

Highlights of the Facility-Based Portion of CalRecycle's 2014 Waste Characterization Study

CalRecycle Monthly Public Meeting
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Nancy Carr, CalRecycle

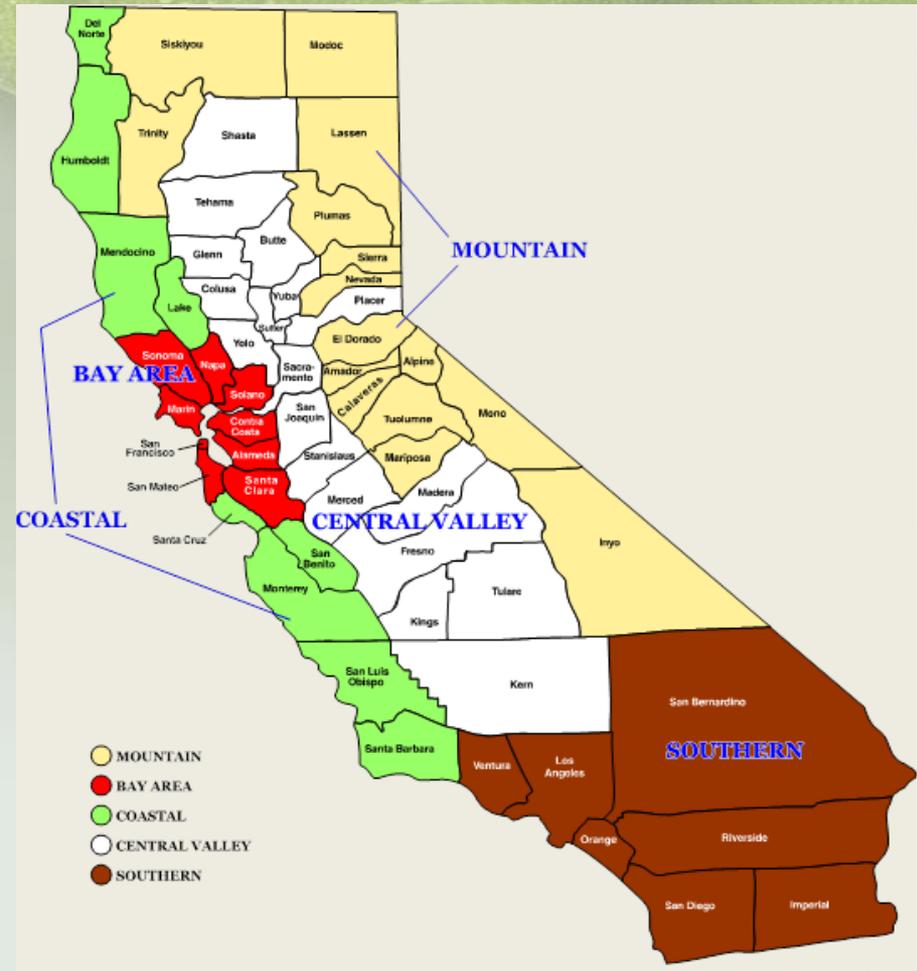


2014 Characterization Study – Two Large Studies

- **Presented today** - Statewide characterization of disposed waste by sector, using facility-based sampling (landfills and transfer stations), repeat of 2008 study
- Presented at May 19, 2015 CalRecycle Monthly Meeting- Generator-based characterization of the commercial waste by 16 business groups and multi-family waste, both disposal and diversion

2014 Facility-Based Statewide Disposal Characterization - Overview

- Data collected in 5 regions over 4 seasons
- 41 disposal facilities throughout the state
- 754 waste samples sorted by hand
- 7,245 vehicles surveyed for sector of origin
- Data aggregation and statistical analysis to develop statewide composition and quantities



Main Elements of Results

- COMPOSITION DATA from sorting waste samples - percent of each material type
- QUANTITY DATA from vehicle surveys – amounts coming from residential, commercial and self-haul sectors
- Both play a role in determining statewide percents and tons of each material in each sector

Review of Results – Data Issues

Composition data in line with past studies – confident it is representative

Sector amounts are very different from past studies – not as confident it is representative, need to confirm results

- 2014 data shows large increase in residential sector proportion and corresponding decrease in commercial sector – inconsistent with past studies and other data

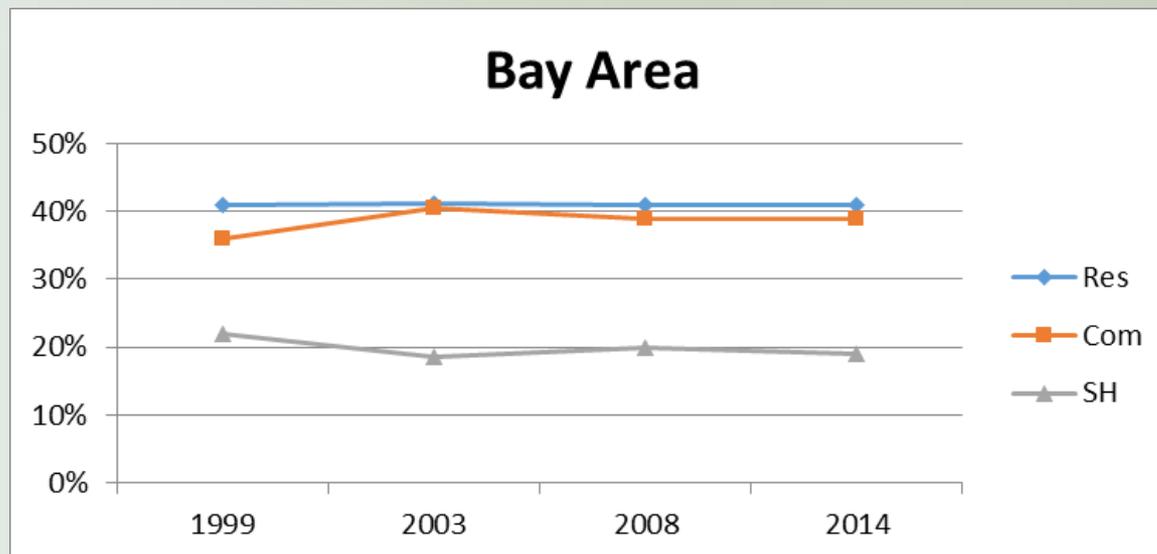
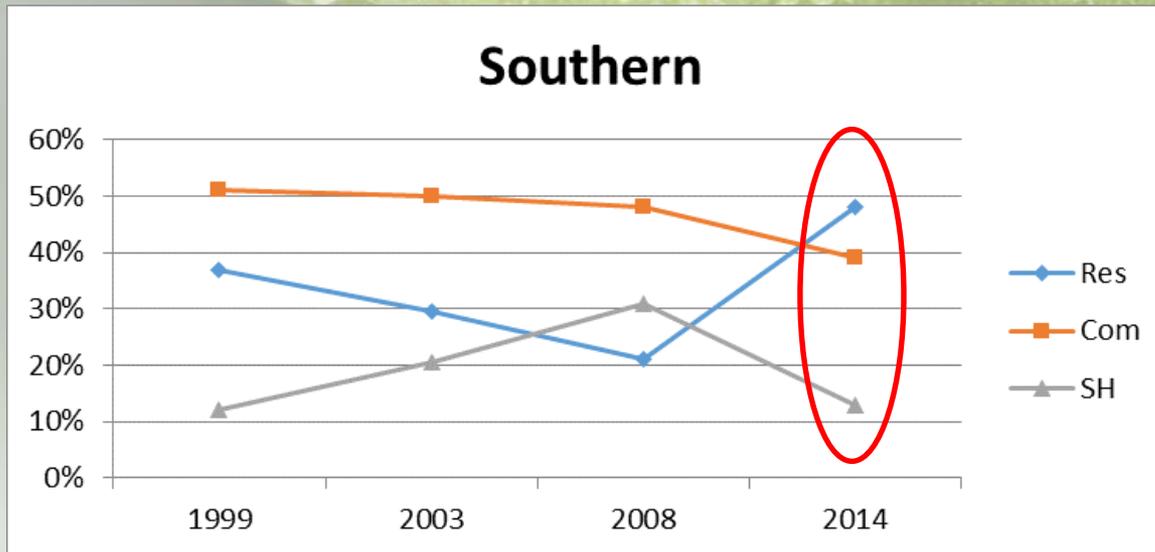
Sector Proportions – Comparing 2014 and 2008 Data

	2014 Sector Proportions	2008 Sector Proportions
Sector	Est. % of Disposed Waste	Est. % of Disposed Waste
Franchised Commercial	38.6%	49.5%
Franchised Residential	47.0%	30.0%
<i>Single-family residential</i>	35.4%	21.6%
<i>Multifamily residential</i>	11.6%	8.4%
Self-hauled	14.4%	20.4%
<i>Commercial self-hauled</i>	11.3%	17.2%
<i>Residential self-hauled</i>	3.1%	3.3%
Totals	100.0%	100.0%

Influence of Southern Region

- Southern Region is 62% of Statewide Disposal – influences statewide data heavily
- Southern Residential Sector Percent Increased from 24% to 48% from 2008 to 2014
- Southern Commercial Sector Percent Decreased from 54% to 39% from 2008 to 2014
- Southern Self Haul Sector Percent Decreased from 22% to 13% from 2008 to 2014
- No large shifts in population and employment that correspond to these shifts

Regional Sector Proportions Over Time for 2 Regions



Investigations into Southern Region Sector Data

- Survey sites chosen randomly; some required to be large
- Two sites that receive the majority of the City of LA's residential waste were selected – shifted region's results heavily to residential
- 2008 study included survey at Puente Hills – largest site in Southern Region, received large amount of commercial waste, now closed and sites that now receive this waste may not have been surveyed

Investigations into Southern Region Sector Data (cont.)

- 2008 survey sites received 32% of region's disposal; 2014 sites received only 18% - possibly missed sites that receive large amounts of commercial waste
- Commercial waste may be going to mixed waste processing facilities that are not usually included in surveys
- Staff research did not identify corresponding sites that get "missing" commercial tonnage
- Facilities, jurisdictions, LEAs all helped with information but no easy solution

Strategy to Move Forward

- Present 2014 data as found by the study
- Recalculate 2014 results using sector proportions from 2008 study and present alongside data from study
- “Reality” may be somewhere in-between
- Continue to research southern region sector data
- Consult facilities, haulers, and jurisdictions in the southern region for advice and assistance
- Ultimately we would like to either validate the 2014 sector percentages or find more accurate sector percentages to use
- If we get additional data that changes results significantly we will publish an addendum

Results of the 2014 Facility-Based Waste Characterization Study

Presented in 3 sections:

1. Showing results calculated two ways
 - using 2014 sector percentages applied to compositions, and
 - using 2008 sector percentages applied to compositions
2. Showing more details of results using 2014 sector percentages (data “as is”)
3. Comparing results for 2014 “as is” to final results from the 2008 statewide study



Section 1 - Showing results calculated two ways

Sector Proportions

Sector	Calculated Using 2014 Sector Proportions		Calculated Using 2008 Sector Proportions	
	Est. % of Disposed Waste	Est. Tons Disposed Statewide	Est. % of Disposed Waste	Est. Tons Disposed Statewide
Franchised Commercial*	38.6%	11,909,937	49.5%	15,301,492
Franchised Residential*	47.0%	14,516,212	30.0%	9,254,001
<i>Single-family residential</i>	35.4%	10,924,313	21.6%	6,662,188
<i>Multifamily residential</i>	11.6%	3,591,900	8.4%	2,591,814
Self-hauled	14.4%	4,438,130	20.4%	6,308,785
<i>Commercial self-hauled</i>	11.3%	3,486,297	17.2%	5,285,747
<i>Residential self-hauled</i>	3.1%	951,833	3.3%	1,023,039
Totals	100.0%	30,864,279	100.0%	30,864,279

Composition of Overall Disposed Waste Stream, 2014

Material	Est. Using 2014 Sector Percentages			Est. Using 2008 Sector Percentages		
	Estimated Percent	+ / -	Estimated Tons	Estimated Percent	+ / -	Estimated Tons
Paper	17.4%		5,367,734	16.8%		5,176,996
Uncoated Corrugated Cardboard	3.1%	0.6%	964,942	3.7%	0.8%	1,152,480
Paper Bags	0.2%	0.0%	70,627	0.2%	0.0%	62,259
Newspaper	1.2%	0.4%	372,966	0.9%	0.3%	285,517
White Ledger Paper	0.4%	0.1%	121,637	0.4%	0.2%	132,219
Other Office Paper	0.3%	0.1%	103,845	0.3%	0.1%	89,177
Magazines and Catalogs	0.6%	0.1%	178,166	0.5%	0.1%	158,407
Phone Books and Directories	0.0%	0.0%	14,583	0.0%	0.0%	13,590
Other Miscellaneous Paper	3.9%	0.4%	1,215,919	3.8%	0.5%	1,164,676
Remainder/Composite Paper	7.5%	0.6%	2,325,048	6.9%	0.6%	2,118,672
Glass	2.5%		764,162	2.5%		770,530
Clear Glass Bottles and Containers	0.9%	0.1%	263,439	0.7%	0.1%	225,563
Green Glass Bottles and Containers	0.2%	0.1%	71,382	0.2%	0.1%	57,935
Brown Glass Bottles and Containers	0.4%	0.1%	111,432	0.3%	0.1%	104,175
Other Glass Colored Bottles and Containers	0.0%	0.0%	12,185	0.0%	0.0%	11,843
Flat Glass	0.1%	0.1%	42,481	0.2%	0.2%	56,510
Remainder/Composite Glass	0.9%	1.0%	263,243	1.0%	1.3%	314,504
Metal	3.1%		957,027	3.1%		964,502
Tin/Steel Cans	0.7%	0.1%	204,449	0.6%	0.2%	186,422
Major Appliances	0.2%	0.2%	50,251	0.1%	0.1%	29,000
Used Oil Filters	0.0%	0.0%	1,255	0.0%	0.0%	1,098
Other Ferrous	0.8%	0.2%	248,593	0.9%	0.3%	267,932
Aluminum Cans	0.2%	0.0%	47,233	0.1%	0.0%	42,696
Other Non-Ferrous	0.5%	0.2%	157,478	0.6%	0.3%	181,009
Remainder/Composite Metal	0.8%	0.2%	247,768	0.8%	0.3%	256,344
Electronics	0.9%		273,878	0.7%		230,498
Brown Goods	0.3%	0.2%	84,415	0.2%	0.1%	75,142
Computer-related Electronics	0.1%	0.1%	45,648	0.1%	0.1%	41,339
Other Small Consumer Electronics	0.2%	0.1%	68,932	0.2%	0.1%	54,457
Video Display Devices	0.2%	0.1%	74,883	0.2%	0.1%	59,560
Plastic	10.4%		3,215,943	10.4%		3,203,542
PETE Containers	0.6%	0.1%	197,202	0.6%	0.1%	179,529
HDPE Containers	0.5%	0.1%	139,189	0.4%	0.1%	136,693
Miscellaneous Plastic Containers	0.6%	0.1%	173,738	0.5%	0.1%	165,343
Plastic Trash Bags	1.2%	0.1%	383,130	1.2%	0.2%	379,315
Plastic Grocery and Other Merchandise Bags	0.5%	0.1%	157,395	0.4%	0.0%	128,298
Non-Bag Commercial and Industrial Packaging Film	0.3%	0.1%	83,192	0.3%	0.1%	102,661
Film Products	0.2%	0.3%	73,394	0.4%	0.5%	118,895
Other Film	1.8%	0.2%	543,476	1.7%	0.2%	523,211
Durable Plastic Items	2.2%	0.5%	682,812	2.2%	0.5%	671,213
Remainder/Composite Plastic	2.5%	0.3%	782,415	2.6%	0.5%	798,384

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Composition of Overall Disposed Waste Stream, 2014

Material	Est. Using 2014 Sector Percentages			Est. Using 2008 Sector Percentages		
	Estimated Percent	+ / -	Estimated Tons	Estimated Percent	+ / -	Estimated Tons
Other Organic	37.4%		11,558,054	34.4%		10,614,389
Food	18.1%	1.6%	5,591,179	16.5%	1.8%	5,083,364
Leaves and Grass	3.8%	1.2%	1,172,925	3.4%	1.3%	1,048,621
Prunings and Trimmings	3.1%	1.0%	962,262	2.8%	1.0%	868,512
Branches and Stumps	1.7%	0.9%	528,493	1.8%	1.0%	544,872
Manures	0.6%	0.6%	174,808	0.7%	0.7%	214,875
Textiles	4.0%	0.7%	1,234,711	3.6%	0.7%	1,114,224
Carpet	1.8%	0.6%	570,212	2.0%	0.7%	605,950
Remainder/Composite Organic	4.3%	0.5%	1,323,465	3.7%	0.5%	1,133,971
Inerts and Other	19.9%		6,132,838	23.5%		7,265,537
Concrete	1.2%	0.4%	373,185	1.3%	0.5%	415,287
Asphalt Paving	0.2%	0.3%	70,269	0.4%	0.7%	130,364
Asphalt Roofing	0.7%	0.4%	223,236	0.8%	0.6%	251,150
Lumber	11.9%	1.8%	3,676,710	13.7%	2.0%	4,229,070
Gypsum Board	1.1%	0.4%	327,002	1.3%	0.5%	401,684
Rock, Soil and Fines	2.4%	0.7%	750,357	2.9%	1.0%	896,129
Remainder/Composite Inerts and Other	2.3%	0.7%	712,079	3.1%	1.1%	941,853
Household Hazardous Waste (HHW)	0.4%		109,568	0.3%		78,461
Paint	0.2%	0.1%	48,951	0.1%	0.1%	31,414
Vehicle & Equipment Fluids	0.0%	0.0%	219	0.0%	0.0%	88
Used Oil	0.0%	0.0%	1,410	0.0%	0.0%	939
Batteries	0.0%	0.0%	11,887	0.0%	0.0%	10,894
Remainder/Composite Household Hazardous	0.2%	0.1%	47,102	0.1%	0.1%	35,125
Special Waste	5.0%		1,558,079	5.8%		1,803,511
Ash	0.1%	0.0%	16,138	0.1%	0.1%	17,409
Treated Medical Waste	0.1%	0.2%	34,909	0.1%	0.1%	30,645
Bulky Items	4.4%	1.3%	1,365,340	5.1%	1.4%	1,574,149
Tires	0.1%	0.1%	39,393	0.1%	0.1%	39,308
Remainder/Composite Special Waste	0.3%	0.3%	102,299	0.5%	0.4%	142,000
Mixed Residue	3.0%		926,996	2.5%		756,314
Totals	100.0%		30,864,279	100.0%		30,864,279
Sample Count	754			754		

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

More detailed composition tables can be found in Appendix D: Expanded Statewide Waste Characterization Tables

Composition Data Side-by-Side (excerpt)

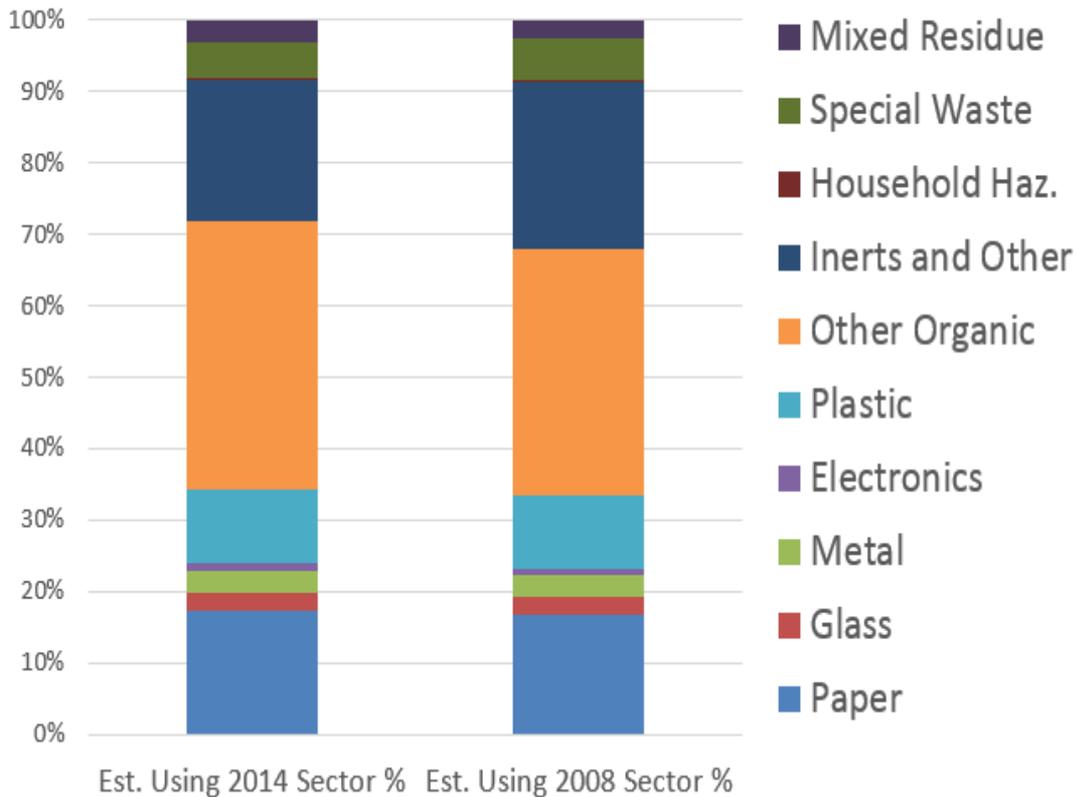
Table 7: Composition of California's Overall Disposed Waste Stream

Material	Est. Using 2014 Sector Percentages			Est. Using 2008 Sector Percentages		
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Magazines and Catalogs	0.6%	0.1%	178,166	0.5%	0.1%	158,407
Phone Books and Directories	0.0%	0.0%	14,583	0.0%	0.0%	13,590
Other Miscellaneous Paper	3.9%	0.4%	1,215,919	3.8%	0.5%	1,164,676
Remainder/Composite Paper	7.5%	0.6%	2,325,048	6.9%	0.6%	2,118,672
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Major Appliances	0.2%	0.2%	50,251	0.1%	0.1%	29,000
Used Oil Filters	0.0%	0.0%	1,255	0.0%	0.0%	1,098
Other Ferrous	0.8%	0.2%	248,593	0.9%	0.3%	267,932

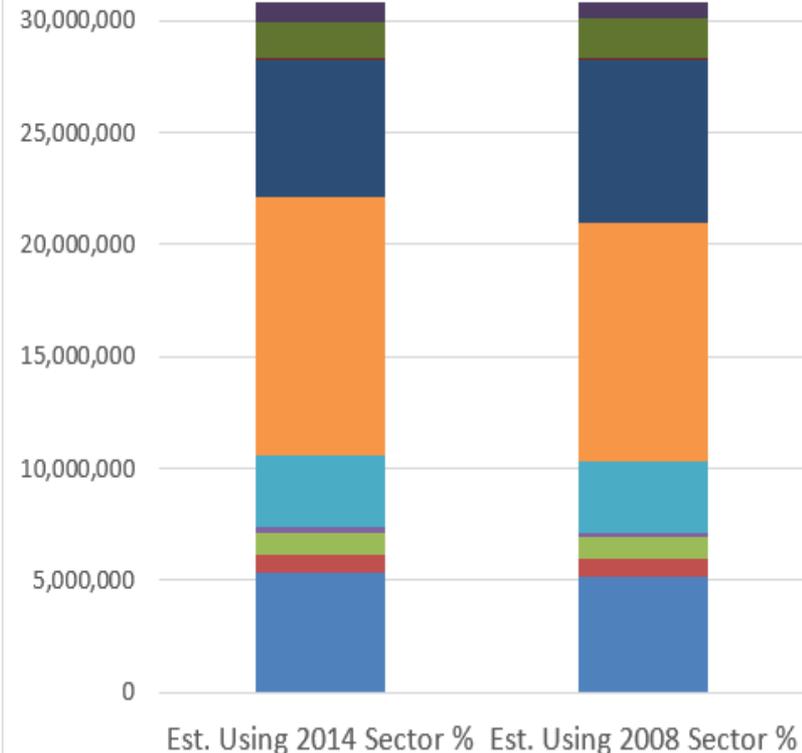
Composition – 2014 California Overall Waste Stream

Percentage and Tonnage Values Similar from the 2 Methods

Material Category Percentages



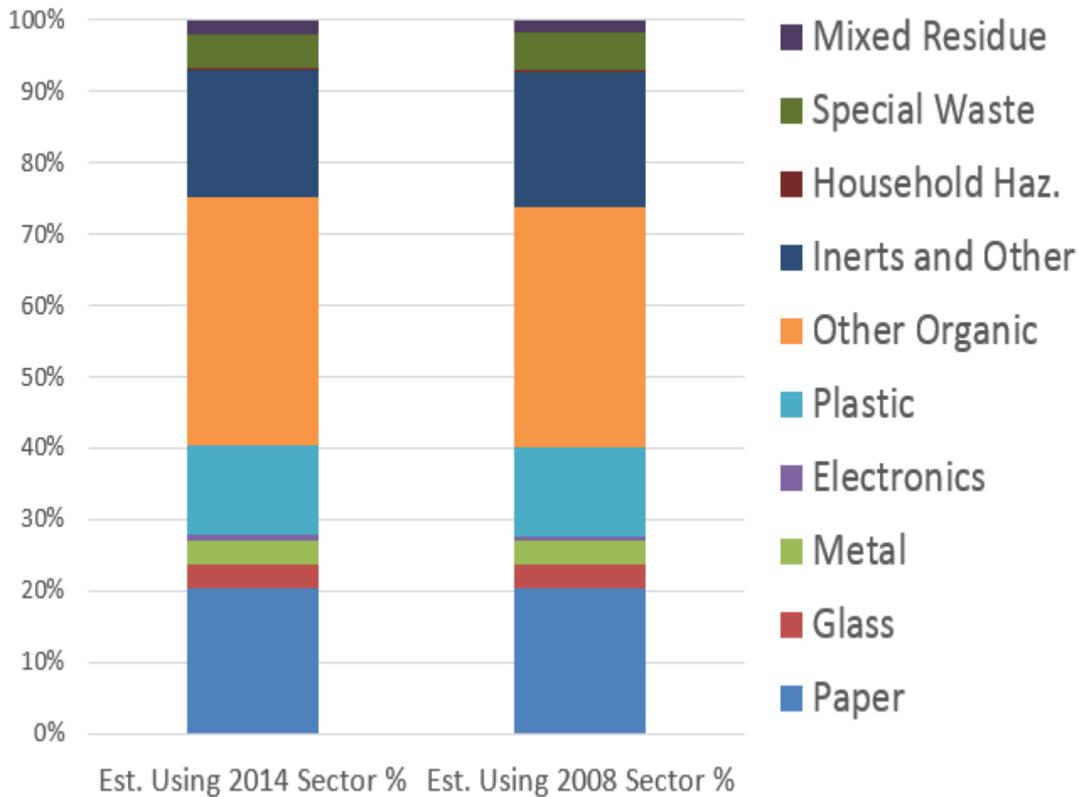
Material Category Tons



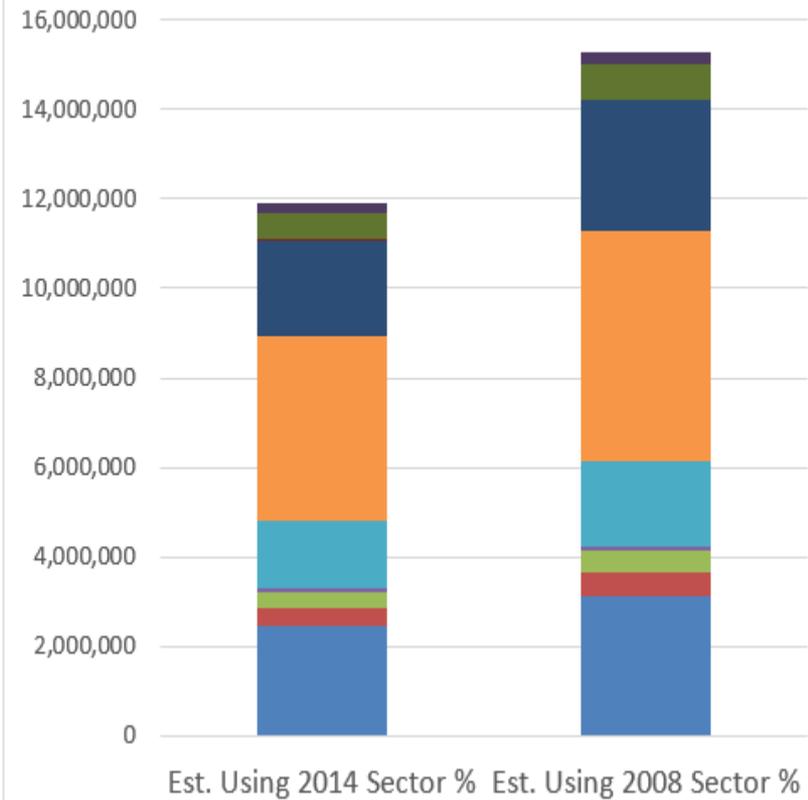
Composition - 2014 California Franchise Commercial Waste Stream

Percentage Values Similar but Tonnage Values Not Similar from the 2 Methods

Material Category Percentages



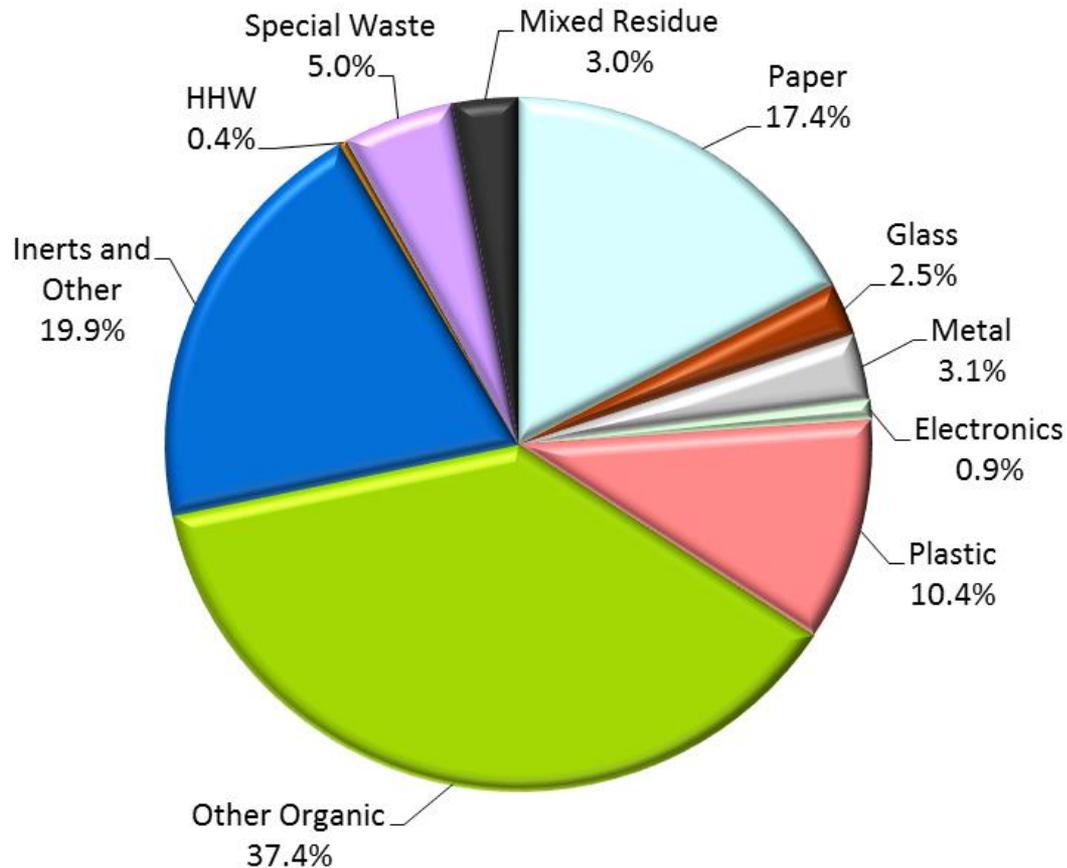
Material Category Tons



A close-up photograph of a vibrant green leaf, likely from a citrus tree, covered in numerous clear water droplets of various sizes. The background is a soft, out-of-focus light green.

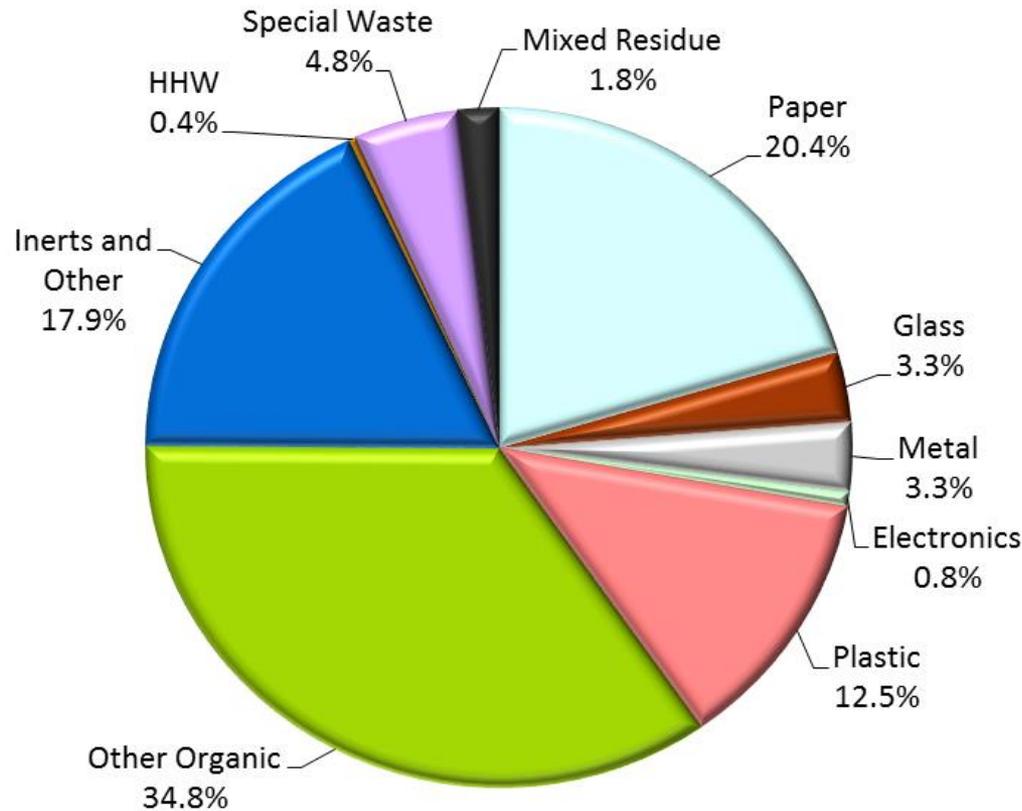
Section 2 - Results using 2014 sector percentages (data “as is”)

Composition Percentages for Overall Disposal (based on 2014 composition applied to 2014 sector percentages)



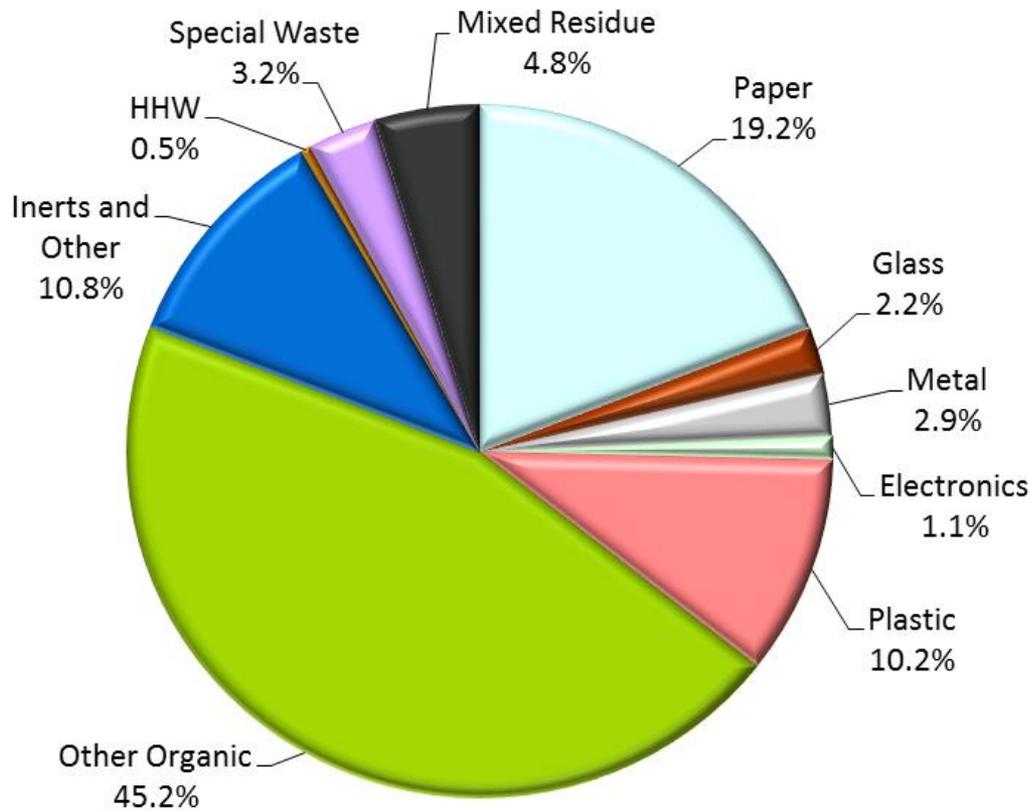
- Other Organic includes food waste (17% of overall disposal) and yard waste (9% of overall disposal)
- Inerts and Other is mostly lumber (12% of overall disposal)
- Paper includes 10% of recyclable types (cardboard, office, etc.) in the overall disposed waste stream

Composition Percentages for Franchised Commercial Disposal (based on 2014 composition applied to 2014 sector percentages)



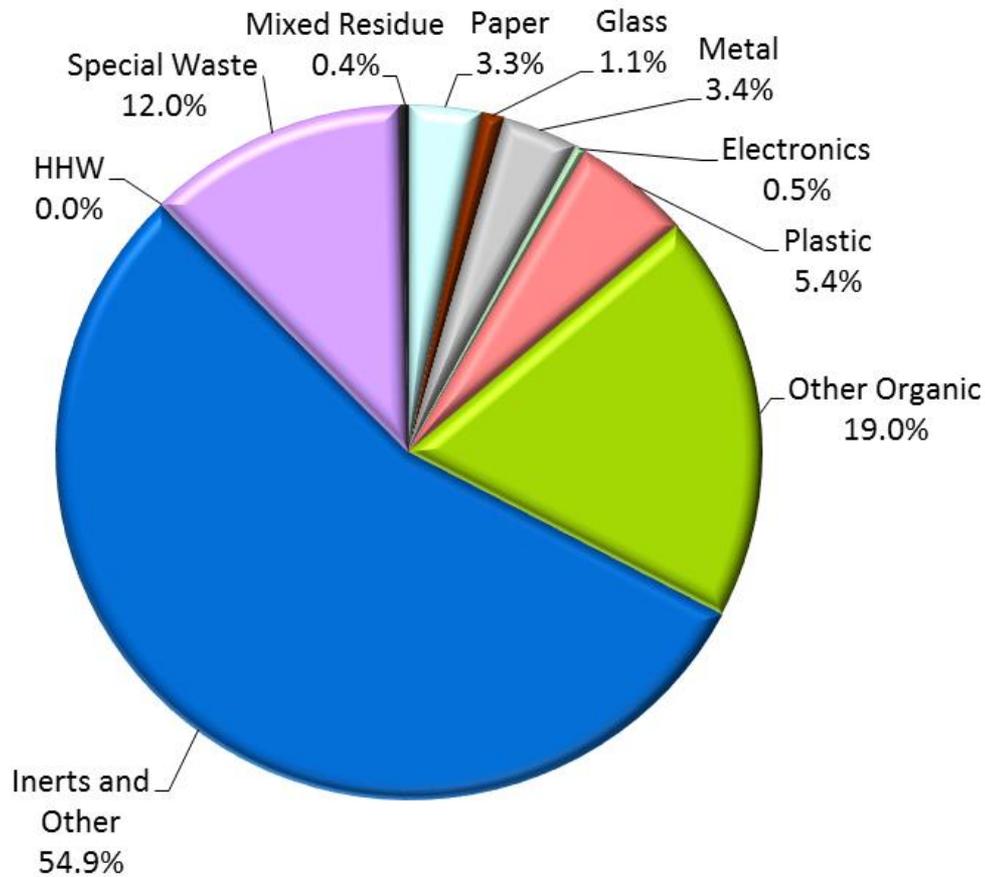
- Other Organic includes food waste (20%) and yard waste (7%)
- Inerts and Other is mostly lumber (12%)
- Paper includes 12% of recyclable types (5% is cardboard)

Composition Percentages for Franchised Residential Disposal (based on 2014 composition applied to 2014 sector percentages)



- Other Organic includes food waste (22%), yard waste (9%) and textiles (6%)
- Inerts and Other is mostly lumber (7%)
- Paper includes 10% of recyclable types (cardboard, office, etc.)

Composition Percentages for Self-Hauled Disposal (based on 2014 composition applied to 2014 sector percentages)



- Inerts and Other is mostly lumber (28%)
- Other Organic is mostly yard waste (10%)
- Special Waste is mostly bulky items like furniture, mattresses, etc. (11%)

10 Most Prevalent Material Types in California's Overall Disposed Waste Stream (based on 2014 composition applied to 2014 sector percentages)

Material	Estimated Percent	Cumulative Percent	Estimated Tons
Food	18.1%	18.1%	5,591,179
Lumber	11.9%	30.0%	3,676,710
Remainder/Composite Paper	7.5%	37.6%	2,325,048
Bulky Items	4.4%	42.0%	1,365,340
Remainder/Composite Organic	4.3%	46.3%	1,323,465
Textiles	4.0%	50.3%	1,234,711
Other Miscellaneous Paper	3.9%	54.2%	1,215,919
Leaves and Grass	3.8%	58.0%	1,172,925
Uncoated Corrugated Cardboard	3.1%	61.1%	964,942
Prunings and Trimmings	3.1%	64.3%	962,262
Total	64.3%		19,832,501

Recoverable Materials in Overall Disposal

Curbside Recyclable Materials

- Cardboard
- Recyclable Paper
- Recyclable Glass
- Recyclable Metals
- Plastic Containers

Other Recyclable Materials

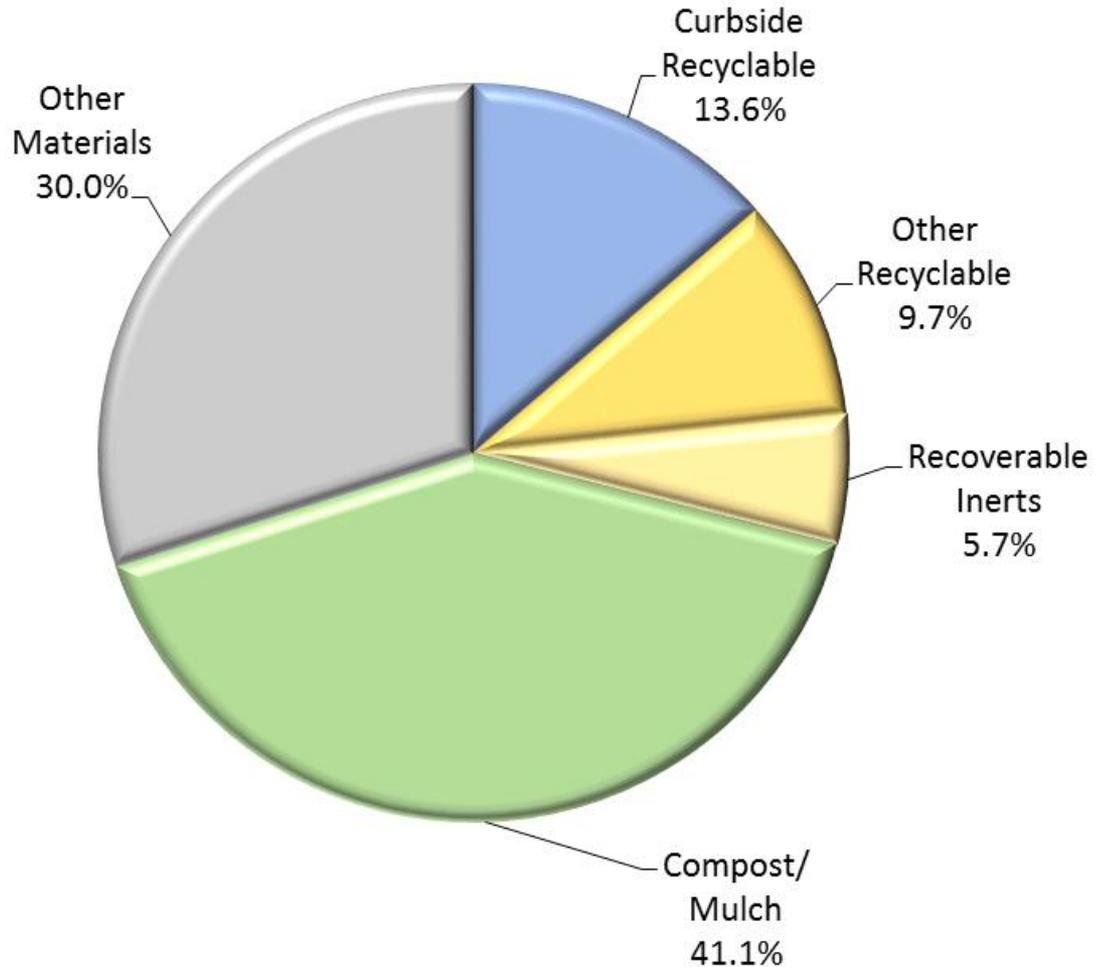
- Other Recycl. Metals; Appliances
- E-waste
- Film Plastic and Durable Plastic Items
- Textiles, Carpet
- Recoverable HHW

Compost/Mulch

- Food
- Yard Waste
- Compostable Paper
- Clean Wood Waste

Recoverable Inerts

- Concrete
- Asphalt Paving
- Asphalt Roofing
- Gypsum Board
- Rock, Soil, Fines

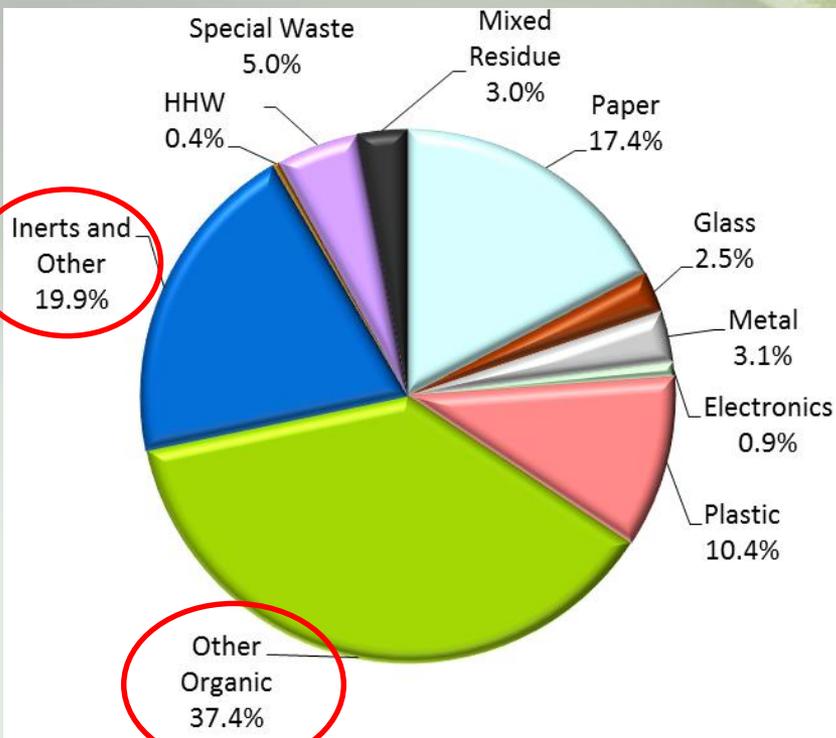


based on 2014 composition applied to 2014 sector percentages

A close-up photograph of a vibrant green leaf, likely from a citrus tree, covered in numerous clear water droplets of various sizes. The background is a soft, out-of-focus light green. The text is overlaid on the lower half of the image.

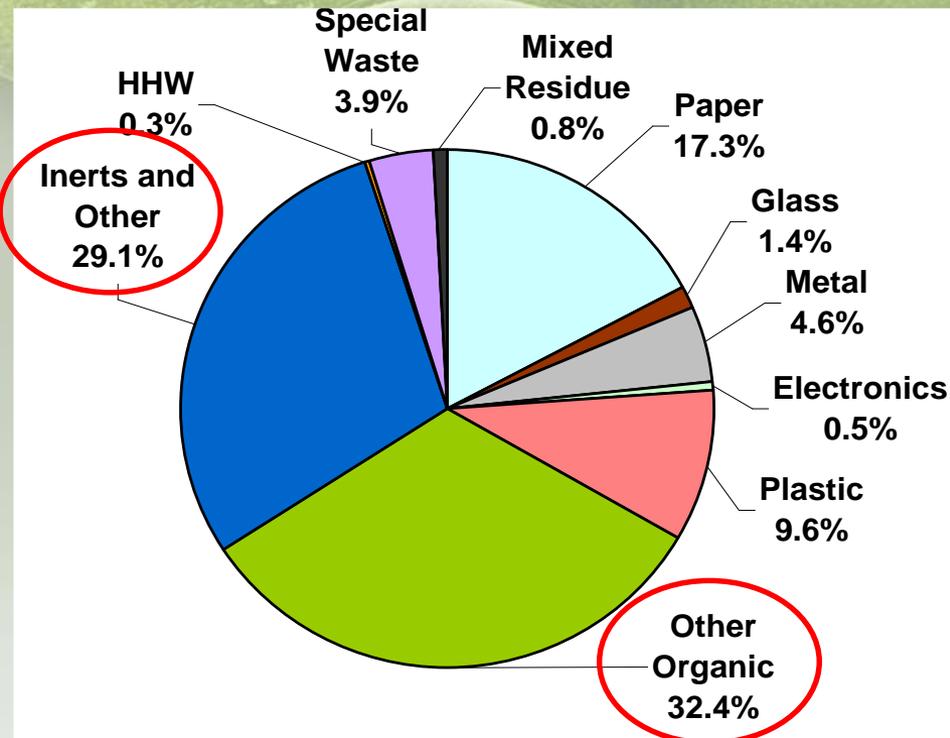
Section 3 - Comparing results
for 2014 “as is” to final results
from the 2008 statewide study

Comparing 2014 and 2008 Statewide Study Results – Overall Disposal Composition Percentages for Broad Categories



2014 Results

Based on 2014 composition percentages applied to 2014 sector percentages



2008 Results

2008 study composition percentages

Comparing 2014 and 2008 Statewide Study Results – Ten Most Prevalent Material Types in California's Overall Disposed Waste Stream

2008

Material Type	%
Food	15.5
Lumber	14.5
Remainder/Composite Inerts and Other	5.5
Remainder/Composite Paper	5.2
Uncoated Corrugated Cardboard	4.8
Remainder/Composite Organic	4.3
Leaves and Grass	3.8
Bulky Items	3.5
Carpet	3.2
Rock, Soil and Fines	3.2

2014

Material Type	%
Food	18.1
Lumber	11.9
Remainder/Composite Paper	7.5
Bulky Items	4.4
Remainder/Composite Organic	4.3
Textiles	4
Other Miscellaneous Paper	3.9
Leaves and Grass	3.8
Uncoated Corrugated Cardboard	3.1
Prunings and Trimmings	3.1

Comparing 2008 and 2014 Statewide Study Results – Changes in Material Percentages

- Several types of recyclables decreased, some increased
- Food and yard waste increased
- Lumber and roofing waste decreased significantly
- Overall per capita disposal decreased from 1.06 to 0.81 tons per person per year – total disposal decreased from about 40 million tons to about 31 million tons

Material	2008 Overall Composition %	2014 Overall Composition %
Cardboard	4.8	3.1
Recycl. Paper	7.4	6.6
Ferrous Metal	2.0	0.8
Plastic Cont.	1.3	1.7
E-waste	0.5	0.9
Food	15.5	16.5
Yard Waste	7.1	8.0
Lumber	14.5	11.9
Asphalt Roofing	2.8	0.8

Summary

- 2014 study had data issues with sector proportions – affects final data
- Present data now, as found in 2014 study, with alternative data for comparison
- Facility-based study to be published in early November; generator-based study to be published later in November
- Further research is needed to either validate the 2014 sector percentages or find more accurate sector percentages to use - if we get additional data that changes results significantly we will publish an addendum

Summary Sector Data From Facilities (“Dream Data”)

Annual tons disposed from each sector:

- Franchised single-family residential
- Franchised multi-family
- Franchised commercial
- Self-hauled (public) residential
- Self-hauled (public) commercial

Tracking of residential and commercial tonnage over time

Less specific data could still help

If you have anything you think could help, let's talk

Potentially host field data collection

Questions?

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