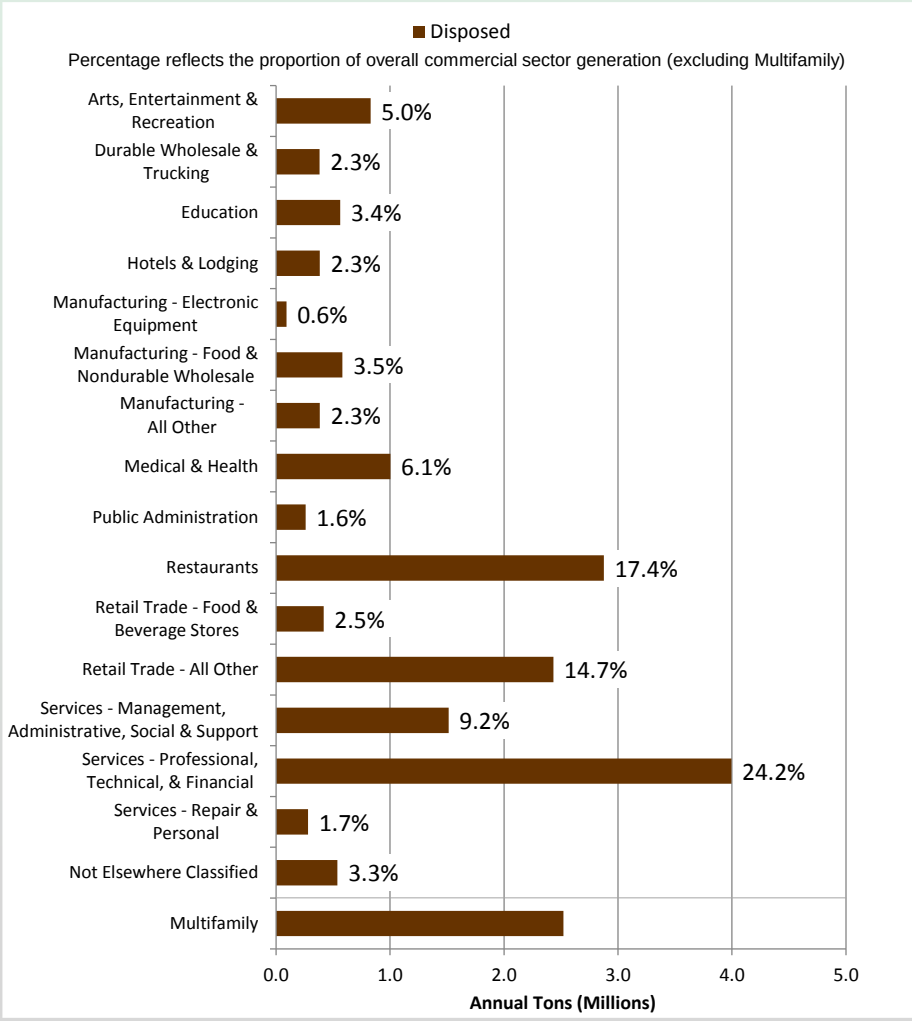
Part 3 - Results

Generator Disposal Study

889	Businesses and Multifamily Sites Sampled
1.13	TPEPY
16.5 million tons	Commercial Waste Disposed

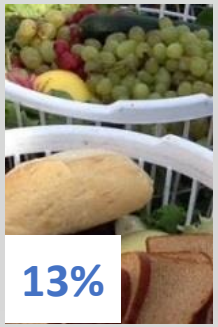
24%

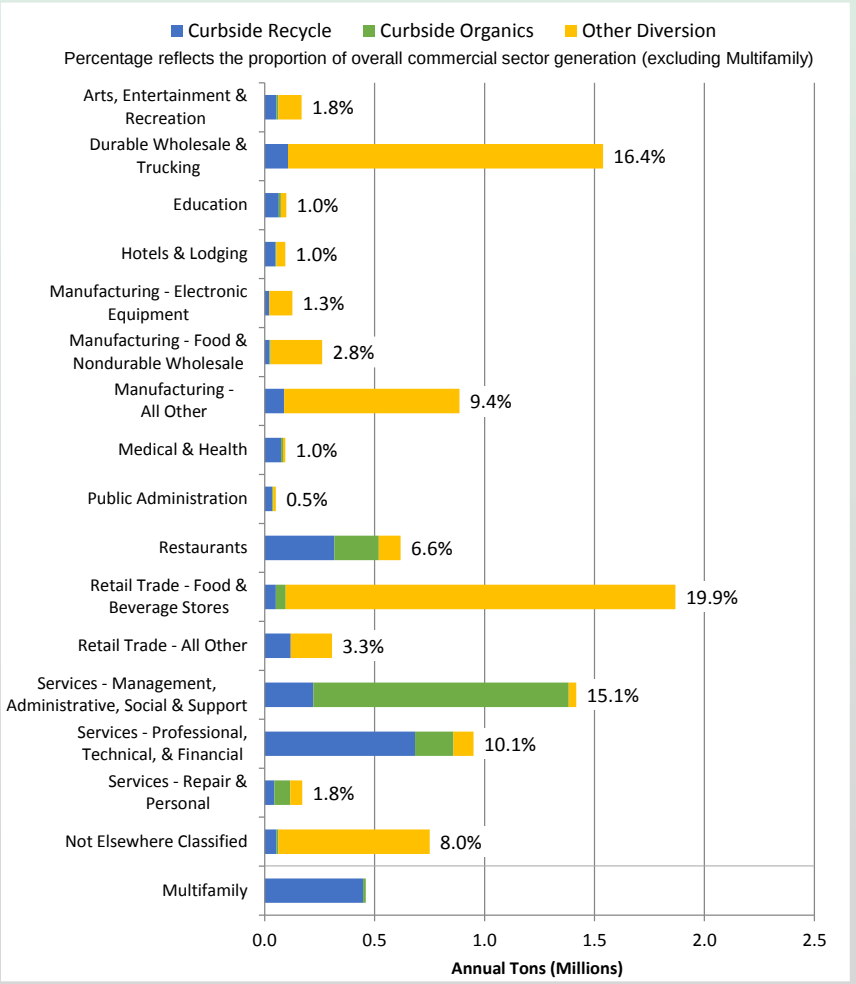
10%

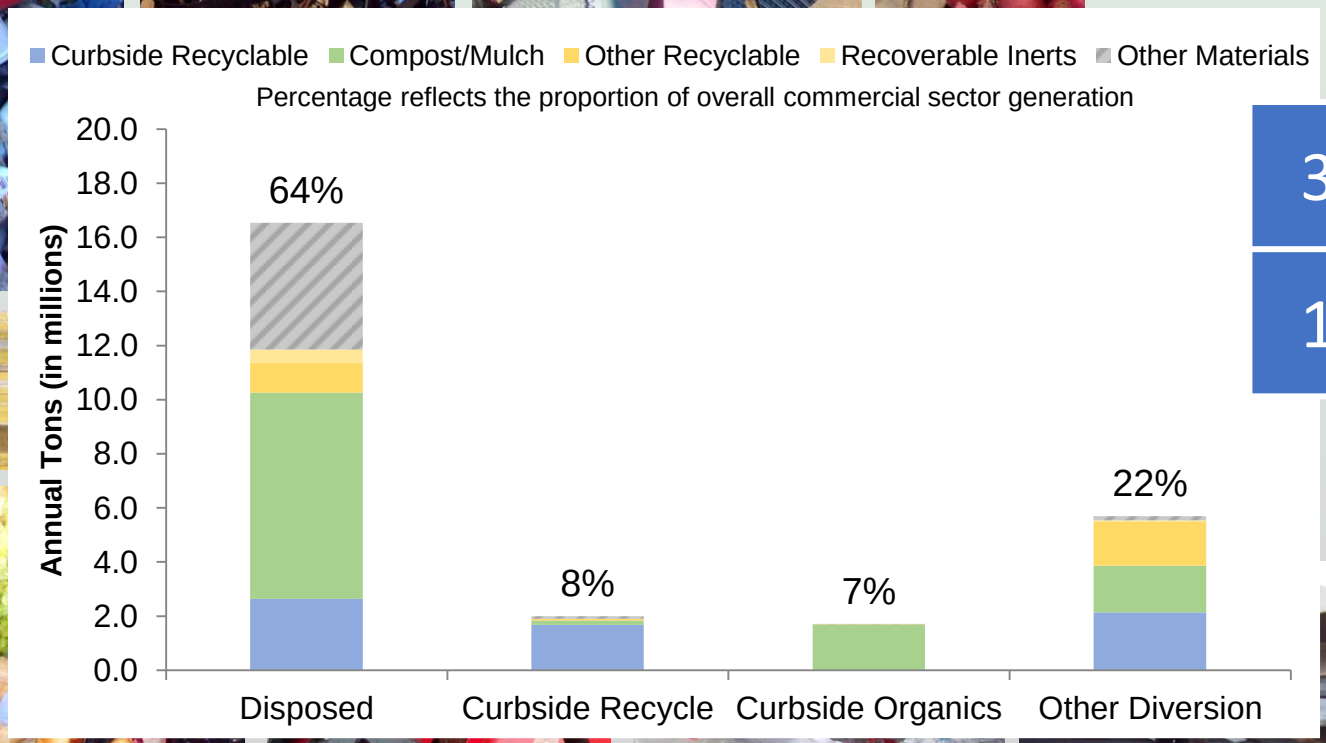


Commercial Diversion Study

481	Businesses and Multifamily Sites Sampled
1,144	Material Streams sampled
0.64	TPEPY
9.4 million tons	Commercial Waste Diverted





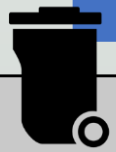


36%	Commercial Diversion Rate
15%	Multifamily Diversion Rate

How Businesses Rank Up

	2013 Statewide Employment	% of Statewide Employment	Rank by Employment
Services - Professional, Technical, & Financial	2,141,914	15%	1
Services - Management, Administrative, Support, & Social	2,034,556	14%	2
Medical & Health	1,491,950	10%	3

Over 69% of **Services - Professional, Technical, & Financial** Disposed waste is recoverable.



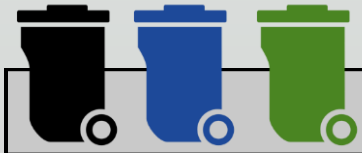
	Tons Disposed	% of Comm. Disposal	Rank by Tons Disposed
Services - Professional, Technical, & Financial	3,994,643	24%	1
Restaurants	2,876,653	17%	2
Retail Trade - All Other	2,433,989	15%	3

Arts, Recreation, and Entertainment has the highest disposal rate of **2.56 TPEPY**.

These two groups are achieving 80% Diversion mostly through Other Diversion streams.

	Tons Diverted	% of Comm. Diversion	Rank by Tons Diverted
Retail Trade - Food & Beverage Stores	1,868,403	20%	1
Durable Wholesale & Trucking	1,538,803	16%	2
Services - Management, Administrative, Support, & Social	1,417,462	15%	3

Retail Trade – Food & Beverage Stores has the highest diversion rate (**5.43 TPEPY**) and the highest generation rate (**6.64 TPEPY**).



	Tons Generated	% of Comm. Generation	Rank by Tons Generated
Services - Professional, Technical, & Financial	4,944,512	19%	1
Restaurants	3,494,479	13%	2
Services - Management, Administrative, Support, & Social	2,932,129	11%	3

Restaurants are diverting 10% of food waste.

Assessment of Recovery Through Curbside Recycling and Organics Programs (Task 3)

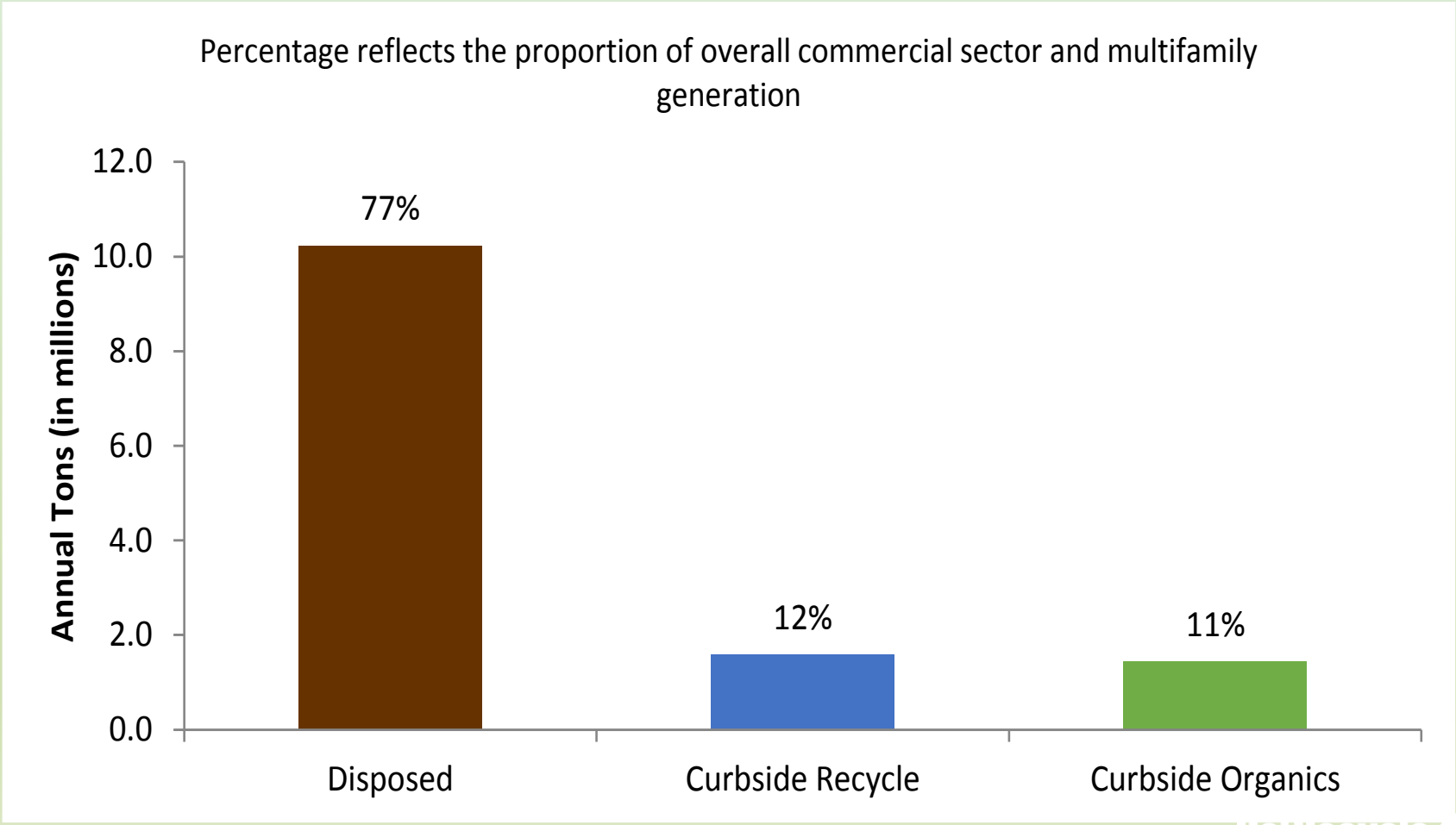
Special Analysis for Curbside Diversion

- Data is for commercial sector and multifamily as a whole, not by business group
- Composition and quantities in disposal, recycling, and organics bins
- Used subset of businesses and multifamily sites recruited for Tasks 2 & 4 – but only those with curbside diversion programs
- "Other Diversion" through other means was not included
- State of contamination of recyclables was assessed
- Results from Task 3 will be different from Tasks 2 & 4 results – it's a different part of the pie

Results for Task 3 – Assessment of Curbside Diversion

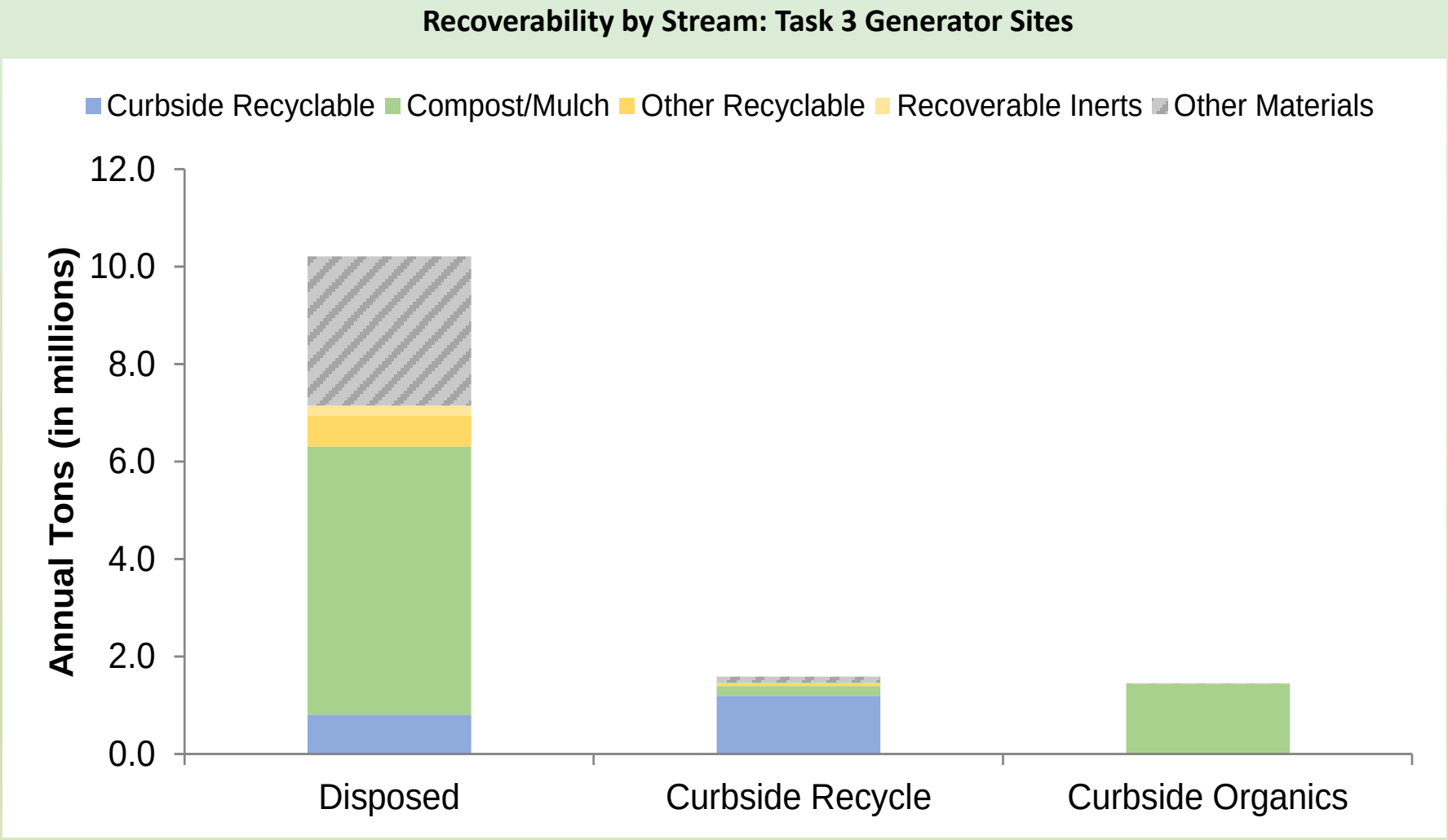
23 % of materials flow to recycling and organics bins

Annual Tons by Waste Stream: Task 3 Generator Sites



Assessment of Curbside Diversion (cont.)

Much of what's still disposed could go into one of the other bins



Assessment of Curbside Diversion (cont.)

- 13 million tons generated in this part of the pie
- 10 million tons in the disposal stream
- 4 million tons of clean, potentially recoverable materials were found in disposal bins
- Of the common recyclables and organics assessed, an estimated 30% was actually recovered
- Biggest potential to increase recovery are in food waste, compostable paper, and clean recyclable paper placed in disposal bins

Status of Task 1 – Data Analysis Not Quite Complete

All field sampling, sorting, and surveys required by the study are complete

Results for statewide tons assigned to each sector (residential, commercial, self-haul) need to be confirmed

CalRecycle staff will present final results this summer

Stay tuned……

Questions?

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