

# ***Contractor's Report to the Board***

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*Targeted Statewide Waste Characterization  
Study:*

## ***Waste Disposal and Diversion Findings for Selected Industry Groups***

*June 2006*

***Produced under contract by:***

***Cascadia Consulting Group***



## ***Findings for Restaurants***

The restaurant industry group was divided into two subgroups, fast-food restaurants and full-service restaurants. Both subgroups were further divided into small and large business types. After data collection, the results for small and large businesses from each type of restaurant were averaged together, based on the proportion of each found in California. The findings for the two restaurant types are presented in the following sections.

### **Fast-Food Restaurants**

Disposal, diversion, and total generated waste composition results for fast-food restaurants are detailed in Table 1. Fast-food restaurants on average generate 6,528 pounds of waste material per employee per year. Of the total waste generation approximately 35 percent or 2,267 pounds, is diverted per employee per year.

Nearly 77 percent of the material diverted by fast-food restaurants is cardboard (1,743 pounds per employee). Cardboard also constitutes a sizeable portion (196 pounds per employee per year) of disposed waste and other types of recyclable paper materials are also disposed in significant amounts. Approximately 294 pounds per employee per year (6.9 percent) of disposed waste from this industry group consists of recyclable paper materials, and an additional 21.5 percent (916 pounds per employee per year) of disposed waste is remainder/composite paper (e.g. soiled napkins, paper serving trays, etc.). It is believed that much of the remainder/composite paper could be diverted to composting programs (unlike other industry groups considered in this study, for which the materials that are classified as remainder/composite paper generally are not suitable for composting).

Fast-food restaurants divert very little plastic material. Plastic film makes up 5.9 percent of the disposal stream (about 252 pounds per employee per year) and almost none of this is being diverted.

As expected, food makes up a large proportion of disposed material, 2,191 pounds per employee per year. Although the analysis shows that fast food restaurants divert a substantial portion of food material (13.5 percent of total diversion, or approximately 300 pound per employee per year), nearly all of that diversion consists of grease, which is often prohibited for disposal as MSW.

Figure A represents the portion of the waste stream that is currently being diverted, as well as what could easily be diverted or potentially be diverted, and the remaining disposed portion.

### ***REASONS THESE SITES DIVERT WASTE***

Approximately 79 percent of the fast food restaurants surveyed about their diversion practices had some type of diversion program in place. Businesses were asked about their reasons for participating or not participating in a recycling/diversion program. The range of responses is presented below:

#### **Participants said:**

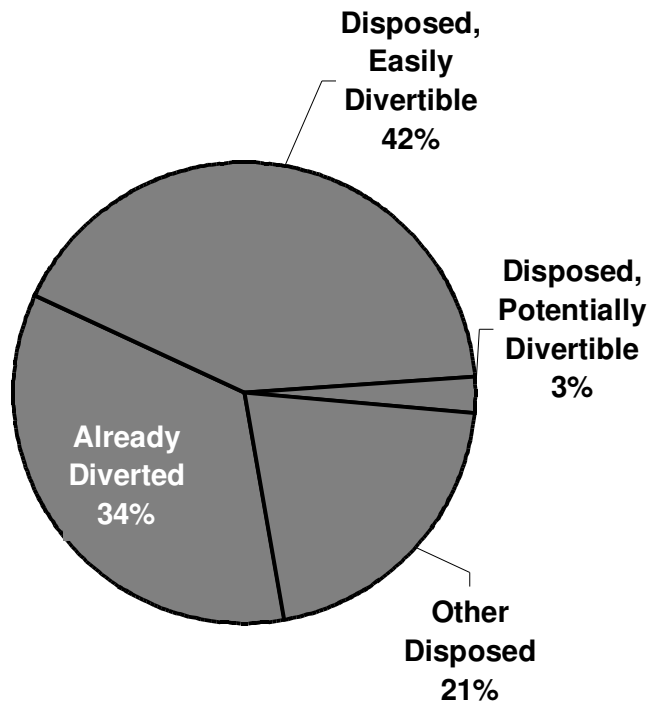
- They recycled because of pride in what they do.

- Recyclables fill up trash dumpster, and it saves space and money to use the recycling dumpster.

**Non-participants said:**

- They don't generate enough recyclables to be worth collecting.
- They don't believe there is a need to divert material from the landfill.
- It is the corporate offices' responsibility to set up a recycling program.
- There is limited space to store recyclables.
- They do not have enough time for recycling.

**Figure A: Fast-Food Restaurants: Diverted and Divertible Waste Material, 2005**



**Table 1: Fast-Food Restaurants: Waste Disposal, Diversion, and Total Generation Composition, 2005**

Material	Disposed Waste		Diverted Waste Est. Percent	Total Generated Waste Est. Percent
	Est. Percent	+ / -		
<b>Paper</b>	<b>33.0%</b>		<b>78.9%</b>	<b>49.0%</b>
Uncoated Corrugated Cardboard	4.6%	2.3%	76.9%	29.7%
Paper Bags/Kraft	0.3%	0.1%	0.0%	0.2%
Newspaper	2.4%	1.3%	0.0%	1.6%
White Ledger	0.4%	0.3%	2.0%	0.9%
Other Office Paper & Colored Ledger Paper	0.3%		0.0%	0.2%
<i>Colored Ledger</i>	0.0%	0.0%		
<i>Other Office Paper</i>	0.3%	0.2%		
Computer Paper	0.0%	0.0%	0.0%	0.0%
Magazines & Catalogs	0.2%	0.1%	0.0%	0.1%
Phone Books & Directories	0.0%	0.0%	0.0%	0.0%
Other Miscellaneous Paper	3.3%	0.9%	0.0%	2.2%
Remainder/Composite Paper	21.5%	5.3%	0.0%	14.1%
<b>Glass</b>	<b>0.6%</b>		<b>7.1%</b>	<b>2.9%</b>
Glass Bottles & Containers (colors not specified)	0.6%		7.1%	2.9%
<i>Clear Glass Bottles &amp; Containers</i>	0.5%	0.2%		
<i>Green Glass Bottles &amp; Containers</i>	0.1%	0.2%		
<i>Brown Glass Bottles &amp; Containers</i>	0.0%	0.0%		
<i>Other Colored Glass Bottles &amp; Containers</i>	0.0%	0.0%		
Flat Glass	0.0%	0.0%	0.0%	0.0%
Remainder/Composite Glass	0.0%	0.0%	0.0%	0.0%
<b>Metal</b>	<b>1.6%</b>		<b>0.0%</b>	<b>1.0%</b>
Tin/Steel Cans	1.0%	0.5%	0.0%	0.7%
Major Appliances	0.0%	0.0%	0.0%	0.0%
Used Oil Filters	0.0%	0.0%	0.0%	0.0%
Other Ferrous	0.1%	0.1%	0.0%	0.1%
Aluminum Cans	0.1%	0.0%	0.0%	0.0%
Other Non-Ferrous	0.2%	0.1%	0.0%	0.1%
Remainder/Composite Metal	0.2%	0.4%	0.0%	0.2%
<b>Plastic</b>	<b>11.6%</b>		<b>0.5%</b>	<b>7.7%</b>
PETE & HDPE Bottles, Buckets, & Containers	1.4%		0.1%	0.9%
<i>PETE Bottles</i>	0.5%	0.3%		
<i>Other PETE Containers</i>	0.0%	0.0%		
<i>HDPE Natural Bottles</i>	0.6%	0.3%		
<i>HDPE Colored Bottles</i>	0.1%	0.1%		
<i>HDPE 5-gallon Buckets — food</i>	0.1%	0.1%		
<i>HDPE 5-gallon Buckets — non-food</i>	0.0%	0.0%		
<i>Other HDPE Containers</i>	0.1%	0.1%		
#3-#7 Bottles & Containers	0.5%		0.0%	0.3%
<i>#3-#7 Bottles</i>	0.0%	0.0%		
<i>#3-#7 Other Containers</i>	0.5%	0.3%		
Plastic Film	5.9%		0.0%	3.9%
<i>Plastic Trash Bags</i>	2.3%	0.7%		
<i>Plastic Grocery &amp; Other Merchandise Bags</i>	0.1%	0.1%		
<i>Non-Bag Comm. &amp; Indust. Packg Film</i>	0.0%	0.1%		
<i>Film Products</i>	0.0%	0.1%		
<i>Other Film</i>	3.4%	0.6%		
Durable Plastic Items	0.9%	0.4%	0.3%	0.7%
Remainder/Composite Plastic	3.0%	0.9%	0.0%	1.9%

**Table 1,continued: Fast-Food Restaurants: Waste Disposal, Diversion, and Total Generation Composition, 2005**

Material	Disposed Waste		Diverted Waste	Total Generated Waste
	Est. Percent	+ / -	Est. Percent	Est. Percent
<b>Electronics</b>	<b>0.0%</b>		<b>0.0%</b>	<b>0.0%</b>
Brown Goods	0.0%	0.0%	0.0%	0.0%
Computer-related Electronics	0.0%	0.0%	0.0%	0.0%
Other Small Consumer Electronics	0.0%	0.0%	0.0%	0.0%
Televisions & Other Items with CRTs	0.0%	0.0%	0.0%	0.0%
<b>Organics</b>	<b>52.5%</b>		<b>13.5%</b>	<b>39.0%</b>
Food	51.4%	6.8%	13.5%	38.2%
Leaves, Grass, Prunings, & Trimmings	0.1%		0.0%	0.1%
<i>Leaves &amp; Grass</i>	0.1%	0.1%		
<i>Prunings &amp; Trimmings</i>	0.0%	0.0%		
Branches & Stumps	0.0%	0.0%	0.0%	0.0%
Agricultural Crop Residues	0.0%	0.0%	0.0%	0.0%
Manures	0.0%	0.0%	0.0%	0.0%
Textiles	0.6%	0.4%	0.0%	0.4%
Carpet	0.0%	0.0%	0.0%	0.0%
Remainder/Composite Organics	0.4%	0.3%	0.0%	0.3%
<b>Construction &amp; Demolition</b>	<b>0.6%</b>		<b>0.0%</b>	<b>0.4%</b>
Concrete	0.0%	0.0%	0.0%	0.0%
Asphalt Paving	0.0%	0.0%	0.0%	0.0%
Asphalt Roofing	0.0%	0.0%	0.0%	0.0%
Lumber & Treated Wood Waste	0.6%		0.0%	0.4%
<i>Lumber</i>	0.4%	0.5%		
<i>Treated Wood Waste</i>	0.2%	0.3%		
Gypsum Board	0.0%	0.0%	0.0%	0.0%
Rock, Soil, & Fines	0.1%	0.1%	0.0%	0.0%
Remainder/Composite C & D	0.0%	0.0%	0.0%	0.0%
<b>Household Hazardous</b>	<b>0.0%</b>		<b>0.0%</b>	<b>0.0%</b>
Paint	0.0%	0.0%	0.0%	0.0%
Vehicle & Equipment Fluids	0.0%	0.0%	0.0%	0.0%
Used Oil	0.0%	0.0%	0.0%	0.0%
Batteries	0.0%	0.0%	0.0%	0.0%
Remainder/Composite HHW	0.0%	0.0%	0.0%	0.0%
<b>Special Waste</b>	<b>0.0%</b>		<b>0.0%</b>	<b>0.0%</b>
Ash	0.0%	0.0%	0.0%	0.0%
Sewage Solids & Industrial Sludge	0.0%		0.0%	0.0%
<i>Sewage Solids</i>	0.0%	0.0%		
<i>Industrial Sludge</i>	0.0%	0.0%		
Treated Medical Waste	0.0%	0.0%	0.0%	0.0%
Bulky Items	0.0%	0.0%	0.0%	0.0%
Tires	0.0%	0.0%	0.0%	0.0%
Remainder/Composite Special Waste	0.0%	0.0%	0.0%	0.0%
<b>Mixed Residue</b>	<b>0.0%</b>		<b>0.0%</b>	<b>0.0%</b>
Mixed Residue	0.0%	0.0%	0.0%	0.0%
<b>Total:</b>	100.0%		100.0%	100.0%
<b>Total Pounds per Employee:</b>	4,262		2,267	6,528
<b>Number of Samples:</b>	22		24	

## Full-Service Restaurants

Disposal, diversion, and total generated waste composition results for full-service restaurants are detailed in Table 2. Full-service restaurants on average generate 6,437 pounds of waste material per employee per year. Of the total waste generation approximately 32 percent or 2,034 pounds, is diverted per employee per year.

As with fast-food restaurants, the majority of material diverted by full-service restaurants is cardboard (71.6 percent of diversion or 1,456 pound per employee per year). Although full-service restaurants dispose less paper overall than fast-food restaurants, much of the paper currently disposed, including cardboard, could be diverted through paper recycling activities (approximately 9.6 percent of disposed waste or 423 pound per employee per year).

Full-service restaurants dispose of nearly 125 pounds per employee per year of metal materials, and they divert almost none of these materials.

Again like fast-food restaurants, full-service restaurants divert very little plastic material. Just over 200 pounds per employee per year of plastic film is disposed (4.6 percent of disposed waste), and almost none is being diverted.

As expected, food makes up a large portion of disposed materials (2,910 pounds per employee per year or 66.1 percent). Nearly a quarter of what is diverted by full-service restaurants is food (478 pounds per employee per year), almost all of that diversion consists of grease, which is often prohibited for disposal as MSW.

Figure B represents the portion of the waste stream that is currently being diverted, as well as what could easily be diverted or potentially be diverted, and the remaining disposed portion.

### *REASONS THESE SITES DIVERT WASTE*

Approximately 78 percent of the full-service restaurants surveyed about their diversion practices had some type of diversion program in place. Businesses were asked about their reasons for participating or not participating in a recycling/diversion program. The range of responses is presented below:

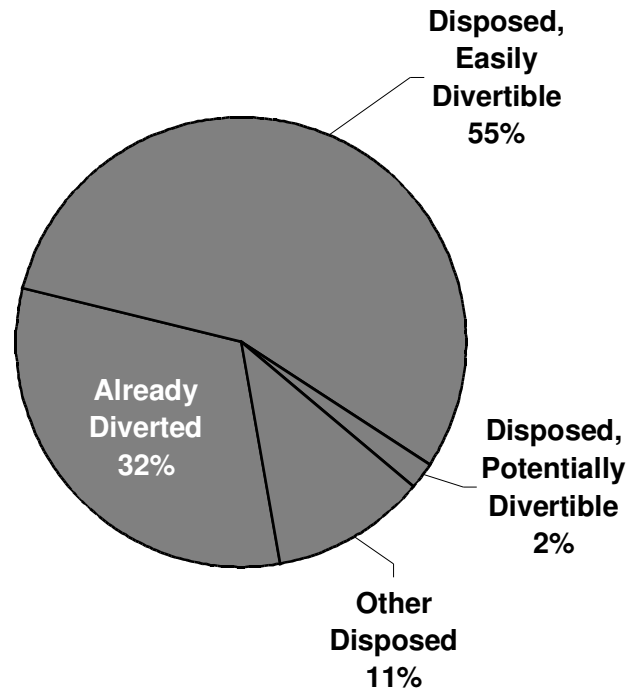
#### **Participants said:**

- They try to recycle everything they can.

#### **Non-participants said:**

- They don't believe there is a need to divert material from the landfill.
- There is limited space to store recyclables.
- They stopped participating because when the hauler came they had very little material in their recycling container due to scavenging.
- They do not have enough time for recycling.
- They don't recycle because they haven't set up a recycling program.
- They would participate if there was a commingled recycling option.

**Figure B: Full-Service Restaurants: Diverted and Divertible Waste Material, 2005**



**Table 2: Full-Service Restaurants: Waste Disposal, Diversion, and Total Generation Composition, 2005**

Material	Disposed Waste		Diverted Waste	Total Generated Waste
	Est. Percent	+ / -	Est. Percent	Est. Percent
<b>Paper</b>	<b>17.3%</b>		<b>71.6%</b>	<b>34.4%</b>
Uncoated Corrugated Cardboard	4.1%	1.4%	71.6%	25.4%
Paper Bags/Kraft	0.1%	0.0%	0.0%	0.1%
Newspaper	2.1%	1.0%	0.0%	1.5%
White Ledger	0.1%	0.0%	0.0%	0.0%
Other Office Paper & Colored Ledger Paper	0.5%		0.0%	0.3%
<i>Colored Ledger</i>	0.0%	0.0%		
<i>Other Office Paper</i>	0.5%	0.3%		
Computer Paper	0.0%	0.0%	0.0%	0.0%
Magazines & Catalogs	0.2%	0.2%	0.0%	0.2%
Phone Books & Directories	0.0%	0.0%	0.0%	0.0%
Other Miscellaneous Paper	2.5%	1.2%	0.0%	1.7%
Remainder/Composite Paper	7.7%	2.1%	0.0%	5.3%
<b>Glass</b>	<b>2.7%</b>		<b>1.9%</b>	<b>2.4%</b>
Glass Bottles & Containers (colors not specified)	2.5%		1.9%	2.3%
<i>Clear Glass Bottles &amp; Containers</i>	0.8%	0.3%		
<i>Green Glass Bottles &amp; Containers</i>	0.8%	0.4%		
<i>Brown Glass Bottles &amp; Containers</i>	0.9%	0.6%		
<i>Other Colored Glass Bottles &amp; Containers</i>	0.0%	0.0%		
Flat Glass	0.0%	0.0%	0.0%	0.0%
Remainder/Composite Glass	0.1%	0.1%	0.0%	0.1%
<b>Metal</b>	<b>2.8%</b>		<b>0.2%</b>	<b>2.0%</b>
Tin/Steel Cans	2.3%	1.8%	0.0%	1.5%
Major Appliances	0.0%	0.0%	0.0%	0.0%
Used Oil Filters	0.0%	0.0%	0.0%	0.0%
Other Ferrous	0.2%	0.2%	0.0%	0.1%
Aluminum Cans	0.0%	0.0%	0.2%	0.1%
Other Non-Ferrous	0.2%	0.2%	0.0%	0.1%
Remainder/Composite Metal	0.1%	0.1%	0.0%	0.1%
<b>Plastic</b>	<b>7.3%</b>		<b>2.7%</b>	<b>5.9%</b>
PETE & HDPE Bottles, Buckets, & Containers	0.9%		0.1%	0.7%
<i>PETE Bottles</i>	0.2%	0.1%		
<i>Other PETE Containers</i>	0.0%	0.0%		
<i>HDPE Natural Bottles</i>	0.4%	0.2%		
<i>HDPE Colored Bottles</i>	0.1%	0.0%		
<i>HDPE 5-gallon Buckets — food</i>	0.0%	0.1%		
<i>HDPE 5-gallon Buckets — non-food</i>	0.0%	0.1%		
<i>Other HDPE Containers</i>	0.1%	0.1%		
#3-#7 Bottles & Containers	0.3%		0.0%	0.2%
<i>#3-#7 Bottles</i>	0.0%	0.0%		
<i>#3-#7 Other Containers</i>	0.2%	0.2%		
Plastic Film	4.6%		0.0%	3.2%
<i>Plastic Trash Bags</i>	1.3%	0.4%		
<i>Plastic Grocery &amp; Other Merchandise Bags</i>	0.1%	0.0%		
<i>Non-Bag Comm. &amp; Indust. Packg Film</i>	0.0%	0.0%		
<i>Film Products</i>	0.0%	0.1%		
<i>Other Film</i>	3.2%	1.1%		
Durable Plastic Items	0.6%	0.4%	2.6%	1.2%
Remainder/Composite Plastic	0.9%	0.2%	0.0%	0.6%

**Table 2, continued: Full-Service Restaurants: Waste Disposal, Diversion, and Total Generation Composition, 2005**

Material	Disposed Waste Est.		Diverted Waste Est.	Total Generated Waste Est.
	Percent	+ / -	Percent	Percent
<b>Electronics</b>	<b>0.1%</b>		<b>0.0%</b>	<b>0.0%</b>
Brown Goods	0.1%	0.1%	0.0%	0.0%
Computer-related Electronics	0.0%	0.0%	0.0%	0.0%
Other Small Consumer Electronics	0.0%	0.0%	0.0%	0.0%
Televisions & Other Items with CRTs	0.0%	0.0%	0.0%	0.0%
<b>Organics</b>	<b>66.5%</b>		<b>23.6%</b>	<b>52.9%</b>
Food	66.1%	5.9%	23.5%	52.7%
Leaves, Grass, Prunings, & Trimmings	0.1%		0.0%	0.1%
<i>Leaves &amp; Grass</i>	0.0%	0.0%		
<i>Prunings &amp; Trimmings</i>	0.1%	0.1%		
Branches & Stumps	0.0%	0.0%	0.0%	0.0%
Agricultural Crop Residues	0.0%	0.0%	0.0%	0.0%
Manures	0.0%	0.0%	0.0%	0.0%
Textiles	0.3%	0.2%	0.0%	0.2%
Carpet	0.0%	0.0%	0.0%	0.0%
Remainder/Composite Organics	0.1%	0.1%	0.0%	0.1%
<b>Construction &amp; Demolition</b>	<b>1.8%</b>		<b>0.0%</b>	<b>1.3%</b>
Concrete	0.3%	0.4%	0.0%	0.2%
Asphalt Paving	0.0%	0.0%	0.0%	0.0%
Asphalt Roofing	0.0%	0.0%	0.0%	0.0%
Lumber & Treated Wood Waste	0.6%		0.0%	0.4%
<i>Lumber</i>	0.6%	0.8%		
<i>Treated Wood Waste</i>	0.0%	0.0%		
Gypsum Board	0.0%	0.0%	0.0%	0.0%
Rock, Soil, & Fines	0.3%	0.3%	0.0%	0.2%
Remainder/Composite C & D	0.6%	0.5%	0.0%	0.4%
<b>Household Hazardous</b>	<b>0.0%</b>		<b>0.0%</b>	<b>0.0%</b>
Paint	0.0%	0.0%	0.0%	0.0%
Vehicle & Equipment Fluids	0.0%	0.0%	0.0%	0.0%
Used Oil	0.0%	0.0%	0.0%	0.0%
Batteries	0.0%	0.0%	0.0%	0.0%
Remainder/Composite HHW	0.0%	0.0%	0.0%	0.0%
<b>Special Waste</b>	<b>1.5%</b>		<b>0.0%</b>	<b>1.0%</b>
Ash	0.0%	0.0%	0.0%	0.0%
Sewage Solids & Industrial Sludge	0.0%		0.0%	0.0%
<i>Sewage Solids</i>	0.0%	0.0%		
<i>Industrial Sludge</i>	0.0%	0.0%		
Treated Medical Waste	0.0%	0.0%	0.0%	0.0%
Bulky Items	1.5%	2.4%	0.0%	1.0%
Tires	0.0%	0.0%	0.0%	0.0%
Remainder/Composite Special Waste	0.0%	0.0%	0.0%	0.0%
<b>Mixed Residue</b>	<b>0.0%</b>		<b>0.0%</b>	<b>0.0%</b>
Mixed Residue	0.0%	0.1%	0.0%	0.0%
<b>Total:</b>	100.0%		100.0%	100.0%
<b>Total Pounds per Employee:</b>	4,403		2,034	6,437
<b>Number of Samples:</b>	23		27	