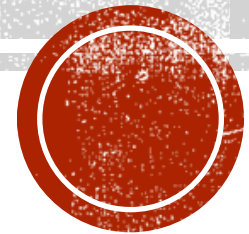# 2014 STATEWIDE WASTE CHARACTERIZATION STUDY

Summary of CalRecycle's Presentation of Highlights and Initial Results & 2014 Diversion and Disposal Rates

PRESENTATION OUTLINE

- Overview
  - What is a waste characterization study?
  - Methodology
  - Main tasks
  - Previous statewide studies

- Part 1: Generator Based Study

- Part 2: Statewide characterization of disposed waste by sector

OVERVIEW: WASTE CHARACTERIZATION METHODOLOGY

- 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
  - 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

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

OVERVIEW: MAIN TASKS

- **Task 1: Disposal Facility-based Waste Characterization**

- **Task 2: Generator-based Characterization of Commercially Disposed Waste**

- **Task 3: Assess Overall Performance of Commercial Source Separation Systems using Generator Sampling**

- **Task 4: Collect Comprehensive Diversion Data from Business Groups**

Business Participation

- Businesses were contacted by CalRecycle or its contractor, Cascadia Consulting Group, Inc. **Identities of all businesses that participated in this study are confidential**.

Disposal Facility Participation

- Disposal Facilities were randomly selected across California to participate in the study. Different facilities were selected for the Generator-based and the Disposal Facility Waste Characterization Study depending on the study demands and the facility operations.

OVERVIEW OF THE 2014 STUDY

Two main studies:

- 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)

- Statewide characterization of disposed waste by sector
  – repeat of 2008 study, facility based sampling (Task 1) (Statewide data not presented yet)

PART 1: GENERATOR BASED STUDY

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

PRE-FIELD WORK – BUSINESS GROUPS

- Select business groups based on Federal North American Industry Classification System (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)

| 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
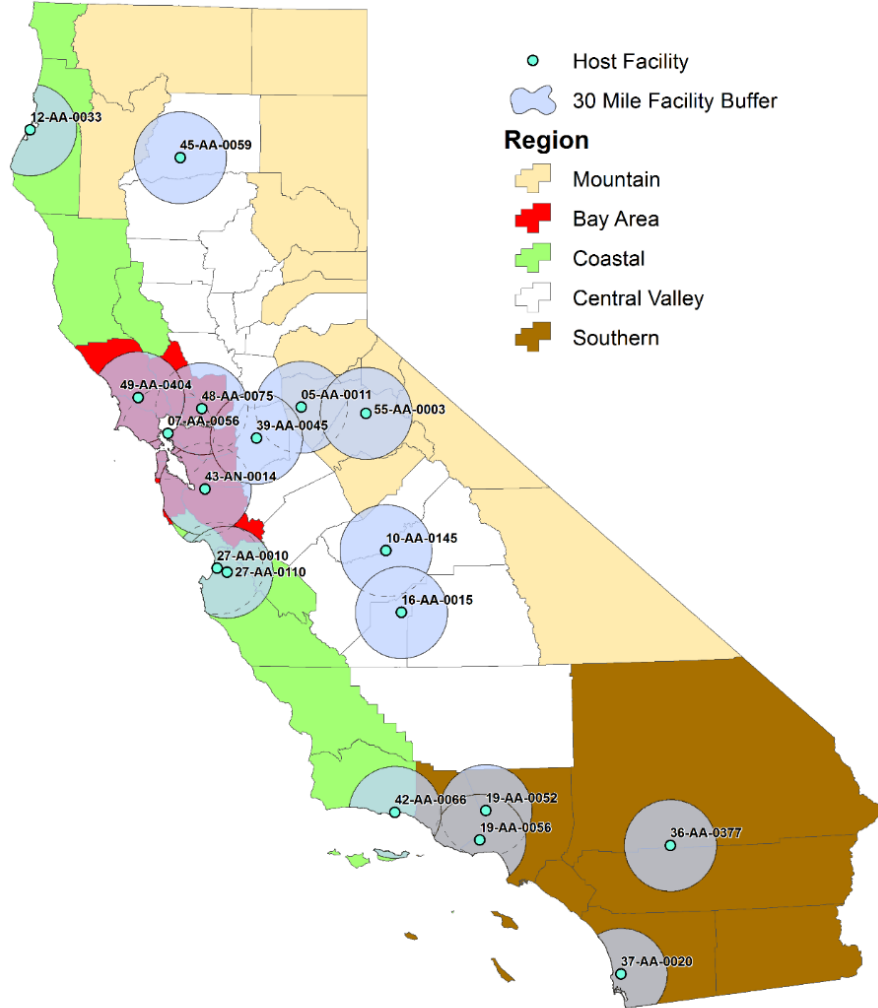
- Used same regions as previous studies
  - 4 sampling areas per region –20 total
  - Sampling area "nodes" based around solid waste facilities for sorting and disposal of samples

- 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

- 3 sites identified:
  - Chiquita Canyon Landfill
  - Calabasas Landfill
  - MarBorg C&D Recycling and Transfer Facility (Santa Barbara)

FIELD WORK FOR GENERATOR BASED SAMPLING

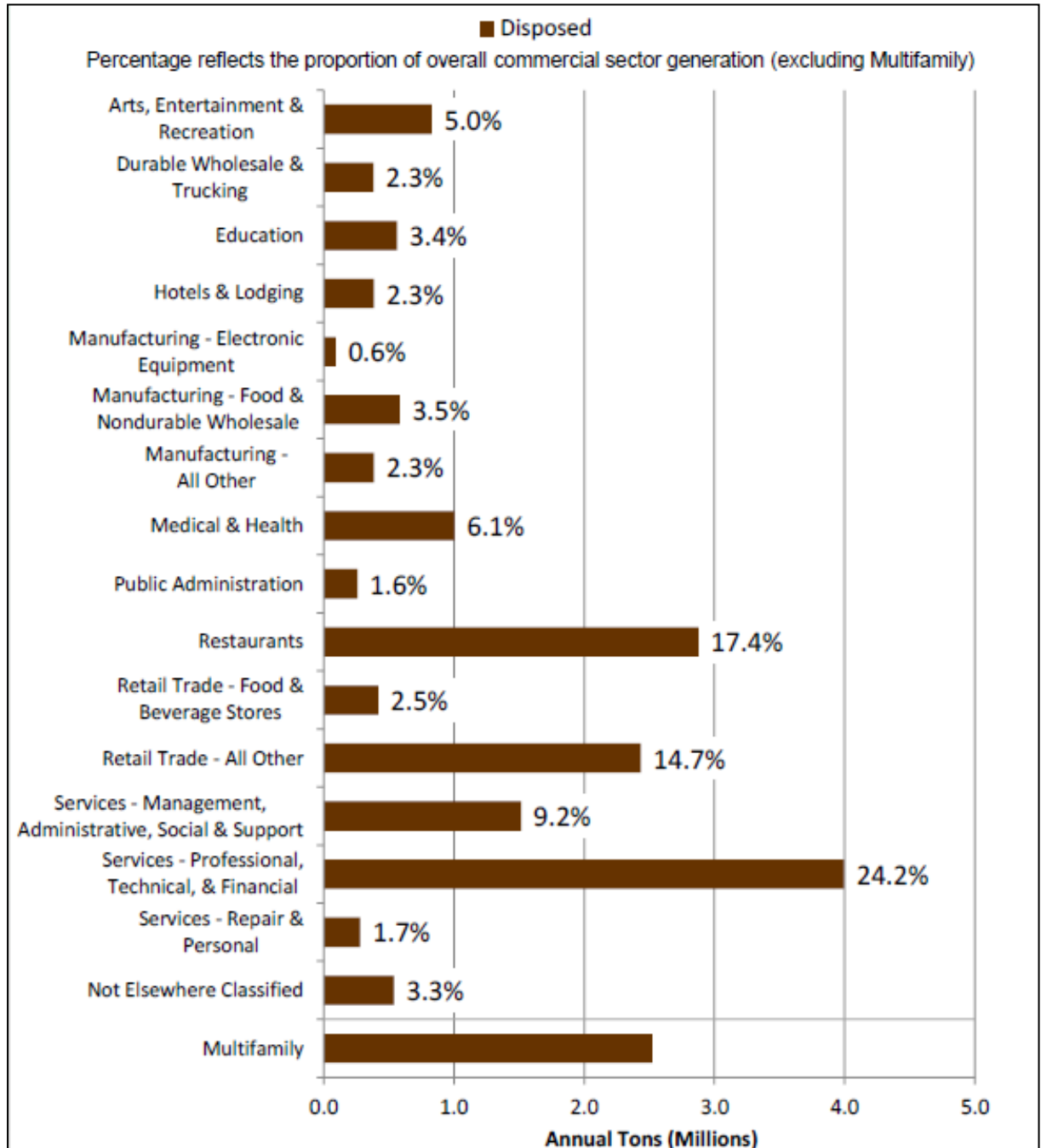**Generator Waste and Diversion Characterization**

- 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
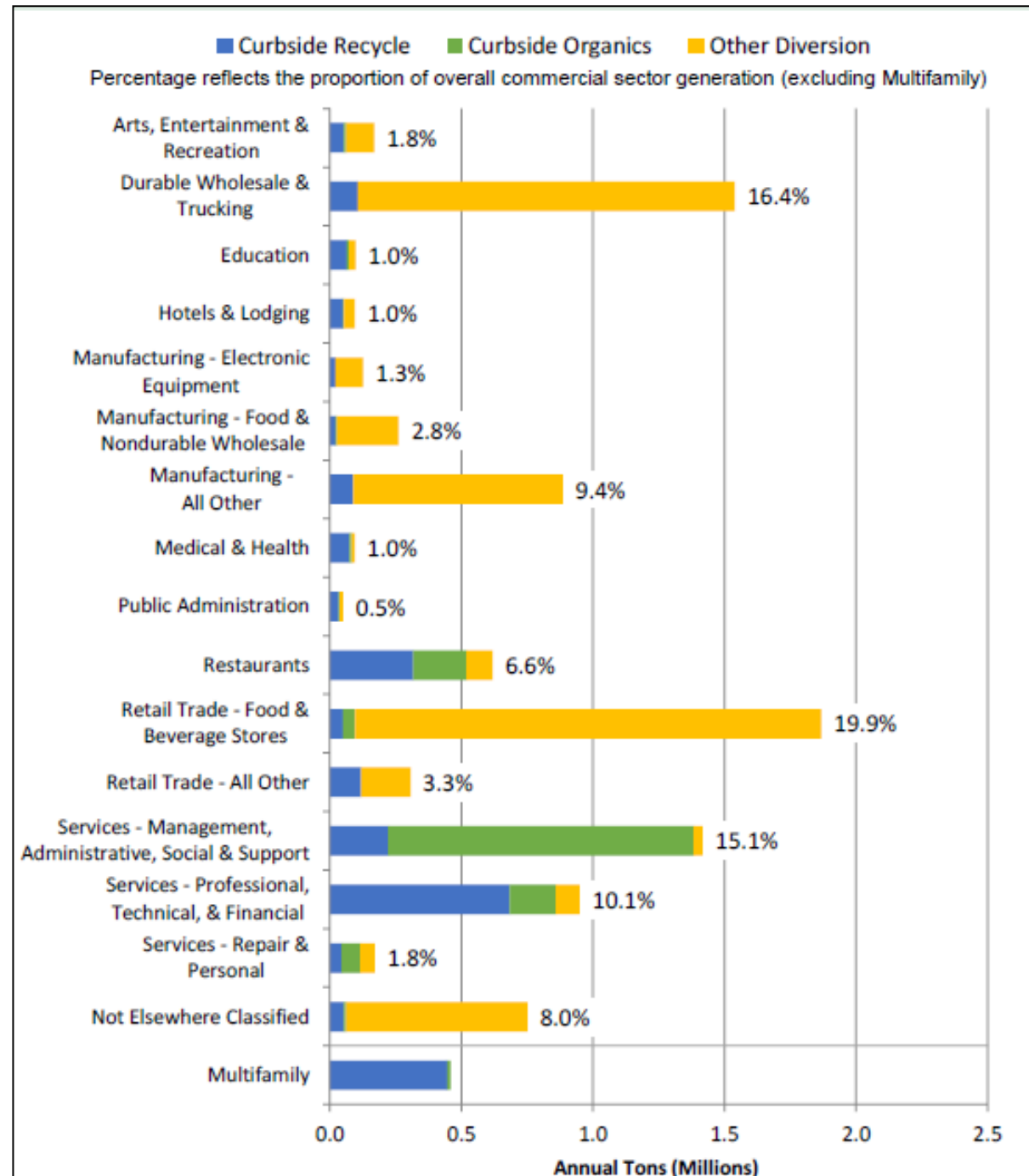
RESULTS:

Generator Disposal Study

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

10%

24%

Disposed

Percentage reflects the proportion of overall commercial sector generation (excluding Multifamily)

Sector	Percentage
Arts, Entertainment & Recreation	5.0%
Durable Wholesale & Trucking	2.3%
Education	3.4%
Hotels & Lodging	2.3%
Manufacturing - Electronic Equipment	0.6%
Manufacturing - Food & Nondurable Wholesale	3.5%
Manufacturing - All Other	2.3%
Medical & Health	6.1%
Public Administration	1.6%
Restaurants	17.4%
Retail Trade - Food & Beverage Stores	2.5%
Retail Trade - All Other	14.7%
Services - Management, Administrative, Social & Support	9.2%
Services - Professional, Technical, & Financial	24.2%
Services - Repair & Personal	1.7%
Not Elsewhere Classified	3.3%
Multifamily	

Annual Tons (Millions)

RESULTS:

Commercial Diversion Study

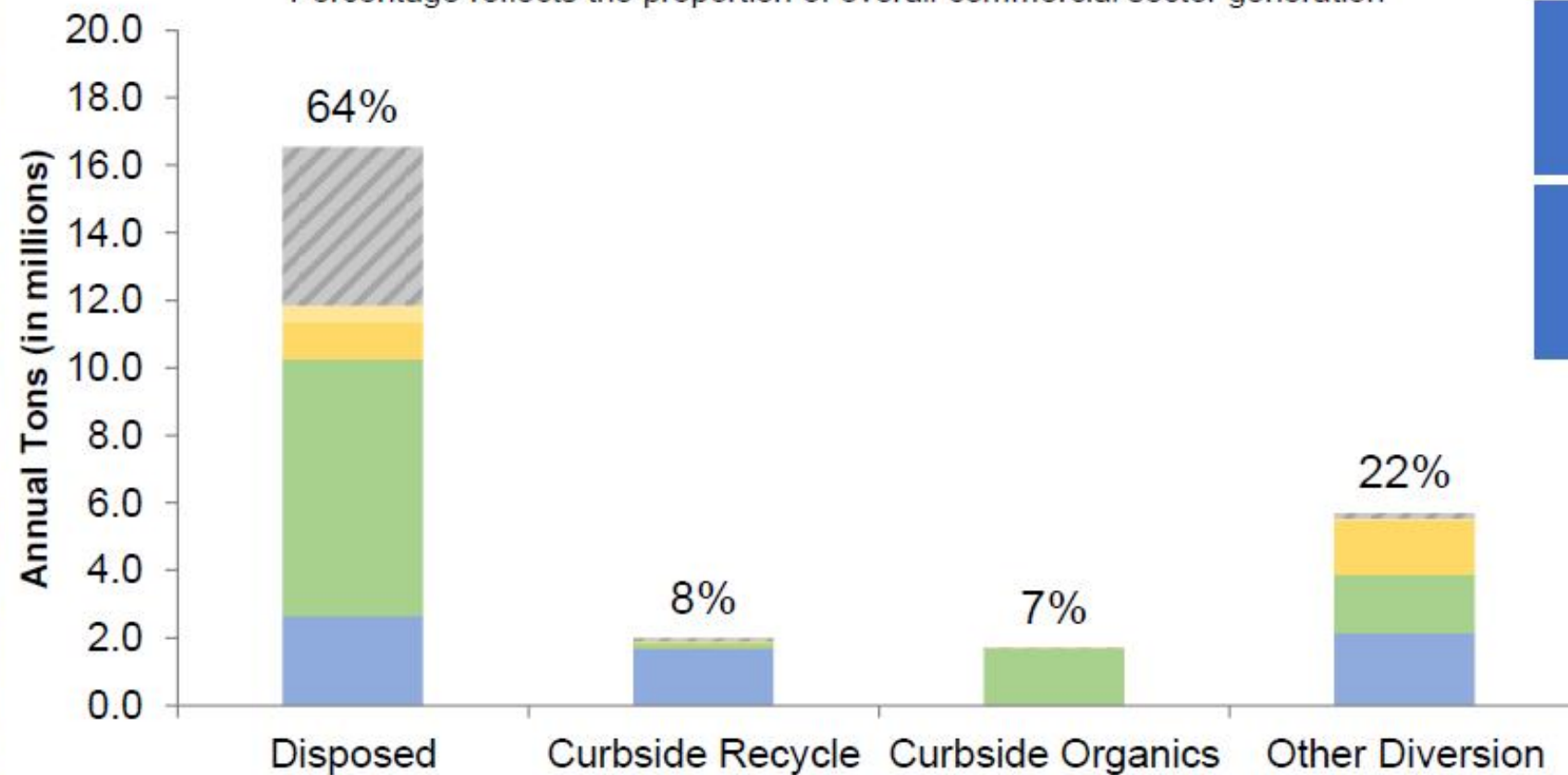|	
481	Businesses and Multifamily Sites Sampled
1,144	Material Streams sampled
0.64	TPEPY
9.4 million tons	Commercial Waste Diverted

30%   16%   14%   13%

Curbside Recycle   **Curbside Organics**   **Other Diversion**

Percentage reflects the proportion of overall commercial sector generation (excluding Multifamily)

Sector	Percentage
Arts, Entertainment & Recreation	1.8%
Durable Wholesale & Trucking	16.4%
Education	1.0%
Hotels & Lodging	1.0%
Manufacturing - Electronic Equipment	1.3%
Manufacturing - Food & Nondurable Wholesale	2.8%
Manufacturing - All Other	9.4%
Medical & Health	1.0%
Public Administration	0.5%
Restaurants	6.6%
Retail Trade - Food & Beverage Stores	19.9%
Retail Trade - All Other	3.3%
Services - Management, Administrative, Social & Support	15.1%
Services - Professional, Technical, & Financial	10.1%
Services - Repair & Personal	1.8%
Not Elsewhere Classified	8.0%
Multifamily	

Annual Tons (Millions)

Percentage reflects the proportion of overall commercial sector generation

Legend:
- Curbside Recyclable
- Compost/Mulch
- Other Recyclable
- Recoverable Inerts
- Other Materials

Y-axis: Annual Tons (in millions), scale from 0.0 to 20.0

Bar values:
- Disposed: 64%
- Curbside Recycle: 8%
- Curbside Organics: 7%
- Other Diversion: 22%

| 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.

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 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.

Restaurants are diverting 10% of food waste.

|	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

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

- 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

TASK 3 RESULTS –ASSESSMENT OF CURBSIDE DIVERSION

Percentage reflects the proportion of overall commercial sector and multifamily generation
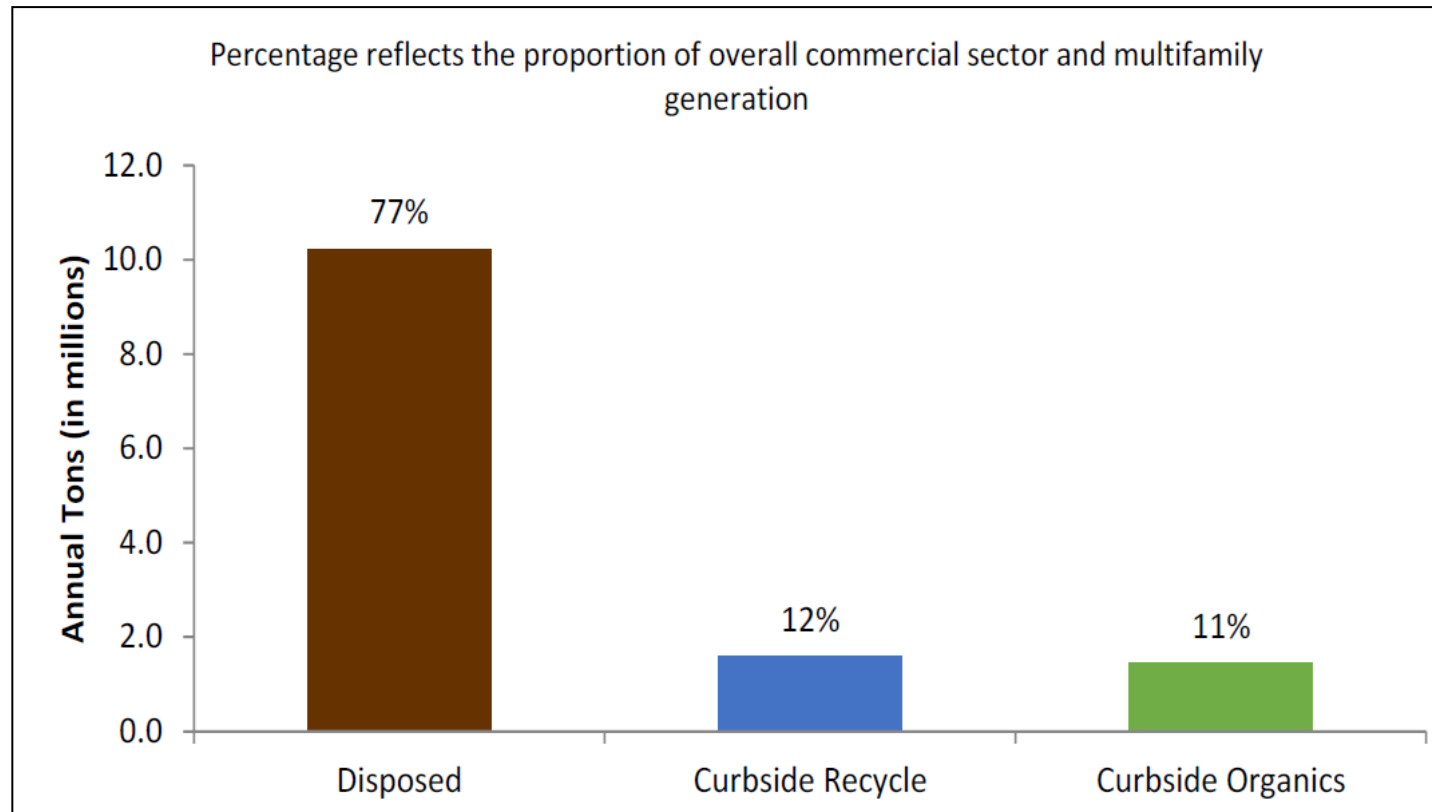
- 23 % of materials flow to recycling and organics bins

Annual Tons by Waste Stream: Task 3 Generator Sites

ASSESSMENT OF CURBSIDE DIVERSION (CONT.)

Chart legend: Curbside Recyclable, Compost/Mulch, Other Recyclable, Recoverable Inerts, Other Materials

Y-axis: Annual Tons (in millions); values 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0

X-axis categories: Disposed, Curbside Recycle, Curbside Organics
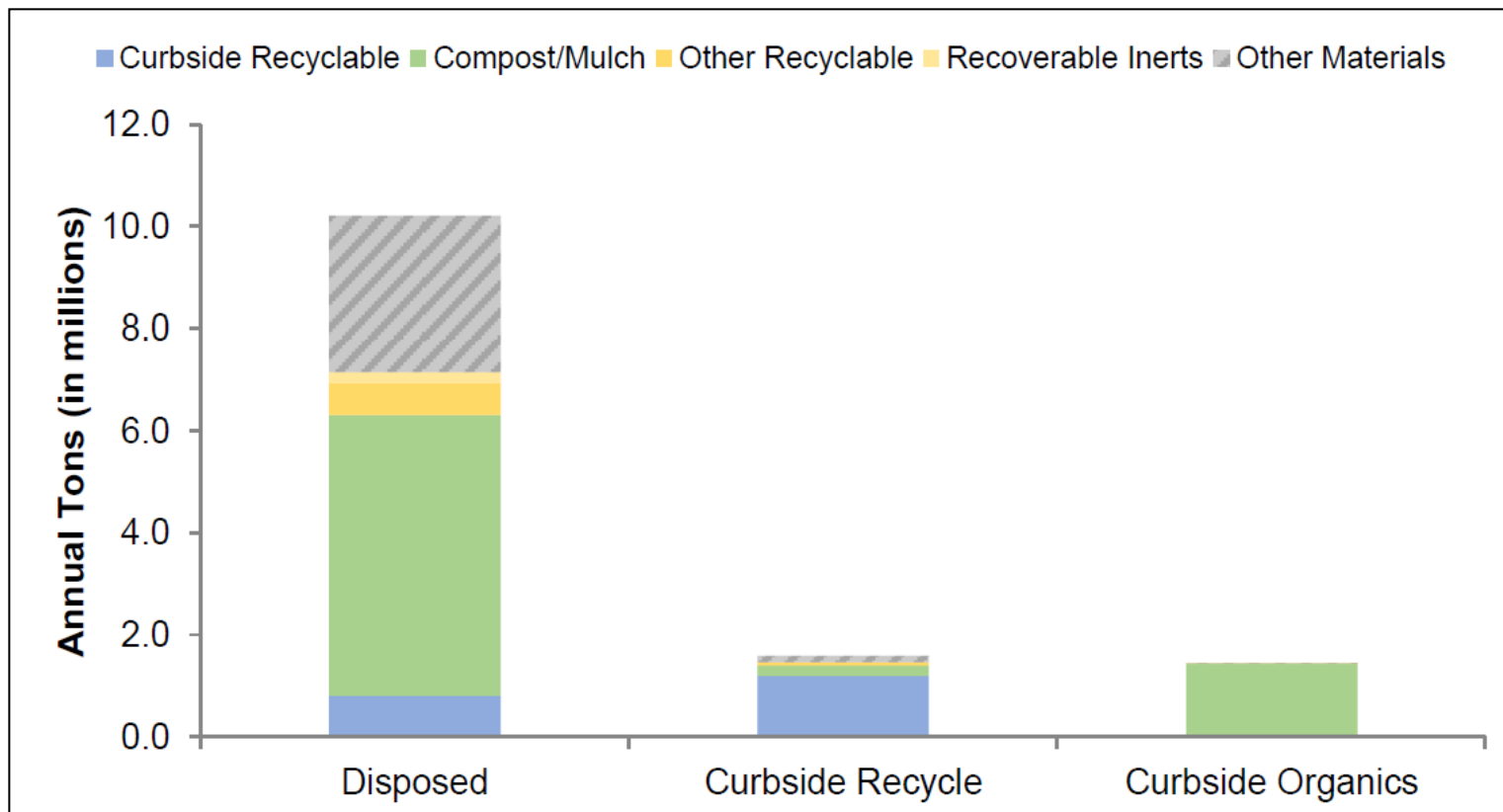
- Much of what's still disposed could go into one of the other bins

Recoverability by Stream: Task 3 Generator Sites

GENERATOR BASED STUDY: ASSESSMENT OF CURBSIDE DIVERSION (CONT.)

- 13 million tons generated

- 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

PART 2:
STATEWIDE CHARACTERIZATION OF DISPOSED WASTE BY SECTOR

- Facility-based sampling (Task 1)

TASK 1: STATEWIDE CHARACTERIZATION OF DISPOSED WASTE BY SECTOR

STATUS: 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………

CALRECYCLE CONTACT INFO

Full Presentation available on CalRecycle's webpage or at the following link:
http://www.calrecycle.ca.gov/Actions/Documents%5c85%5c20152015%5c1357%5cMay%2019%20Presentation%20Waste%20Char%20Study%20NC%201.pdf

Nancy Carr

▪ Knowledge Integration Section
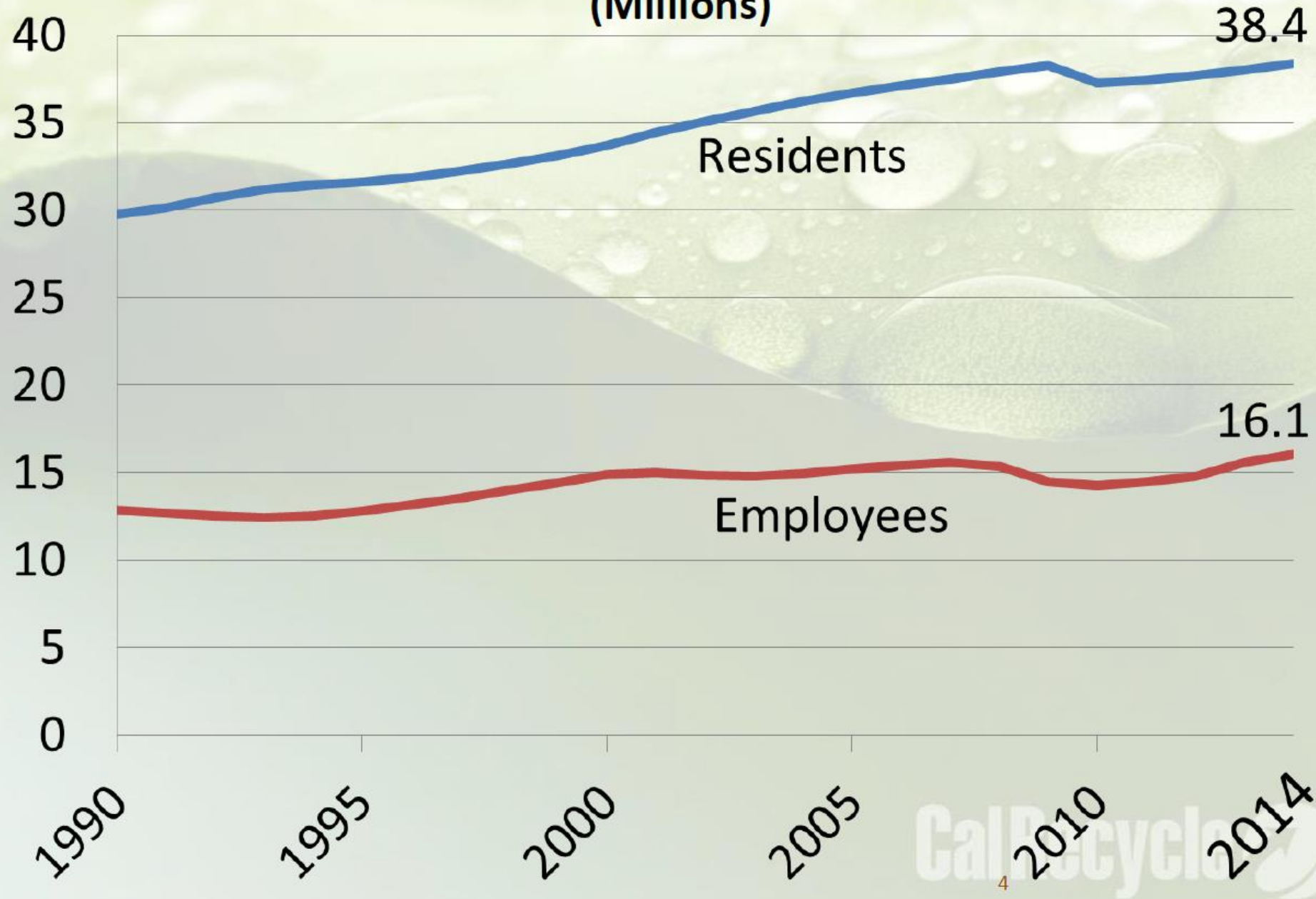
▪ Nancy.Carr@CalRecycle.ca.gov

▪ 916-341-6216

▪ http://www.calrecycle.ca.gov/WasteChar/2014Study.htm

2014 STATEWIDE PER CAPITA DISPOSAL, DIVERSION, AND RECYCLING RATES
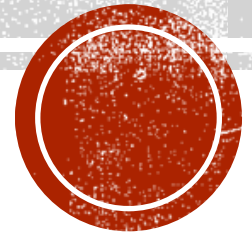
Statewide Population & Employment

(Millions)
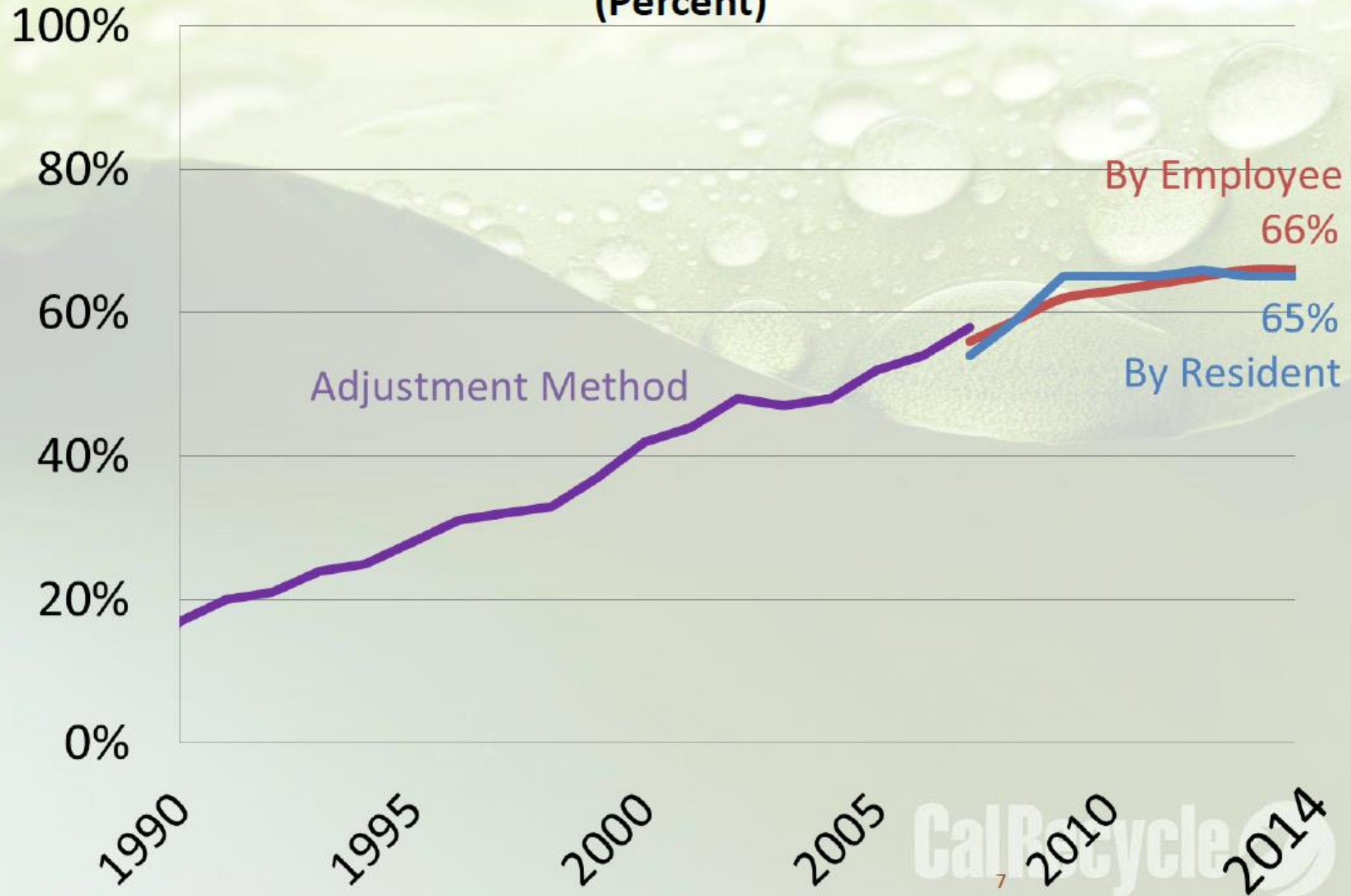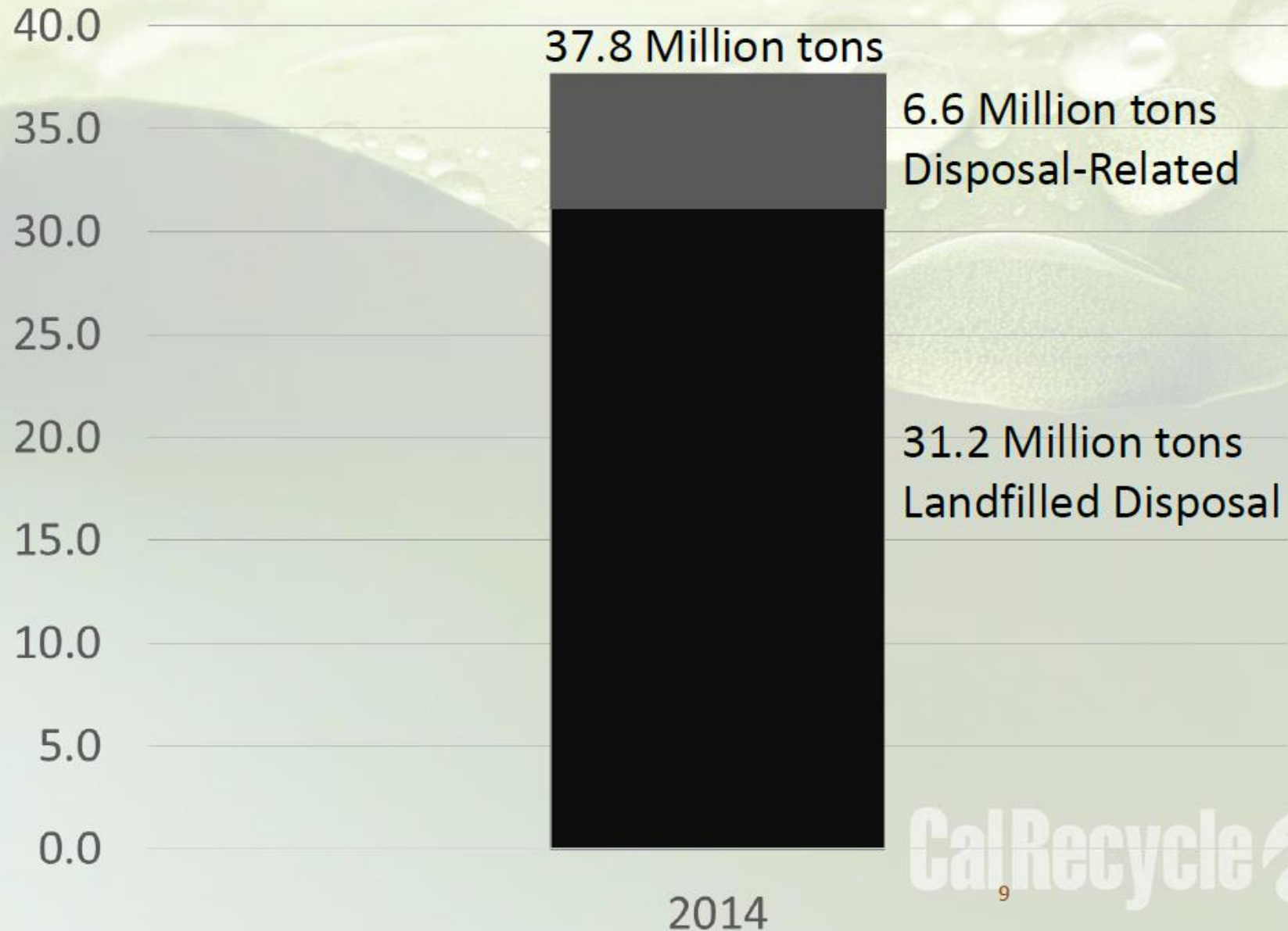
Statewide Average Per Capita Disposal
(Pounds per day)

Pounds Per Employee Per Day
10.6

Pounds Per Resident Per Day
4.5
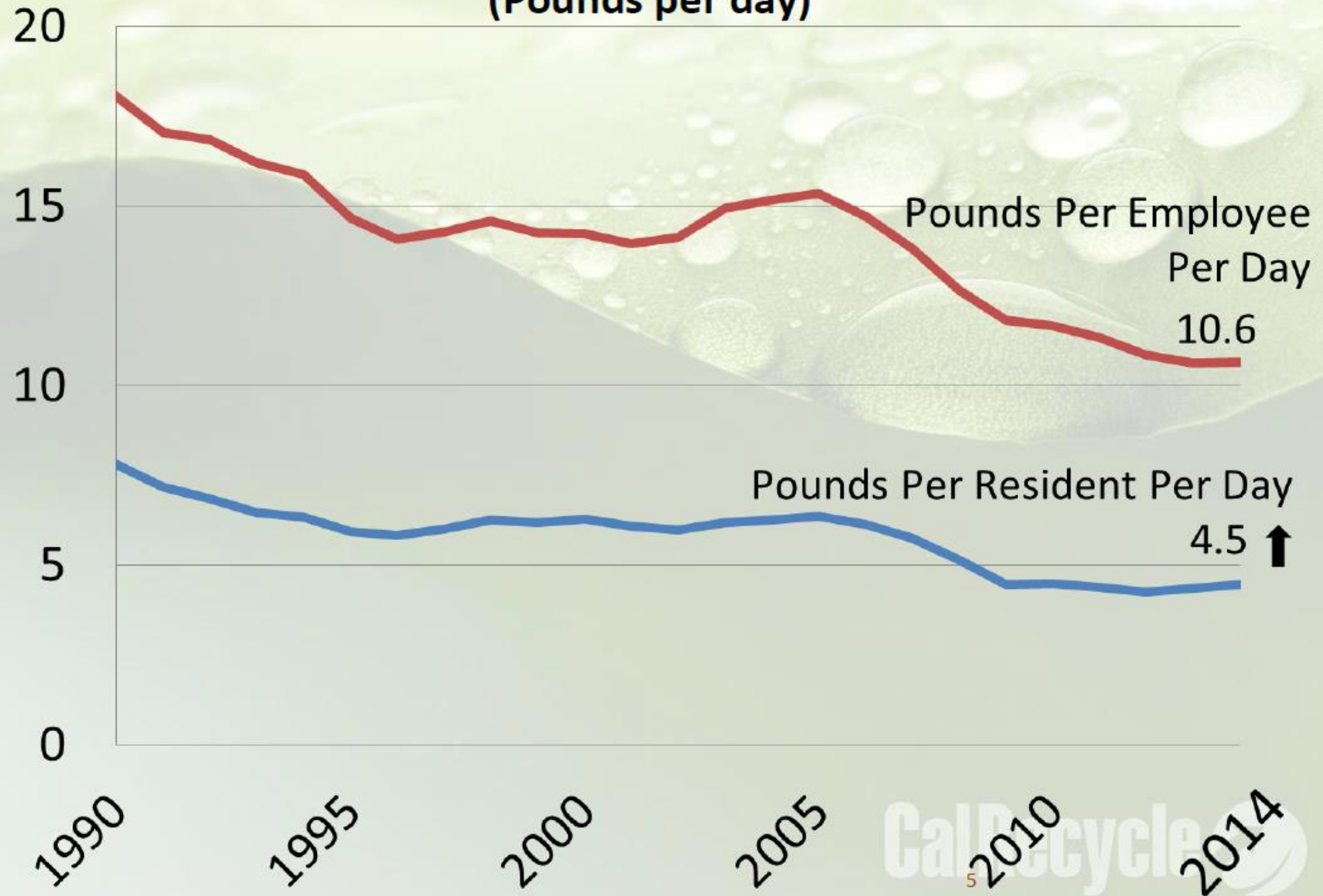
Statewide Diversion Rates
(Percent)

By Employee
66%

65%
By Resident

Adjustment Method

100%
80%
60%
40%
20%
0%

1990   1995   2000   2005   2010   2014

CalRecycle

Statewide Disposal
(Millions of tons)

37.8 Million tons

6.6 Million tons
Disposal-Related

31.2 Million tons
Landfilled Disposal

40.0

35.0

30.0

25.0

20.0

15.0

10.0

5.0

0.0

2014

CalRecycle

2014 Statewide Progress

Per Capita Disposal

- 4.5 lbs/resident/day

- 10.6 lbs/employee/day

Diversion Rate Equivalent

- 65% (Resident)

- 66% (Employee)

Recycling Rate

- 50%

MORE INFORMATION IS AVAILABLE AT:

http://www.calrecycle.ca.gov/lgcentral/goalmeasure/disposalrate/MostRecent/default.htm