

The Effectiveness of Multifamily Dwelling Composting Programs in Alameda County

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ABSTRACT

Alameda County's Measure D mandates a 75% landfill diversion by 2010. Compostable waste comprised 34.5% of all waste landfilled from Alameda County during the year 2008. Within the Multifamily Dwelling Waste Stream 46.7% of waste was compostable. Compostable waste can easily be diverted from the landfill and has the potential to aide in Alameda County's diversion goals. This study investigates which cities, of Alameda, Berkeley, and Fremont, have reduced the amount food and yard waste sent to the landfills from the MFD sector between 1995 and 2008 and the reasons for these trends. I hypothesized that cities offering food scrap inclusion in their compost collection service and those programs that have been operating longest will experience the greatest decreases in food and yard waste sent to landfills. To correlate historical waste stream values with compost collection services I examined Waste Characterization Reports and interviewed persons involved in each jurisdictions' MFD compost collection programs. All three cities experienced over 50% reduction in yard waste from the MFD sector since 1995. Alameda and Berkeley decreased their landfilled food waste between 2000 and 2008 by over 30%. Fremont sent over 60% more food waste to landfills during this same period. Alameda began collecting food waste mixed in with yard waste from their MFD residents in 2003. Fremont and Berkeley have no universal compost collection service offered to Multifamily Dwellings. All three cities offer compost collection services with food scrap inclusion to Single Family Dwellings while MFD residents remain underserved in Alameda County.

KEYWORDS

Organics Programs, Waste Diversion, Waste Management, Apartment Complexes, Collection Services

INTRODUCTION

Around the world, the composting industry is growing due to technological innovations and governmental mandates to decrease landfilled waste (Green 2003). For example the state of California set a goal of a 50% diversion rate of all disposed materials in the state by 2010 (California Integrated Waste Management Board 1998). Within California, an even more ambitious jurisdiction, Alameda County, created a waste management plan that set a goal of 75% reduction of landfilled waste from the county (Alameda County Waste Management Authority, 1987). Alameda County has been nationally recognized for their progressive waste management techniques and often serves as a model for local governments that wish to follow suit (Institute for Local Self-Reliance 2002). However, many residents of Alameda County remain unable to access this environmental good. In Alameda County only 11 of 17 jurisdictions and sanitary districts offer compost pickup to MFDs, and of these only 3 allow food scraps and food-soiled paper to be included in the pickup (StopWaste.Org 2009). Food waste is one of the largest contributors to the Alameda County waste stream, comprising 18.7% (by weight) of all the materials disposed of in the county in 2008 (R.W. Beck 2008). Since the inception of Measure D in 1990, Alameda County's waste management plan that sets a goal of reducing tonnage sent to landfills by 75% by the year 2010, most material groups disposed of have either maintained or reduced historical tonnages levels. Yet food waste disposal in the county has increased by over 39% between 1995 and 2008, while the county's population increased by only 6.1% in the same period (R.W. Beck 2008). More specifically the food waste from the Multifamily Dwelling (MFD) sector has increased by more than 82% while multifamily dwelling residences have increased by only 4.5% (R.W. Beck 2008). Food waste comprised 25.9% of all materials disposed of from the Multifamily Dwelling sector 2008, however, in the Multifamily Dwelling Recycling Programs Evaluation Report, organics are mentioned only as a "potential" waste diversion tactic for MFDs. The report mentions the difficulty of collecting organics materials and suggests only those "buildings that have high levels of participation and diversion along with low levels of contamination of traditional recycling could be targeted" (SAIC 2008). There are many MFDs in the county that do not receive organics pickup, and even jurisdictions with organics programs currently in place have not been evaluated as recycling programs have been.

This study will determine which jurisdictions in Alameda County have reduced the amount of food and yard waste sent to landfills from Multifamily Dwellings and which of these categories meet the 75% reduction rates of landfilled material. Additionally, major events in the various jurisdictions' program histories will be evaluated in conjunction with the historic food and yard-waste stream data to determine if the program type has a direct impact on the amount of waste sent to the landfill. These research questions will provide information concerning the success of implementing Multifamily Dwelling composting programs and illuminate positive aspects and areas needing improvement.

METHODS

To evaluate the effectiveness of composting services provided to Multifamily Dwellings in Alameda County I compared three jurisdictions and assessed their rates of sending yard and food waste to landfills. The three jurisdictions investigated, all cities with over 10,000 MFD units, included Alameda, Berkeley and Fremont. The County published Waste Characterization Reports in 1995, 2000, and 2008. To assess the affect these programs have on reducing waste sent to landfills (rather than compost generation), I used these reports to collect the tonnage values of both food and yard waste sent to landfills from Multifamily Dwellings in each jurisdiction. After extrapolating these values I identified trends in waste reduction.

To correlate the compost material disposal rates with the programs in each jurisdiction, I conducted interviews with either the employees of the cities' Public Works Department or the cities' specific contracted hauler to obtain the histories of these services. I asked about the program's history including start dates, collection methods and frequency of collection, participation rates by MFDs and program challenges, solutions and successes. This information was examined in conjunction with the historic waste streams of MFD food and yard waste during the period of 1995 to 2008 for each jurisdiction.

RESULTS

Historic waste streams

All three jurisdictions within this study have shown reductions in the amount of yard waste from the MFD sector sent to landfills since 1995 by over 60%. Berkeley experienced the greatest reduction in this category. Berkeley is also the only city that has reduced MFD food

waste sent to landfills since 1995. However, both Alameda and Berkeley have shown decreases in landfilled food waste since 2000 by over 30%. Fremont's landfilled MFD food waste has increased by over 60% in this same period.

Alameda	1995	2000	2008	% Δ 2000-2008	% Δ 1995-2008
Yard	122	98	37	-62.2	-69.7
Food	877	1528	1068	-30.1	+21.8

Table 1. Tons MFD compostable waste sent to landfills from Alameda. Note: Δ means change.

Berkeley	1995	2000	2008	% Δ 2000-2008	% Δ 1995-2008
Yard	827	1190	35	-97.1	-95.8
Food	4254	2789	1647	-40.9	-61.3

Table 3. Tons MFD compostable waste sent to landfills from Berkeley.

Fremont	1995	2000	2008	% Δ 2000-2008	% Δ 1995-2008
Yard	2073	1257	819	-34.8	-60.5
Food	6039	4876	7938	+62.8	+31.4

Table 3. Tons MFD compostable waste sent to landfills from Fremont.

Program histories

Each city under this study has a very different program currently in place to collect waste from MFD residents. All cities enforce contract agreements with private garbage hauling franchises except for the city of Berkeley which employs city personnel for garbage and compost pickup and the Ecology Center, a non-profit organization, for recycle pickup.

The city of Alameda contracts Alameda County Industries for their refuse collection services. The city began collecting yard waste from Multifamily Dwelling residents in 1996 and allowed for food scrap inclusion in the yard waste containers in 2003 (Stoerkel 2010). All MFD complexes within the jurisdiction pay a monthly fee of \$3.82 per unit for compost collection to Alameda County Industries, whether they participate in the program or not. Alameda County Industries (ACI) is contractually responsible for distribution of kitchen pails, wheeled carts and dumpsters to MFD complexes. ACI must also pay for the design, printing, and distribution of outreach materials to MFD residents. While all MFD complexes may receive these services, they may not actually be participating in the compost program and the current participation rate is unknown. Laurie Stoerkel, a Program Specialist with the Public Works Department responsible for outreach and implementation for compost collection services for Single Family Dwellings, MFDs and businesses within the City of Alameda, stated that the last outreach to MFDs occurred in 2007 and consisted of separation posters for dumpster areas.

Stoerkel noted that the greatest challenges of the program are contamination of green waste, typically with plastic, poor organization and upkeep at bin sites, and public misconceptions and lack of information and motivation. MFD collection is integrated within the Single Family Residential garbage truck routes and accessing their specific participation rates is difficult. While customer participation and education may be lacking, Stoerkel did express satisfaction with ACI and their timeliness and sincerity regarding customer service issues. Stoerkel also believes that decreases in yard waste, reflected in the waste characterization data, resulted from increased outreach at the time of food scrap inclusion. After the inception of MFD food waste compost services, the data additionally shows that landfilled MFD food waste also decreased.

The city of Fremont has no universal compost collection service offered to Multifamily Dwellings. Fremont's franchised waste hauler is Allied Waste of Alameda County. Allied Waste provides garbage and recycling collection for MFDs and garbage, recycling and compost pickup for Single Family Dwellings. Stephanie Saenz-Willits, Recycling Coordinator of Allied Waste, described that landlords or property managers of "small" complexes are allowed to request and secure compost collection services. To receive services, the complexes must have low recycling contamination rates, feasible location for integration in existing garbage truck routes, and approval by the city. If all requirements are met, one cart is delivered to the complex and serviced weekly at the same collection rates as the Single Family Dwellings. Saenz-Willits estimates that about four or five apartment complexes are currently participating under these conditions.

Fremont currently has no plans to create or implement a universal compost collection service as the city of Alameda has done. Saenz-Willits expressed that recycling participation rates by MFDs are so low relative to Single Family Dwellings, 13-15% and 63-65% respectively, that a new waste diversion program is anticipated to be equally unsuccessful. She also stated out that money and resources within in the business are low.

The city of Berkeley hauls their residents' garbage and compost, however compost collection services are not offered to MFD residents unless requested by an on-site manager. Property managers may secure up to four 64 gallon bins for their complex free of charge. Collection is integrated into pre-existing routes at least once a week. The current number of complexes receiving services is unknown.

Andrew Schneider, Recycling Program Manager of Berkeley's Department of Public Works explained that they are thinking of creating a universal MFD compost collection program in the future, however, they are currently working on a plan to increase MFD recycling rates and participation. Once they are able to maintain a successful MFD recycling program they will look to creating a compost program. Currently, there is no Berkeley staff member devoted to compost programs within the city of Berkeley and "Since the economic downturn, [they] have not actively recruited any food waste clients" (Schneider 2010). Schneider noted that the most successful MFD food scrap composters are those complexes that have an active property manager dedicated to the program.

DISCUSSION

I examined Multifamily Dwelling historic food and yard waste stream data for three cities in Alameda County and their MFD curbside compost program narratives to evaluate their ability to reduce food and yard waste sent to the landfill. All three cities investigated experienced reduction in yard waste within the period I examined. Both Alameda and Berkeley reduced the amount of MFD food waste sent to landfills between the years 2000 and 2008. Fremont experienced an increase in food waste sent to the landfill within this same period. Berkeley's MFD yard waste was the only category that experienced over 75% reduction as set out by Measure D. Alameda offers a universal MFD compost collection program which charges for all MFD units within the jurisdiction. Both Berkeley and Fremont allow for by request sign-ups from individual complexes in their jurisdiction. Because Alameda and Berkeley both experienced decreases in food and yard waste sent to landfills, yet have extremely different programs, no conclusive relationship between program type and diversion rates can be drawn within the scope of this study.

The large decrease in Berkeley's food waste sent to the landfill may result for a few reasons. There are many confounding factors that could not be controlled or were not considered within in this study. For example the number of occupied MFD housing units may have decreased over this period of the study. The relatively lower tonnage values for Alameda and Berkeley in 2008 may reflect the recent economic recession and Fremont may have experienced an increase in apartment complex development or MFD resident population since the year 2000. Additionally, the low 2008 value for Berkeley may be a result of the effects of the UC Berkeley

dining hall compost program which began sometime after the year 2000. The complex factors of an urban system, including development, economics, population and demographics, serve as limitations when trying to draw conclusions about the relationship between waste generation and MFD compost collection services within each jurisdiction in this study. However, the results do point to general successes and challenges when implementing a MFD compost program within any city.

Alameda was the only jurisdiction that did not specifically cite funding challenges or the economic downturn as a challenge concerning the roll-out of an MFD organics program. Alameda is also the only jurisdiction which employs a staff member specifically dedicated to organics programs. A possible reason that Alameda may not experience the funding challenges is because they enforce a pay rate for all MFD units within the jurisdiction regardless of collection service participation (Stoerkel 2010). King County of Washington state serves over 60% of households with compost collection and similar to Alameda enforces an embedded rate for this service within all residents' trash bills regardless of participation (Goldstein and Spencer 2007). Environmental economists Birol and Karousakis examined the willingness to pay for compost collection services by London residents in 2008. They found at a 95% confidence level that residents stated they would pay an average of 1.19 pounds/household/month in taxes to fund a compost collection program (Birol and Karousakis 2008). Other urban populations, such as those of Alameda County, may also be willing to pay for collection services, and these fees or taxes could certainly help fund the roll-out of an MFD compost program.

While many jurisdictions could cite successes and challenges of their programs, none have data on the number of MFD complexes actually practicing and participating in the curbside compost collection. Other areas that have successful curbside compost programs including San Francisco County and Seattle, Washington know their residential participation rate. San Francisco serves 150,000 households and roughly 200 multifamily dwellings and Seattle services almost 2000 apartment complexes (Goldstein and Spencer 2007). Over a decade ago, St. Edmundsbury of England served 22,000 of 39,000 properties within the borough (Hayes 1998). Studies within each jurisdiction conducted to ascertain participation rates could illuminate the success of MFD compost programs and point to areas that need improvement, including outreach to specifically target non-participants.

Outreach to MFDs is a creative and intentional endeavor that can be provided in many forms. Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board, together referred to as Stopwaste.Org, advertise for composting by residents county-wide through transit ads, billboard ads and newspaper ads (Stopwaste.Org 2010). However these advertisement schemes do not target a specific population and are futile for residents who do not receive compost collection services. The city of Alameda distributed separation posters to MFD landlords and/or property managers in 2007 designed to be placed near garbage areas at the complex (Stoerkel 2010). Cedar Rapids, Iowa promotes their municipal composting program through a weekly gardening show on a local radio station (Emerson 2005). In a study conducted for Stopwaste.Org titled, “Public Attitude Toward Food Scrap Recycling,” over 40% of those polled responded that they would “definitely pay attention” to an insert in a utility bill, information from a friend or neighbor, a newsletter or publication mailed to the home, and an article in the local newspaper (Fairbank, Maslin, Maullin and Associates 2007). Additionally, many other compost collection programs include the haul of food scraps and yard waste to a local composting facility which turns the waste into a finished product that can be directly sold back to local residents and businesses (Emerson 2005, Hayes 1998). With this system residents are made more aware of the environmental incentives, reuse and recycle, that composting can offer. Outreach is essential in gaining informed participators to any program and the power of residential knowledge can be seen in the Stopwaste.Org survey findings. Eighty-two percent of the population aware of food scrap recycling programs offered in their jurisdiction participates and of the 29% unaware that food scraps and soiled paper can be recycled, 62% responded that they are likely to recycle these materials with the knowledge gained from the survey (Fairbank, Maslin, Maullin and Associates 2008). These high participation rates suggest that informing the community of the compost service is effective in garnering their participation.

While the compost business is growing, MFD residents remain underserved in Alameda County and therefore unable to contribute to this industry. Public Attitudes Toward Food Scrap Recycling, a study conducted for StopWaste.Org, notes that “residents of multiunit buildings are almost twice as likely as those in single-family homes to recycle no food scraps” (Fairbank, Maslin, Maullin and Associates 2008). Likely this is due to the fact that these residents are not receiving the services enabling them to compost. The study also found that of the 29% of the

population surveyed and unaware of food scrap recycling in the county, “tend disproportionately to live in multi-unit buildings, to be Latino or African-American, [and] to be non-college educated women” (Fairbank, Maslin, Maullin and Associates 2008). These findings identify groups of the Alameda County population in need of further outreach and education.

Even since the inception of various compost programs in the county, food waste remains the largest contributor to the landfill waste stream (R. W. Beck, Inc. 2009). Introducing comprehensive MFD programs would ensure that all demographics of the population are adequately served by municipal entities and create greater potential to meet Alameda County waste diversion goals. Of roughly 10 compost programs throughout the nation examined only San Francisco and Seattle reported on their MFD population participation. Providing a means for Multifamily unit dwellers to contribute to waste reduction is not only environmentally responsible, but socially responsible as well. Future studies should include examination of even more functioning composting programs, participation surveys of those programs, and outreach success in garnering knowledgeable participants. Composting participation requires knowledge of composting benefits and familiarity with the concept and process. As more compost services and education reach the community, curbside compost programs will become the norm and residents will feel inspired to contribute to waste diversion causes.

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