

Chapter 5. Food Waste Recovery

Food waste management and recovery is the series of activities where discarded food materials are collected, sorted, processed and converted into other materials and used in the production of new products.

Food Waste recovery represents an important part of the food system, and in particular a sustainable food system, by “closing the food loop.” As the final step in the movement of food through human communities, food waste can be both a community output (as discarded or landfilled waste), and an input back into the food system (as a recoverable resource capable of being converted into compost or other recyclables). A critical component of a sustainable food system is the diversion of food waste from landfills. This is reflected in the “Sustainable Food System for Oakland” **Goal 2. Urban Agriculture and Waste Reduction**, which promotes “closed-loop systems that make use of food waste recovery while reducing energy use.”

Reducing food waste in general, as well as increasing the amount of food residuals that are diverted from landfills can have a number of environmental, social, and economic benefits, including:

- Reducing pollution and the consumption of non-renewable materials within a community
- Generating needed compost for urban and rural agriculture production
- Reducing trash collection and disposal fees for individuals and businesses
- Ensuring that edible food is redistributed to those who require emergency food provision

The California Integrated Waste Management Board emphasizes the fact that, “There is no single strategy for diverting food discards to beneficial uses. Food can be donated to charities, converted into animal feed, rendered into soap or other products, and composted. Food waste can also be avoided through prevention strategies.”¹⁴⁷ In short, food waste recovery is comprised of a number of recycling and use options that encompass different kinds and sources of food waste as well as different markets for and recipients of recovered and residual food products. This section will address some of the strategies currently being employed by and within Oakland for food waste recovery.

Food Waste and Materials Recovery - Why is it Important?

Food waste recovery can generally be defined as the **collecting and reusing food scraps, through donation of edible food to charities, and the recycling of edible food through**

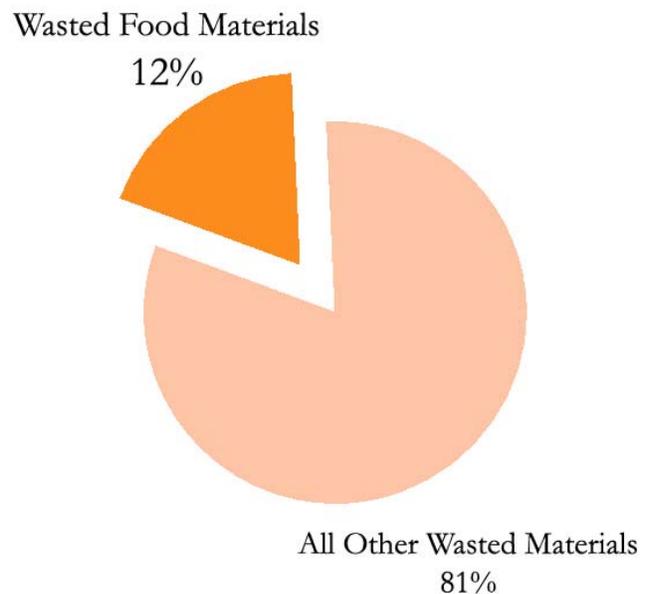
¹⁴⁷ “Innovations’ Case Studies: Food Waste Recovery - General Information.” *General Information: Food Waste Recovery*. California Integrated Waste Management Board. March 2006.
<<http://www.ciwmb.ca.gov/LGLibrary/Innovations/FoodWaste/Program.htm>>.

composting, and other end uses.¹⁴⁸ The “Recycling Hierarchy,” as mandated by California State Law, is Reduce, Reuse, Recycle. According to the Alameda County Integrated Waste Management Plan, “The most important diversion strategy is ‘Source Reduction,’ also referred to as waste prevention.”¹⁴⁹

According to a recent study by a researcher at the University of Arizona, Americans throw away approximately 40-50% of their food (i.e., total, system-wide “food loss”).¹⁵⁰ Within that figure, retailers and restaurants throw away 35 million tons a year, valued at \$30 billion. Households are responsible for throwing away approximately \$43 billion worth of food (not including plate scrapings, garbage disposal waste, or composting). That comes out to about 14 percent of what they buy, or 1.28 pounds of food per household per day. Vegetables are 27 percent of food trash, while packaged foods in their original containers and with valid expiration dates are 14 percent¹⁵¹. While these figures are general in that they represent the results of a nation-wide survey, they do point to the fact that **communities everywhere need to do a better job of reducing practices of food consumption that result in waste.** Not only does food loss represent a significant waste of financial resources for individual households and businesses – it also contributes to pollution and wasteful consumption of resources.

In 2000, food represented 12% of the City of Oakland’s total waste stream, making it the most common material in the waste stream.¹⁵² The percentage of food as a component of the waste stream of individual sectors (such as single and multi-family residential, commercial, etc) is even higher. For example, food waste represents 24% of all single-family waste, and 15.4% of commercial waste.

Figure 5.1 Food Scraps as a Percentage of Total Wasted Materials- 2000



¹⁴⁸ “Innovations” Case Studies: Food Waste Recovery Source: Alameda County Waste Characterization Study – 2000. California Integrated Waste Management Board. March 2006.

<<http://www.ciwmb.ca.gov/LGLibrary/Innovations/FoodWaste/Program.htm#Overview>>.

¹⁴⁹ Alameda County Source Reduction and Recycling Board. “Alameda County Source Reduction and Recycling Plan,” p. 9. *Alameda County Waste Management Authority*. January 2003. March 2006. <<http://www.stopwaste.org/docs/rplan2003.pdf>>.

¹⁵⁰ Jones, Timothy. “The Garbage Project.” *University of Arizona*. 10 August 2005. 12 September 2005. <<http://bara.arizona.edu/gp.htm>>.

¹⁵¹ Ibid;

“UA prof: Americans wasting \$100 billion of edible food yearly.” *The Arizona Republic*. 5 December 2006. March 2006. <http://www.tucsoncitizen.com/news/local/120505a2_garbologist>.

¹⁵² Alameda County Waste Characterization Study – 2000. *StopWaste.org*. March 2006. <<http://recycle.stopwaste.org/wcs/Vol2/Oakland3.xls>>.

If the City of Oakland was able to utilize all of the food materials land-filled through composting, this would generate enough compost for approximately 120 community gardens per year.¹⁵³

Assessment of Oakland Food Waste Recovery

In Oakland, as in California in general, food waste recovery programs are on the rise. The City of Oakland has undertaken an ambitious goal with the Alameda County Waste Management Authority of “Beyond 75%” diversion rate. Oakland’s new “Zero Waste” Resolution take resource recovery and waste management to a new level, by calling for both “upstream” and “downstream” solutions. This approach looks at the full lifecycle of products and materials and emphasizes building in reuse and recycling to every step of product design and use. Zero Waste aims to reduce the toxicity and pollution of materials and well as a reduction in inputs, to ensure that products are made in such a way as to enable “highest and best use” through recyclability and reusability, and to create opportunities for economic development through both increased efficiency and multiple markets for reused and recycled goods.¹⁵⁴

Zero Waste principles can be applied to food by considering the distance that food travels from producer to consumer (efficiency and packaging requirements), the kinds of packaging in which food (both processed and unprocessed) is sold to consumers, and the methods and processes by which food waste can be converted into useful end products. For example, polystyrene (“Styrofoam”) and plastic bags are non-recyclable food packaging that are also non-biodegradable and make food much harder to separate for recovery. The proposed Oakland ban on polystyrene would increase the potential for food recycling by reducing contamination in the waste stream. The success of Zero Waste approaches to food recycling is exemplified by McAfee Coliseum, which in 2005 became the first ballpark in the nation to begin implementing 100% compostable materials in food service, eliminating Styrofoam and plastic cups.¹⁵⁵

Oakland offers both residential and commercial food scrap recycling programs through Waste Management of Alameda County (WMAC) and Norcal currently provide commercial food waste composting services in Oakland.¹⁵⁶ The City of Oakland is unusual in that its exclusive solid waste agreement with Waste Management of Alameda County does not include commercial recycling of “source separated recyclable materials.”¹⁵⁷ This means that private haulers may compete for recycling contracts with individual commercial enterprises.

¹⁵³ Based off of the Alameda County Waste Characterization Study – 2000 figures of 46,978 tons of food waste and average community garden size of 6400 square feet. Compost generation typically loses 2/3 of its mass in production. Garden compost requirements were estimated at 1 cubic foot of compost per square foot of garden per year (City Slicker Farms. Personal Communication. March 2006.) One cubic foot of compost was estimated to weight approximately 40 pounds.

¹⁵⁴ “Resolution Adopting a Zero Waste Goal by 2020 for the City Of Oakland and Directing The Public Works Agency, in Concert with the Mayor’s Office, to Develop a Zero Waste Strategic Plan to Achieve the City’s Zero Waste Goal.” *City of Oakland Agenda Report*. February 28 2006.

¹⁵⁵ “Oakland Now: Mayor Jerry Brown State of the City Report.” *Mayor State of Oakland 2005*. March 2006. <<http://www.oaklandnet.com/government/mayor/MayorStateofOakland2005.pdf>>.

¹⁵⁶ Brown, Vence & Associates. “Alameda County Recycling Board ‘5 Year Audit’ Programmatic Overview and Evaluation.” *Alameda County Source Reduction and Recycling Board*. April 2002. March 2006. <<http://www.stopwaste.org/docs/5yearaudit.pdf>>.

¹⁵⁷ “Information about who can legally haul solid waste in Oakland.” *Oakland Recycles – Garbage – Exclusive Franchise*. Oakland Recycles. March 2006. <<http://www.oaklandpw.com/Page332.aspx>>.

Oakland is relatively unique in this sense; recycling is a profitable enterprise that the city does not need to subsidize, allowing haulers to charge for recycling services. This creates a competitive, market-based system of recycling.

Table 5.1: Commercial and Residential Organic Materials Collection - 2005¹⁵⁸

Residential food scraps and yard trimmings (“Green Cart”) tons collected via Oakland's residential curbside program:	34,000
Estimated commercial food scraps tons collected by open market commercial haulers in Oakland:	12,000

Household food waste is now being recycled through the single-family residential¹⁵⁹ “Weekly Pickup - Green Yard Trimmings and Food Scraps Cart.” This program, which grew out of the yard trimmings recycling program, allows residences to recycle food scraps, along with food-soiled paper, with other organic yard waste. Currently, food scraps collection is available to approximately 95,000 households. Participation rates are currently being assessed, although this study is not complete.

In addition, StopWaste.org¹⁶⁰ has sold 17,616 home compost bins to Oakland residents between 1992 and 2005. This is the highest number of bins in any city in Alameda County, and represents approximately 20-22% of single family homes in Oakland. Home composting and food scraps recycling are two important strategies in converting materials that would become part of the waste stream to useful resources.

However, there are a number of difficulties in expanding the residential food waste recycling. Food scraps recycle requires a significant behavior shift, tantamount to the shift in the 1990's to recycle cans, bottles and paper. Community education on the value of food composting, and to address the perceived “nuisances” of food scrap recycling (odor, transfer of scraps, etc) are planned. This becomes more complicated and multifamily residences present a relatively more difficult population for recycling in general, due to relatively high turnover rates (“transient population”), as well as the lack of a direct connection between payment and service for renters. Additionally, since the food scraps collection program grew out of the yard trimmings collection program, multi-family residences were not included.¹⁶¹ This simply highlights the fact that food scrap recycling is not a “one-size-fits-all” enterprise, and that increasing participation by households and commercial/retail establishments will require creative programmatic solutions that link City policy makers, food recycling and composting enterprises, and community members.

One creative solution currently being employed in Oakland is the food scraps recovery activities run by City Slicker Farms. City Slicker Farms is a West Oakland-based

¹⁵⁸ City of Oakland Public Works Agency, 2006.

¹⁵⁹ City of Oakland Public Works Agency, 2006. Defined as 1- 2- 3- and 4-unit residences.

¹⁶⁰ StopWaste.org is the Alameda County Waste Management Authority and Alameda County Source Reduction and Recycling Board

¹⁶¹ Multi-family residences are defined as 5+ unit residences. “5+ -unit residences are not a cost-effective target for yard trimmings collection, as they are very small generators of yard trimmings.” City of Oakland Public Works Agency. Personal Interview. 20 October 2005.

organization that runs organic, sustainable, bio-intensive market farms and backyard gardens. The produce from these farms and gardens provides affordable, fresh produce to the local community. City Slicker Farms accepts donated food and yard scraps from West Oakland residents, which is composted and used for their farm and garden needs. In 2005, they diverted close to 20 tons of food scraps and yard waste from land-fills. City Slicker Farms is currently unable to generate all the compost that they need to run their farming operations through this donation program, although they are interested in expanding towards a goal of self-sufficiency.

Food scrap recovery programs like the one run by City Slicker Farms have a number of benefits, beyond simply reducing the amount food scraps that end up in landfills. One of the benefits of this kind of food scrap recovery program is that it connects an individual household's waste production with food production within the realm of the community. Households that might traditionally be considered part of "hard to reach" populations (i.e., members of multi-family residences, or those who don't highly value recycling) may be more inclined to participate in food scrap recovery programs that are built on community relationships. In general, City Slicker Farms' collection program and other "non-commercial" food scrap recovery programs have the potential to compliment larger, commercial programs by reaching out to community members, and by exemplifying how food scraps can be utilized in the sustainable production of fresh produce for the community itself.

Edible Food Recovery

Another strategy for diverting food waste from landfills as well as distributing food to those who need it is "edible food recovery." Alameda County Waste Management Authority created an edible food donation program to "increase edible food donations...for those in need and to create beneficial reuse for this waste stream."¹⁶² This program supported the Alameda County Community Food Bank as well as Oakland Potluck. Oakland Potluck, a food rescue organization founded in 1986, is a grassroots, volunteer-based system for collecting fresh, edible food from parties, schools, churches, weddings, city agencies, and other sources of unused food and delivers it to shelters, senior centers, food pantries, and other member agencies. While the diversion provided by edible food waste recovery programs is low with respect to the total amount of wasted food materials,¹⁶³ edible food waste recovery is yet another example of ways that food waste can be utilized in creative ways that benefit the community.

Summary of Key Findings and Barriers

A healthy, sustainable food system should consider the impact that all parts of the food system have on food waste recovery, and should be pursued with Zero Waste principles in mind. The way in which food is packaged, delivered, and marketed "has a huge impact on disposal in Alameda County."¹⁶⁴ Local foods that are produced and processed locally and require less packaging due to reduced transportation distances could increase the

¹⁶² Brown, Vence & Associates. "Alameda County Recycling Board '5 Year Audit' Programmatic Overview and Evaluation." *Alameda County Source Reduction and Recycling Board*. April 2002. March 2006. <<http://www.stopwaste.org/docs/5yearaudit.pdf>>.

¹⁶³Ibid.

¹⁶⁴ Alameda County Source Reduction and Recycling Board. "Alameda County Source Reduction and Recycling Plan," p. 11. *Alameda County Waste Management Authority*. January 2003. March 2006.

recoverability of food scraps by reducing non-recyclable and non-compostable components. Community and regional agricultural production creates a market for composting, increasing the value diverting food from landfills. In order to achieve system-wide waste reduction goals, food scrap recovery must be addressed from multiple angles, including increasing public awareness of food waste issues and designing food scrap recovery programs that meet the needs of different waste producers. This will mean reducing wasteful food consumption, increasing the recyclability of food packaging, and increasing diversion through creative and diverse programs that promote composting and food recycling for all types of food waste.