



COMMUNITY ZERO WASTE PLAN

Sustainability Division - September 2017

Acknowledgements

The City of Menlo Park's Zero Waste Plan was created through the collaboration of City staff, R3 Consulting Group, Inc., and sub-consultants Abbe & Associates, LLC and Cascadia Consulting Group. Together, these parties form the Zero Waste Plan "Project Team."

City of Menlo Park Staff

Clay Curtin, Assistant to the City Manager

Heather Abrams, Sustainability Manager

Vanessa Marcadejas, Senior Sustainability Specialist



R3 Consulting Group, Inc.

Garth Schultz, Principal

Emily Ginsburg, Senior Project Analyst

Rose Radford, Project Analyst

Mekdem Wright, Project Analyst



Abbe & Associates, LLC

Ruth Abbe, Principal



Cascadia Consulting Group

Jessica Coe, Senior Associate

Kirstin Herwin, Associate

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Section 1 Executive Summary

Introduction

The City of Menlo Park (City) has taken several actions in recent years to promote environmental practices and policies. In 2009 the City Council approved Menlo Park’s Climate Action Plan to assist the City in meeting or exceeding the emission reduction targets of AB 32 (California’s Global Warming Solutions Act of 2006). The Climate Action Plan is a “living document” that provides strategies for reducing local greenhouse gas (GHG) emissions, including the adoption of a Zero Waste Plan. Menlo Park continues to make strides as a leader in sustainability through the development of this Zero Waste Plan to help guide the community in diverting its waste from landfill disposal, effectively managing resources to their highest and best use while reducing waste at the source.

Goal Statement

Reduce landfilled materials generation to 3.1 pounds per person per day and achieve at least 73% diversion of franchised waste from landfill disposal by 2035. These goals are based on increases in rates of recovery for divertible materials to reach zero waste, or 90% capture of recoverable materials in the City’s waste stream by 2035. See Menlo Park zero waste goals and milestones in Table 1, below.

Table 1: Zero Waste Goals and Milestones

Menlo Park Zero Waste Goals					
Goal	2015	2020	2025	2030	2035
1 - Franchised Diversion (Franchised Waste % Diversion)	56%	61%	65%	69%	73%
2 - Per Capita Disposal (CalRecycle PPD)	5.0	4.5	4.0	3.5	3.1
Goals Based On Increases In Rates of Recovery for Divertible Materials					
Capture Rates of Recoverable Materials (Cascadia Modeling)	70%	75%	80%	85%	90%
Estimated Amounts of Landfill Disposal					
Franchised Disposal (Generation Static, Nearest 100 Tons)	16,600	15,000	13,300	11,800	10,200
Total Disposal (Population Static, Nearest 100 Tons)	30,200	27,200	24,100	21,300	18,600

Zero Waste Strategies

Menlo Park’s Zero Waste Plan serves as a guiding document for the implementation of waste reduction policies, programs and infrastructure enhancements that will support the City in diverting resources from landfill disposal. These zero waste strategies build upon Menlo Park’s achievements in waste reduction and reinforce waste diversion practices. Please see Section 5 for more information. Table 2 on the following page provides a summary of recommended zero waste strategies and target waste generation sectors.

Table 2: Zero Waste Strategy Recommendations

Item #	Zero Waste Strategy	Recommendation	Target Sectors
<i>Short-Term</i>			
1	Mandatory Sorting of Self-Hauled Waste at Shoreway	Change Shoreway operational practices to ensure that all self-hauled waste is sorted for maximum recovery.	Self-Haul
2	Mandatory Participation in Recycling and Composting Programs	Mandate that waste generators participate in recycling and composting programs.	Commercial, Multi-Family, Single Family
3	Universal Recycling and Composting Collection Service	Provide universal recycling and composting collection services to all commercial and multi-family customers who have trash collection.	Commercial, Multi-Family
4	Require All C&D Projects to Use Designated Facilities	Require all projects that generate C&D debris to direct materials to designated facilities with guaranteed minimum recycling rates and/or verified practices to maximize diversion.	Self-Haul
5	Increase Recycling Requirements in C&D Ordinance	Increase C&D diversion requirements, for example 100% of all readily recyclable materials.	Self-Haul
6	Recycling Ambassadors and Door-to-Door Outreach	Identify key community members and elected officials to help spread the message to recycle; organize door-to-door outreach for residential customers and in the business community.	Commercial, Multi-Family, Single Family
7	Support for Reuse, Repair, Leasing or Sharing Efforts	Support materials diversion from landfill via Repair Café or Fix It Clinics, car share, tool lending library, and workshops.	Commercial, Multi-Family, Single Family
8	Promote Reusable Bottles and Bottle Filling Stations	Promote alternatives to bottled water, including an ordinance requiring new buildings that have drinking fountains to provide bottle filling stations.	Commercial

Table 2: Zero Waste Strategy Recommendations

Item #	Zero Waste Strategy	Recommendation	Target Sectors
9	Outreach, Education and Technical Assistance for C&D Generators	Encourage generators of construction and demolition waste to recycle.	Self-Haul
<i>Medium-Term</i>			
10	Expanded Bulky Item Recycling Collection	Offer expanded large item pickup service that includes hard to recycle materials such as mattresses, textiles, carpet, window glass, and large metal items.	Commercial, Multi-Family, Single Family
11	Participating Partners Program	Partner with and promote organizations that accept or collect items for reuse, repair, recycling, or composting in Menlo Park (including participating partner window decal).	Commercial, Multi-Family, Single Family
12	Expanded List of Curbside Recyclables	Expand the types of materials accepted in curbside recycling.	Commercial, Multi-Family, Single Family
13	Material Bans of Products or Packaging	Additional bans of specified products or packaging.	Commercial, Multi-Family, Single Family
14	Zero Waste Event Requirements	Require special events to have recycling and compostable materials collection.	Commercial
15	Outreach to Elementary and Secondary Schools	Encourage local schools, and the school community, to recycle and compost at home, support school "share tables" for extra food, and target cafeteria waste reduction.	Commercial
16	Outreach to Faith-Based Organizations	Encourage houses of worship and congregations to recycle and compost.	Commercial
17	Textile Recycling	Start a textile recycling program. For example, promote and partner with Goodwill and others to offer more drop-off locations.	Single Family
<i>Long-Term</i>			
18	Additional Commercial Technical Assistance	Additional commercial technical assistance to supplement Recology staff. Prioritize largest commercial generators for technical assistance.	Commercial
19	Mandatory Recycling Percentage	Mandate a minimum diversion percentage for businesses and multi-family.	Commercial, Multi-Family

Landfill Diversion Potential of Zero Waste Strategies

In 2015, Menlo Park generated 5.0 pounds of landfilled material per person per day and the City's franchise diversion rate was 56%. To estimate the diversion potential of each of the zero waste strategies, the Project Team developed a diversion model. The model predicts that implementation of the zero waste strategies would result in a 70% franchise diversion rate, and reduce the amount of waste sent to landfill by approximately 8,500 tons per year. See Section 6 for more information and a breakdown of the estimated annual additional diversion potential for each zero waste strategy.

These strategies were evaluated based the number of tons and cost per ton diverted, and strategies that most cost efficiently divert the most tons from landfill were prioritized for implementation. While some strategies, such as textile recycling and promotion of reusable bottles, have a higher estimated cost per ton diverted, they are still considered important for sustaining progress towards zero waste after the more "low-hanging fruit" are gone. Table 3 details the estimated total diverted tons by strategy over the 10-year planning period.

Other measures may be needed at the national, statewide, and local level in order for the City to reach its zero waste goals. Additional diversion can be achieved through the South Bayside Waste Management Authority's implementation of mixed waste processing and other regional waste reduction initiatives, which can be supported by social marketing efforts to further reduce waste in Menlo Park. Together, these initiatives will assist the City in reaching its goal of 73% diversion by 2035.

Estimates of Greenhouse Gas Reduction

The Environmental Protection Agency's Waste Reduction Model (WARM) was used to estimate greenhouse gas reductions resulting from the implementation of this Zero Waste Plan. WARM estimates that the emission of approximately 13,000 metric tons of carbon dioxide equivalent (MTCO₂E) could be avoided each year by recycling and composting currently landfilled, yet recoverable, waste materials captured through zero waste strategies. This is equivalent to the annual emissions from 2,790 passenger vehicles, conserving 802,273 gallons of gasoline, or 867 household's annual energy consumption. Additional carbon emission reductions could be achieved through source reduction of non-recoverable materials and reuse activities.

Implementation Costs and Timeline

Table 3 on the following page provides a summary of zero waste strategy implementation costs and timeframe. Costs for implementing the zero waste strategies were developed by estimating:

- The number of staff or contractor hours that would be needed to develop and maintain each program;
- The outreach materials (training, materials, advertising, promotional flyers, promotional kits, outreach campaign) needed for each program; and
- The capital costs for upgrades at the Shoreway Environmental Center, to be shared throughout the service area.

Based on the 9,038 single family, multi-family and commercial customers in the City, full implementation of all zero waste strategies could result in an average approximate \$0.85 per month increase in residential rates. Other funding mechanisms may also be considered. Please see Section 8 for more information.

Timing for the development of new programs is subject to the City's budget process, contract extensions with Recology or new contracts with another service provider, and potential upgrades to the Shoreway Environmental Center. For planning purposes, it is anticipated that the zero waste strategies will be

implemented in the following sequence over a ten-year period: Short-term (2018-2020), Medium-term (2021-2025), and Long-term (2026-2027). See Section 8 for details.

The remaining years leading up to the 2035 milestone date for achieving zero waste allow time for program participation to grow, implemented policies to take full effect, programs and progress to be reassessed, and new strategies to arise as conditions change.

Table 3: Implementation Timeframe and Estimated Cost

Time Frame	Item #	Zero Waste Strategy	Strategy Total Cost	Strategy Diverted Tons	Dollars per Ton Diverted	Total Change in GHG Emissions (MTCO ₂)
Short-Term 2018 - 2020	1	Mandatory Sorting of Self-Hauled Waste at Shoreway	\$69,500	11300	\$6	1,175
	2	Mandatory Participation in Recycling and Composting Programs	\$25,800	10700	\$2	2,061
	3	Universal Recycling and Composting Collection Service	\$19,500	9200	\$2	1,897
	4	Require All C&D Projects to Use Designated Facilities	\$19,500	8600	\$2	858
	5	Increase Recycling Requirements in C&D Ordinance	\$19,500	7900	\$2	786
	6	Recycling Ambassadors and Door-to-Door Outreach	\$58,500	4900	\$12	957
	7	Support for Reuse, Repair, Leasing or Sharing Efforts	\$29,400	100	\$294	4
	8	Promote Reusable Bottles and Bottle Filling Stations	\$19,500	10	\$1,950	1
Medium-Term 2021 - 2025	9	Outreach, Education and Technical Assistance for C&D Generators	\$90,000	2520	\$36	357
	10	Expanded Bulky Item Recycling Collection	\$50,000	910	\$55	286
	11	Participating Partners Program	\$53,000	840	\$63	197
	12	Expanded List of Curbside Recyclables	\$218,800	840	\$260	47
	13	Material Bans of Products or Packaging	\$32,300	280	\$115	NA
	14	Zero Waste Event Requirements	\$74,300	350	\$212	122
	15	Outreach to Elementary and Secondary Schools	\$84,000	350	\$240	119
	16	Outreach to Faith-Based Organizations	\$84,000	350	\$240	119
Long-Term 2026 - 2027	17	Textile Recycling	\$18,800	12	\$1,567	NA
	18	Additional Commercial Technical Assistance	\$167,100	1260	\$133	1,341
	19	Mandatory Diversion Percentage	\$23,900	1580	\$15	1,612
Total			\$1,157,400	62,002	NA	11,939

Section 2 Background

This section provides an overview of current conditions in Menlo Park, including solid waste programs and policies, partnerships, and facilities. The City’s achievements in diversion by sector and overall trends in disposal are also presented.

Solid Waste Franchised Collection Services

Recology of San Mateo County (Recology) is the City’s franchised waste hauler and provides many solid waste services to Menlo Park’s residents and businesses. Recology also conducts outreach and education in the community, provides technical assistance to multi-family and commercial customers, and assists in the implementation of state solid waste legislative requirements. A summary of Recology’s collection services in Menlo Park is included in Table 4 below.

Table 4: Recology Franchised Solid Waste Collection Services

Franchised Collection Services	Single Family	Multi-Family	Commercial ¹
Landfill Trash	X	X	X
Recyclable Materials	X	X	X
Compostable Materials	X	X	X
Used Batteries and Cell Phones	X	X	
Used Motor Oil and Oil Filters	X		
Large Item Pickup ²	X	X	
Holiday Tree Collection	X	X	

City Leadership

Menlo Park currently has several City-led initiatives in place to promote the diversion of waste from landfill, engage with community members on recycling, and provide a strong foundation for the implementation future zero waste strategies. The following list highlights key policies and programs.

City Facility Diversion

The City leads by example through participation in recycling and composting programs. The franchised hauler provides desk-side and other indoor recycling and compostable materials collection containers for use in City facilities, and staff are educated on best practices to divert materials from landfill disposal.

Environmentally Preferable Purchasing Policy

In 2014, the City implemented a new Environmental Preferable Purchasing (EPP) Policy to address the environmental impacts of the City’s purchasing practices, including its contribution to waste reduction and recycling.



¹ The collection of commercial source separated recycling and compostable materials, and non-putrescible waste placed in roll-off containers, is non-exclusive under the franchise agreement.

² Single family customers are limited to two pickups per year, and property managers may schedule large item pickups, at no additional charge. Large item pickup service is available to businesses for a fee.

Outreach and Education

The City distributes quarterly solid waste billing inserts to its residents. Solid waste-related topics covered in recent years include, but are not limited to: household hazardous waste collection, monthly compost giveaways, and promotion of document shredding and e-waste collection events.

Paper Shredding and E-Waste Collection Events

The City works with Recology to organize two paper shredding and e-waste collection events per year. These events are free to residents and businesses with proof of address in Menlo Park.

Polystyrene Foodware Ban

The Menlo Park City Council adopted San Mateo County's Polystyrene Foodware Ordinance in 2012. The ordinance applies to all food vendors in the City and prohibits restaurants, delis, cafes, markets, fast-food establishments, vendors at fairs, and food trucks from dispensing prepared food in polystyrene containers labeled as No. 6.

Reusable Bag Ordinance

In 2013 the Menlo Park City Council adopted San Mateo County's Reusable Bag Ordinance, mandating a minimum charge of ten cents per recycled paper or reusable bag provided at checkout. As of January 1, 2015, the minimum charge increased to twenty-five cents per recycled paper or reusable bag.

Construction and Demolition Debris Recycling

City municipal code Chapter 12.48 entitled Recycling and Salvaging of Construction and Demolition Debris requires that covered projects divert 60% of construction and demolition (C&D) debris from landfill.

Partnerships



The City of Menlo Park is one of twelve public agencies that form the South Bayside Waste Management Authority (SBWMA or RethinkWaste) in San Mateo County. RethinkWaste's primary goal is to provide cost effective waste reduction, recycling and solid waste programs to Menlo Park and other member agencies through franchised collection services and partnerships with other organizations.

As a part of RethinkWaste, the City benefits from a number of programs and services, including contract management of the City's franchise agreement with Recology, a local recycling center and Materials Recovery Facility (MRF) owned by RethinkWaste and operated by South Bay Recycling, and several public education and outreach programs. Public education programs include tours of the MRF, Earth Day and America Recycles Day events, compost giveaways, and more.

Recology is also a key partner in providing materials diversion programs and educating the Menlo Park community on recycling, composting, and waste reduction. Under the City's franchise agreement, Recology has exclusive franchise rights to residential and commercial trash, City waste collection, and residential compostable materials and recycling.³ The "three stream system" forms the core of the solid waste programs that residents and business engage with on a daily basis. Recology Recycling Coordinators

³ The collection of commercial source separated recycling and compostable materials, and non-putrescible waste placed in roll-off containers, is non-exclusive under the franchise agreement.

offer technical assistance to help commercial and multi-family customers divert more materials from landfill disposal and conduct site visits to identify opportunities for increasing diversion.

Recology's collection services are supplemented by additional programs and events offered by the City, RethinkWaste, and the County of San Mateo (County). The County produces model ordinances, manages waste diversion programs, and conducts public education efforts, which are available to and benefit the residents and businesses of Menlo Park. RecycleWorks (the public education program run by the County of San Mateo) runs composting workshops on a countywide basis, which the City promotes. The City also actively promotes its own diversion programs, engaging its citizenry in the achievement of higher levels of waste diversion.

Shoreway Environmental Center

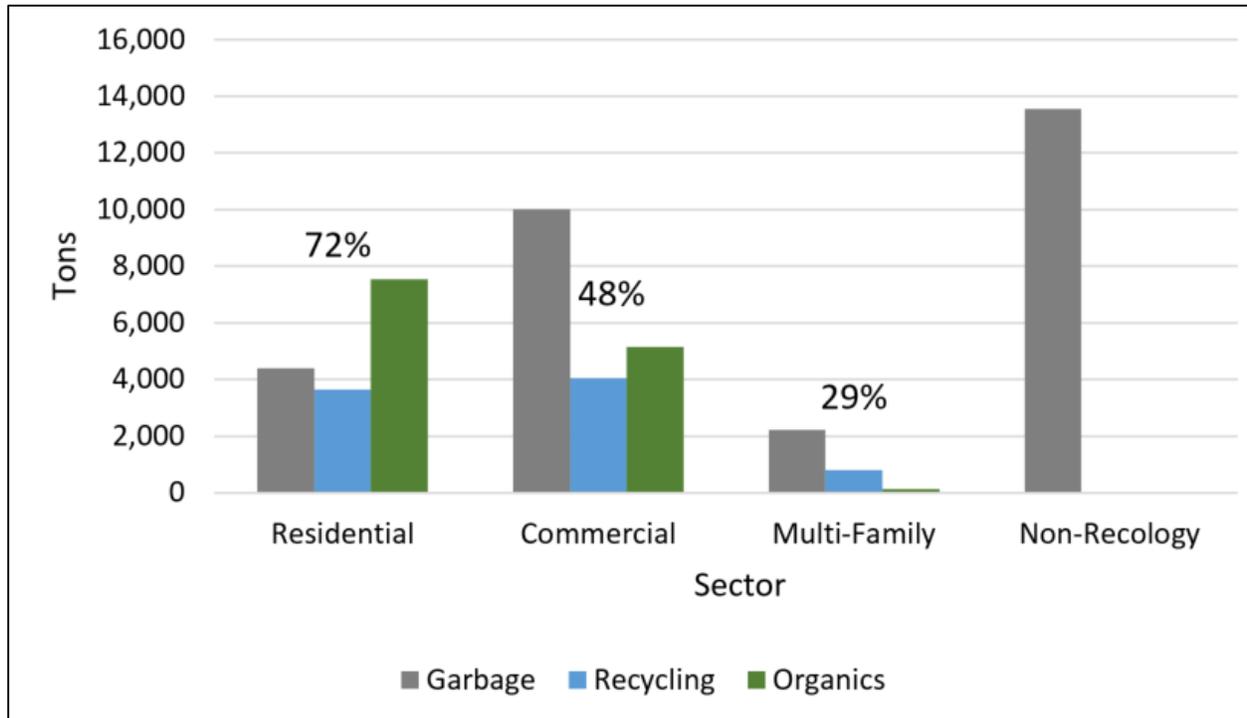
The Shoreway Environmental Center (Shoreway) is a state-of-the-art recycling and transfer station facility. Shoreway also offers residents and businesses of Menlo Park a convenient option to drop off materials for recycling or disposal and offers SBWMA service area residents free compost year-round. Several potential facility enhancements are outlined in RethinkWaste's Long Range Plan, including a mixed waste processing system, transfer station expansion, MRF single stream processing equipment and building expansion, office space for RethinkWaste, a public meeting space, and other upgrades.



Menlo Park Diversion Achievements

Figure 1, below, provides a snapshot of landfill trash, recycling, and compostable material tons in Menlo Park in 2015. Notable in the figure is the very high tonnage allocated to Menlo Park through the state reporting program that does not pass through Recology.

Figure 1: 2015 Diversion Across Sectors



Residential

Under the residential recycling and compost collection services provided by Recology, in 2015, residents diverted 11,170 tons of their sector’s total waste stream (15,537 tons) from landfill, representing 72% diversion before processing.⁴ This is the highest diversion rate of all generator groups in Menlo Park, and is an achievement that speaks to the participation and engagement of its residents.

Commercial

The commercial sector continues to increase the amount of materials it recycles in Menlo Park. Based on Recology’s data, in 2015, businesses recycled over 1,300 tons more than they did just five years ago, an increase of 35%. Approximately 93% of commercial and multi-family landfill trash customers recycle with Recology, and the remainder of these customers either do not generate more than four cubic yards of landfill trash per week or recycle with another provider. Overall, the commercial sector diverted 48% of its waste from landfill disposal in 2015. Business and multi-family participation in recycling and composting programs is also driven by state legislation: AB 341 (Mandatory Commercial Recycling) and AB 1826 (Mandatory Commercial Organics Recycling).

⁴ Some materials collected in recycling and compost carts can’t be diverted and go to landfill after processing.

Multi-Family

Successfully engaging the multi-family sector to participate in diversion programs is a challenge in Menlo Park, especially for compostable materials.⁵ In 2015, only 29% of the materials generated in the multi-family sector was diverted, with compostable materials representing just 4% of that total. Recycling in the multi-family sector is more successful, and the total tons recycled has increased by 287 tons over the period 2011-2015. High turnover in multi-family residences can contribute to an ongoing need for outreach, education, and periodic re-education.

Self-Haul

There is a substantial amount of non-franchised waste being delivered to landfills across California and allocated by the haulers to the City. This waste can be hauled by customers directly to transfer stations or landfills, or it might be hauled by non-franchised haulers other than Recology.

Trends in Disposal

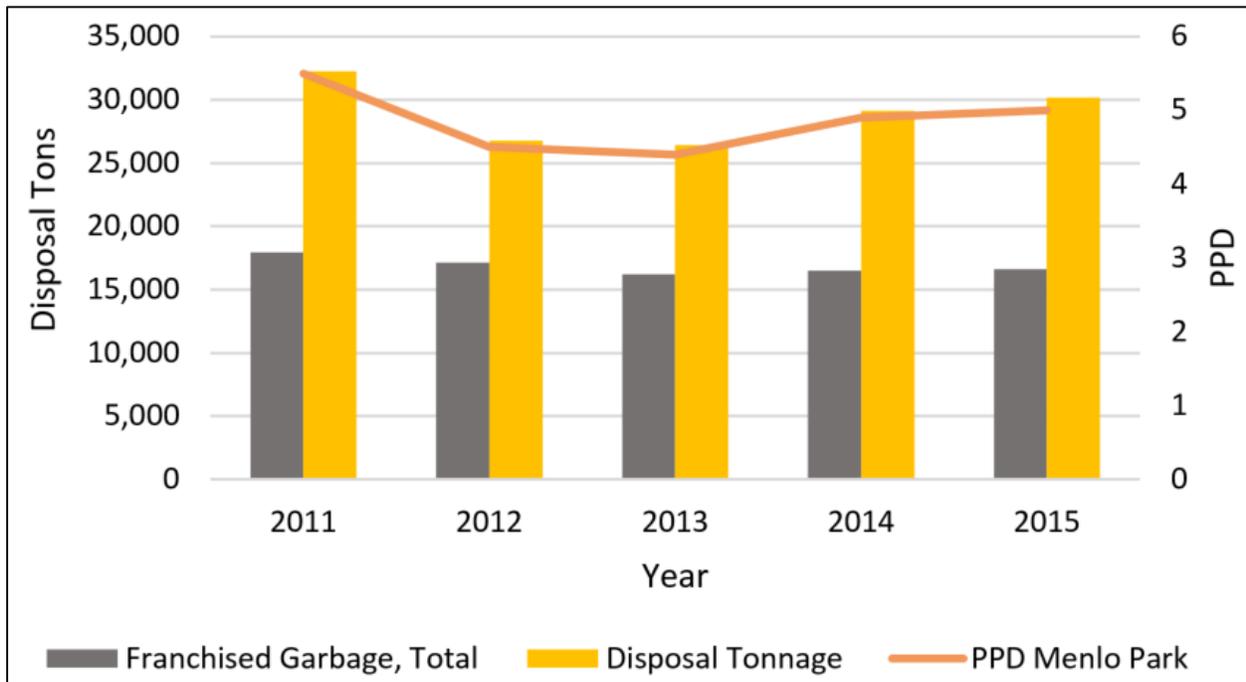
The State of California Integrated Waste Management Act (AB 939) of 1989 established a system of reporting for landfill disposal, enabling jurisdictions to track disposal trends over time. It also mandated 50% reduction in disposal tons (tons being sent to landfill) by the year 2000, a goal tracked through the establishment of a base level of disposal. This level was set by Senate Bill 1016 in 2008 as a “pounds per person per day” (PPD) measure, and remains a useful method for tracking disposal trends over time.



Figure 2 displays the trends in disposal tonnage in Menlo Park as tracked by the State of California Disposal Reporting System. Also included in this figure is the franchised landfill trash (i.e. garbage) collected by Recology. The difference between the two is landfill trash hauled by independent actors such as Menlo Park residents and businesses engaged in self-haul and non-franchised waste haulers. Over the period depicted in the chart, PPD goes up slightly and franchised landfill trash remains relatively stable. In 2015, Menlo Park produced 5.0 pounds per person per day of waste, a diversion rate equivalent of 67%.

⁵ This problem is not unique to Menlo Park: several Bay Area communities have low multi-family sector diversion rates. This sector represents both great challenge and opportunity for diverting waste from being landfilled.

Figure 2: Menlo Park Disposal and PPD Over Time



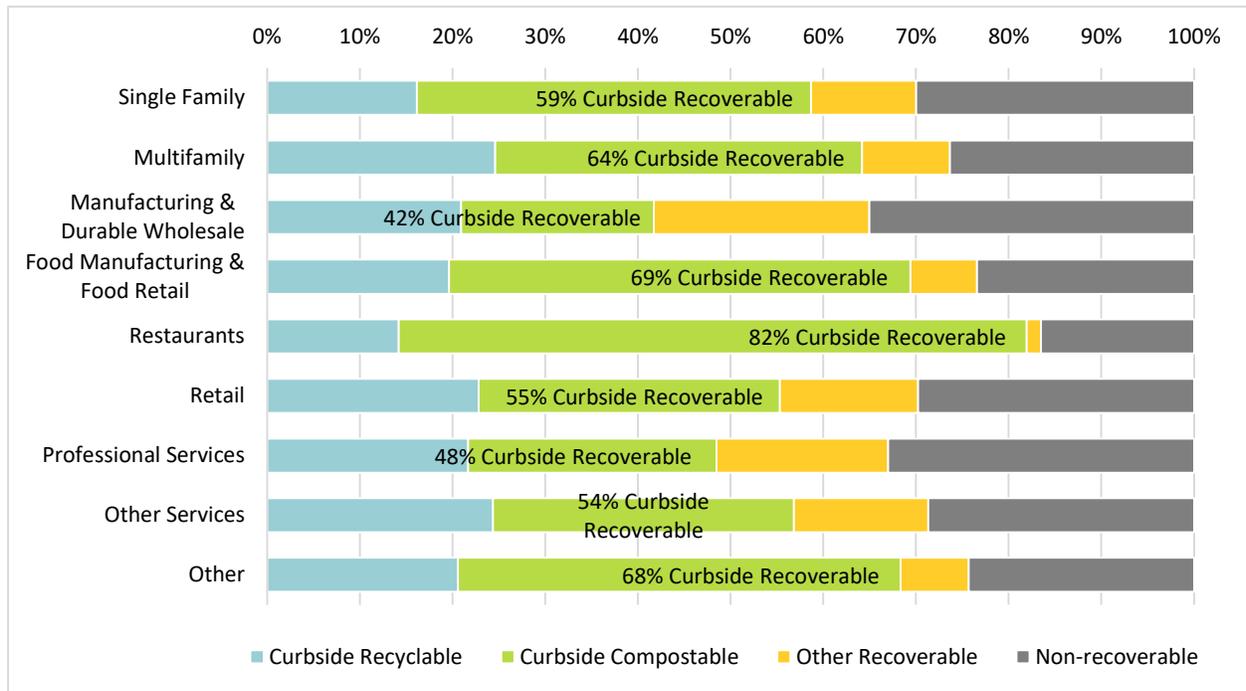
Section 3 Service Opportunities

This section provides recommendations for the City to consider when negotiating with its solid waste hauler to enhance service offerings. These potential changes could be implemented under a future franchise agreement or amendment to the current franchise agreement. In addition, opportunities for additional recovery from landfilled waste are detailed in Appendix A.

Opportunities for Solid Waste Collection Service Enhancements

Based on waste composition data modeling for the City of Menlo Park (Appendix A), commercial and multi-family sectors represent substantial opportunity for additional waste diversion. See Figure 3 for a recoverability of disposed materials overview. This waste modeling guides the following recommendations for solid waste collection service enhancements.

Figure 3: Recoverability of Disposed Materials



Franchise Commercial and Multi-Family Recycling and Composting Collection

Currently, the hauling of commercial source separated recyclable materials and compostable materials is non-exclusive under the franchise agreement with Recology, and the actual amount of materials collected is greater than what is captured by the Recology collection tonnage data.⁶ An agreement with the City’s franchised hauler that defines commercial recycling and compostable material as exclusive franchised materials would ensure more accurate and consistent reporting of commercial sector diversion.⁷ It would also give the City more control over the handling of these materials from the point of collection to the designated processing facility to maximize recovery.

Accurate tracking of commercial sector recycling and compostable material collections is necessary to measure progress towards achieving zero waste, and current non-Recology collections should be counted towards commercial sector diversion. The City could instigate its own regulation of non-franchised commercial recycling haulers, however, negotiating with Recology is a likely a better alternative in terms of City staff time and resources.

Mandatory Recycling and Composting Participation

The City’s solid waste ordinance could be updated to engage the business community and multi-family properties in the diversion of recyclable and compostable materials. Doing so will set the expectation that these sectors contribute to the attainment of Menlo Park’s zero waste goals, and allow the City to more effectively collaborate with its franchised hauler on commercial and multi-family recycling and compostable material diversion.

⁶ RethinkWaste passed an ordinance that requires commercial recycling haulers to report the amounts and types of materials collected for recycling. However, non-compliance remains a barrier for gathering data on these recycling activities in Menlo Park and other Member Agencies.

⁷ Such an agreement would likely exclude temporary “roll-off” containers.

To avoid token compliance and acknowledge the dynamic change in materials generation as the City progresses towards zero waste, it is advised that the subscription requirement specify that each commercial generator subscribe to a level of service that is sufficient to handle the volume of recyclable materials and compostable materials generated or accumulated on the premises. Alternatively, businesses or multi-family customers may self-haul their recyclables and/or compostable materials to a facility for diversion as long as they can demonstrate their compliance with the ordinance. Should the City's franchised waste hauler be granted the exclusive collection of commercial recyclable and compostable materials as described above, the ordinance could be structured and implemented as follows:

- Annually work with the franchised hauler to identify all commercial generators subject to the ordinance and review subscription data to confirm whether all subject commercial generators are compliant.
- Notify commercial generators who do not subscribe to the required collection services with the franchised hauler of the requirement to subscribe or self-haul recyclable and compostable materials. Those commercial generators who do not subscribe to the required services with the franchised hauler but who can produce evidence of legitimate self-haul of recyclable materials and compostable materials will be deemed compliant, whereas those who cannot will be deemed non-compliant.
- Work with the franchised hauler to conduct site visits with select commercial generators each year, covering all commercial generators every five years, in order to document whether commercial generators participate in the required recycling and compostable material collection programs (not just subscribe) and are therefore in compliance.
- Annually work with any non-compliant commercial generators in order to bring them into compliance with the ordinance requirements by providing outreach, education, and technical assistance to facilitate compliance.
- Commercial generators shall be responsible for ensuring and demonstrating compliance with ordinance requirements within thirty (30) days of notification of non-compliance. Failure to demonstrate compliance would be cause for enforcement.

A municipal code update would also allow the City to address changes in state legislation in support of compliance, namely AB 939 (State Diversion Requirement/Goal), AB 341 (Mandatory Commercial Recycling), AB 1826 (Mandatory Commercial Organics Recycling) and AB 1594 (Green Waste as Alternative Daily Cover for Diversion Credit Ban).

Universal Recycling and Composting Collection Service

To achieve even higher levels of diversion in the commercial and multi-family sectors, the City could consider negotiating for universal provision of recycling and composting collection services under a future solid waste franchise agreement. This would provide all commercial and multi-family waste generators easy access to diversion programs as part of their solid waste service, supporting greater program participation and ultimately greater diversion of materials from landfill disposal.

Other Service Enhancement Opportunities

These opportunities and other potential new service enhancements requiring franchised hauler collaboration are discussed in Section 5.

Section 4 Community Planning Process

The City of Menlo Park conducted stakeholder outreach to obtain input on potential new and expanded programs to be included in the City's Zero Waste Plan. The City held two public workshops, conducted a community survey, and engaged the Environmental Quality Commission to contribute to the development of this Zero Waste Plan. The Project Team also conducted additional stakeholder meetings and follow up phone calls with representatives from the environmental community, property managers, service providers, faith organizations, school community, business groups, and regional agencies.



Workshop 1 – Policies, Programs and Infrastructure

During Workshop 1, held on November 2, 2016, the Project Team highlighted some of the City's existing programs and policies, including the polystyrene foodware ordinance and reusable bag ordinance. The team also identified potential new service opportunities, in addition to policy and program options in support of zero waste. Posters were placed around the room identifying additional potential diversion opportunities for the different generator sectors: single family residential, multi-family residential, commercial, self-haul, and construction & demolition (C&D). Participants in the workshop reviewed the potential options for diverting more waste from landfill disposal and suggested the types of additional information needed to refine the selections.

Workshop 2 – Zero Waste Strategy Options

During Workshop 2, held on December 5, 2016, the workshop participants reviewed a refined list of options, including estimates for diversion potential and cost ranges for implementation. Based on this input and input from additional stakeholder meetings and follow up calls, the Project Team developed a revised list of Zero Waste Strategy Options that was presented to City staff for their review. The final list of recommended policies, programs, and infrastructure enhancements is detailed below in Section 5.

Section 5 Zero Waste Strategies

Short-Term Implementation (2018 – 2020)

1. Mandatory Sorting of Self-Hauled Waste at Shoreway

A significant amount of material in the City's disposal stream comes from self-haul generators. Out of the 30,000 tons of materials disposed in 2015, 45% is handled by self-haul generators, including C&D generators and individual residents and businesses. This program would address the self-hauled materials that are delivered to the Shoreway Environmental Center.

Materials delivered by self-haul customers are often highly recoverable, including:



- Materials leftover from construction projects (dimensional lumber and wood, gypsum wallboard, and other C&D)
- Traditional recyclables (metal, paper, plastic, and glass)
- Compostable materials (yard trimmings, food, and other compostable organics)
- Bulky items (furniture, carpet, and mattresses).

Different material types require different handling approaches in order to maximize diversion.

For example, an effective means of diverting mixed C&D materials is through directing these loads to a sort line. Typically, materials are unloaded by self-haul customers and placed on a conveyor belt by facility operations staff. Workers at sorting stations recover recyclable C&D materials, including wood, paper, rigid plastic, and wallboard. Both the Davis Street Transfer Station in San Leandro and SF Recycling & Disposal operate sort lines for self-haul materials separately from their C&D sort lines for commercial C&D materials. Both facilities are able to recycle 50 to 70 percent of materials processed through the self-haul sort lines.

Alternatively, self-haul customers could separate their materials to achieve higher diversion from landfill disposal. For example, all self-haul customers at the Cold Canyon Resource Recovery Park in San Luis Obispo are directed to bunkers for separating materials. Customers are required to separate their materials or pay a surcharge. As a result, 97% of customers elect to self-separate.

Shoreway also has a free drop-off center for a wide variety of materials, including batteries, paint, scrap metal and small appliances. However, many self-haul customers bypass the drop-off center and go directly to the tipping area. An emerging trend in design at transfer stations is to conduct all separation and processing after the fee gate. This allows transfer station staff to monitor and assist in appropriate sorting of materials and provides a more stable funding mechanism as facilities transition to higher diversion rates.

This program would be a joint project to change Shoreway operational practices to ensure that all self-hauled waste is sorted for maximum recovery, either through on-site processing or self-separation. Under this program, the City would work with RethinkWaste to add features to the self-haul area for increased diversion of self-haul materials at Shoreway. It is possible that additional processing equipment, such as processing lines, would be needed to process additional material types. However, these costs would be shared throughout the service area.

Case Study: Davis Street Transfer Station, San Leandro

The Davis Street Transfer Station, which is owned and operated by Waste Management, receives solid waste and recyclable materials from franchised solid waste haulers, construction and demolition contractors and commercial and residential self-haul customers. It is located on the site of a former landfill in an urban area in the City of San Leandro.

In 2008, Waste Management filled in its public area pit and created a flat area for unloading self-haul materials. In 2009, the facility opened its public area materials recovery facility (MRF). All self-haul is now processed for recovery. There are four areas for self-haul customers to drop-off materials based on what they have in their loads. All self-haul drop-off and processing areas are located after the fee gate.

The public area MRF processes 200 tons per day of self-haul, diverting more than 60 percent of materials processed. The materials are processed on a sort line with a two-inch screen. There are two shifts employing 12 sorters (24 staff total). Targeted materials include cardboard, wood, metal and mixed rigid plastic.

Waste Management also operates a public reuse and recycling zone for shoes, belts, clothing, compact disks, VHS tapes, magazines, paper and cardboard. Self-haul customers with these targeted materials are directed to the reuse and recycling zone prior to off-loading at the public area MRF.

Some upfront staff resources are needed for negotiating the service agreements and for potential upgrades to the self-haul area at Shoreway.

Targeted generators are self-haul generators.

2. Mandatory Participation in Recycling and Composting Programs

Case Study: Alameda County Mandatory Recycling Ordinance

Alameda County Waste Management Authority Mandatory Recycling Ordinance requires businesses, institutions, and multi-family properties with five or more units to sort their recyclables from their trash. Multi-family property owners as well as businesses and institutions that generate food waste, such as restaurants and grocery stores, must also sort compostables from their trash. These requirements are effective within participating areas of Alameda County. The ordinance requires the recycling service to be sufficient to handle the amount of recyclable material as well as the composting collection service to be sufficient to handle the amount of food scraps and food-soiled paper generated at the location. This includes cardboard, newspaper, white paper, mixed recyclable paper, recyclable glass food and beverage containers, metal (aluminum and steel) food and beverage containers, PET (#1) and HDPE (#2) plastic bottles, food scraps and compostable paper.

Staff time: 5.44 full-time equivalent staff

Under current state law all multi-family (five units or more) and commercial businesses generating over four cubic yards of solid waste per week must have recycling collection. In addition, increasingly strict thresholds are being phased in that require multi-family and commercial businesses to also have compostable material collection service. However, small multi-family and commercial generators, and residential customers, are not subject to these requirements. The City could implement mandatory requirements in order to motivate all residential, commercial, institutional, and public agency generators to separate recyclable and compostable materials from the waste they generate at their homes or places of business, and place it in the appropriate container for collection and greater diversion.

This program would:

- Consider a future requirement for mandatory recycling (goal of significantly reducing recyclables in the trash via subscription to and participation in recycling programs) for single family, multi-family, and commercial customers
- Consider a future requirement for mandatory composting (goal of significantly reducing organics in the trash via subscription to and participation in composting programs) for single family, multi-family, and commercial customers

To consider a case study, the City of San Carlos enacted a mandatory commercial and multi-family recycling and composting ordinance in 2010. Enforcement of the ordinance is a three-step process: issuance of a courtesy notice, issuance of a warning notice, and issuance of a violation notice. The City has the authority to impose administrative penalties of up to \$500 per violation. Businesses in San Carlos were very supportive of the City's efforts to move from a voluntary to a mandatory recycling program. Very few enforcement actions have been necessary.

Some upfront staff resources are needed to develop a mandatory participation ordinance and ongoing resources would be required to conduct an annual outreach program.

Targeted generators include all single family, multi-family, and commercial customers.

3. Universal Recycling and Composting Collection Service

Currently, commercial and multi-family customers can subscribe to service through Recology for recycling and composting collection or choose another service provider. An analysis of service level data provided by Recology indicates that many commercial and multi-family customers may not have composting collection.



Through this program, the City would provide universal recycling and composting collection services to all commercial and multi-family customers who have landfill trash collection through its agreement with Recology (i.e., any customer that signs up to receive landfill trash collection would automatically receive recycling and composting collection service). This approach can be very effective in ensuring that all customers are in compliance with mandatory state requirements, and would enhance diversion achieved through the Mandatory Participation in Recycling and Composting Programs zero waste strategy. Providing recycling and composting services to all customers reduces barriers to participation in diversion programs by giving customers the infrastructure they need to be successful, without placing the burden to take action and subscribe on commercial and multi-family customers. It is similar to the approach that the City implemented for all single family customers where households receive recycling, compost and solid waste collection services.

Case Study: Central Contra Costa Solid Waste Authority Universal Recycling and Composting Collection

In March 2015, the Central Contra Costa Solid Waste Authority began to roll out recycling and composting collection services to all customers within the service area. Costs for recycling and composting are included in the trash rates and all customers (single family, multifamily and commercial) are eligible for all services.

Some upfront staff resources are needed for negotiating the service agreements.

Targeted generators are multi-family and commercial customers.

4. Require All C&D Projects to Use Designated Facilities

Currently, builders must comply with the City's C&D recycling ordinance by submitting reports and receipts documenting 60 percent recycling for their projects. Going forward, the City could require all projects that generate C&D debris to direct materials to designated facilities with guaranteed minimum recycling rates and/or verified practices to maximize diversion. Many communities in the region already register or certify recycling rates by facility (including the cities of San Jose and San Francisco). This approach could simplify and expedite the reporting requirements. Use of designated facilities could also maximize recovery by ensuring that C&D materials are processed effectively, as independently verified by the City via a facility certification process.

Case Study: Oakland C&D Ordinance

City of Oakland requires that all new construction, all demolition projects, and commercial projects valued at \$50,000 or more recycle 100% of asphalt and concrete and 65% of the remaining waste generated.

Some upfront staff resources are needed for updating the C&D ordinance.

Targeted generators are self-haul and C&D generators.

Case Study: San Jose C&D Ordinance

The City has provided incentives for construction and demolition debris diversion through its model program, Construction and Demolition Diversion Deposit (CDDD), since 2001.

When applying for a building permit, permit applicants meeting the CDDD minimum threshold pay a deposit based on the square footage and type of the project. To receive a full refund of the deposit, permit applicants provide documentation to the City that they have diverted 75 percent or more of the C&D debris generated by the project.

To assist permit applicants in documenting diversion and to encourage development of C&D debris recycling infrastructure, the City certifies facilities that meet a minimum of 75 percent diversion. Permit applicants may document diversion by calculating their specific diversion rate or by submitting documentation that they have delivered their C&D debris to a certified facility.

Staff time: 2 full-time equivalent staff

5. Increase Recycling Requirements in C&D Ordinance

Currently, the City's C&D ordinance requires construction projects to divert 60% of C&D materials. Many C&D materials, including concrete, asphalt, wallboard, wood, metal, plastic and glass are readily recyclable and the increased capture of these materials to prevent their landfill disposal represents an important opportunity for achieving additional diversion. For this program, the City would increase the C&D diversion requirements, for example 100% of all readily recyclable materials would be required to be diverted from disposal. As a point of comparison, the City of Oakland requires that all new construction, all demolition projects, and commercial projects valued at \$50,000 or more recycle 100% of asphalt and concrete and 65% of the remaining waste generated. The State of California recently adopted a 65% diversion requirement for C&D materials, which the City is also considering as impetus for revising the requirements of its own C&D ordinance.

Some upfront staff resources are needed for updating the C&D ordinance.

Targeted generators are self-haul and C&D generators.

6. Recycling Ambassadors and Door-to-Door Outreach

Case Study: Castro Valley Sanitary District Green Hearts Program

The Castro Valley Sanitary District Green Hearts Team was founded in the Summer of 2013 for members of the Castro Valley community who want to give back to the environment and Castro Valley. Under the direction of the Solid Waste Department, Green Hearts Team volunteers will wear their hearts on their sleeve with the goal to help others compost, recycle, reduce waste, and beautify Castro Valley all year round. Green Hearts volunteers:

- Host and provide demonstrations at composting workshops
- Support the formation of Zero Waste or Green Teams at local organizations and businesses.
- Support the formation of Zero Waste Youth Castro Valley.
- Organize and/or promote multi-home or multi-family garage sales.
- Organize and/or promote children's clothing and toy swap events.

This program takes a community based social marketing approach to outreach and education. It can be easy for customers to ignore outreach and solicitations from service providers or staff, however, it is hard for them to say “no” to their friends and neighbors. For this program, the City would identify key community members and elected officials to serve as trusted messengers to help spread the message to recycle and organize door-to-door outreach for residential and business customers.



A good example of this approach is the Miss Alameda Says, “Compost!” program in the City of Alameda. Miss Alameda ran for Miss California in 2011 and then volunteered her time going door-to-door at restaurants to encourage them to participate in the City’s compostable materials collection program. The results were highly successful and all the restaurants contacted agreed to participate. The program grew to include student volunteers assisting in going door-to-door at multi-family buildings. Miss Alameda also provides assemblies and training at schools.

In Castro Valley, the “Green Hearts” program recruits and trains volunteer community members to support the outreach and education at public events.

While the program would be volunteer-based, it would require staff or contractor resources to recruit, train, and organize the volunteers (approximately 0.1 full-time equivalent). Please see Appendix B for a profile and outreach strategy for this sector.

Targeted generators include all single family, multi-family, and commercial customers.

7. Support for Reuse, Repair, Leasing, or Sharing Efforts



Many products and pieces of equipment can be reused or repaired. However, residents and businesses often do not have the knowledge or skills to repair broken items, and would benefit from coaching or could be directed to reuse and repair services.

Repair Cafés or Fixit Clinics are models of free events organized by volunteers to repair things together. In the place where a Repair Café or Fixit Clinic is located, participants have access to tools, materials, and coaches to help make needed repairs on clothes, furniture, electrical appliances, bicycles, appliances, toys, etc. Participants bring their broken items from home or places of business. Working with the specialists they can start making their repairs and/or lend a hand on someone else's repair job.

The City can also promote the "sharing economy" where owners rent or lend tools, equipment, and other items that are seldom used and can be shared.

This program would support materials diversion from landfill through repair and reuse:

Case Study: Repair Café Mountain View

Repair Café Mountain View is a volunteer-run, community service dedicated to encouraging the repair and reuse of goods, rather than relegating them to landfill. At the event, volunteers can guide participants to tackle the repair themselves or they can fix them while the participants watch and wait. These "fixers" can help with:

- Small household appliances: toasters, hair dryers, mixers, vacuums, etc.
- Various electronics: computers games, tools, etc.
- Toys, furniture, luggage, kitchen items, etc.
- Bikes, clothing and other sewing projects, jewelry, etc.

- Promote reuse and repair for residents and businesses with web-based directories (e.g., eBay, Craigslist and FreeCycle.org), utility bill inserts, and cooperative advertisements

- Promote local antique and thrift stores, repair shops, and local electronic equipment, furniture, and appliance resellers including a brochure/website displaying locations

- Support organizations that can sponsor quarterly repair workshops

- Connect with Boy Scouts, Girl Scouts, and other service clubs to organize workshops

- Help recruit volunteer "fixers"

- Recruit appropriate free venue

- Promote repair workshops

Ongoing staff or contractor resources and outreach materials would be needed to support reuse outreach and repair events (approximately 0.05 full-time equivalent).

Targeted generators include all single family, multi-family and commercial customers.

8. Promote Reusable Bottles and Bottle Filling Stations

Menlo Park residents and businesses have access to high quality tap water. However, bottled water is often purchased for drinking water away from home. While plastic water bottles are recyclable, the Container Recycling Institute estimates that 85% are either disposed or littered.

This program would promote alternatives to bottled water, including an ordinance requiring new buildings that have drinking fountains to provide bottle filling stations. Other jurisdictions have adopted ordinances

to reduce waste from plastic water bottles by promoting source reduction, supporting a cultural shift. In 2013, the Santa Clara County Board of Supervisors adopted an ordinance that provided local amendments to the California Plumbing Code requiring bottle filling stations wherever drinking fountains are required in new buildings.

Some upfront staff resources are needed for developing the water bottle filling station ordinance.

Targeted generators are commercial generators.

Case Study: Santa Clara County Bottle Filling Ordinance

The County of Santa Clara Board of Supervisors adopted an ordinance that requires the installation of new water bottle filling stations where drinking fountains are required in private commercial development projects in unincorporated Santa Clara County. The ordinance is a local amendment to the California Plumbing Code that includes the installations of water bottle filling stations for new construction or renovations in government facilities and commercial, industrial, and institutional buildings.

Also known as “Hydration Stations” or “Drink Tap Stations,” bottle filling stations are locations where water bottles can be filled with potable water. The stations are designed so water bottles can be placed below a downward facing water tap and be filled with potable water activated by a sensor or manual button. Unlike water fountains, water filling stations are attractively designed to provide clean, safe drinking water, as the water tap is often protected and the water provided is usually filtered and chilled.

Medium-Term Implementation (2021 – 2025)

9. Outreach, Education, and Technical Assistance for C&D Generators

Case Study: Oakland C&D Technical Assistance

Oakland provides technical assistance at the Green Building Resource Center. Staff is available to help building permit applicants complete plans and reports required by the City’s C&D Ordinance, including online (Green Halo) submittals. Staff can help with plans for waste reduction and recycling, on-site recycling logistics, and other reuse or recycling needs.

Staff time: 1 full-time equivalent staff person

City municipal code requires that construction projects divert 60 percent of construction and demolition (C&D) debris from landfill. In 2015, the City began implementing Green Halo, an online database that allows contractors and City staff to track and verify whether the amount of recycled materials comply with the City’s C&D recycling ordinance. Weight tickets are uploaded by the permit applicant and checked by City staff for compliance. However, recoverable C&D remains a large component of the City disposal stream and much of this material could be diverted from disposal.

Under this program, the City would provide direct technical assistance to encourage project sponsors and stakeholders to initiate effective recycling and waste reduction practices during construction and demolition activities. The City would also undertake targeted education and outreach on how to reduce and reuse C&D materials by promoting activities such as salvage, deconstruction, and construction techniques that minimize waste.

Some staff or contractor resources would be needed to provide support to the C&D generators in Menlo Park (approximately 0.1 full-time equivalent). Please see Appendix B for a profile and outreach strategy for this sector.

Targeted generators include self-haul and C&D generators.

10. Expanded Bulky Item Recycling Collection

Twice per year, Recology San Mateo County offers pickup of large or bulky household items from single family customers for no additional charge. Property managers can also schedule large item pickups for multi-family properties. Residents may set out:

- Two cubic yards of bagged/boxed solid waste
- One large appliance (such as a washing machine, dryer, refrigerator, or freezer)
- One bulky item (such as a mattress, couch or tires)
- Electronic scrap (such as a TV, computer, or computer monitor)

Appliances, tires, mattresses and e-scrap are diverted from disposal. Most of the other bulky items collected by Recology are landfilled.

For this strategy, the Bulky Item program would change focus to encourage diversion of more materials from landfill disposal. The City would contract with Recology to expand the list of materials acceptable for recycling, including items that are hard to recycle through the curbside program. These materials could include:

- Scrap metal
- Window glass
- Carpet
- Textiles

This program could also potentially be extended to businesses at no additional cost, and structured similarly to the multi-family building bulky item pickup service.

The City could also partner with a number of reuse entities (thrift stores, repair shops, and nonprofits such as Goodwill Industries and Salvation Army) to repair, reuse, and resell appropriate bulky items that are currently being landfilled. The City would enter into service contracts with reuse partners to define operating procedures, service requirements, and performance standards, and to establish program parameters to ensure that the bulky-item reuse program is closely coordinated with the bulky-item collection program operated by Recology, and does not impede Recology operations.

The City would continue to encourage residents to donate bulky items through charitable organizations and thrift stores. An additional component of this program would include City sponsorship of, or promotion for, neighborhood and/or apartment complex swap meets or garage sales to encourage residents to donate, rather than discard, reusable bulky items.

Recology's costs for collection should not be significantly impacted. Instead of transporting solid waste to the transfer station for disposal, Recology would deliver recyclable materials for processing. The reuse organizations would be expected to collect materials for resale without compensation from the City.

Some upfront staff resources are needed for negotiating the service agreements and for annual monitoring of the program.

Targeted generators include single family, multi-family, and commercial customers.

Case Study: Central Contra Costa Solid Waste Authority Reuse Days

As a part of its twice per year Clean Up Days, the Authority also provides Reuse Days where residents can put out reusable items like housewares, clothes and books. Those items are collected by Mt. Diablo Recycling and then distributed to those in need or sold in thrift stores.

Budget: Mt. Diablo Recycling provides this service at no extra charge.

11. Participating Partners Program

Case Study: San Luis Obispo Integrated Waste Management Authority Take Back Program

Through the SLO Take Back Program, every retailer that sells household batteries, compact fluorescent light bulbs and fluorescent tubes, mercury-added thermostats, paints, sharps, and medication in San Luis Obispo County takes those items back from the public for free. As part of its household hazardous waste program the Authority collects the materials and recycles or properly disposes of it.

Budget: \$200,000 per year for staff, processing, and equipment

Many retailers are willing to take back materials for reuse or recycling (including used motor oil, fluorescent lamps, batteries, paint, corks and hangers) and numerous organizations exist that focus on repair and reuse (including thrift stores, consignment stores, and electronics and appliance repair stores).



Under this program, the City would partner with and promote local organizations that accept or collect items for reuse, repair, recycling or composting. Partner organizations would be recognized and provided with a window decal indicating participation in the program. The participating partners would be advertised on the City's website and its other publications.

Through this program, the City would:

- Encourage a local “ecology of commerce” for promoting the sale of reusable items in the area
- Encourage the marketing of used lumber, building materials, compost products and used appliances through major home repair, hardware stores, and nurseries
- Encourage the marketing of used furniture through furniture stores
- Promote retailers that are willing to take back materials for reuse, recycling, or composting

Some staff or contractor resources would be needed to recruit and recognize the participating partners (approximately 0.05 full-time equivalent). Targeted generators include single family, multi-family, and commercial customers.

12. Expanded List of Curbside Recyclables

Recyclable materials collected from residents and businesses in the City are delivered to the Shoreway Environmental Center in San Carlos. Shoreway is owned by the South Bayside Waste Management Authority (RethinkWaste) and operated by South Bay Recycling. Materials targeted for recycling include: glass bottles and jars, metal cans, lids and foil and small pieces of scrap metal; plastic bottles, tubs, clamshells, cups and berry baskets; paper bags, cardboard, office paper, junk mail, and magazines.



Some materials that have recycling markets are not currently processed at Shoreway. One option for increasing diversion would be to add additional types of materials that can be placed into the recycling cart; including aseptic containers (such as juice boxes or soup boxes), plastic film (including produce bags and packaging overwrap), rigid plastics (such as toys and laundry baskets), expanded polystyrene blocks, and textiles.

Under this program, the City would work with RethinkWaste to add recyclable materials with local markets for recycling to the list of materials that can be collected. It is possible that more processing equipment, such as optical sorters, would be needed to process additional material types. However, these costs would be shared throughout the service area.

Some upfront staff resources are needed for negotiating the service agreements, and for potential upgrades to the recyclables processing line at Shoreway.

Targeted generators include all single family, multi-family, and commercial customers.

Case Study: Los Angeles Expanded List of Recyclable Materials

The City of Los Angeles contracts with processors that accept a long list of recyclable materials, including film plastics, rigid plastic, polystyrene, and aseptic containers.

Budget: Costs are included in the processing fees. The City receives a net per ton payment (e.g., \$25/ton) from processors for recyclables. For comparison, Recology San Francisco has recently constructed an \$11 million expansion of its processing facility to target additional material types.

13. Material Bans of Products or Packaging

Case Study: Santa Cruz County Expanded Polystyrene Ban

On April 17, 2012, the Santa Cruz County Board of Supervisors adopted a new ordinance to restrict the sale of polystyrene products in the unincorporated County. The ordinance revises the County Code to further restrict the sale of polystyrene foam products in the County. This specifically includes products such as polystyrene cups, plates, bowls, coolers and beach toys, the source of much of the polystyrene debris found on our local beaches. The ordinance exempts food products which are packaged outside the County, as well as products where polystyrene is used for insulation or flotation purposes and is completely encased by a more durable material. Examples of this include surfboards, boats and some construction materials. The ordinance also provides for updating

The City has enacted bans of specific problem waste materials:

- Polystyrene foodware ordinance, enacted in 2012, prohibits food vendors, including restaurants, delis, cafes, markets, fast-food establishments, vendors at fairs, and food trucks, from dispensing prepared food in polystyrene containers labeled as No. 6
- Reusable bag ordinance, enacted in 2013, bans the distribution of plastic bags at retail stores and requires retailers to charge 25 cents per bag for the distribution of reusable bags or paper bags



This program would consider additional bans of specified products or packaging. For example, Santa Cruz County has banned the sale of all polystyrene foam products including cups, plates, bowls, coolers and similar products at all retail stores. The San Luis Obispo

Waste Management Authority has developed a model ordinance that would restrict distribution of plastic straws at restaurants unless a customer requests one.

Some upfront staff resources are needed to develop additional product or packaging bans and ongoing resources would be required to conduct an annual outreach program and enforcement.

Targeted generators include all single family, multi-family, and commercial customers.

14. Zero Waste Event Requirements

Special events provide a unique opportunity for the City to demonstrate to its residents, businesses, and visitors how to practice zero waste concepts. Through its contract with the City, Recology provides recycling, compost, and trash collection at large public events and venues in the City including:

- Downtown Block Parties (3 per year)
- Easter Egg Hunt
- 4th of July Celebration
- Summer Concerts (8 per year)
- Kite Day
- Connoisseurs' Marketplace
- Breakfast with Santa
- Multicultural Day
- Sustainability/Conservation Fair
- Spring Community Cleanup Event
- Fall Community Cleanup Event



Under this program, the City would require event organizers of all events that require a permit to arrange for recycling and compost collection service, require all vendors to use only recyclable and compostable materials, provide education and environmental awareness, and provide adequate recycling staff or volunteers at the event.

The City would also provide technical assistance to public and private venues and events to support waste reduction and recycling.

Some upfront staff resources are needed for developing the zero waste event ordinance and ongoing staff or contractor resources would be needed to support event organizers (approximately 0.05 full-time equivalent).

Case Study: San José Zero Waste Events

The Zero Waste Event Program works with Event Organizers to minimize waste and provide for collection of recyclables and organics at events held in the City of San José. Vendors, caterers, and samplers are required to: use the food & beverage products in the Food & Beverage Products: The Do's & Don'ts of Sustainable Selection guide; use City-loaned Eco-stations (specially designed receptacles for recycling, compost, and trash collection); and announce three messages listed in the stage announcements at an event stage during each day of the event.

15. Outreach to Elementary and Secondary Schools

Public schools in Menlo Park are not currently part of the City's collection program and contract separately

Case Study: Central Contra Costa Solid Waste Authority School Recycling Program

The Authority provides outreach and technical assistance to the 60 schools in its service area. Contract technical assistance staff provide the social and physical infrastructure for Zero Waste including, custodial training and "right-sizing," student projects and presentations, support to green teams, educational school assemblies, and indoor containers.

Budget for contract staff is:
\$120,000 per year.

with collection service providers (Recology South Bay and Recology Peninsula Services). Currently, they do not get the same level of support that other commercial customers receive through Recology of San Mateo County. Providing outreach and technical assistance to public and private schools in Menlo Park can help to reinforce recycling and composting messaging that students can carry home to their families and with them throughout their lives.

The school community provides unique access to the families within the City that may otherwise be difficult to reach. A strong school program can reinforce behavior change (as kids often tell their parents how to recycle and compost). Notably, school programs are the most successful when they are aligned with the practices that students have at home. There is a wealth of environmental curriculum available to schools and teachers, but schools have a distinct need for technical assistance to meaningfully reduce trash. This can also be complemented through service-learning where students participate in the greening of their schools.

Existing outreach and education programs (including San Mateo County's Green Star Schools, Cool the Earth, California Education and the Environment Initiative Curriculum, CalRecycle Closing the Loop Curriculum, and others) can supplement and enhance student learning. Direct technical assistance would encourage local schools and the larger school community to recycle and compost at home, support school "share tables" for extra food, and target cafeteria waste reduction.

Some staff or contractor resources would be needed to provide support to the schools in Menlo Park (approximately 0.1 full-time equivalent). Please see Appendix B for a profile and outreach strategy for this sector.

Targeted generators are public and private schools, students and their families, and school staff.

16. Outreach to Faith-Based Organizations

Churches and faith-based organizations can provide direct access to community members for engagement and education on waste reduction and recycling. Greening the house of worship can also lead to the greening of the congregation. People are more likely to change habits if they attempt to do so with friends and neighbors, introduce change a little at a time with support and encouragement provided along the way, and see leaders in the community taking steps as well. Reaching out to faith-based organizations can help the organization and its members reduce waste sent to landfill, benefiting the wider Menlo Park community and the environment.

Under this program, the City could provide direct technical assistance to faith-based organizations and support them in the development of green teams, as well as encouraging them to work with their networks to pursue zero waste.

Some staff or contractor resources would be needed to provide support to the faith-based organizations in Menlo Park (approximately 0.1 full-time equivalent). Targeted generators are churches and other faith-based organizations, including their congregations.

Case Study: City of Alameda Faith-Based Outreach

As part of the implementation of its Local Action Plan for Climate Protection, the City helped to form a local non-profit, Community Action for a Sustainable Alameda (CASA). The City provides on-going staff support to CASA. CASA conducts outreach to the 50 faith-based organizations operating within the City, including churches, temples, mosques, and synagogues. Through grants and other support, CASA provides indoor recycling and compost containers, stickers, and signs. CASA also conducts workshops for sharing best practices for greening the houses of worship and the congregations.

Staff time: 4 hours per month

17. Textile Recycling

Case Study: San Francisco Zero Waste Textile Initiative

In 2014, San Francisco launched the Zero Waste Textile Initiative, a municipal program designed to eliminate textiles that wind up in landfills or incinerators. #SFSaveFashion, in partnership with international textile-recycling firm I:Collect, expanded textile drop-off locations in the City and accepts worn-out items previously considered trash. Residents and businesses can drop off apparel, footwear, linens, and other textiles to designated drop-off boxes at more than 160 city-wide locations for reuse or recycling. Recology San Francisco accepts textiles for recycling in the curbside recycling carts.

Textiles are a sizable component of the disposal stream, and a contaminant in the recycling collection system. For this program the City can explore:

- Collection of textiles through the bulky-item collection program
- Addition of clean, bagged textiles in the recycling collection program
- No-cost collection service to get textiles and other reusable items to a charity or textile processor
- Promotion and partnerships with Goodwill and others to offer more drop-off locations, and/or quarterly curbside collection

Some upfront staff resources are needed for evaluating options and negotiating the service agreements.

Targeted generators are single family customers.

Long-Term Implementation (2026-2027)

18. Additional Commercial Technical Assistance

Currently Recology Waste Zero staff respond to requests from their customers in Menlo Park and assist them to increase recycling services. Recology conducts a minimum of 100 waste assessments every three years.

This program would provide enhanced technical assistance to commercial customers to help them initiate or expand recycling and waste reduction practices. The City would publicize the program and encourage businesses to use this free service to increase recycling wherever feasible and potentially lower their disposal costs.

Technical assistance would include conducting on-site waste assessments to identify target materials for recycling and waste reduction, providing contact information for securing recycling equipment, training custodial and operations staff, and distributing appropriate outreach materials describing best practices for setting up or expanding recycling services for different types of businesses. Trained staff would help to minimize or overcome various obstacles to recycling faced by commercial customers (space constraints, labor and sorting requirements, lack of information or training, etc.). Additionally, enhanced technical assistance would encourage more commercial customers to set up an effective recycling program that is suited to their place of business, whether it be a large office complex, bar, restaurant, factory, warehouse, shopping center, small retail store, or other type of commercial site. This program provides additional support to businesses, targets the largest waste generators, and complements the outreach and education services currently offered through Recology.

A significant amount of staff or contractor resources would be needed to provide this technical assistance (approximately 0.5 full-time equivalent). However, this program has the potential to be very effective in increasing diversion. Please see Appendix B for a profile and outreach strategy for this sector.

Targeted generators include all commercial customers.

19. Mandatory Diversion Percentage



While single family generators have achieved 72% diversion of waste from landfill in Menlo Park, the commercial sector is at 48% and the multi-family sector is at 29%. This program would mandate a minimum diversion percentage for businesses and multi-family such as 50% and 75% by specific milestone dates. This program could be implemented along with universal rollout of recycling and compostable materials collection services to all multi-family and commercial customers. Diversion rates would be monitored and, if needed, enforcement measures could be triggered based on mandatory participation requirements.

Case Study: San Francisco Commercial Technical Assistance

San Francisco and Recology have a partnership in conducting outreach and technical assistance to commercial and multi-family customers. Both the City and Recology identify customers that require assistance. Recology staff work with property managers and building owners to “right-size” service. San Francisco provides interns and contracted technical assistance staff to provide door-to-door outreach at multifamily buildings and conduct tenant and custodial trainings in appropriate languages.

Case Study: Alameda County Mandatory Recycling Ordinance

Alameda County Waste Management Authority Mandatory Recycling Ordinance requires businesses, institutions, and multi-family properties with five or more units to sort their recyclables from their trash. Multi-family property owners as well as businesses and institutions that generate food waste, such as restaurants and grocery stores, must also sort compostables from their trash. These requirements are effective within participating areas of Alameda County. The ordinance requires the recycling service to be sufficient to handle the amount of recyclable material as well as the composting collection service to be sufficient to handle the amount of food scraps and food-soiled paper generated at the location. This includes cardboard, newspaper, white paper, mixed recyclable paper, recyclable glass food and beverage containers, metal (aluminum and steel) food and beverage containers, PET (#1) and HDPE (#2) plastic bottles, food scraps and compostable paper.

Staff time: 5.44 full-time equivalent staff

These policies could be implemented in the following sequence:

- Monitoring of state requirements - all multi-family customers and commercial customers with four cubic yards of solid waste or more required to have compost collection service by 2019
- Universal rollout of recycling and compost collection service to all multi-family and commercial customers by 2021
- Monitoring of diversion percentages, if 50% not reached by 2025, mandatory participation requirements enacted
- Monitoring of diversion percentages, if 75% not reached by 2030, enforcement measures enacted

Some upfront staff resources are needed to develop a mandatory recycling percentage ordinance and ongoing resources would be required to conduct an annual outreach program.

Targeted generators are multi-family and commercial customers.



A New Rate Structure for Solid Waste Services

Currently, the majority of what customers pay for solid waste collection services is based on the size of their landfill trash bin and frequency of pickup. This approach encourages customers to take advantage of recycling and composting collection services provided at no extra charge or at a subsidized rate. However, this “pay as you throw” model has proven problematic: it has failed to provide the financial sustainability needed to fund all solid waste services, including recycling, composting, and other waste diversion programs. In 2016, the City engaged R3 Consulting to develop a new rate structure that will;

- Collect revenues necessary to meet the annual compensation requirements due to Recology under the existing contract, beginning in 2018; and

- Ensure the revised rate structure incorporates all operational costs and fees, costs projected by the community zero waste plan and produce a complete rate table and rate calculation which is understandable to customers and implementable by Recology.

The new rate model is expected to be assessed and adopted by the City Council in Fall 2017. As such, this has not been included as part of the Economic Analysis and Implementation Plan (Section 8). However, it is a recent progressive action undertaken by the City that will ultimately support sustainable diversion of materials from landfill disposal during the 10-year planning period, and its impacts are assessed in the Additional Potential Diversion Analysis (Section 6) and included in the estimate Greenhouse Gas Emission Reduction (Section 7).

Regional Considerations and Social Marketing

The nineteen waste strategies described above are leadership opportunities the City can take to directly impact waste diversion activities in the community. As a RethinkWaste member agency, Menlo Park will also benefit from wider regional efforts to reduce waste, such as the JPA's implementation of its Long Range Plan. Included in the Long Range Plan are Shoreway infrastructure enhancements, model solid waste ordinances, extended producer responsibility, and an every other week garbage collection pilot. In addition, the City should also consider the importance of social marketing for increasing participation in diversion programs. RethinkWaste's future mixed waste processing program, and example social marketing strategies the City could implement to support a cultural shift and enhance zero waste strategy implementation, are discussed below.

Mixed Waste Processing

Mixed waste processing is included in RethinkWaste's Long Range Plan for potential future program implementation. The City should continue to monitor RethinkWaste's plans to implement mixed waste processing at the Shoreway facility, as this may be a potential avenue for additional diversion.

The Long Range Plan notes that the mixed waste processing system will recover recyclables and organics from residential and commercial (including multi-family) waste. Such a program could yield approximately 1,500 tons of additional diversion for Menlo Park, which would enable the City to reach its zero waste goal of 73% franchised diversion by 2035 as shown in Section 6.

Targeted Outreach and Education on Problematic Materials

Targeted outreach and education to raise awareness about particular materials that tend to be disposed incorrectly would bring current efforts into focus, assisting residents in proper sorting of waste into landfill trash, recycling, and compost carts. To start, proper sorting of paper and compostable materials could be emphasized to reduce the amount of material sent to landfill. Other communities, such as the City of Livermore, have used this strategy and report positive results. Moreover, the results are easily measurable through the periodic monitoring of this sector's waste stream compositions, by checking the contents of carts, or conducting more detailed waste audits. The franchised hauler is well-positioned to partner with City on such an effort, both through its outreach and education work in the community and ability to monitor and report on changes.

Comparative Basis Education on Progress

Communicating the results of diversion progress and waste stream composition monitoring is another method that helps focus outreach and motivate behavior change, particularly when data is presented on a comparative basis and in a visually engaging format. Strategies like StopWaste's benchmark services and Pacific Gas and Electric's bill inserts that compare energy usage to similar nearby homes are based on studies that show people pay attention to how they compare to others and are motivated to change (and maintain high achievement) when they receive feedback on their performance. In the context of zero

waste, infographics comparing the service level of a customer’s home, multi-family complex, or business to the average sector service level, and/or the preferred zero waste service level, could be valuable. Comparisons of waste stream composition, waste stream generation, and other key metrics could also be used in alignment with the City’s zero waste goals.

Section 6 Additional Potential Diversion Analysis

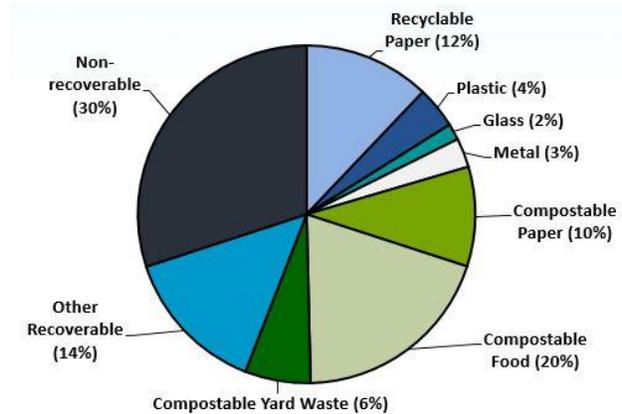


Figure 4: Materials in Menlo Park Trash

Menlo Park has the opportunity to significantly increase its citywide diversion rate through the implementation of the new and expanded policies, programs, and infrastructure. In 2015, the City’s franchise diversion rate (based on materials collected by Recology) was 56%. To estimate the diversion potential of each of the zero waste strategies, the Project Team developed a diversion model. The model uses disposed waste composition data for each waste generator sector (i.e., single family, multi-family, commercial, and self-haul) to estimate tons of potentially recoverable materials by type and by sector that are currently landfilled.⁸ The model then applies an estimated capture rate (the percentage of a

target material estimated to be diverted) to the tons disposed to derive the potential diversion tons associated with each strategy. The capture rates were developed under guidance from the U.S Environmental Protection Agency’s “Managing and Transforming Waste Streams” tool, in addition to research of comparable programs and educated estimates. The model predicts that implementation of the zero waste strategies would result in a 70% franchise diversion rate. Regional programs, such as mixed waste processing, would assist the City in reaching 73% franchised diversion, and potentially beyond.

Table 5 lists the estimated capture rate for each zero waste strategy and the resulting potential diversion tons per year.

⁸ The diversion model is based on landfilled waste composition data for the City of Menlo Park prepared by Cascadia Consulting Group. See Appendix A for Menlo Park landfilled waste composition modeling.

Table 5: Estimated Capture Rate and Annual Diversion Tons

Item #	Zero Waste Strategy	Additional Potential Diversion					Targeted Material Capture
		Single Family	Multi-Family	Commercial	Self-Haul	Total All Sectors	
Short-Term							
1	Mandatory Sorting of Self-Hauled Waste at Shoreway				1130	1130	15%
2	Mandatory Participation in Recycling and Composting Programs	280	160	630		1070	11%
3	Universal Recycling and Composting Collection Service		180	740		920	13%
4	Require All C&D Projects to Use Designated Facilities				860	860	12%
5	Increase Recycling Requirements in C&D Ordinance				790	790	11%
6	Recycling Ambassadors and Door-to-Door Outreach	130	70	290		490	5%
7	Support for Reuse, Repair, Leasing or Sharing Efforts	3	2	5		10	1%
8	Promote Reusable Bottles and Bottle Filling Stations			1		1	1%
Medium-Term							
9	Outreach, Education and Technical Assistance for C&D Generators				360	360	5%
10	Expanded Bulky Item Recycling Collection	20	10	100		130	5%
11	Participating Partners Program	30	20	70		120	1%
12	Expanded List of Curbside Recyclables	20	10	90		120	10%
13	Material Bans of Products or Packaging	10	10	20		40	1%
14	Zero Waste Event Requirements			50		50	1%
15	Outreach to Elementary and Secondary Schools			50		50	1%
16	Outreach to Faith-Based Organizations			50		50	1%
17	Textile Recycling	6				6	3%
Long-Term							
18	Additional Commercial Technical Assistance			630		630	11%
19	Mandatory Diversion Percentage		160	630		790	11%
	Increased Diversion Supported Through New Rate Model	220	130	480		830	11%
	TOTAL	720	750	3840	3140	8450	
	RethinkWaste Long Range Plan: Mixed Waste Processing	400	200	900		1500	15%

Section 7 Greenhouse Gas Emission Reduction

The Waste Reduction Model (WARM) was used to calculate the estimated greenhouse gas emission reduction. WARM was created by the U.S. Environmental Protection Agency to help solid waste planners and organizations estimate greenhouse gas emission reductions from several different waste management practices. The model calculates emissions in metric tons of carbon dioxide equivalent (MTCO₂E) and metric tons of carbon equivalent (MTCE) across a wide range of material types commonly found in municipal solid waste.

If these zero waste strategies were to be fully implemented, approximately 13,000 metric tons of carbon dioxide equivalent could be avoided each year through recycling and composting currently landfilled waste materials. This is the equivalent to the annual emissions from 2,790 passenger vehicles, conserving 867 households' annual energy consumption, or conserving 17,155 barrels of oil. See Table 6 below for more information. Additional greenhouse gas emission reduction could be achieved through mixed waste processing, source reduction of non-recoverable materials, and reuse activities.

Table 6: Estimated Annual Greenhouse Gas Emission Reduction

Total change in MTCO ₂ E: (13,253)	Total Change in Energy Use (99,673) million BTU	Total change in MTCO: (3,614)
This is equivalent to...		
Removing annual emissions from 2,790 passenger vehicles		
Conserving 1,491,273 gallons of gasoline		
Conserving 552,206 cylinders of propane used for home barbeques		
Conserving 71 railway cars of coal		
Conserving 867 households' annual energy consumption		
Conserving 17,155 barrels of oil		

Section 8 Economic Analysis and Implementation Plan

Economic Analysis

Costs for implementing the zero waste strategies were developed by estimating:

- The number of staff or contractor hours that would be needed to develop and maintain each program
- The outreach materials (training, materials, advertising, promotional flyers, promotional kits, outreach campaigns) needed for each program
- The capital costs for upgrades at the Shoreway Environmental Center, to be shared throughout the service area
- An average hourly loaded rate for staff of \$75 per hour.

Outreach materials cost assumptions:

- \$5 each for training materials
- \$250 each for newspaper advertising

- \$2 each for promotional flyers
- \$50 each for promotional kits
- \$2,000 for an outreach campaign

Capital costs for upgrades at Shoreway cost assumptions:

- \$2 million to add optical sorting equipment to the recyclables processing. Menlo Park's share would be \$200,000 based on its proportionate share of the materials.
- \$500,000 to add upgrades to the self-haul area. Menlo Park's share would be \$50,000.

These assumptions were used to project the annual estimated costs for each strategy. Based on the estimated diversion tons, the cost per ton diverted was also projected for each strategy.

Based on the 9,038 single family, multi-family, and commercial customers in the City, full implementation of all zero waste strategies could result in an average approximate \$0.85 per month increase in monthly residential rates. Other funding mechanisms may also be considered.

Timeline

These zero waste strategies could be implemented over a 10-year period from 2018 through 2027. The implementation timeframe is divided into three phases:

- Short-term 2018-2020
- Medium-term 2021-2025
- Long-term 2026-2027

Timing for the development of new programs is subject to the City's budget process, contract negotiations with Recology or new contracts with another service provider, and potential upgrades to the Shoreway Environmental Center. For planning purposes, it is anticipated that the zero waste strategies will be implemented in the following sequence.

Table 7 provides the cost estimates for the zero waste strategies and implementation timeline.

Table 7: Cost Estimates and Implementation Schedule

#	Zero Waste Strategy	Categories	Start-up Hours	Ongoing Annual Hours	Total Capital Investment (Amortized over 10 years)	Short-term			Medium-term					Long-term		Strategy Total	Annual tons diverted	Strategy Diverted Tons	Dollars per ton diverted	Total change in GHG emissions (MTCO ₂)
						2018	2019	2020	2021	2022	2023	2024	2025	2026	2027					
1	Mandatory sorting of self-hauled waste at Shoreway	Start-up Labor	250			\$ 6,300	\$ 6,500	\$ 6,700								\$69,500	1130	11300	\$6	1,175
		Amortized Capital Investment			\$ 50,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000					
2	Mandatory participation in recycling and composting programs	Start-up Labor	250			\$ 6,300	\$ 6,500	\$ 6,700								\$25,800	1070	10700	\$2	2,061
		Annual Outreach and Education Materials Expense			\$ 2,000	\$ 2,100	\$ 2,200													
3	Universal recycling and composting collection service	Start-up Labor	250			\$ 6,300	\$ 6,500	\$ 6,700							\$19,500	920	9200	\$2	1,897	
4	Require all projects to direct C&D materials to designated facilities	Start-up Labor	250			\$ 6,300	\$ 6,500	\$ 6,700							\$19,500	860	8600	\$2	858	
5	Increase recycling requirements in C&D ordinance	Start-up Labor	250			\$ 6,300	\$ 6,500	\$ 6,700							\$19,500	790	7900	\$2	786	
6	Recycling ambassadors and door-to-door outreach	Annual Labor		200		\$ 15,000	\$ 15,400	\$ 15,800							\$58,500	490	4900	\$12	957	
		Annual Outreach and Education Materials Expense			\$ 4,000	\$ 4,100	\$ 4,200													
7	Support for reuse, repair, leasing or sharing efforts	Annual Labor		100		\$ 7,500	\$ 7,700	\$ 7,900							\$29,400	10	100	\$294	4	
		Annual Outreach and Education Materials Expense			\$ 2,000	\$ 2,100	\$ 2,200													
8	Promote reusable bottles and bottle filling stations	Start-up Labor	250			\$ 6,300	\$ 6,500	\$ 6,700							\$19,500	1	10	\$1,950	1	
9	Outreach, education and technical assistance for C&D generators	Annual Labor		200					\$ 15,000	\$ 15,400	\$ 15,800	\$ 16,200	\$ 16,600		\$90,000	360	2520	\$36	357	
		Annual Outreach and Education Materials Expense				\$ 2,000	\$ 2,100	\$ 2,200	\$ 2,300	\$ 2,400										
10	Expanded bulky item recycling collection	Start-up Labor	250						\$ 18,800						\$50,000	130	910	\$55	286	
		Annual Labor		100						\$ 7,500	\$ 7,700	\$ 7,900	\$ 8,100							
11	Participating partners program	Annual Labor		100					\$ 7,500	\$ 7,700	\$ 7,900	\$ 8,100	\$ 8,300		\$53,000	120	840	\$63	197	
		Annual Outreach and Education Materials Expense				\$ 2,500	\$ 2,600	\$ 2,700	\$ 2,800	\$ 2,900										
12	Expanded list of curbside recyclables	Start-up Labor	250						\$ 18,800						\$218,800	120	840	\$260	47	
		Amortized Capital Investment			\$ 200,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000						
13	Material bans of products or packaging	Start-up Labor	250						\$ 18,800						\$32,300	40	280	\$115	NA	
		Annual Outreach and Education Materials Expense				\$ 2,500	\$ 2,600	\$ 2,700	\$ 2,800	\$ 2,900										
14	Zero waste event requirements	Start-up Labor	250						\$ 18,800						\$74,300	50	350	\$212	122	
		Annual Labor		100						\$ 7,500	\$ 7,700	\$ 7,900	\$ 8,100	\$ 8,300						
		Annual Outreach and Education Materials Expense				\$ 3,000	\$ 3,100	\$ 3,200	\$ 3,300	\$ 3,400										
15	Outreach to elementary and secondary schools	Annual Labor		200					\$ 15,000	\$ 15,400	\$ 15,800	\$ 16,200	\$ 16,600		\$84,000	50	350	\$240	119	
		Annual Outreach and Education Materials Expense				\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000										
16	Outreach to faith-based organizations	Annual Labor		200					\$ 15,000	\$ 15,400	\$ 15,800	\$ 16,200	\$ 16,600		\$84,000	50	350	\$240	119	
		Annual Outreach and Education Materials Expense				\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000										
17	Textile recycling	Start-up Labor	250						\$ 18,800						\$18,800	6	12	\$1,567	NA	
18	Additional commercial technical assistance	Annual Labor		1000										\$ 75,000	\$ 76,900	\$167,100	630	1260	\$133	1,341
		Annual Outreach and Education Materials Expense												\$ 7,500	\$ 7,700					
19	Mandatory recycling percentage	Start-up Labor	250						\$ 18,800						\$23,900	790	1580	\$15	1,612	
		Annual Outreach and Education Materials Expense												\$ 2,500						\$ 2,600
TOTAL			3,000	2,200	\$ 250,000	\$93,300	\$95,400	\$97,500	\$191,000	\$106,500	\$108,700	\$110,900	\$113,100	\$126,300	\$109,600	\$1,157,400	7,617	62,002	NA	11,939

Waste Modeling Methods, Assumptions, and Findings

INTRODUCTION

Cascadia performed waste modeling to inform the development of Menlo Park's Zero Waste Service Plan. The waste modeling exercise produced the following data points:

- 2015 total franchised tons by stream (disposal, recycling, organics)
- 2015 total franchised tons by generator (single family, multifamily, and commercial)
- 2015 total franchised tons by detailed commercial sector (manufacturing & durable wholesale, food manufacturing & food retail, restaurants, retail, professional services, other services, and other)
- Disposed franchised waste material compositions by generator and for self-haul materials
- Recoverability of disposed franchised waste by generator and for self-haul materials
- 2015 baseline aggregate average service levels
- 2015 inbound capture rates
- 2015 recovery rates and estimated maximum recovery rates
- Recovery rates based on capture rate benchmarks

DATA SOURCES

Cascadia used the following data sources to inform the modeling for Menlo Park:

- "Recology San Mateo County Annual Report to the SBWMA for Year 2015," submitted February 2016.
- Information from "[Residential solid waste and recycling services](#)" on the City of Menlo Park's official website.
- Recology customer listings with subscription levels.
- City of Menlo Park commercial establishment listings of North America Industry Classification System (NAICS) codes and employee counts.
- Housing and occupation rates from the "[E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2016 with 2010 Census Benchmark](#)" report produced by the Department of Finance for the State of California.
- Waste composition studies prepared for the South Bayside Waste Management Authority completed in 2013.
- The "[2014 Disposal-Facility-Based Characterization of Solid Waste in California](#)" and the "[2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California](#)" conducted by California Department of Resources Recycling and Recovery (CalRecycle) and published in 2015.
- Proprietary Cascadia data from a waste composition study completed in 2014 for an undisclosed Bay Area community.

TERMS AND DEFINITIONS

Cascadia used the following definitions to present modeling results.

Franchised Tons	Tons of material generated by the residential and commercial sectors collected by Recology through either curbside or roll-off service.
Generation	The total tons of disposal, recycling, and organics material collected by Recology.
Contamination	Materials that Recology does not accept in the curbside recycling or organics collection program that customers place in their recycling or organics collection containers. These contaminants affect the quality of the recycling and/or organics product that Recology recovers from their customers.
Capture Rate	The proportion of recoverable materials that are recovered through Recology curbside collection divided by the proportion of all generation that is a recoverable material that was collected in either the disposal, recycling, or organics streams.
Inbound Recovery Rate	The proportion of curbside recycled and curbside composted tons (including contamination) to franchised generation.
Maximum Recovery Rate	The theoretical recovery rate when totaling current inbound recovery material streams and curbside recoverable materials that are currently in the disposal stream that could be recovered with programmatic, behavioral, educational, collection, and/or processing systems developments.

MODELING METHODS AND FINDINGS

This section outlines the assumptions and methodology Cascadia used to complete the modeling exercise, and presents key findings.

Annual Tons

Residential single family, multifamily, and commercial tons are based on Recology 2015 collection records. The commercial tons were further divided into seven detailed commercial sectors: manufacturing and durable wholesale, food manufacturing and food retail, restaurants, retail, professional services, other services, and other. Cascadia allocated commercial tons among these detailed commercial sectors using per employee per year material generation rates from the "2014 Disposal-Facility-Based Characterization of Solid Waste in California" report by CalRecycle, and Menlo Park employment data. The detailed commercial sector-specific tons were scaled to match the total commercial tons as reported by Recology. Table 1 shows the 2015 single family, multifamily, and commercial generator tons reported by Recology and the modeled tons by detailed commercial sector.

Table 1. 2015 Franchised Tons and Inbound Recovery Rates

	Disposal	Recycling	Organics	Generation	Recovery Rate
Residential	6,615	4,445	7,644	18,703	65%
Single Family	4,390	3,646	7,524	15,560	72%
Multifamily	2,225	799	119	3,143	29%
Commercial	9,992	4,054	5,154	19,200	48%
Manufacturing & Durable Wholesale	460	304	0	764	40%
Food Manufacturing & Food Retail	294	80	150	523	44%
Restaurants	617	188	425	1,230	50%
Retail	554	110	0	664	17%
Professional Services	6,947	3,100	4,439	14,487	52%
Other Services	645	154	107	906	29%
Other	475	120	32	627	24%
TOTAL	16,607	8,499	12,797	37,903	56%

Figure 1 and Figure 2 present the proportion of franchised material collected in 2015 by stream and by generator.

Figure 1. 2015 Total Franchised Materials Collected by Stream

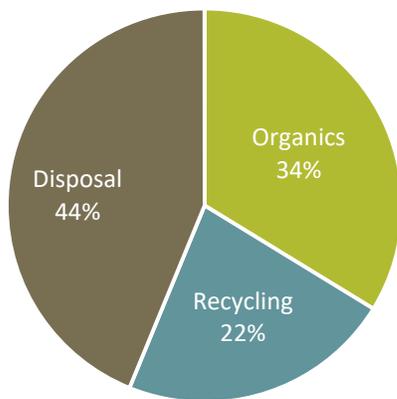


Figure 2. 2015 Total Franchised Materials Collected by Generator

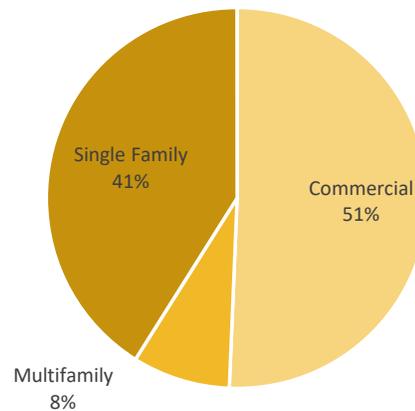


Figure 3 and Figure 4 display 2015 total franchised tons for Menlo Park’s three waste streams and the inbound recovery rate achieved by each generator (Figure 3) and each detailed commercial sector (Figure 4).

Figure 3. 2015 Total Franchised Tons by Generator

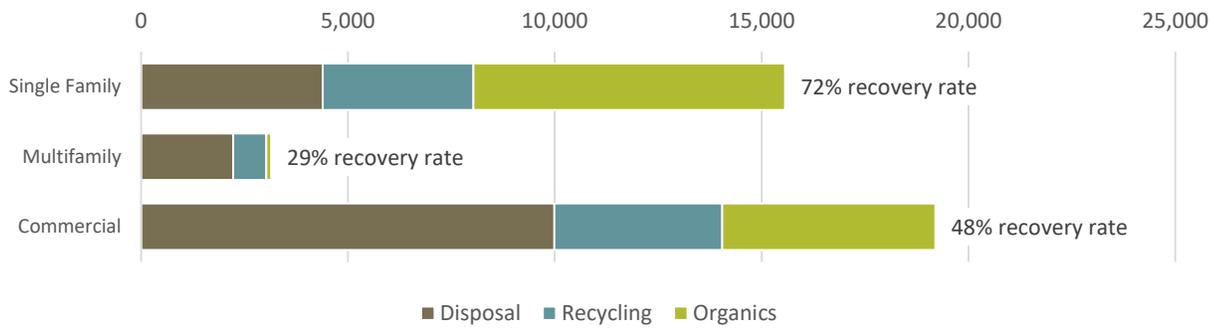
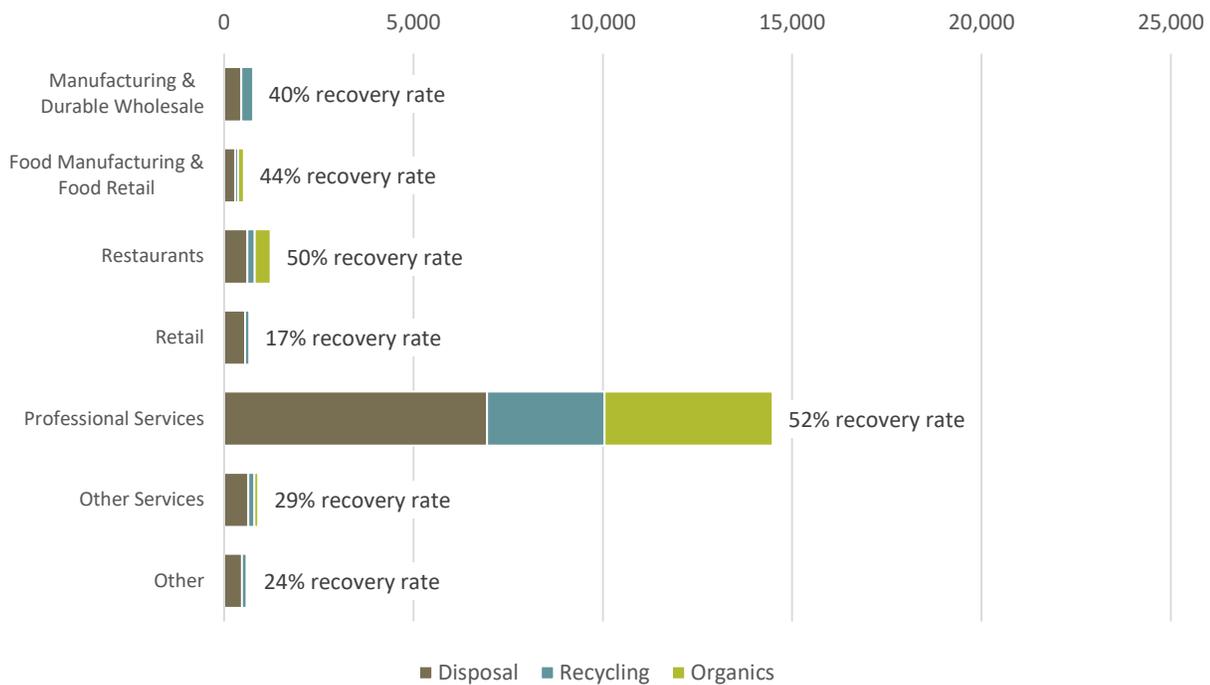


Figure 4. 2015 Total Franchised Tons by Detailed Commercial Sector



Disposal Compositions

Cascadia modeled composition for each sector with composition data collected from the 2014 CalRecycle statewide studies (“[2014 Disposal-Facility-Based Characterization of Solid Waste in California](#)” and the “[2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California](#)”) and data from a large waste composition study completed in 2014 for a Bay Area community with similar generation patterns to Menlo Park (the city does not wish to be identified).

Distinguishing characteristics that Cascadia took into account when selecting representative compositions for use in modeling included similarity of business types and sizes (by employment) to Menlo Park, level of urbanization, geographic proximity, and availability of waste collection and diversion systems such as single-stream recycling collection, acceptance of food waste in the organics curbside service, and construction and demolition waste processing.

Cascadia modeled composition using 29 material types. Specific sources and assumptions Cascadia used to model composition by generator are described below.

- **Single Family.** Cascadia modeled single family disposal composition by combining 2014 CalRecycle residential composition data and data from a large waste composition study completed in 2014 for a representative Bay Area community.
- **Multifamily.** Cascadia modeled multifamily disposal composition from 2014 CalRecycle facility-based data from representative regions.
- **Commercial.** Cascadia modeled commercial composition using 2014 CalRecycle commercial composition data from areas in the state with similar diversion programs. Cascadia assigned weighting factors to the available composition data based on Menlo Park's commercial sector employment profiles and proportion of large and small businesses. Cascadia used the same full-time equivalent (FTE) employee threshold used in the CalRecycle study to determine if a business was large or small.
- **Self-haul.** Self-haul includes material that generators disposed directly at transfer stations or the landfill. Cascadia modeled self-haul disposal composition from 2014 CalRecycle self-haul composition data. Tons of self-hauled materials were not available and are not reported.

Detailed disposal composition results by generator are shown in Table 2, Table 3, and Table 4.

Table 2. Detailed Disposal Composition: Residential

Material	Single Family		Multifamily		Total Residential	
	Est. %	Est. Tons	Est. %	Est. Tons	Est. %	Est. Tons
Paper	18.1%	796	22.0%	490	19.5%	1,287
Corrugated Cardboard and Kraft	1.6%	68	3.5%	78	2.2%	146
Newspaper	1.1%	50	2.9%	64	1.7%	114
Other Recyclable Paper	5.4%	237	7.2%	161	6.0%	398
Compostable Paper	9.4%	411	7.3%	163	8.7%	575
Non-Recoverable Paper	0.7%	30	1.1%	24	0.8%	54
Plastic	10.2%	448	10.6%	236	10.3%	684
#1 & #2 Plastic Containers	1.0%	44	1.5%	33	1.2%	76
Other Recyclable Plastics	2.7%	119	2.5%	55	2.6%	174
Recoverable Film	0.6%	28	0.5%	12	0.6%	40
Non-recoverable Film	3.9%	173	4.1%	92	4.0%	265
Non-recoverable Plastics	1.9%	84	2.0%	44	1.9%	128
Glass	2.0%	88	4.3%	95	2.8%	183
Glass Containers	1.8%	81	3.4%	77	2.4%	158
Non-recoverable Glass	0.2%	7	0.8%	18	0.4%	25
Metal	2.7%	119	3.9%	87	3.1%	206
Ferrous Metal	1.2%	54	2.1%	46	1.5%	100
Non-ferrous Metal	0.6%	28	1.0%	22	0.8%	50
Other Recoverable Metal	0.2%	9	0.0%	-	0.1%	9
Non-recoverable Metal	0.6%	27	0.9%	20	0.7%	47
Organics	46.5%	2,043	45.7%	1,016	46.2%	3,059
Food	25.8%	1,133	29.5%	656	27.0%	1,789
Yard Waste	7.4%	323	2.7%	61	5.8%	384
Textiles	4.2%	186	5.4%	119	4.6%	305
Non-recoverable Organics	9.1%	401	8.1%	180	8.8%	581
Construction & Demolition	11.5%	503	5.6%	124	9.5%	628
Recoverable Wood	2.5%	109	1.9%	43	2.3%	152
Carpet	1.8%	77	0.3%	8	1.3%	85
Recoverable C&D	1.4%	62	0.8%	18	1.2%	80
Non-recoverable C&D	5.8%	255	2.5%	56	4.7%	311
Other Materials	8.9%	392	7.9%	175	8.6%	568
Household Hazardous Waste	0.5%	21	0.1%	3	0.4%	24
Electronic Waste	0.7%	30	0.8%	19	0.7%	49
Tires	0.1%	3	0.1%	1	0.1%	5
Bulky Items	2.7%	119	3.8%	84	3.1%	203
Non-recoverable	5.0%	219	3.1%	68	4.3%	288
Totals	100.0%	4,390	100.0%	2,225	100.0%	6,615

Percentages for material types may not total 100% due to rounding.

Table 3. Detailed Disposal Composition: Commercial

Material	Manufacturing & Durable Wholesale		Food Manufacturing & Food Retail		Restaurants		Retail		Professional Services		Other Services		Other		Total Franchised Commercial	
	Est. %	Est. Tons	Est. %	Est. Tons	Est. %	Est. Tons	Est. %	Est. Tons	Est. %	Est. Tons	Est. %	Est. Tons	Est. %	Est. Tons	Est. %	Est. Tons
Paper	22.9%	105	25.6%	75	26.8%	166	26.8%	148	26.9%	1,866	28.3%	183	25.6%	122	25.1%	2,665
Corrugated Cardboard and Kraft	3.6%	17	3.5%	10	2.0%	12	3.1%	17	4.2%	290	4.2%	27	3.7%	18	3.7%	392
Newspaper	0.8%	4	1.7%	5	2.3%	14	1.8%	10	1.8%	125	2.0%	13	1.7%	8	1.7%	179
Other Recyclable Paper	7.4%	34	6.2%	18	4.8%	30	8.3%	46	8.0%	556	8.5%	55	6.7%	32	7.3%	771
Compostable Paper	8.1%	37	8.6%	25	13.5%	84	10.3%	57	9.7%	671	10.7%	69	10.7%	51	9.3%	994
Non-Recoverable Paper	2.9%	13	5.6%	16	4.2%	26	3.3%	18	3.2%	223	2.8%	18	2.8%	13	3.1%	328
Plastic	16.2%	74	15.1%	44	12.3%	76	15.4%	85	12.9%	895	8.3%	53	11.2%	53	12.0%	1,282
#1 & #2 Plastic Containers	0.4%	2	1.0%	3	1.1%	7	1.7%	9	0.7%	51	0.8%	5	1.1%	5	0.8%	82
Other Recoverable Plastics	2.3%	11	1.4%	4	0.5%	3	2.2%	12	2.0%	138	1.1%	7	1.5%	7	1.7%	182
Non-recoverable Film	2.0%	9	2.2%	6	0.2%	1	1.3%	7	0.9%	65	0.5%	3	1.0%	5	0.9%	96
Recoverable Film	4.1%	19	6.3%	18	6.8%	42	5.6%	31	3.3%	231	2.8%	18	4.1%	20	3.6%	379
Non-recoverable Plastics	7.4%	34	4.2%	12	3.7%	23	4.6%	26	5.9%	411	3.1%	20	3.5%	17	5.1%	542
Glass	0.7%	3	2.3%	7	1.5%	9	2.2%	12	1.4%	99	0.6%	4	6.5%	31	1.6%	165
Glass Containers	0.3%	1	2.0%	6	1.3%	8	2.0%	11	0.8%	57	0.5%	3	3.3%	16	1.0%	102
Non-recoverable Glass	0.5%	2	0.3%	1	0.2%	1	0.2%	1	0.6%	42	0.1%	1	3.2%	15	0.6%	63
Metal	5.6%	26	2.2%	6	2.4%	15	3.7%	20	4.9%	338	3.0%	20	2.2%	11	4.1%	436
Ferrous Metal	2.8%	13	1.1%	3	1.6%	10	1.7%	9	1.7%	119	1.3%	8	1.0%	5	1.6%	168
Non-ferrous Metal	1.2%	6	0.5%	2	0.4%	2	0.7%	4	1.5%	105	0.8%	5	0.6%	3	1.2%	126
Other Recoverable Metal	0.2%	1	0.0%	-	0.0%	-	0.0%	-	0.0%	-	0.0%	-	0.1%	0	0.0%	1
Non-recoverable Metal	1.3%	6	0.6%	2	0.5%	3	1.2%	7	1.6%	114	1.0%	6	0.6%	3	1.3%	141
Organics	20.3%	93	45.5%	134	55.7%	344	32.0%	178	24.3%	1,687	40.9%	264	44.5%	212	27.4%	2,911
Food	8.8%	41	38.2%	112	53.1%	328	20.8%	115	9.2%	639	14.7%	95	24.6%	117	13.6%	1,447
Yard Waste	3.8%	18	2.9%	9	1.1%	7	1.4%	8	7.9%	552	9.3%	60	12.5%	59	6.7%	712
Other Potentially Compostable	2.5%	11	1.1%	3	0.6%	3	4.0%	22	2.2%	156	3.1%	20	2.3%	11	2.1%	227
Textiles	5.2%	24	3.1%	9	0.9%	6	5.8%	32	4.9%	341	13.8%	89	5.1%	24	4.9%	525
Construction & Demolition	30.2%	139	7.3%	21	1.1%	7	17.7%	98	25.8%	1,790	10.7%	69	7.2%	34	20.3%	2,158
Non-recoverable Organics	16.3%	75	4.6%	14	1.0%	6	3.8%	21	10.0%	697	2.8%	18	2.6%	12	7.9%	843
Recoverable Wood	0.5%	2	0.3%	1	0.0%	-	4.5%	25	0.3%	20	1.3%	8	0.4%	2	0.5%	58
Recoverable C&D	2.7%	13	0.8%	2	0.0%	-	1.9%	11	4.9%	340	1.2%	8	1.8%	9	3.6%	382
Carpet	10.6%	49	1.5%	5	0.1%	1	7.4%	41	10.6%	733	5.4%	35	2.4%	12	8.2%	875
Other Materials	4.2%	19	2.1%	6	0.2%	1	2.2%	12	3.9%	272	8.2%	53	2.7%	13	3.5%	377
Non-recoverable C&D	0.6%	3	0.2%	1	0.0%	0	0.5%	3	0.1%	8	1.1%	7	0.1%	0	0.2%	22
Recoverable HHW	0.4%	2	0.2%	0	0.0%	-	0.1%	1	0.9%	64	0.1%	1	0.1%	1	0.6%	69
Non-recoverable HHW	0.0%	-	0.0%	-	0.0%	-	0.0%	-	0.0%	0	0.1%	1	0.0%	-	0.0%	1
Tires	2.4%	11	1.0%	3	0.0%	-	0.9%	5	1.8%	125	0.4%	3	1.4%	6	1.4%	153
Non-recoverable	0.8%	4	0.7%	2	0.2%	1	0.7%	4	1.1%	75	6.5%	42	1.2%	5	1.2%	133
Totals	100.0%	460	100.0%	294	100.0%	617	100.0%	554	100.0%	6,947	100.0%	645	100.0%	475	100.0%	10,637

Percentages for material types may not total 100% due to rounding.

Table 4. Detailed Disposal Composition: Self-haul

Material	Est. %
Paper	3.2%
Corrugated Cardboard and Kraft	1.9%
Newspaper	0.0%
Other Recyclable Paper	1.1%
Compostable Paper	0.1%
Non-Recoverable Paper	0.1%
Plastic	8.7%
#1 & #2 Plastic Containers	0.1%
Other Recyclable Plastics	3.7%
Recoverable Film	0.1%
Non-recoverable Film	0.3%
Non-recoverable Plastics	4.4%
Glass	0.7%
Glass Containers	0.2%
Non-recoverable Glass	0.5%
Metal	3.8%
Ferrous Metal	1.2%
Non-ferrous Metal	0.4%
Other Recoverable Metal	0.0%
Non-recoverable Metal	2.2%
Organics	5.9%
Food	0.3%
Yard Waste	3.8%
Textiles	1.1%
Non-recoverable Organics	0.7%
Construction & Demolition	68.4%
Recoverable Wood	13.6%
Carpet	7.2%
Recoverable C&D	11.8%
Non-recoverable C&D	35.8%
Other Materials	9.3%
Household Hazardous Waste	0.1%
Electronic Waste	0.4%
Tires	0.0%
Bulky Items	8.2%
Non-recoverable	0.6%
Totals	100.0%

Percentages for material types may not total 100% due to rounding.

Disposal Recoverability

To analyze the Menlo Park modeled material compositions by material recoverability, Cascadia assigned each of the 29 material types to one of four recoverability groups. To calculate tons of recoverable disposed material, Cascadia summed the tons of disposed material at the material type level based the material’s assigned recoverability group. The four recoverability groups used for modeling were:

- **Curbside recyclable.** Materials readily accepted for recycling or composting in Recology’s curbside recycling collection system.
- **Curbside compostable.** Materials readily accepted for recycling or composting in Recology’s curbside organics collection system.

- **Other recoverable.** Materials that could be recovered or diverted through other, non-curbside collection programs, such as household hazardous waste (HHW) or construction and demolition (C&D) debris.
- **Non-recoverable.** Any materials not readily accepted for recovery or diversion in Recology’s current curbside collection programs or in other programs currently in place (such as HHW collection and C&D recovery) in Menlo Park.

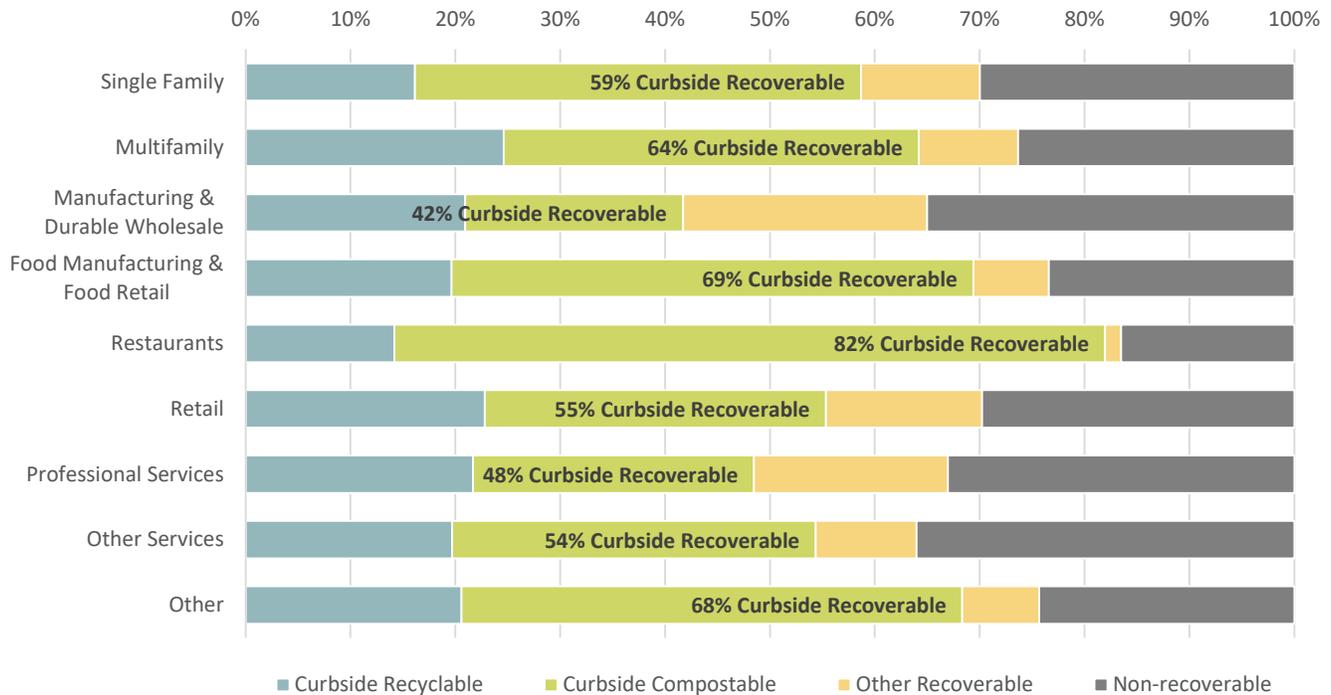
Cascadia also summarized the 29 material types into nine material classes: Recyclable Paper, Compostable Paper, Plastic, Glass, Metal, Compostable Food, Compostable Yard Waste, Other Recoverable, and Non-Recoverable. Material class and recoverability classifications by material type are provided in Table 5.

Table 5. Material Types with Recoverability Classifications

Material Class	Material Type	Recoverability Group	Class by Recoverability
Paper			
	Corrugated Cardboard and Kraft Newspaper	Curbside Recyclable	Recyclable Paper
	Other Recyclable Paper	Curbside Recyclable	Recyclable Paper
	Compostable Paper	Curbside Compostable	Compostable Paper
	Non-Recoverable Paper	Non-recoverable	Non-recoverable
Plastic			
	#1 & #2 Plastic Containers	Curbside Recyclable	Plastic
	Other Recyclable Plastics	Curbside Recyclable	Plastic
	Recoverable Film	Curbside Recyclable	Plastic
	Non-recoverable Film	Non-recoverable	Non-recoverable
	Non-recoverable Plastics	Non-recoverable	Non-recoverable
Glass			
	Glass Containers	Curbside Recyclable	Glass
	Non-recoverable Glass	Non-recoverable	Non-recoverable
Metal			
	Ferrous Metal	Curbside Recyclable	Metal
	Non-ferrous Metal	Curbside Recyclable	Metal
	Other Recoverable Metal	Other Recoverable	Other Recoverable
	Non-recoverable Metal	Non-recoverable	Non-recoverable
Organics			
	Food	Curbside Compostable	Compostable Food
	Yard Waste	Curbside Compostable	Compostable Yard Waste
	Textiles	Other Recoverable	Other Recoverable
	Non-recoverable Organics	Non-recoverable	Non-recoverable
Construction & Demolition			
	Recoverable Wood	Other Recoverable	Other Recoverable
	Carpet	Other Recoverable	Other Recoverable
	Recoverable C&D	Other Recoverable	Other Recoverable
	Non-recoverable C&D	Non-recoverable	Non-recoverable
Other Materials			
	Household Hazardous Waste	Other Recoverable	Other Recoverable
	Electronic Waste	Other Recoverable	Other Recoverable
	Tires	Other Recoverable	Other Recoverable
	Bulky Items	Non-recoverable	Non-recoverable
	Non-recoverable	Non-recoverable	Non-recoverable

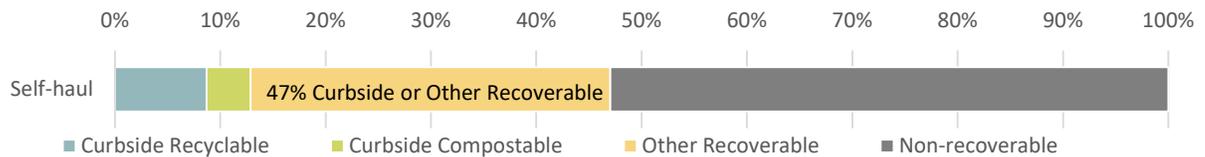
Figure 3 displays the estimated recoverability of Menlo Park’s franchised landfilled materials by residential generators and detailed commercial sectors. More than half of landfilled waste has the potential for recovery through existing programs.

Figure 3: Recoverability of Disposed Materials by Residential Generators and Detailed Commercial Sectors



Self-haul materials includes material disposed directly at the transfer station or landfill by both residential and commercial generators. The recoverability of Menlo Park’s self-haul waste was analyzed separately and is shown in Figure 5.

Figure 5. Self-haul Recoverability



In Figure 6 and Figure 7, estimated tons of Menlo Park’s landfilled waste are presented by material class and generator (Figure 6) and material class and detailed commercial sector (Figure 7). As shown, Recyclable Paper, Compostable Food, Compostable Yard Waste, and Compostable Paper are consistently among the most prevalent disposed materials that could be diverted from landfill, across all generators and detailed commercial sectors.

Figure 6. Disposed Materials by Material Class and Generator

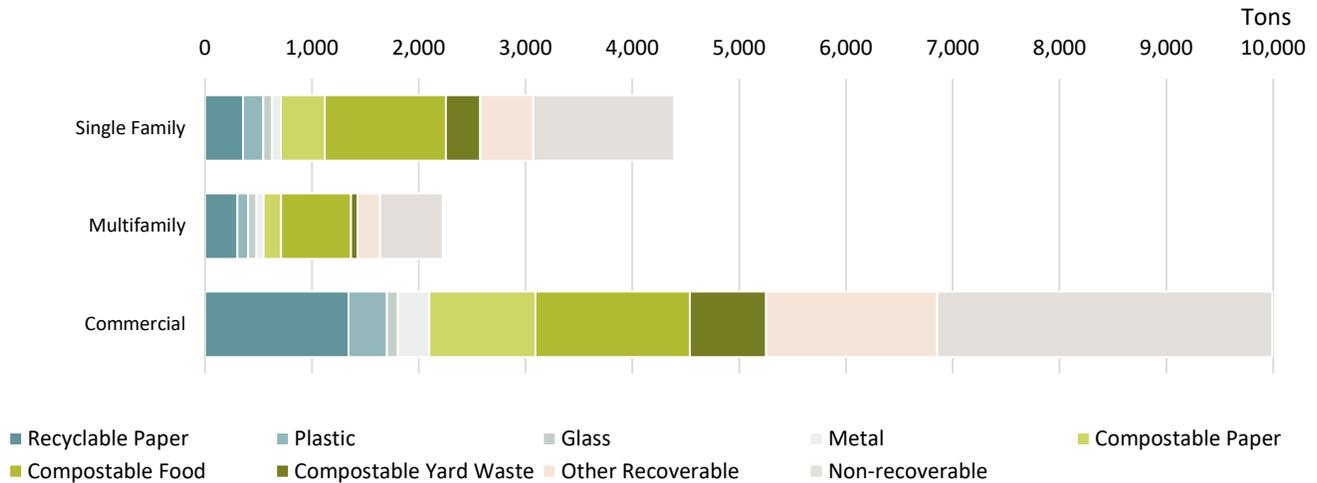
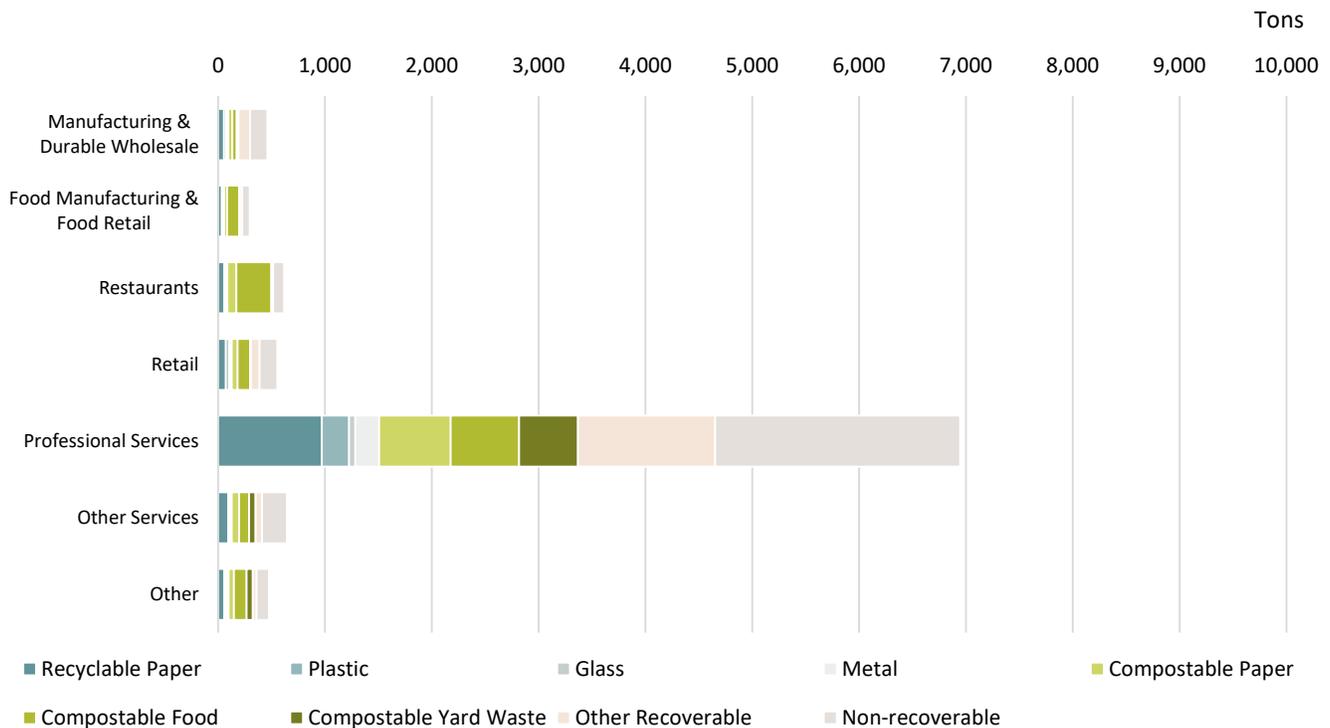


Figure 7. Disposed Materials by Material Class and Detailed Commercial Sector



Baseline Aggregate Average Service Levels

Cascadia modeled baseline aggregate average service levels for each generator to reflect minimum capacity needs. These service levels were based on tons collected, modeled density factors, and Recology subscription data. For this analysis, the aggregate average service level refers to an average calculated over *all* eligible customers in Menlo Park, not only customers who already subscribe to service. The

aggregate average service levels were modeled from the tons of material Recology collected in 2015 to reflect needed capacity, rather than subscribed capacity.

To model aggregate average service levels, Cascadia used the available composition data and published material-specific density factors to estimate a density per stream for each modeled generator group and detailed commercial sector. Cascadia applied the stream-specific density factor to the modeled annual tons to estimate the total volume disposed, recycled, and composted in cubic yards. For single-family, multifamily, and commercial container-based service, Cascadia also compared the estimate of weekly disposal volume to Recology's subscription data. If the modeled disposal volume exceeded the total subscribed volume, Cascadia used the subscribed volume to calculate the aggregate average.

The per stream total volumes of disposed, recycled, and composted material were divided by the appropriate unit—number of single-family Recology accounts, multifamily units, or employee counts eligible for collection service—and number of weeks in the calendar year to estimate the aggregate weekly service levels in cubic yards per week per unit.

Generator-specific details for the calculation of aggregate average service levels are provided below:

- **Single Family**
 - Cascadia used composition data from a large waste composition study completed in 2014 for a representative Bay Area community to estimate the density per stream.
 - The calculated weekly cubic yards of generated single family garbage, recycling, and organics did not exceed the subscribed weekly volume.
 - The aggregate average was calculated over the number of households, determined using Recology Menlo Park customer data.
- **Multifamily**
 - Cascadia used multifamily density factors by stream reported in the 2014 CalRecycle study.
 - The calculated cubic yards of generated multifamily garbage, recycling, and organics exceeded the subscribed weekly volume for garbage by 16%. Cascadia used the subscribed volume reported by Recology to calculate the aggregate average multifamily service level.
 - Total multifamily units were estimated from census data of housing with five or more units, and applying the vacancy rate reported by Department of Finance for the State of California.
- **Commercial**
 - Cascadia estimated stream density factors using commercial density factors that were based on sample data from comparable communities in California during the 2014 CalRecycle study.
 - Calculated weekly volumes could not be compared to subscription levels because the weekly capacity of on-call roll off containers is unknown.
 - The aggregate average service level was calculated for each commercial sector using the sector-specific FTE counts.

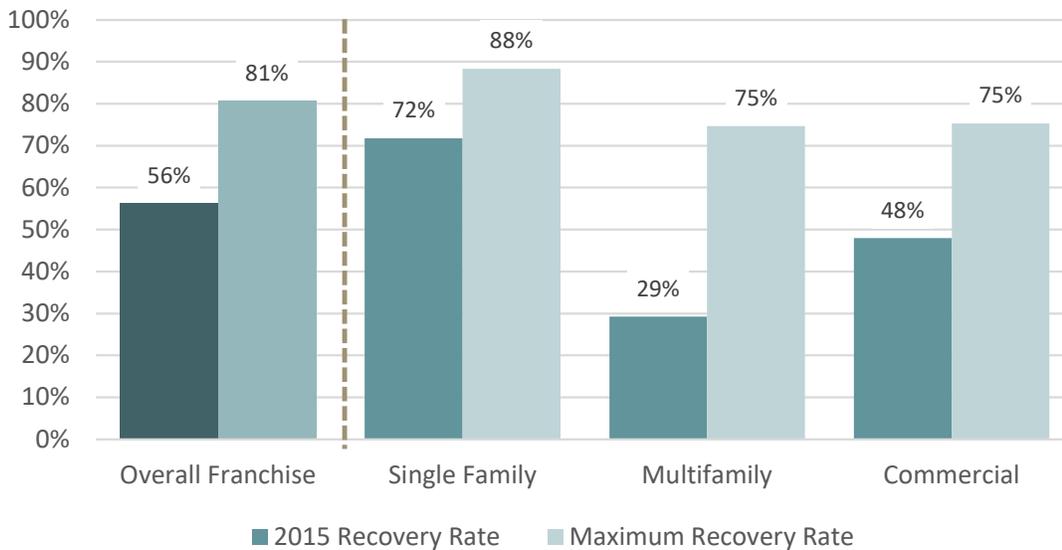
Table 6. Aggregated Average Baseline Capacity Needs by Generator

	Disposal	Recycling	Organics	Generation	
Residential					
Single Family	0.20	0.18	0.23	0.60	cy/hh/wk
Multifamily	0.17	0.13	0.01	0.31	cy/unit/wk
Commercial					
Manufacturing & Durable Wholesale	0.05	0.06	-	0.11	cy/FTE/wk
Food Manufacturing & Food Retail	0.12	0.08	0.05	0.25	cy/FTE/wk
Restaurants	0.15	0.12	0.04	0.30	cy/FTE/wk
Retail	0.15	0.19	-	0.34	cy/FTE/wk
Professional Services	0.09	0.09	0.11	0.29	cy/FTE/wk
Other Services	0.07	0.05	0.01	0.14	cy/FTE/wk
Other	0.11	0.06	0.01	0.18	cy/FTE/wk

Maximum Recovery Rate, Capture Rates, and Projected Recovery Rates

For planning purposes, Cascadia estimated a maximum recovery rate for each sector and overall, as shown in Figure 8. The maximum recovery rate was modeled based on the modeled recoverability of disposed material for each sector. Cascadia summed inbound recovery streams with modeled tons of curbside recoverable materials present in the disposal stream and divided the total by modeled generated tons to calculate the maximum recovery rates.

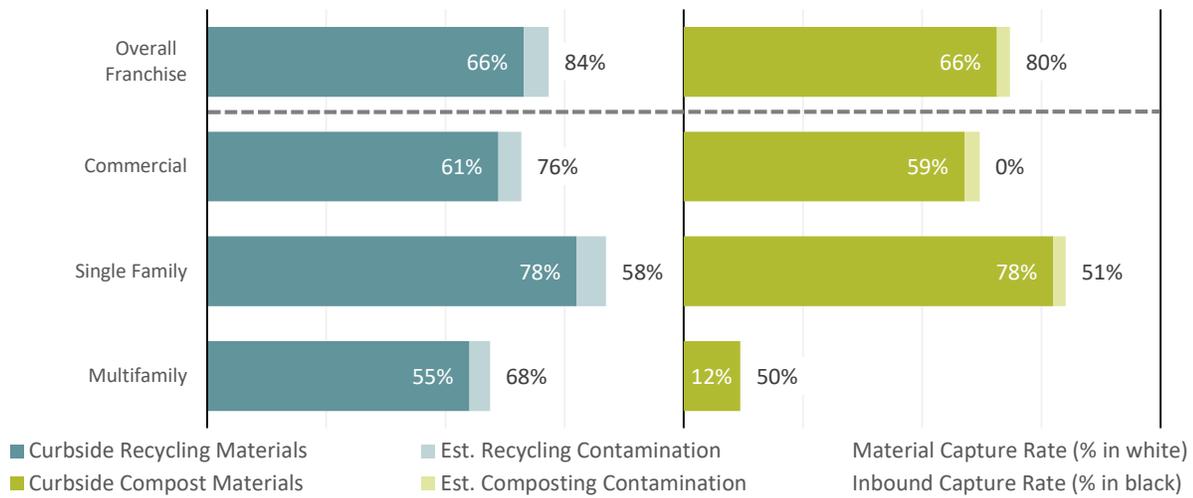
Figure 8. 2015 and Maximum Recovery Rates Overall and by Generator



The capture rate is different from the recovery rate in that the capture rate reflects the proportion of recoverable material that is recovered by the franchised recovery program out of all the recoverable materials that sector generates. The estimated capture rates for recyclable materials and compostable materials are shown in Figure 9. In the figure, the inbound capture rate includes materials collected in the

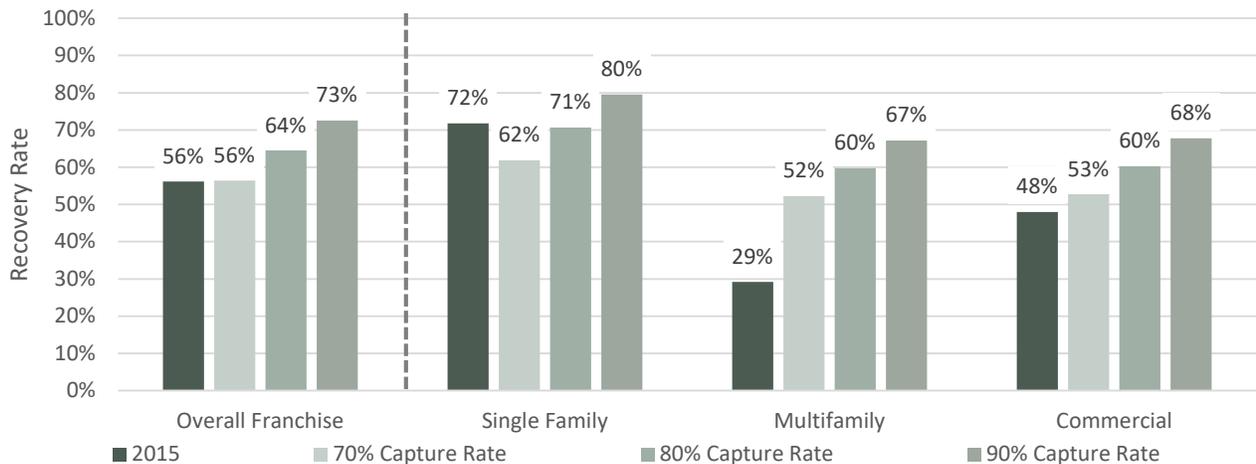
curbside recycling or organics stream. The material capture rate takes into account an estimate of contamination that is present in each of the recovery streams.

Figure 9. 2015 Inbound Capture Rates and Estimated Contamination by Generator



To support the development of the City’s zero waste goals, Cascadia also calculated the franchised recovery rate based on increasing inbound material capture rates by increments of 10%. Figure 10 shows the 2015 baseline recovery rate in comparison to the recovery rate from achieving a 70% capture rate, 80% capture rate, and 90% capture rate. In some cases, the capture rate in 2015 already exceeded these capture rate modeling scenarios.

Figure 10. Franchised Recovery Rate Resulting from Increased Inbound Material Capture Rates by Sector



Commercial TA Profile

For motivated businesses, intermittent recycling and organics notifications – via mailers, website content, and other public marketing channels – can be enough to support establishing a sustainable recycling and organics program. However, many businesses benefit from tailored technical assistance to right-size their collection services, establish internal collection infrastructure that maximizes participation, and train their staff to ensure program participation on an ongoing basis. This profile outlines the key features of an effective site-visit based commercial technical assistance methodology, and estimates technical assistance labor hour inputs and results.

DESCRIPTION OF RECOMMENDED TECHNICAL ASSISTANCE SERVICES

Who: Highly trained zero waste specialist who is aware of local resources, is fluent in community-based social marketing techniques, and has experience in performing waste audits. This specialist can be employed by the hauler, the city, or a third party contractor.

When: Typically, the most effective outreach plans include an initial broad program marketing effort through public education campaigns that introduce and launch services to customers. Recology has already provided this service in Menlo Park. Then, highly targeted, customer focused outreach and education via onsite technical assistance ramps up diversion and participation at targeted businesses. After this highly targeted outreach, light follow-up touches to ensure program maintenance are essential to sustaining program performance.

Where: As much assistance as possible should be site based to tailor recommendations to each business' unique waste generation profile. Recommendations should be driven by data collected during the site visit.

What: An onsite technical assistance site visit is ideal to setting the groundwork for and sustaining waste reduction, recycling, and composting programs. This section provides an overview of best practices before, during, and after commercial technical assistance.

Before

Selecting the right businesses for technical assistance and setting the groundwork for success begins long before a technical assistance representative is onsite.

- Strategically select and target businesses for technical assistance site visits. Targeting techniques can vary based on outreach program goals, but may include prioritizing businesses based on amount of material generated onsite annually, lack of recycling and/or composting collection services onsite, feedback from Recology collection truck drivers about contamination in the recycling/organics stream (or recycling/organics in the garbage), and level of business interest in assistance.
- Once businesses have been selected for assistance, perform initial phone correspondence with businesses to inform them of site visit services available to them, discuss the benefits of receiving assistance, and schedule the site visit. Phone correspondence and site visit should be with a decision maker at the business.
- If technical assistance staff make three unsuccessful contact attempts by phone, the staff person may consider a drop-by visit for business types that do not rely on phone or email communication and are more accessible in-person (for example, small businesses who are in-and-out throughout the day and may not have a staff person dedicated to answering the phone or e-mails). Otherwise, after three unsuccessful

contact attempts by phone, the technical assistance staff may consider the business non-responsive, and remove them from the list of businesses to receive technical assistance.

- When scheduling site visits, ensure they are the day before garbage is collected, and, if possible, the day before or close to the day before recycling and composting collection.

During

The primary goal of a site visit is to collect information to formulate recommendations about establishing or improving the business' recycling and/or organics collection program. This section provides a high level overview of site visit best practices.

- Review and confirm the service level, contact information, and other details that the city/Recology/property manager provided prior to the visit. Ask the property manager/decision maker at the business for an overview of recycling and other material management systems currently in place at the business.
- Visit each collection area or enclosure onsite where Recology-serviced containers are located. Note container fullness, composition of material in containers, location relative to other collection streams (is garbage co-located with recycling and composting?), labeling with signage, and space constraints for adding more or differently sized collection containers. Take photos to document each of the above. Take samples of material that may require additional research to determine recyclability or alternative, recyclable replacement options.
- Visit at least one example of every type of area where materials are generated in the business (such as office, storage, warehouse, break room, kitchen, cafeteria, and restroom). Note container placement and fullness, composition of material in containers, labeling and signage, and space constraints for adding additional collection containers. Take photos to document each of the above.
- Ask questions to determine the system for moving discarded materials from generation points to collection containers, noting custodial vs. employee responsibilities, and type of container liner used, if any.
- Ask questions to understand purchasing policies, assess waste reduction opportunities, and determine where non-recyclable or non-compostable materials can be avoided.
- Document notes in one easy-to-access place, preferably in an electronic form that can be automatically updated to a larger database for ease of tracking and progress reporting.

After

After performing a site visit, it is important to provide the business with a brief written summary of existing conditions onsite and recommendations for improvement. Then, support the decision maker at the business to act on recommendations through coordination with Recology and follow-up correspondence with the business' decision maker that includes carefully crafted persuasive prompts. Other best practices for follow-up communications are detailed below.

- Decide which implementation tools to provide the business. These may include in-person training, indoor container labels, signs, vendor information, funding opportunity information, new employee recycling and composting program notification templates, and container fullness/monitoring forms as appropriate to the specific business.
- Follow up with every business one month after new service implementation to inquire how the program is going. This follow-up conversation will be structured with strategic prompts to spur the decision maker into action and inspire a critical conversation about program progress, challenges, and successes.

The technical assistance representative should schedule an in-person recycling and composting training with every business that is interested in receiving one. This training may take the form of a train-the-trainer session with the decision maker at the business, a training with key employees, or an all-employee meeting. Specific training structures will depend on business type, employee motivation, and space available at the site. However, common training themes should include:

- Use examples of recyclable, compostable, and garbage materials from the business' own material stream as training props.
- Provide prompts specific to the business' recycling and composting program, and facilitate discussion around those prompts, to ensure employees understand the program.
- Provide employees and/or decision makers with guidance for on-going monitoring of recycling/organics programs and tips/tools for communicating with their employees and/or tenants bi-annually.

LABOR HOURS PER GENERATOR (ANNUALLY)

Based on data from a Bay Area-based technical assistance program that uses a similar methodology to that described above, the number of labor hours required to provide businesses with this level of technical assistance is **between 4.5 to 6 hours per generator**.

DIVERSION PER GENERATOR (ANNUALLY)

Based on data from a Bay Area-based technical assistance program that uses a similar methodology to that described above, the amount of new diversion that this technical assistance protocol can generate is **approximately 0.86 tons per year per generator assisted**. Note that tons available for diversion will vary widely based on business type and size.

Faith-Based Communities TA Profile

During zero waste planning workshops, Menlo Park employees and citizens identified faith-based communities as generators of interest for waste reduction and recycling outreach and technical assistance.

Faith-based institutions present unique opportunities to connect to people who operate as part of one tight-knit group. However, the recommended methodology for performing a site visit at a church, synagogue, mosque, or other faith-based community is very similar to the technical assistance methodology outlined in the commercial profile, with a few additions related to leveraging the power of community at these generators. Please reference the Commercial profile for more information about the general recommended approach to technical assistance, which is also applicable to faith-based communities. Additional approaches specific to faith-based communities are discussed below.

- During site visits, be sensitive and responsive to religious norms in the spaces that you visit.
- It is important to consider faith-based communities as event spaces, and assess the frequency and types of events hosted at the site. If there are regular events at the site, consider performing a site visit directly after the event is complete to get a good sense of regular event waste generation and composition.
- Leverage the church community to utilize community-based social marketing strategies – like social diffusion, public and durable commitments, and social norming – to promote behavior change related to waste reduction, recycling, and composting.

- Children are often an integral part of faith-based communities. Design trainings to be interactive for children and adults, if appropriate, or design a separate training for the children in the community. Children are often the catalysts for behavior change in communities and families, and can teach the adults in their lives with infectious enthusiasm.
- If there are residential spaces onsite, like a rectory, use residentially focused outreach strategies for individuals living there.

LABOR HOURS PER GENERATOR (ANNUALLY)

Based on data from a Bay Area-based technical assistance program that uses a similar methodology to that described above to assist faith-based communities and similar event spaces, the number of labor hours required to provide faith-based communities with this level of technical assistance is **between 5 to 7 hours per generator**.

DIVERSION PER GENERATOR (ANNUALLY)

Based on data from a Bay Area-based technical assistance program that uses a similar methodology to that described above to assist faith-based communities and similar event spaces, the amount of new diversion that this technical assistance protocol can generate is **approximately 3.2 tons per year per generator assisted**. Note that this tonnage is much higher than the commercial average because faith-based communities often generate more food than the average commercial business, so the weight of material that they divert is often more for an equivalent volume of material. Note that tons available for diversion will vary widely based on institution size and use profile.

Schools TA Profile

During zero waste planning workshops, Menlo Park employees and citizens identified schools as generators of interest for waste reduction and recycling outreach and technical assistance.

Schools can provide an ideal setting for developing and managing innovative and successful waste reduction and diversion programs. Principals, administrators, custodial staff, and teachers act as both material generators and managers in schools, and are intimately involved in the day-to-day operations and cultures that drive consumption and disposal at school. When recruited and supported as champions and partners, these individuals are uniquely positioned to make the incremental operational and cultural changes that transform the way their school thinks about waste.

Students—from kindergarteners to graduating seniors—are the enthusiastic and creative core of a school. They can serve not only as energetic program champions, but also as vital sounding boards and sources of new ideas. Encouraging students to notice—and take ownership of—the materials they use and discard at school can help to foster a powerful ethos of stewardship and responsibility that they will take home to their families and broader community.

This profile outlines the key features of an effective outreach and technical assistance methodology for schools, and estimates labor hour inputs and results.

DESCRIPTION OF RECOMMENDED TECHNICAL ASSISTANCE SERVICES AT SCHOOLS

Who: Highly trained zero waste specialist who is aware of local resources, is fluent in community-based social marketing techniques, and has experience in performing waste audits and working in an educational setting. This specialist can be employed by the hauler, the city, or a third party contractor.

When: Schools often need deeper technical assistance than other business types. The characteristics that make schools an ideal setting for growing sustainable waste reduction, recycling, and composting programs also require a sustained, train-the-trainer based assistance approach to ensure a coordinated, successful program. After in-person site visits with administrators, training sessions with each key groups in the school – including administrators, custodians, teachers, students, and parents – are essential for program success.

Where: As much assistance as possible should occur onsite at the school, training administrators, faculty, staff, and students to be champions of their own program.

What: This section provides an overview of best practices before, during, and after technical assistance in a school setting. Technical assistance site visits at a school mirror many of the characteristics of site visits at commercial sites and faith-based communities, with some notable exceptions. This section provides site visit guidelines specific to the school setting; please reference the commercial profile for more general guidelines about performing a technical assistance site visit.

Before

The process for selecting the right schools for technical assistance mirrors the process for selecting the right businesses for technical assistance. Reference the commercial profile for more information about marketing technical assistance services.

During

The primary goal of a site visit is to collect information to formulate recommendations about establishing or improving the school's recycling and/or organics collection program. In schools, site visits should have a special focus on engaging individuals who are likely to have historical perspectives about program history. Again, the site visit process at schools mirrors that at businesses, with some additions:

- Start each school site visit with meeting with the principal and other key administrators to introduce the goals of technical assistance and gain a better understanding of school culture, priorities, policies, current programs, and student and neighborhood demographics that define the school's needs, interests, and level of commitment.
- During the meeting, establish a game plan for the school site, identify critical service needs, and define roles and responsibilities for key players at the school.
- Meet with, interview, and engage custodial staff to understand how current programs function on the ground day-to-day, program history, custodial service contract details, and loading dock space and requirements.
- After completing the site assessment and analysis, work with key administrative and custodial staff to develop a recommendations report that documents the school's unique waste profile and operational needs; defines the internal and external resources and roles required for success; and schedules outreach,

education, training, and additional technical assistance necessary to support custodial staff, teachers, students, and vendors responsible for implementing the program at the school site.

Reference the commercial profile for more general guidelines about performing a technical assistance site visit.

After

Again, many of the post-site visit technical assistance that schools need to start and sustain successful programs are the same as for businesses. However, a large differentiator is how to communicate with all of the different generator groups within a school, whether that is via a train-the-trainer session with administrators, an assembly with students, or an all-employee meeting. It is important to clearly communicate with teachers, student groups, student body, and parents to set expectations about their roles in the program, and to generate awareness, understanding, and commitment around waste reduction and waste management programs.

These different audiences have different priorities and goals related to waste management and recycling, so it is important to tailor communications and approaches to meet specific training objectives for each group. Specific training structures will depend on the unique results of the site visit at each school. However, common training themes for each group within a school are outlined in the table below.

Table 1. Training Recommendations for School Generator Groups

School Generators	Training/Outreach Objective	Training Type
School Principals, Administrators	<ul style="list-style-type: none"> – Understand school program needs and priorities – Serve as program advocate – Demonstrate to stakeholders how program values are in line with school needs and priorities – Keep apprised of program activities and results – Provide proactive support for school events and celebrations – Facilitate cross-district collaboration and idea sharing, as appropriate – Sets the program tone/directive – model desired program participation through social diffusion and norming messaging 	<ul style="list-style-type: none"> – Train-the-trainer working/planning session
Custodial Staff	<ul style="list-style-type: none"> – Understand infrastructure, operations, and past programs – Gain buy-in and enlist support – Prioritize operational efficiencies – Foster sense of ownership and pride 	<ul style="list-style-type: none"> – Train-the-trainer working/planning session
Teachers	<ul style="list-style-type: none"> – Identify opportunities for incorporating recycling and resources into grade-appropriate classroom activities and curriculum – Promote creative generation and sharing of ideas and lesson plans – Facilitate opportunities for cross-district, county, and statewide collaboration – Assist with classroom projects and activities, as needed 	<ul style="list-style-type: none"> – Train-the-trainer working/planning session – Give lessons to reinforce in classroom

School Generators	Training/Outreach Objective	Training Type
Student Groups	<ul style="list-style-type: none"> – Generate enthusiasm and pride – Promote grade-level-appropriate participation and ownership of program(s) – Support cross-district and citywide collaborations and competitions – Encourage initiatives that bring different schools and grade levels together (e.g. high schoolers performing recycling skits for elementary schoolers, etc.) – Model desired program participation through social diffusion – Empower student leaders to become program champions 	<ul style="list-style-type: none"> – Presentation and brainstorming sessions during student group meeting times – Lunch monitor training sessions
Students (at large)	<ul style="list-style-type: none"> – Generate enthusiasm and pride – Support active participation in waste reduction, recycling, and organics programs 	<ul style="list-style-type: none"> – Assembly
Parents	<ul style="list-style-type: none"> – Understand student needs and priorities – Demonstrate to students how the value and benefits of waste reduction/management are in line with student needs and priorities; gain buy-in – Provide opportunities for involvement in school activities and events 	<ul style="list-style-type: none"> – Mailers – Incorporate messaging into parent/teacher time on campus, like parent/teacher conferences and back-to-school nights

LABOR HOURS PER GENERATOR (ANNUALLY)

Based on data from a Bay Area-based technical assistance program that uses a similar methodology to that described above, the number of labor hours required to provide schools with this level of technical assistance is **between 8 to 12 hours per school**. Note that this number can vary widely depending on training needs at each school.

DIVERSION PER GENERATOR (ANNUALLY)

Based on data from a Bay Area-based schools technical assistance program that uses a similar methodology to that described above, the amount of new diversion that this technical assistance protocol can generate is **approximately 9.38 tons per year per school assisted**. Note that this tonnage is much higher than the commercial average because schools often generate more food than the average commercial business, so the weight of material that they divert is often more for an equivalent volume of material. Also note that tons available for diversion will vary widely based on school type and student population.

Self-Haul Customer TA Profile

Engaging, educating, and encouraging self-haul customers to divert recyclables, including construction and demolition debris, can be a challenge. It is possible to reach self-haul customers with information before they arrive at the transfer station, via broad-based outreach about the recycling options at the transfer station. However, the best way to ensure that messaging is reaching self-haul customers is engaging with them at the transfer station.

when they arrive to drop off their materials. This profile outlines the key features of effectively engaging self-haul customers to divert construction and demolition debris and other recyclables.

Shoreway Environmental Center scale house staff are currently required to inspect each incoming self-haul load, and direct the vehicle for disposal and recycling depending on their load inspection findings. Tipping floor staff also help direct vehicles where to unload, and the facility has dedicated sorters in the public tipping area that sort recoverable materials from the incoming loads of self-hauled material. These dedicated tipping area staff people mostly focus on recovering metals and electronics from self-hauled loads.

DESCRIPTION OF RECOMMENDED TECHNICAL ASSISTANCE SERVICES

Who: Scalehouse staff and floor-based transfer station staff are the only two groups who will likely engage with self-haul customers in person.

When and where: Provide online resources about what materials are recyclable at the transfer station, for motivated customers to reference before they arrive. Then, leverage scalehouse and other transfer station staff interactions with self-haul customers to encourage recycling during the customer's current visit and during future visits.

What: This section provides an overview of best practices before and during transfer station staff interaction with self-haul customers.

Before

For self-haul customers who are already committed to recycling, providing information about what recycling services are available at the transfer station and what they can expect when they arrive at the transfer station is important. According to a survey of almost 1,000 self-haul customers conducted in King County in 2016, only about 15% of self-haul customers look for information about what materials are recyclable at the transfer station before bringing their materials there. Of those customers, almost all looked online for this information.¹

Providing simple online information about what materials the transfer station accepts for recycling, tipping fees for those materials, and any guidelines about how to prepare those materials for recycling (for example, which materials need to be separated for recycling, and which can be kept commingled) will give people who are already motivated to recycle the information that they need to do so.

During

When self-haul customers arrive at the transfer station, maximize opportunities for contact between self-haul customers and employees at the transfer station. This section discusses best practices for engaging customers while they are onsite dropping off materials at the transfer station.

- Simple, large, and multi-lingual signage before the scale house should urge self-haul customers to drop off recyclables before they cross the scale, if appropriate per the facility's set-up.
- Scalehouse staff should prompt every self-haul customer with questions about whether their load contains recyclable materials, and with information about how to recycle those materials. According to Shoreway Environmental Center protocol, scalehouse staff will also perform a load inspection for every self-haul

¹ <https://your.kingcounty.gov/solidwaste/about/documents/customer-survey-2016.pdf>, p. 18-19.

customer. On average, 95 percent of self-haul loads include materials that could be recycled. However, only 8 percent of self-haul customers proactively ask questions about recycling while they are at the scalehouse, according to the 2016 King County Transfer Station Customer Survey.² So, scalehouse staff must proactively ask about recyclables in the self-haul loads and perform load inspections to prompt recycling behaviors in those customers.

- Scalehouse staff recycling prompts with customers could take a variety of forms, but should include both information and motivating messages.
 - Scalehouse staff should ask customers whether they have materials for recycling, and perform a load inspection to confirm. If the customer does, the scalehouse staff person should provide instructions about how and where to recycle those materials once the customer is inside the facility. Ideally, transfer station staff on the floor inside the facility, and instructional signage, will reinforce these instructions once the customer enters the facility.
 - If the customer reports that they do not have materials for recycling, and the scalehouse staff person can neither confirm nor deny this claim with a load inspection, scalehouse staff should be ready to provide messaging about the benefits of recycling. If possible, messaging should include statistics about the percent of the average self-haul load that is recyclable, the money that the customer could save by recycling that material instead of dumping it as garbage, and the environmental impacts of recycling those materials. Scalehouse receipts could even be printed to automatically include this information for loads that will be dumped as garbage. Alternately, scalehouse staff could be equipped with a brochure offering more information about recycling and the facility, to inform the customer's next visit. Any messaging encouraging recycling behavior should emphasize that there are staff on the tipping floor who assist customers in sorting their loads. These staff currently mostly focus on recovering metals and electronics from self-haul loads, but could potentially expand their function to serve a broader role, including picking more materials and engaging more with self-haul customers.
- Tipping floor staff, including tipping floor supervisors and tipping floor sorters, should engage with each self-haul customer at least once during the customer's visit to ensure that they know where to dump their materials, are dumping them correctly, and that they don't need any additional assistance.
 - Tipping floor supervisors/non-sorting staff should offer assistance to direct self-haul customers to the correct location to dump their materials. A checkpoint at the entrance to the tipping floor, where staff physically points the customer to the correct location to start dumping their materials, can accomplish this goal.
 - On-floor sorting staff should serve two purposes: to double check that customers are not disposing of recyclables, and to assist customers in sorting their materials for recycling. In the 2016 King County survey, of self-haul customers who did not separate their loads for recycling (and instead disposed their entire loads as garbage), 36 percent noted that they chose not to recycle because it "takes too long to separate/prepare materials" for recycling. The second most frequent response to this question was that recycling at the transfer station is inconvenient (28 percent of respondents answered in this way). On-floor sorting staff do not currently serve this larger engagement role, but expanding their role to encompass this type of outreach can address these two barriers to recycling by providing assistance to customers who are attempting to recycle.³

² <https://your.kingcounty.gov/solidwaste/about/documents/customer-survey-2016.pdf>, p. 32, 35.

³ <https://your.kingcounty.gov/solidwaste/about/documents/customer-survey-2016.pdf>, p. 35.

Construction and Demolition Contractor TA Profile

Construction and demolition contractors are accustomed to working independently at their job sites. There are a variety of factors that impact contractor efficiency, effectiveness, and profitability, and contractors are accustomed to handling the materials that they generate with these factors in mind. Therefore, contractors do not typically benefit from onsite technical assistance, since their onsite materials management processes are too involved for someone not intimately involved in their work to make recommendations around. However, they do benefit from clear information and guidelines about how to divert recyclable materials, and the penalties that they could suffer if they do not.

This profile outlines the key features of effectively engaging contractors to divert construction and demolition debris and other recyclables.

The recommendations in this section are based on a 2006 study that interviewed and conducted focus groups with C&D industry stakeholders, including generators (construction and demolition contractors), haulers (City contracted and independent haulers), and processors. The goal of the interviews and focus groups was to review potential policy options for expanding C&D recycling. A list of policy options, designed to increase the diversion of C&D waste, was used as an interview guide to elicit reactions to proposed policies and outreach methodologies. Note that these opinions may vary based on local market conditions. Conducting interviews and focus groups with construction and demolition contractors is advisable to test receptivity to any proposed policy options or technical assistance campaigns.

DESCRIPTION OF RECOMMENDED TECHNICAL ASSISTANCE SERVICES

Who: Municipal staff or consultants who are familiar with CALGreen and other similar regulations about diverting recyclable materials from construction and demolition projects.

When and where: Online guides and staff people should be available by phone to guide contractors to comply with local, regional, and statewide construction and demolition diversion requirements.

What: This section provides an overview of best practices for providing C&D contractors with pertinent information about how and why to recycle materials from their jobsites.

Technical assistance for construction & demolition contractors would primarily consist of remote support (via phone assistance and online reference materials) throughout the span of their project. Unlike with other generators, there are not distinct "before," "during," and "after" phases for technical assistance, so this profile discusses technical assistance for C&D contractors in general, rather than in phases.

The King County study referenced for this section found that contractors are enthusiastic about better access to information and benchmarking data about C&D debris recycling, but do not want city staff involved in job site operations in a technical assistance capacity. Generators universally favored being provided with better information about vendors/markets for construction and demolition debris, and benchmarking data for various types of projects, but did not want city staff on-site or felt that they didn't need help with managing waste. Contractors surveyed for this King County study also expressed a desire to verify where materials are going, publicize local success stories, and have access to a comprehensive and frequently updated recycling guide for difficult to market and hazardous C&D materials. Overall, generators requested help with better resources to understand where to send recyclable materials, noting, "...to improve the process, you need to improve the tools."

For the King County study, when asked about requiring a diversion plan, most generators noted that they would be able to “live with” the requirement. Only one generator noted that they would oppose the policy. In general, generators agreed that most contractors are already preparing plans for their own purposes, and a requirement to prepare a plan would not be a large departure from their current operations. Most generators stated that any such requirement would require “teeth” and proper enforcement to be successful.

Generators interviewed for the King County study noted that they would support a ban on select C&D materials, and unanimously emphasized that recycling options for banned materials – including effective, local commingled processing – would need to be in place for a ban to be successfully implemented. The contractors noted that the most logical targets for a ban are materials for which adequate processing and recovery infrastructure exist locally.