city of santa monica

zero waste strategic operations plan

HDR

DRAFT

Zero Waste Strategic Operations Plan

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1.0 Introduction

1.1 Background

The City of Santa Monica prides itself on being an environmental leader. It's Resource Recovery and Recycling Division (RRR) and Office of Sustainability and the Environment (OSE) have implemented many cutting edge environmental initiatives and programs. The City's state-of-the-art waste diversion strategies contributed to the City reaching a 74% diversion rate in 2009. As another indicator of the City's diversion accomplishments, the City's calculated per capita disposal rate in 2010 was 3.6 pounds per person per day, well below the targeted rate of 10.9 pounds per person per day. The per capita disposal target, as established by CalRecycle, is the amount of disposal that is approximately equivalent to the 50 percent diversion requirement, and represents an average of 50 percent of total waste generation in 2003 through 2006 expressed in terms of per capita disposal

On June 23, 2009, the City Council directed staff to develop a Zero Waste Strategic Plan. The creation of the Plan would allow the City to strengthen and refine its current waste diversion operations while adding significant opportunities and emerging technologies. The City established the Zero Waste Planning Committee to effectively design and implement a zero waste program. This Committee was comprised of the Resource Recovery & Recycling Division (RRR), the Office of Sustainability and the Environment (OSE) and the City's private partners, Southern California Disposal and Allan Company. Numerous meetings were held between September 2009 and August 2010 to establish methodologies to develop a Zero Waste Strategic Plan. Out of this collaborative effort, several processes and programs were discussed and implemented including a pilot residential yard trimmings and food scraps program, expansion of the commercial food scraps program, and audits of landfills to determine diversion rates.

In addition, the committee determined that a consultant would be needed to develop a long term Zero Waste Strategic Plan which would include identifying new and expanded operational programs, including producer responsibility, product stewardship, client responsibility, council ordinances and resolutions as well as identifying impacts of all programs on future materials processing requirements and disposal rates. A Request for Proposals for a consultant was issued in June 2011, and in December 2011, the City began a Zero Waste Strategic Planning process to identify the new policies, programs and infrastructure that will enable the City to reach its Zero Waste goal of 95% diversion by 2030, or a per capita disposal rate of 1.1 pounds per person per day. The Zero Waste Strategic Operations Plan will help the City strengthen its existing diversion operations while addressing significant fiscal challenges and emerging trends and technologies. The Plan will serve as a broad environmental and policy framework and will guide the future development of the City's resource recovery and recycling policies, programs, and infrastructure.

The Zero Waste Strategic Planning process included the following tasks:

1. Review and summary of existing policies, programs, facilities, and rate structure.
2. Review and compilation of existing zero waste guiding principles, and development of zero waste guiding principles relevant to the City.
3. Compilation of existing and projected waste generation and composition data.
4. Identification, evaluation, and selection of policy, program, and infrastructure options.
5. Calculation of potential diversion and greenhouse gas emission reductions.
6. Analysis of program costs and rate structure impacts.

1.1.1 What Is Zero Waste?

Zero waste is a change of perspective. It requires rethinking what we have traditionally regarded as trash and instead treating all materials as valued resources. Zero waste entails shifting consumption patterns, more carefully managing purchases, and maximizing the reuse of materials at the end of their intended use. Zero waste takes into consideration the entire materials management system, from extraction of natural resources, to product design, manufacturing and distribution, to product use and reuse, to recycling, composting, energy recovery, or disposal.

In developing policies, programs and infrastructure to achieve zero waste, the City can both maximize diversion from landfills and reduce generation of waste. Achieving zero waste entails encouraging the City, its residents, businesses, and visitors to reevaluate what we consider waste.

Ultimately, zero waste contributes to the development of a greener local economy and a more sustainable community. In order to reach true sustainability, the strategies identified in the Zero Waste Strategic Operations Plan must consider “People, Planet, and Profit” as the triple bottom line achieving social, environmental, and economic sustainability.

The City has defined it Zero Waste goal to mean achieving 95% diversion or a per capita disposal rate of 1.1 pounds per person per day.

1.2 Guiding Principles

The Santa Monica Zero Waste Strategic Operations Plan (Plan) is based on ten Guiding Principles that provide a framework for the policies, programs and actions identified for implementation. These Zero Waste Guiding Principles are consistent with the Guiding Principles developed for the Santa Monica Sustainable City Plan.

1. **The Health of the Community and the Environment Guides all Policy Decisions**
   Santa Monica is committed to protecting, preserving and restoring the natural environment and safeguarding the health of all members of the community. All program and policy decisions related to achieving our zero waste goals will be developed based on these commitments.
2. **The Hierarchy for Managing Discarded Materials is to Reduce, Reuse, Recycle and then Recover**
   The City has adopted an environmental hierarchy for 'highest and best use' of discarded materials. It will follow this hierarchy by prioritizing waste prevention and reduction, then encouraging reuse prior to treatment through recycling and composting. The City will recover energy and economic value from residual materials that cannot be recycled or composted through environmentally sound treatment prior to disposal.
3. **Economic and Social Benefits are Integral to Zero Waste**
   The programs and policies in this Plan will promote economic benefits, including job creation, cost savings and business opportunities, and will ensure that inequitable burdens are not placed on any one geographic or socioeconomic sector of the population.
4. **The City Leads By Example**
   Santa Monica will model the behavior it seeks from its residents, businesses and institutions by incorporating zero waste principles into local policies and operations; through advocacy for zero waste policies and initiatives at the regional, state and federal level; and through support to the community in striving for zero waste.
5. **Brand Owners, Producers and Manufacturers Contribute to the Management of their Products and Packaging**
   The City will pursue policies at all levels of government (State/ Regional/Local) for producers to take responsibility for the end of life management of products and packaging. Consumers need to be part of the solution and will be educated on alternative purchasing practices.
6. **Regional Partnerships Leverage the City's Efforts in Pursuing Zero Waste**
   Santa Monica recognizes that to be successful it must work with other cities in the region in order to promote a robust zero waste infrastructure and culture. The City will collaborate on programs, public outreach, legislation, infrastructure and new technologies that help to achieve zero waste goals throughout the region.

7. **Municipal Management of Local Collections and Processing Programs Ensures Local Control and Responsiveness**

   The City's operations are a model of materials management. New programs and infrastructure will be developed to ensure that residents, businesses and visitors become zero waste champions.

8. **Education, Outreach and Marketing are Essential to Achieving Cultural Change**

   Santa Monica recognizes the power of community-based social marketing, social networks, community organizing and grassroots support for its education and outreach programs. The City will empower the community by providing the tools and techniques for enabling the culture to achieve zero waste.

9. **Research and Development of New Technologies, Collection Systems and Infrastructure are Needed to Maximize Diversion of Discarded Materials**

   The City recognizes current approaches to managing materials are inadequate to maximize diversion from disposal. The City will closely monitor new developments and will invest in pilot programs and facilities for achieving zero waste.

10. **Local Market Development for Reusable and Recyclable Materials Ensures Sustainability**
    Santa Monica is part of the global economy, but recognizes that local business development is the key to a sustainable community. Wherever possible, the City will invest in local reuse and recycling markets and support local businesses in providing markets for discarded materials.

1.3 Zero Waste Policy

The City will develop a zero waste policy to be adopted concurrent with the adoption of the zero waste strategic operations plan. The policy will establish the City's goal of reaching zero waste by 2030, and the strategies and actions the City will take to attain that goal. Other aspects of the policy may include the definition of zero waste, specific goals for the residential and commercial sectors, the roles and responsibilities of City departments and divisions, and references to relevant sections of the City's municipal code, ordinances, and resolutions. The policy will be drafted for review by City staff and legal counsel, and for consideration by the City Council.

1.4 Goal Areas, Goals, Indicators and Targets

The Zero Waste Strategic Operations Plan is organized around six goal areas:

1. Waste Reduction
2. Environmental Benefits
3. Economic Benefits
4. City Leadership
5. Producer Responsibility
6. Zero Waste Culture Change

Specific **goals** are established in each goal area representing what Santa Monica must achieve in order to become a zero waste community.

For each goal, **indicators** have been developed to measure progress toward meeting the goals. The indicators will help determine the impact of a program, policy or action, and when tracked over time, will reflect the accomplishments and challenges of implementing the Zero Waste Strategic Operations Plan. The indicators will measure the performance or effectiveness of specific policies or programs, and will be used to determine the need for future modifications to the Plan. For some goals, numeric **targets** have been established to further evaluate the accomplishments of the Plan.

The goal areas, indicators and targets are listed in **Table 1-1**.

Table 1-1. Goal Areas, Indicators and Targets

Goal Area/Indicator	Targets
1. Waste Reduction • Total citywide generation (also report per capita and by sector) • Amount landfilled • Amount diverted (recycled and composted, etc.) from landfill	• 80% diversion by 2015 • 95% diversion by 2030 • Per capita disposal rate of less than 3.6 pounds/person/day by 2020 • Per capita disposal rate of less than 1.1 pounds/person/day by 2030
2. Environmental Benefits • Greenhouse gas emissions reduction through waste reduction and recycling programs • Conversion of City fleets to clean fuels/renewable	• 30% contribution to greenhouse gas reduction goal through waste prevention and recycling by 2015 • 50% contribution to greenhouse gas reduction goal through waste prevention and recycling by 2020 • 100% of all City fleet vehicles to clean fuels by 2030
3. Economic Benefits • Creation of new jobs • Local market development	• 20% increase in local jobs from waste prevention and recycling • Local market development o 3 new local partnerships by 2015 o 5 new partnerships by 2020

Goal Area/Indicator	Targets
4. City Leadership • Zero waste at City offices and facilities	• Establish baseline • Recycling and composting at all City facilities by 2015 • 80% diversion rate at City facilities by 2015 • 95% diversion rate at City facilities by 2030
5. Producer Responsibility • Producer responsibility for problem products (advocacy at state level or implementation of City ordinances)	• State legislation or City ordinance to address pharmaceuticals, sharps, batteries, fluorescent bulbs by 2020
6. Zero Waste Culture Change • Customer participation and reduced contamination • Zero waste awareness at home, at work, at school, at play	• 80% participation in City programs by 2015 • 90% participation in City programs by 2020 • 100% participation in City programs by 2025 • Contamination reduced to 2% by 2015 • Contamination reduced to 1% by 2020 • 80% of residents and businesses aware of Zero Waste by 2015 • 90% of residents and businesses aware of Zero Waste by 2020

2.0 Current Conditions

An important step in the planning process is to obtain a comprehensive understanding of the existing policies, programs, and infrastructure in the City. This helps ensure the Zero Waste Plan is in line with the City's established goals and efforts.

2.1 Resource Recovery and Recycling Division

This section provides a description of the existing services provided by the City's Resource Recovery and Recycling Division.

2.1.1 Residential Collection Services

The City's Resource Recovery and Recycling Division provides collection services for all single-family (SF) and multi-family (MF) residences. There are approximately 50,000 total housing units in the City[1]. Approximately 77% of the housing units are designated by the City as MF, which is defined as more than 2 units.

In 2011, the City collected an estimated 43,300 tons from residential customers, including approximately 27,600 tons of refuse, 8,500 tons of recyclables, and 7,000 tons of yard trimmings/ food scraps. A breakdown of the quantities and types of materials collected from single-family and multi-family residences is shown in **Table 2-1**[2].

Table 2-1. Residential Tonnages (2011)

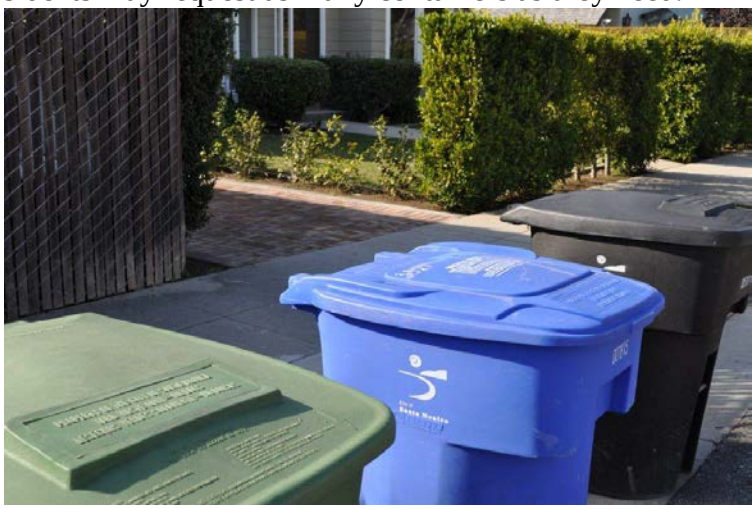
	Single-Family	Multi-Family	Total
Refuse	6,976	20,692	**27,667**
Recycling	4,099	4,479	**8,578**
Yard Trimmings/Food Scraps	6,428	613	**7,041**
TOTAL	**17,503**	**25,783**	**43,287**

[1] US Census, 2010; http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

[2] The City does not have separate collection routes by customer type, and therefore percentage estimates have been calculated based on the 2009 container audit and weighted averages.

2.1.1.1 Single-Family Residences

Single-family residences are provided with refuse, recycling, and yard trimmings collection services on a weekly basis, that utilizes an automated, 3-cart system. Residents can choose between 68- and 95-gallon sized gray carts for refuse, and are provided 95-gallon blue carts for recyclables and 95-gallon green carts for yard trimmings. Items that are accepted in the blue recycling container are summarized in Table 2-2. Yard trimmings are composted at Community Recycling, located in Lamont, California, for agricultural use. The materials accepted in the yard trimmings carts include grass, leaves, weeds, tree trimmings, and small branches not more than 3 feet long. Currently, there are no restrictions or fees on the number of recycling or yard trimmings carts available to residents. Residents may request as many containers as they need.



Single-family residents pay for collection services bi-monthly, based on the frequency of service, the number of carts, and the size of the refuse cart(s). The current collection rates for single-family residences are included in **Table 2-3**.

Beginning in August 2010, the City began a pilot SF residential food scraps collection program for approximately 600 households. The program allowed residents to place food scraps in their yard trimmings cart(s). In late 2010, the City conducted a survey of 150 participants to collect feedback on the food scraps collection program. Of the responses received, 40% were participating in the program while 60% were not participating. Of the 60% of residents who were not participating in the program, 67% indicated they were not aware of the

program and stated they would begin to participate in the program now that they were aware. In August 2011, the pilot program expanded to 330 households, and in February 2012 to an additional 370 households, and in April 2012, a total of 1,300 households were participating in the program. Beginning June 30, 2012, all single-family residences were eligible to participate in the program. A map of the pilot program areas is shown in **Exhibit 2-1**. The co-collected food scraps and yard trimmings are taken to Southern California Disposal (SCD), where they are placed in roll-off containers that are hauled to Community Recycling for composting. The City also offers home composting bins at a subsidized price as another measure to decrease the amount of organic materials that go to landfills.

Table 2-2. Items Accepted in the City's Recycling Program

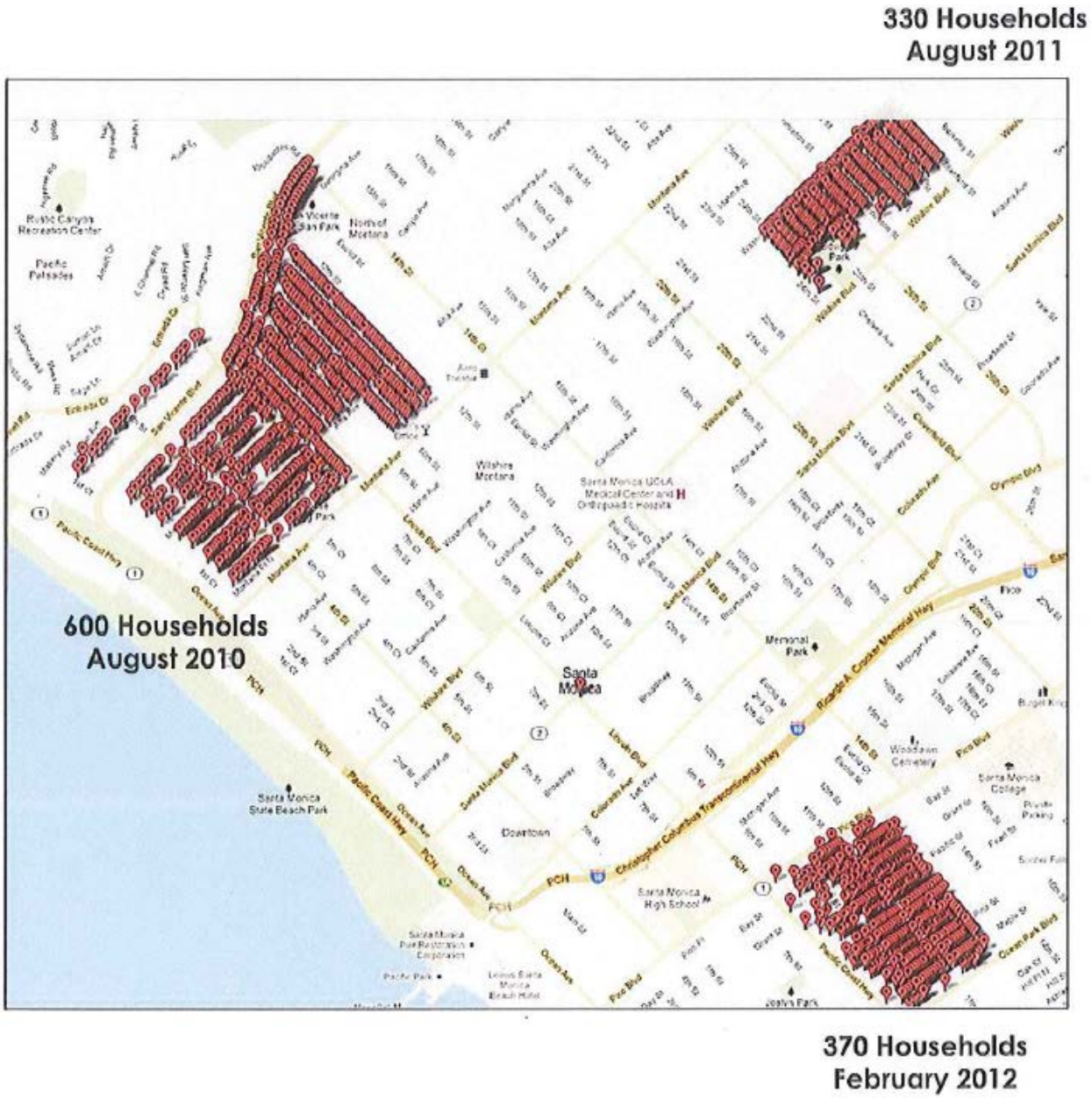
Glass
All glass bottles and jars (mayonnaise, apple juice bottles, wine bottles, etc.)
CA redemption bottles (soda, beer, wine coolers, etc.)
Metal
Aluminum beverage cans and aluminum food cans (e.g., cat food cans)
Steel/tin food and beverage cans
Clean aluminum foil and foil food trays
Paper
Newspaper (including inserts)
Office paper (white and colored)
Computer paper
Corrugated cardboard
Cardboard boxes and paper bags
Phone books
Magazines and catalogs
Food/detergent boxes
Mixed office paper (file folders, fax paper, envelopes, advertisements, flyers, etc.)
Junk mail, bulk mail, and scrap paper
Paper bound with non-water soluble glue (paperback books, hardback books, overnight mail packages, etc.)
Milk cartons (clean and rinsed)
Aseptic Packages (juice boxes)
Plastics
Plastics Numbered 1-5, and 7
Water/juice/soda bottles
Food containers
Milk and water jugs
Detergent/cleaning product bottles
Personal care bottles
Plastic bags (shopping bags, dry cleaner bags and other plastic bags)

Table 2-3. Bi-Monthly Single-Family Residential Collection Rates

Quantity, Size Refuse Cart	Frequency	Rate
1-68 gallon cart	1x weekly	$64.85
2-68 gallon cart	1x weekly	$129.70
3-68 gallon cart	1x weekly	$194.55
1-95 gallon cart	1x weekly	$83.76
2-95 gallon cart	1x weekly	$167.54
3-95 gallon cart	1x weekly	$251.31
1-68 & 1-95 gallon cart	1x weekly	$148.63
2 cubic yard bin	1x weekly	$335.06
300 gallon container	1x weekly	$252.33
Shared container service		$25.67

A bulky item collection service is offered by the City. Bulky items include large objects that do not fit in a refuse container, such as refrigerators, stoves, and furniture. The service is available to residents for a fee, depending on the size and amount of items discarded. The fees can range from $25 for small items, to $250 for large items.

Exhibit 2-1. Map of SF Residences Participating in the Pilot Food Scraps Collection Program



2.1.1.2 Multi-Family Residences

The City collects refuse from an estimated 40,000 multi-family (MF) units. Multi-family buildings are provided with either 68- or 95-gallon carts; 300-gallon containers; or 2-, 3-, or 4-cubic-yard bins for refuse collection. Residents of multiple unit dwellings and condominiums have a commingled recycling collection program. Blue 300-gallon containers, or 2, 3, or 4 cubic yard bins are placed throughout the alley ways for the collection of commingled recyclables from MF complexes. The containers and bins are either designated to specific complexes, or are shared by neighboring complexes. Presently, there are approximately 400 large (more than 5 units) buildings that do not have recycling services. A list of recyclables accepted by the City was provided in **Table 2-2**. The current collection rates for multi-family residences are shown in **Table 2-4**.

Table 2-4. Bi-Monthly Multi-Family Residential Collection Rates

68, 95 Gallon Refuse Carts		
Quantity, Size	Frequency	Rate
1-68 gallon cart	1x weekly	$51.35
1-95 gallon cart	1x weekly	$67.55

300 Gallon Refuse Container		
Quantity, Size	Frequency	Rate
300 gallon container	1x weekly	$147.27
300 gallon container	2x weekly	$294.54
300 gallon container	3x weekly	$441.82
300 gallon container	4x weekly	$589.10
300 gallon container	5x weekly	$736.38

2 Cubic Yard Refuse Bin		
Quantity, Size	Frequency	Rate
2 cubic yard bin	1x weekly	$154.03
2 cubic yard bin	2x weekly	$308.07
2 cubic yard bin	3x weekly	$462.09
2 cubic yard bin	4x weekly	$616.11
2 cubic yard bin	5x weekly	$770.16
2 cubic yard bin	6x weekly	$924.17

Miscellaneous		
Quantity, Size	Frequency	Rate
Livable Unit Charge		$8.11
No Charge/2nd Meter		$0.00
Lock Charge/Per Bin		$17.58
City bin on City Property	Per Bin	$86.47
Share Bin/Cart Service		$37.84

3 Cubic Yard Refuse Bin		
Quantity, Size	Frequency	Rate
3 cubic yard bin	1x weekly	$226.49
3 cubic yard bin	2x weekly	$453.02
3 cubic yard bin	3x weekly	$679.52
3 cubic yard bin	4x weekly	$906.03
3 cubic yard bin	5x weekly	$1,132.54
3 cubic yard bin	6x weekly	$1,358.97

4 Cubic Yard Refuse Bin		
Quantity, Size	Frequency	Rate
4 cubic yard bin	1x weekly	$300.26
4 cubic yard bin	2x weekly	$600.51
4 cubic yard bin	3x weekly	$900.77
4 cubic yard bin	4x weekly	$1,201.03
4 cubic yard bin	5x weekly	$1,501.28
4 cubic yard bin	6x weekly	$1,801.54

Refuse Bin Roll Out		
Quantity, Size	Frequency	Rate
Bin roll out	1x weekly	$41.89
Bin roll out	2x weekly	$83.76
Bin roll out	3x weekly	$125.65
Bin roll out	4x weekly	$167.54
Bin roll out	5x weekly	$206.35
Bin roll out	6x weekly	$251.31

Refuse Bin Truck Roll Out		
Quantity, Size	Frequency	Rate
Bin truck roll out	1x weekly	$47.38
Bin truck roll out	2x weekly	$94.76
Bin truck roll out	3x weekly	$144.44
Bin truck roll out	4x weekly	$189.52
Bin truck roll out	5x weekly	$236.91
Bin truck roll out	6x weekly	$284.29

2.1.2 Commercial Collection Services

The City provides collection services for approximately 3,000 commercial accounts, representing approximately 14,000 businesses. A breakdown of the quantities and types of materials collected from commercial accounts is shown in **Table 2-5**. The container sizes available to commercial businesses for refuse include: 68- or 95-gallon carts; 300-gallon containers; or 2, 3 or 4-cubic-yard bins. Extra refuse collection containers are available for an additional fee, depending on the size and number of containers requested. The summary of commercial rates for collection services is included in **Table 2-6**. Commercial customers also pay for street sweeping services. In the future, street sweeping services will be incorporated into the City's overall rate structure.

Table 2-5. Commercial Tonnages (2011)

	Tons
Refuse	38,199
Recycling	3,882
Yard Trimmings/Food Scraps	2,316
TOTAL	**44,398**

The City provides commingled recycling collection services to all commercial customers at no additional charge. Approximately 820 businesses currently participate in recycling. Private haulers also provide recycling services to some commercial businesses. **Table 2-2** includes the list of items collected in the commercial recycling program.

Food scraps recycling collection is available to restaurants, grocery stores and other establishments with food services. Presently, the service is offered at no additional charge. In the future, the program will be incorporated into the City's overall rate structure. Participants are required to source separate all food scraps and place them into designated containers provided by the City. Currently, 98 businesses are participating in the program and another 471 businesses are eligible to participate. The City takes the food scraps to SCD, and then it is hauled to Community Recycling for composting.

Partnering with GeoGreen Biofuels, the City offers a fats, oil, and grease (FOG) collection program that is free of charge. Collection containers are located Downtown in parking structures 2 through 6. Restaurants that are not located Downtown can request a separate collection container by contacting the City.

Private haulers provide collection services to Santa Monica Community College (SMC) and Santa Monica Malibu Unified School District (SMMUSD). Athens Services is the hauler and processor for SMC, and Crown Disposal is the hauler and processor for the SMUSD.

Table 2-6. Bi-Monthly Commercial Collection Rates (FY 2011/2012)

68 Gallon Refuse Cart		
Quantity, Size	Frequency	Rate
1-68 gallon cart	1x weekly	$35.13
1-68 gallon cart	2x weekly	$70.25
1-68 gallon cart	3x weekly	$105.39
1-68 gallon cart	4x weekly	$140.52
1-68 gallon cart	5x weekly	$175.64

95 Gallon Refuse Cart		
Quantity, Size	Frequency	Rate
1-95 gallon cart	1x weekly	$50.00
1-95 gallon cart	2x weekly	$99.98
1-95 gallon cart	3x weekly	$149.98
1-95 gallon cart	4x weekly	$199.97
1-95 gallon cart	5x weekly	$249.96

300 Gallon Refuse Container		
Quantity, Size	Frequency	Rate
300 gallon container	1x weekly	$102.68
300 gallon container	2x weekly	$205.36
300 gallon container	3x weekly	$318.53
300 gallon container	4x weekly	$424.71
300 gallon container	5x weekly	$530.88

Miscellaneous		
City bin on City property	Per Bin	$59.45
Lock Charge	Per Bin	$17,58
Non-Semi Auto Service	2x/week	$45.94

Street Sweeping Rates (based on water meter size)		
0.75”	Per Unit	$74.32
1.00”	Per Unit	$101.34
1.5”	Per Unit	$148.63
2.00”	Per Unit	$198.61
3.00”	Per Unit	$297.24
4.00”	Per Unit	$397.24
6.0”	Per Unit	$595.86

2 Cubic Yard Refuse Bin		
Quantity, Size	Frequency	Rate
2 cubic yard bin	1x weekly	$110.79
2 cubic yard bin	2x weekly	$221.59
2 cubic yard bin	3x weekly	$332.37
2 cubic yard bin	4x weekly	$443.16
2 cubic yard bin	5x weekly	$609.37
2 cubic yard bin	6x weekly	$664.76
2 cubic yard bin	7x weekly	$775.55

3 Cubic Yard Refuse Bin		
Quantity, Size	Frequency	Rate
3 cubic yard bin	1x weekly	$149.98
3 cubic yard bin	2x weekly	$299.94
3 cubic yard bin	3x weekly	$449.93
3 cubic yard bin	4x weekly	$599.91
3 cubic yard bin	5x weekly	$749.88
3 cubic yard bin	6x weekly	$899.85
3 cubic yard bin	7x weekly	$1,049.83

Refuse Bin Roll Out		
Quantity, Size	Frequency	Rate
Bin roll out	1x weekly	$24.32
Bin roll out	2x weekly	$48.64
Bin roll out	3x weekly	$72.96
Bin roll out	4x weekly	$97.28
Bin roll out	5x weekly	$121.59
Bin roll out	6x weekly	$145.93
Bin roll out	7x weekly	$170.23

Refuse Bin Truck Roll Out		
Quantity, Size	Frequency	Rate
Bin Truck roll out	1x weekly	$35.13
Bin Truck roll out	2x weekly	$70.25
Bin Truck roll out	3x weekly	$105.39
Bin Truck roll out	4x weekly	$140.52
Bin Truck roll out	5x weekly	$175.64
Bin Truck roll out	6x weekly	$210.77
Bin Truck roll out	7x weekly	$270.23

2.1.3 Household Hazardous Waste

Residents have access to a free drop-off service for Household Hazardous Waste (HHW) at the City's HHW Collection Center, located at the City Yards on 2500 Michigan Avenue. The operating hours of the HHW Center are the 1st Saturday of the month, between 9 am and 2 p.m. Small businesses, those that generate less than 27 gallons of hazardous waste per month can make an appointment to bring hazardous waste to the City's HHW Collection Center on the Friday before the 1st Saturday of the month. There is a fee for small businesses to use the HHW Collection Center. A list of the HHW accepted is provided in **Table 2-7.**

To supplement the services provided at the drop-off center, the City began a HHW Home Collection Program in August 2011. The HHW Home Collection Program is provided on a free and unlimited basis to homeowners and tenants in the City. Participants in the program must contact the City's contractor to reserve the service and request a collection kit. On collection day, residents are instructed to leave their HHW at their doorstep where it is collected.

Materials accepted in the HHW Home Collection Program include:

- Aerosols
- Art Supplies
- Automotive Products
- Batteries
- Cleaners/Wax
- Garden Chemicals
- Lubricants
- Mercury Containing Devices
- Other Household Products
- Paints
- Personal Care Products
- Pesticides
- Sharps
- Electronics
- Pool Chemicals
- Auto Batteries: Up to 4
- Fluorescent Light Tubes (Straight): Up to 10, tubes must be taped
- Televisions: 1
- Computer Monitors: 1
- Empty paint cans and/or dried latex paint not hazardous

Other Consumer Electronics with Circuit Boards

- Desktop or laptop computers: 1
- Microwave ovens: Up to 2
- Desktop scanners, printers, copiers: Up to 2
- Fax machines: Up to 2
- Telephones, cell phones, portable phones, keyboards, mice, VCR's, CD players, stereos disc drives, cables: No limit

Table 2-7. Materials accepted at the City's HHW Center

Category	Materials Included
Aerosol Products	Aerosol air fresheners, aerosol antibacterial sanitizers
Art Supplies	Adhesives, paint, cleaners, correction fluids, photography chemicals
Automobile Batteries	Automobile batteries
Automotive Products	Cleaners, lubricant, solvent, fuel, brake fluid, antifreeze, carburetor cleaner, metal conditioner, engine degreaser, fuel additives, refrigerants, transmission fluid, window washer fluid, used motor oil, used motor oil filters
Batteries	All household types
Chemicals	Garden chemicals, pesticides
Cleaners/Wax	Polish, degreasers, rug/upholstery cleaners, oven cleaners, toilet bowl cleaners
E-waste	Computer monitors, televisions, cell phones, DVD players
Fats, Oil, and Grease	Cooking oil
Fluorescent Straight Light Tubes	Fluorescent lamps
Lubricants	Automotive/household compressor oil, cutting oil
Paint	Aerosols, hobby/automotive/household latex and oil-based, thinners, strippers, wood preservatives, lacquers, linseed oil, primers, stains, varnishes
Personal Care	Personal Care - nail polish, polish remover, rubbing alcohol, shoe polish, spot remover
Poisons	Household/garden poisons, pesticides, insecticides, herbicides, fungicides, baits traps, fertilizers, pet care, pool chemicals
Other Household	Fluorescent tubes/bulbs, compact fluorescent lamps (CFLs), thermostats, thermometers, propane tanks, moth balls, rust remover, kerosene
Sharps Medical Waste	Needles, lancets
Oil and Oil Filters	Used motor oil, oil filters

2.1.4 Zero Waste Events

To promote and implement recycling, reuse and composting practices at special events, the Resource Recovery and Recycling Division offers assistance to help organizations implement Zero Waste events. The assistance includes a planning guide with information and recommendations on vendor involvement, food service, site planning, decorations and giveaways, education, volunteers, signage, and collection containers.

2.2 City Policies and Programs

The City has implemented numerous policies and programs that support the City's resource recovery and sustainability efforts. These policies and programs were incorporated into the Zero Waste Planning process to ensure the goals and visions were aligned.

2.2.1 Santa Monica Municipal Code (SMMC)

2.2.1.1 Disposable Food Service Containers

Chapter 5.44 of the Santa Monica Municipal Code (SMMC) prohibits the distribution of disposable food service containers made of nonrecyclable plastic or expanded polystyrene foam from all food providers and at City events. The ban applies to single-use disposable containers intended for serving or transporting prepared, ready-to-eat food or beverages. The ban helps reduce the amount of plastic that ends up on the City's beaches, reduces materials that go to the landfill, and also reduces the amount of natural resources used to manufacture and transport the disposable products.

2.2.1.2 Single-Use Carry Out Bags

Chapter 5.45 of the SMMC prohibits retail establishments, grocery stores, convenience stores, mini-marts, liquor stores, pharmacies, and any City events, from distributing petroleum

and bio-based single-use carryout plastic bags. The code imposes a $0.10 fee for each paper bag that is distributed, and requires paper bags to be 100% recycled content paper, with a minimum of 40% post-consumer, recycled content.

The City has implemented a Share a Bag Program. The program enables the community to donate extra, reusable bags at designated locations throughout the City for those who cannot afford reusable bags or for those who forget their reusable bags. There are 20 Share a Bag Program locations citywide.

2.2.1.3 Construction and Demolition Material Waste Management Plans

Chapter 8.108, Subpart C, requires all City-sponsored construction and demolition (C&D) projects, as well as private C&D projects that are $50,000 or greater in value, or are 1,000 square feet or greater, to meet a minimum 70% diversion rate. Covered projects must submit a waste management plan (WMP) for City approval that includes the tonnages of materials that are disposed and diverted, and the methods implemented to reuse and/or recycle the materials,. Applicants must provide a security deposit equal to 3% of the project value, or $30,000, whichever is less. Upon project completion, a final compliance report must be submitted for the security deposit to be refunded to the applicant.

A number of methods can be used to comply with the C&D diversion requirements. On -site reuse is allowed on a case by case basis, as approved in the WMP. Materials that are source-seperated on site, such as wood, concrete, or asphalt, can be sent to an approved C&D facility for reuse or recycling. All mixed C&D materials are required to be sent to an approved mixed C&D recycling facility. A list of the City-approved C&D recycling facilities is included in **Table 2-8.**

Table 2-8. Approved C&D Recycling Facilities

***METAL** companies listed below accept both ferrous & non-ferrous metals, unless otherwise noted.*	***MIXED C&D RECYCLERS** Process mixed C&D to extract recyclables*	***SALVAGED ITEMS (USED BUILDING MATERIALS)***
A&S Metal Recycling 2261 E. 15th Street Los Angeles, CA 90021 213-623-9443	Community Recycling & Resource Recovery, Inc. 9189 DeGarmo Avenue Sun Valley, CA 91352 818-767-0675	Freeway Building Materials 1124 S. Boyle Avenue Los Angeles, CA 90023 323-261-8904
Alpert & Alpert Iron & Metal 1815 Soto Street Los Angeles, CA 90023 323-265-4040	Direct Disposal 3720 Noakes Street Los Angeles, CA 90023 323-262-1604	Santa Fe Wrecking & Salvage 720 E. 18th Street Los Angeles, CA 90021 213-765-8166
Atlas Iron & Metal 10019 Alameda Street Los Angeles, CA 90002 323-566-5184	East Valley Diversion 11616 Sheldon Street Sun Valley, CA 91352 818-252-0019	Scavenger's Paradise 5453 Satsuma Avenue N. Hollywood, CA 91601 323-877-7945
Kramer Metals 1760 E. Slauson Avenue Los Angeles, CA 90058 323-587-2277	Downtown Diversion 2424 E. Olympic Blvd Los Angeles, CA 90021 213-612-5005	***WOOD*** North Hills Recycling, Inc. 11700 Blucher Avenue Granada Hills, CA 91344 818-831-7980
A-1 Metals Recycling, Inc. 8250 Tujunga Avenue Sun Valley, CA 91352 818-767-4388	California Waste Services 621 W. 152nd Street Gardena, CA 90247 310-538-5998	Recycled Wood Products 1313 E. Phillips Blvd Pomona, CA 91766 909-868-6882
INERT MATERIAL Hanson Aggregates 5625 Southern Avenue South Gate, CA 90280 800-300-6120	Southern California Disposal 1908 Frank Street Santa Monica, CA. 90404 310-828-6444	***CARPET PADDING*** Carpet Pad Recycling 1923 Rosemead Blvd South El Monte, CA 91733 626-444-6048
Arcadia Reclamation, Inc. 12321 Lower Azusa Road Arcadia, CA. 91006 909-392-8510	Interior Removal Specialist, Inc. 9309 Rayo Avenue South Gate, CA 90280 323-357-6900	***CARDBOARD*** Allan Company 2411 Delaware Avenue Santa Monica CA 90404 310-453-9677
Vulcan Materials Company 11520 Sheldon Blvd Sun Valley, CA 90052 818-768-4157	***INERT MATERIAL*** Valley Base Materials 2121 E. 25th Street Los Angeles, CA 90058 323-583-7913	***BRICK & ROOFING TILES*** Bourget Bros Building Materials 1636 11th Street Santa Monica, CA 90404 310-450-6556
Chandler's Sand Gravel 26311 Palos Verdes Drive East Rolling Hills Estates, CA 90274 310-784-2900	Nu-Way Arrow Reclamation 1270 E. Arrow Highway Irwindale, CA. 91706 626-305-5308	

In 2010, the City conducted an audit of the mixed C&D recycling facilities. The results of the audit indicated a total of 35,308 tons of C&D materials originating in the City were processed at these facilities, with 31,116 diverted from landfilling, for an average of 88% diversion. **Table 2-9** includes the approved mixed C&D recycling facilties, along with the facility diversion rates, and tons of materials processed from the City in 2010.

Table 2-9. City-Approved Mixed C&D Recycling Facilities

Facility Name and Location	Tons Originating in Santa Monica	Diversion Rate	Tons Diverted
California Waste Services	5,922	87%	5,152
Community Recycling	16,742	93%	15,570
Direct Disposal	311	73%	227
Downtown Diversion	10,087	83%	8,372
East Valley Diversion	62.6	85%	52.4
Interior Removal Specialists	1,190	78%	928
Southern California Disposal	994	82%	815
TOTAL	35,308	88%	31,16

2.2.2 Extended Producer Responsibility

Resolution 10412, signed on June 23, 2009, documents the City's support for an extended producer responsibility (EPR) framework in State legislation by way of urging the League of California Cities, the California State Association of Counties, and CalRecycle to advocate for more EPR policies. The resolution states that the City will encourage all manufacturers to take part in the responsibility of their products, from the processing, collection, recycling, and disposal of the materials.

2.2.3 Recycled Products Procurement Policy

The Recycled Products Procurement Policy was developed in 1991 to help the City make responsible decisions in purchasing products with recycled content. The main guidelines of the policy include the following:

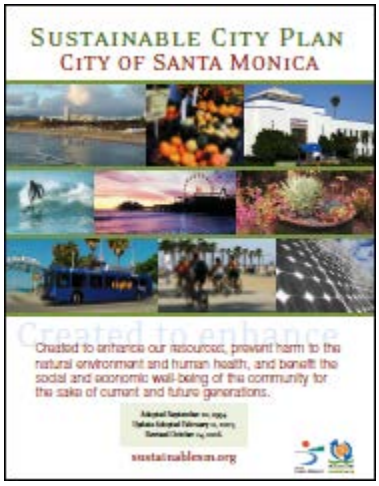
- The priority in which products should be purchased based on the highest content of post-consumer material, pre-consumer material, and minimum recycled content.
- The ability of a product and its packaging to be reused, reconditioned for reuse, or recycled, and the amount of waste the product and its packaging generates.
- Equipment purchased or rented by the City are to be compatible with the use of recycled-content products.

- Product specifications, requisitions, and performance standards must not require the use of products made from virgin materials or exclude recycled-content products.

2.2.4 Sustainable City Plan

In September 1994, the City Council took steps to address sustainability concerns in the community by adopting the City of Santa Monica Sustainable City Plan. The Sustainable City Plan provides a roadmap to ensure the City meets its environmental, economic, and social needs without compromising the quality of life for the community and for future generations. The plan has concrete goals and targets for tracking the City's progress in the following eight areas:

1. Resource Conservation
2. Environmental and Public Health
3. Transportation
4. Economic Development
5. Open Space and Land Use
6. Housing
7. Community Education and Civic Participation
8. Human Dignity



The Sustainable City Plan includes goals and strategies, for the City government and all sectors of the community, to conserve and enhance local resources, safeguard human health and the environment, maintain a healthy and diverse economy, and improve the livability and quality of life for all community members in the City.

Under the Resource Conservation area, the City established the following goals for solid waste generation:

- Total citywide generation to not exceed year 2000 levels by 2010
- Increase amount diverted to 70% of total by 2010.

The goals of the Sustainable City Plan are tracked through a Sustainable City Progress Report and Report Card. In 2005, a Progress Report website was launched to provide updates on the status of the Plan as well as a letter grade that rates the City on its efforts in the eight target areas.

The Sustainable City Report Card is a document that provides a summary of the grades that are also posted on the Progress Report website. The most recent Sustainable City Report Card was released in September 2010, a summary of those grades are provided in **Table 2-10**. The 2010 waste diversion goal was exceeded in 2009 with a diversion rate of 74%.

Table 2-10. 2010 Sustainable Report Card Grades

#	Category	Overall Grade	Effort
1	Resource Conservation	B-	A-
2	Environmental and Public Health	C+	A-
3	Transportation	C+	A
4	Economic Development	B	A-
5	Open Space and Land Use	A-	A
6	Housing	C	A
7	Community Education and Civic Participation	A-	A
8	Human Dignity	B	A

2.2.5 Green Business Certification Program

The City, the Convention and Visitors Bureau, the Chamber of Commerce, and the Sustainable Works non-profit organization have joined together to certify and recognize green businesses in the community through the Green Business Certification Program. The Program recognizes and certifies businesses that have taken steps to incorporate sustainable practices into their operations. In order to apply for a green certification, businesses must have a physical location in the City, a minimum of five employees, and occupy a minimum of 500 square feet of commercial business space. Eligible businesses must fall under one of the following categories:

- Office
- Retail Store
- Restaurant
- Grocery
- Hotel
- Motel

Businesses that successfully pass the verification process are green certified for a period of 2 years. A total of 19 businesses were certified in the latest (2011-2013) Business Certification Program.

2.2.6 Sustainable Quality Awards

The Sustainable Quality Awards (SQA) event was developed to identify and recognize businesses in the City that are successfully incorporating sustainable practices into their operations. The SQA is an annual event that promotes the efforts of local businesses that have made significant achievements in the areas of sustainable economic development, social responsibility, and stewardship of the natural environment.

2.2.7 US Conference of Mayors/California Public Interest Research Group (CALPIRG) Buy Recycled Campaign

In September 1995, the City adopted a resolution for the US Conference of Mayors/California Public Interest Research Group (CALPIRG) Buy Recycled Campaign. In the resolution, the City agreed to purchase paper that contains a minimum of 20% post-consumer recycled content, increasing the amount of post-consumer recycled content to 30% beginning in 1998. The City currently exceeds these standards by using paper containing a minimum of 50% post-consumer recycled content.

2.2.8 City's Purchase and Use of Tropical Forest Wood Products

Ordinance 2.28 bans the purchase or use of any tropical hardwood product within the City, or at any City-sponsored events. The ordinance requires all contracts between the City and any supplier of wood products to include provisions that restrict the use of tropical wood.

2.2.9 Print Shop Purchasing Policy

The City's print shop has a policy to exclusively purchase and use recycled paper and vegetable-based printing inks, unless a printing request is submitted that cannot be completed using those products. It is estimated that 99% of all printing jobs are completed using recycled paper and vegetable-based inks.

2.2.10 Electronic Waste

Electronic waste (E-waste), such as computers and televisions, is collected through a drop-off program for residents and businesses at the Santa Monica Community Recycling Center, located at 2411 Delaware Avenue. The drop-off program is free to residents and fee-based for businesses.

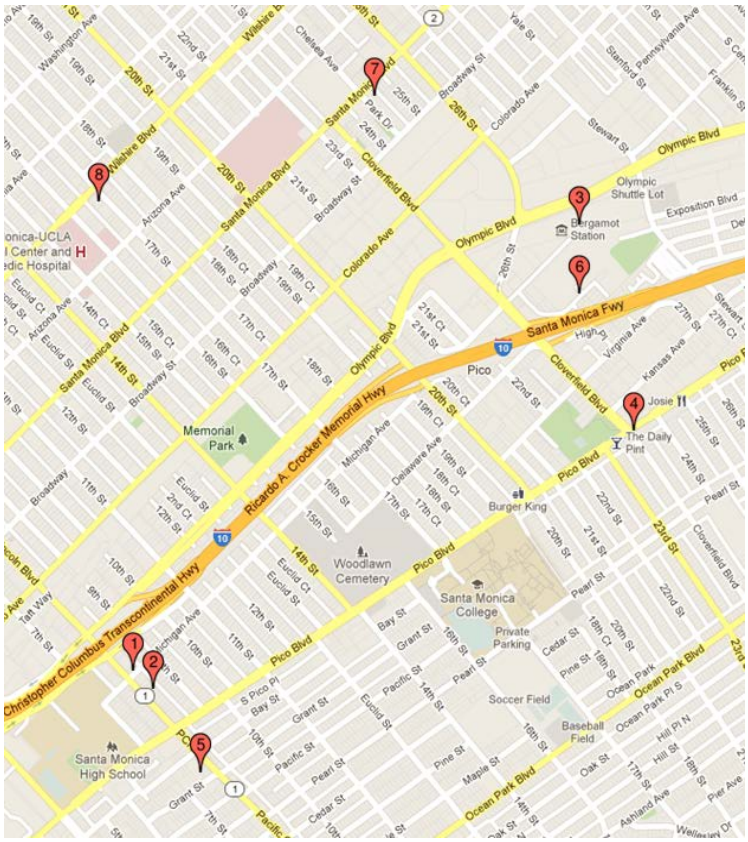
2.2.11 Used Oil and Filter Collection

Collection centers are located throughout the City for residents to drop off used oil and oil filters. **Exhibit 2-2** provides a map of the drop off locations.

2.2.12 Christmas Tree Recycling

During the month of January each year, Christmas trees can be taken and recycled at four local parks or at the SCD Transfer Station in the City for free. The trees collected at the parks are turned into mulch and used throughout the City.

Exhibit 2-2. Used Oil and Oil Filter Collection Locations



1. EZ Lube
   1757 Lincoln Blvd
   Santa Monica, CA 90404
2. Firestone
   1817 Lincoln Blvd
   Santa Monica, CA 90404
3. Household Hazardous Waste Center
   2500 Michigan Ave
   Santa Monica, CA 90404
4. Jiffy Lube
   2344 Pico Blvd
   Santa Monica, CA 90405
5. O'Reilly Auto Parts
   2018 Lincoln Blvd
   Santa Monica, CA 90405
6. Santa Monica Community Recycling Center
   2411 Delaware Ave
   Santa Monica, CA 90404
7. Volkswagen of Santa Monica
   2440 Santa Monica Blvd
   Santa Monica, CA 90404
8. W.I. Simonson, Inc.
   1626 Wilshire Blvd
   Santa Monica, CA 90404

2.2.13 Catalogue Choice

City residents can sign up for a free account to opt-out of unwanted catalogs, phone books, coupons, circulars, credit card offers, and donation solicitations. The website is accessed through https://santamonica.catalogchoice.org/login.

2.2.14 Scheduled Events

The City schedules a variety of waste reduction, re-use, recycling and composting events on a quarterly basis:

- E-Waste collection
- Textile recycling
- Paper shredding
- Compost give-away days and workshops
- Re-use workshops
- Annual Citywide yard sale

2.3 Resource Recovery and Recycling Processing Facilities

There are two resource recovery and recycling processing facilities located within the City limits: the Santa Monica Community Recycling Center and the SCD Transfer Station.

2.3.1 Santa Monica Community Recycling Center

The Santa Monica Community Recycling and Buy-Back Center is located at 2411 Delaware Avenue. The property is owned by the City and leased to the Allan Company, who owns and operates the facility equipment. The Center is open Monday through Friday from 8:00 a.m. to 5:00 p.m., and on Saturdays from 8:00 a.m. to 2:00 p.m. The Center may close earlier due to maximum daily tonnage restrictions.

The Community Recycling Center accepts the following items:

- Cans – aluminum, steel
- Glass – bottles and jars
- Plastic
- Mixed Paper
- Scrap Metal
- Electronics
- White goods - stoves, refrigerators and other appliances
- Used motor oil and oil filters

2.3.2 Southern California Disposal Transfer Station

The SCD Transfer Station is a privately owned facility that is open to the public. The transfer station is located at 1908 Frank Street, and is open Monday through Friday from 6:00 a.m. to 2:00 p.m., and on Saturdays from 6:00 a.m. to 1:30 p.m.

Items that are accepted at the facility include:

- Refuse
- Food scraps
- Yard trimmings
- C&D debris
- Street sweeping collections

In addition, SCD receives and transfers all refuse, yard trimmings, and food scraps that are collected by the City. SCD transfers refuse to a number of facilities, including Puente Hills landfill, Sunshine Canyon Landfill, Chiquita Canyon Landfill, Southeast Resource Recovery Facility (SERRF), and Commerce Refuse to Energy Facility. Yard trimmings and street sweepings are transferred to Community Recycling for composting at its compost facility in Lamont. Community Recycling receives the City's food scraps at the SCD transfer station, and transfers the material to its composting facility in Lamont. Construction and demolition debris generated from City projects is also transferred through SCD to Community Recycling for processing, recycling, and disposal.

2.4 Educational Outreach

2.4.1 Sustainable Works

Sustainable Works, a project of Community Partners, is a non-profit environmental education organization within the City. The organization offers four different sustainability programs: Business Greening, Community Sustainability, Residential Greening, and Student Greening.

The Business Greening Program is free to Santa Monica businesses through a subsidy provided by the City's Office of Sustainability and the Environment. The Program assists businesses in greening their bottom line by helping them save money and resources through increased efficiency and employee education. Sustainable Works performs on-site environmental assessments to evaluate current business practices and provides sustainable recommendations.

The Community Sustainability Program facilitates the adoption of sustainable practices in the community and engages stakeholders to help meet sustainability goals.

The Residential Greening Program offers free Green Living Workshops for residents in the City, and to non-residents for a fee. The series features six workshops offered once a week, for six weeks, covering topics that include resource recovery and recycling, water, energy, transportation, chemicals, and responsible purchasing. A Sustainable Works book is provided to each participant, which includes comprehensive resources for sustainable living.

The Student Sustainability Workshop is a program that provides educational, student leadership, and community building opportunities to its participants while shaping the next generation of environmental leaders.

2.4.2 Community Sustainability Liaison

The role of the Community Sustainability Liaison is to provide Santa Monica residents and community organizations with information and resources needed to help meet the goals of the Santa Monica Sustainable City Plan. The Liaison also helps coordinate educational outreach events within the community and produces a monthly electronic newsletter that highlights local sustainable news and events.

2.4.3 Educational Outreach Tools

The City provides updates and information on its programs, policies, and events through a variety of outreach tools. Information is dispersed online (City websites and emails), via mail, television programming, workshops, advertisements in public spaces, and through citywide events. A list of some of the media available to the City for public outreach and education is provided in **Table 2-11.** The Environmental Directory includes a thorough list of local resources for topics that range from energy efficiency programs to environmentally preferred purchasing. The booklet also includes resources for refuse, recycling, composting, and hazardous waste.

Table 2-11. Educational Outreach Media

Media
Resource Recovery and Recycling Division Website
Office of Sustainability and the Environment Website
Sustainable Santa Monica Electronic Newsletters
Sustainable Santa Monica Facebook Page
Santa Monica Resource Recovery and Recycling Facebook Page and Twitter
City Emails
Press Releases/Media Lists (i.e., Santa Monica Daily Press, Santa Monica Mirror, Santa Monica Observer, the Argonaut, etc.)
CityTV Programming
Community Events/Workshops
City Hall Public Information Desk
Libraries
Farmers Markets
Display Advertising (Big Blue Bus Advertising, etc.)
City Collection Truck Advertising

2.4.4 Educational Outreach Events

The City hosts a variety of environmental events throughout the year. These events provide the City an opportunity to directly reach out to community members, support local businesses, and promote sustainability efforts. The Santa Monica Festival is the largest festival in the City, and is held each year in May at Clover Park. The City also dedicates the month of September as Sustainability Awareness Month, in which key messages are targeted to residents, businesses, and the City Council regarding sustainability topics.

Events that take place during Sustainable Santa Monica Awareness Month include:

- Business Mixers
- Residential Workshops
- Film Screenings
- A Sustainable Food Event
- Report Card Launch
- Student Poster Contest
- Green Prize for Sustainable Literature

A summary of annual sustainability events hosted by the City is provided in **Table 2-12**.

Table 2-12. Citywide Environmental Events

Event	Month
Buy Local Expo	March
Sustainable Industries Economic Forum	April
Santa Monica Festival	May
AltBuild Expo	May
Sustainable Quality Awards	May
Main Street Festival	June
Solstice Festival	June
Sustainable Santa Monica Awareness Month	September
AltCar Expo	October
Pico Festival	October

3.0 Generation and Characterization

3.1 Existing Generation

Analyzing the City's generation provides an understanding of which areas to target in the Zero Waste Strategic Operations Plan. Utilizing both the generation data and the inventory of existing programs and infrastructure, zero waste options were developed that will provide the most significant impact on reducing waste and increasing diversion.

In 2011, the City generated approximately 360,000 tons of materials. Out of the total tons generated, 77% was diverted through waste prevention, recycling, and composting, and 23% was disposed in landfills or waste-to-energy facilities. The Zero Waste Strategic Operations Plan prioritizes source reduce, reuse, recycling, and composting materials before landfilling or processing at waste-to-energy facilities. The total amount of materials generated is calculated using the City's average generation rate from the years 2003 through 2006. This methodology is consistent with the CalRecycle per capita disposal equivalent methodology (as set forth in state statute). The City's 2011 per capita disposal was 5.0 pounds per person per day (PPD). Compared to the per capita disposal target of 10.9 PPD, the City was well within the target goal. The City's overall 2011 generation is included in **Table 3-1.**

Table 3-1. Overall Generation 2011 (tons)

Disposal	Diversion	Total
82,997	275,355	**358,351**

3.2 Waste Diversion

In 2011, the City diverted 275,355 tons of material, or 77% of the total materials generated. The diversion programs provided by the City, and waste prevention and recycling efforts undertaken by individual residents and businesses, all contribute to the City's diversion rate. A summary of the activities that contribute to diversion in the City is provided in **Table 3-2.**

Table 3-2. 2011 Diversion Summary

Source/Program	Diversion (Tons)
SF Residential	10,527
Curbside Recycling	*4,099*
Yard Trimmings and Food Scraps	*6,428*
MF Residential	5,092
Recycling	*4,479*
Yard Trimmings	*613*
Commercial	6,412
Recycling	*3,882*
Yard Trimmings and Food Scraps	*2,530*
Self-Haul	3,356
Recycling	*3,248*
Yard Trimmings and Food Scraps	*108*
C&D	41,919
Commercial	*2,861*
Self-Haul	*7,945*
Private C&D Recycling	*31,113*
Street Sweeping	2,627
Other City Programs[3]	17,790
Residential Drop-Off	*164*
Residential Buy-Back	*17,484*
Tires	*13*
White Goods	*7*
Scrap Metal	*78*
E-waste	*8*
HHW	*36*
Diversion at Landfills (alternative daily cover, beneficial reuse, etc.)	12,601
Other Source Reduction & Recycling Programs[4]	175,031
Total	**275,355**

[3] City of Santa Monica 2010 Annual Report to CalRecycle

[4] This figure was estimated based on projections of citywide generation, and includes waste prevention and recycling efforts undertaken by individual residents and businesses in the City.

3.3 Disposal

In 2011, 82,997 tons of materials were disposed in landfills or processed at waste-to-energy facilities. Commercial waste comprised approximately 50% of the disposed waste, MF residential waste comprised almost 25% of disposal, and SF residential waste made up 8%. The remaining disposal consisted of construction and demolition (C&D) debris from the commercial and self-haul sectors, and additional materials that were disposed by private companies or individuals. A summary of the disposed waste is provided in **Table 3-3.**

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Table 3-3. 2011 Disposal Summary (tons)

Source	Tons
SF Residential	6,976
MF Residential	20,692
Commercial	39,716
Self-Haul	6,310
C&D	1,399
Commercial	*215*
Self-Haul	*1,184*
Additional Disposal	7,905
Total	82,997

3.4 Discarded Materials Characterization

Understanding the types and quantities of materials that make up the discarded materials generated in the City is an important element of the Zero Waste Strategic Operations Plan. The data helps guide the development and selection of policies, programs and facilities, and to target specific material types and/or products. Since discarded materials vary by generator type, it is important to analyze the materials generated by each sector.

3.4.1 Methodology

For this study, the waste composition percentages contained in the California 2008 Statewide Waste Characterization Study were applied to the City's discarded materials quantities to identify the types and quantities of materials disposed by sector[5]. The specific data used for Santa Monica was taken from the "Overall Disposed Waste Composition: Southern Region." The study characterizes the waste into 10 categories and 62 material types. **Table 3-4** shows the overall waste characterization by material category for each sector. The detailed data for all material categories and types for each sector is included in **Appendix A**.

Table 3-4. Composition by Material Category and Generator Sector

Category	SF Residential	MF Residential	Commercial	Self-Haul
Paper	18.3%	22.2%	20.1%	5.1%
Glass	2.2%	2.9%	1.2%	0.4%
Metal	3.7%	3.4%	4.3%	4.4%
Electronics	0.4%	0.0%	0.1%	0.3%
Plastic	9.9%	7.0%	10.5%	5.7%
Other Organic	47.0%	41.8%	31.9%	10.1%
Inerts and Other	14.7%	17.7%	28.1%	62.9%
Household Hazardous Waste (HHW)	0.2%	0.2%	0.3%	0.1%
Special Waste	0.2%	3.8%	3.5%	11.0%
Mixed Residue	3.5%	1.1%	0.0%	0.0%

Source: CalRecycle, 2008 State-wide Waste Characterization Study, Southern Region

[5] Cascadia Consulting Group, for the California Integrated Waste Management Board (now "CalRecycle").

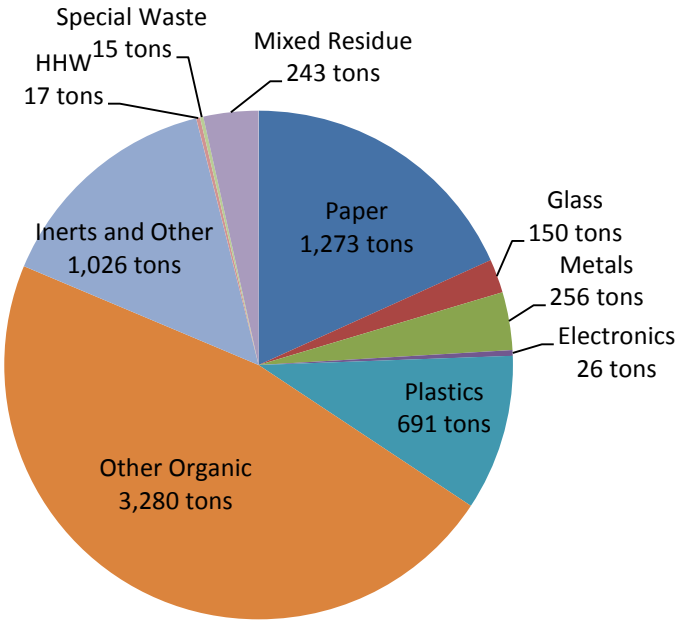
3.4.2 Single-Family Residential Waste Composition

Within the single-family residential sector, the following key findings are identified:

- **Other Organic** makes up 47% (3,280 tons) of the sector's total disposed wastestream. *Food waste* was the largest material type in this category, which made up 24% (1,687 tons) of the overall waste disposed within this sector; followed by *leaves and grass* at approximately 8% (540 tons); and *remainder/composite organics* at approximately 7% (484 tons).
- **Paper** makes up 18% (1,273 tons) of the wastestream; *remainder/composite paper* was the largest material type and made up approximately 6% (401 tons).
- **Inerts and Other** make up approximately 15% (1,026 tons) of the wastestream; *lumber* was the largest material type in this category, which made up almost 8% (543 tons) of the disposed wastestream.

A summary of the quantity of materials disposed in the SF residential sector is shown in **Exhibit 3-1**.

Exhibit 3-1. Single Family Residential Disposed Waste Composition



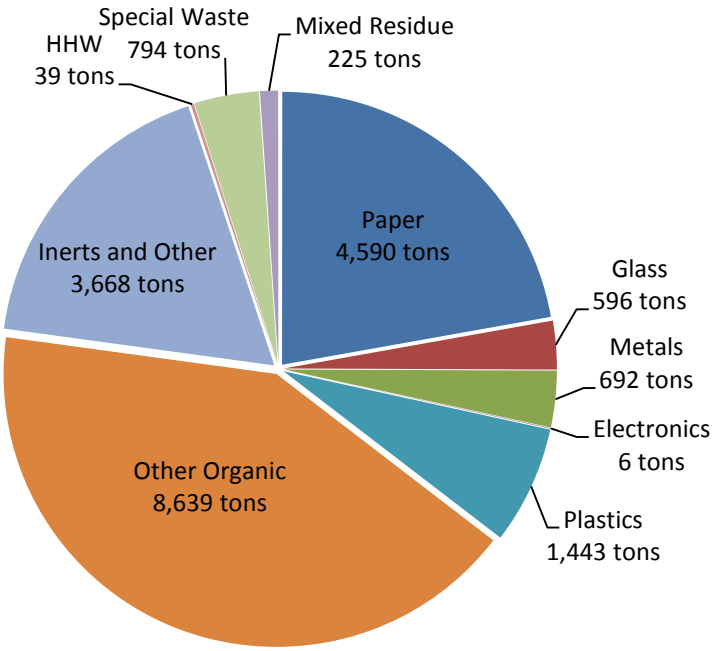
3.4.3 Multi-Family Residential

Within the multi-family residential sector, the following key findings are identified:

- **Other Organic** makes up the largest category of the materials, which was approximately 42% (8,639 tons) of the sector's total wastestream. Food waste was the largest material type in this category, which made up approximately 22% (4,460 tons) of the overall waste disposed within this sector; followed by *remainder/composite organics* at 9% (1,890 tons); and *carpet* which was 6% (1,300 tons).
- **Paper** makes up 22% (4,590 tons) of the wastestream; *uncoated corrugated cardboard, other miscellaneous paper*, and *remainder/composite paper* were the largest material types in this category, each made up approximately 5% (1,000 tons) of the wastestream.
- **Inerts and Other** make up approximately 18% (3,668 tons) of the wastestream; *lumber* was the largest material type in the category, which made up 12% (2,568 tons) of the total disposed wastestream.

A summary of the quantity of materials disposed in the MF residential sector is shown in **Exhibit 3-2.**

Exhibit 3-2. Multi-Family Residential Disposed Waste Composition



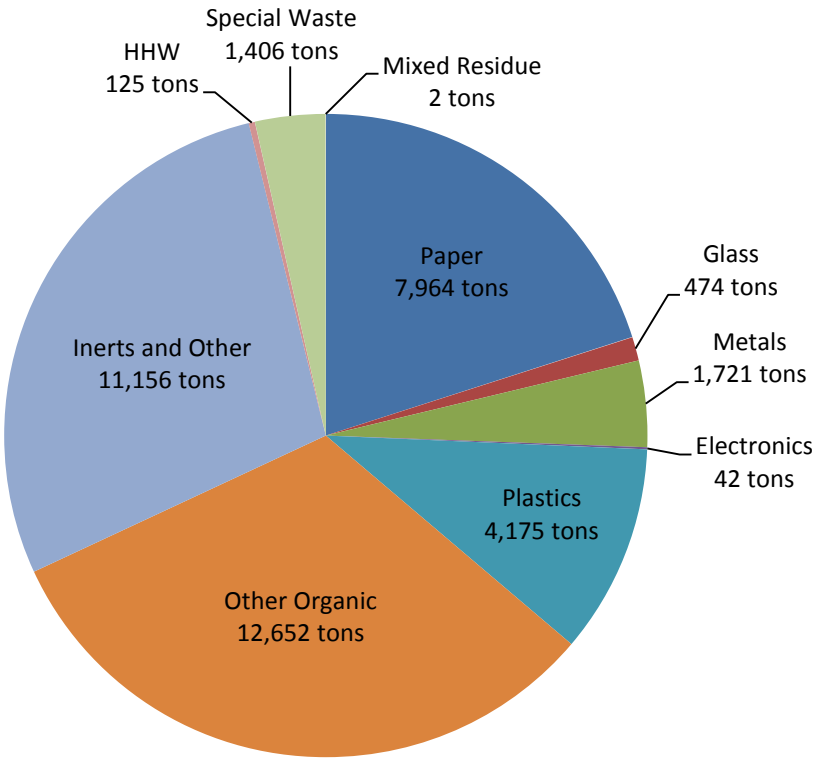
3.4.4 Commercial

Within the commercial sector, the following key findings are identified:

- **Other Organic** makes up the largest category of the materials, at 32% (12,652 tons) of the sector's disposed wastestream. *Food waste* is the largest material type in this category, which makes up15% (6,069 tons) of the overall waste disposed within this sector; followed by *carpet* at 5% (1,984 tons); and *prunings and trimmings* at 4% (1,674 tons).
- **Inerts and Other** make up 28% (11,156 tons) of the wastestream; *lumber* is the largest material type in the category, which makes up approximately 17% (6,535 tons).
- **Paper** made up 20% (7,964 tons) of the wastestream; *cardboard* was the largest material type and made up approximately 7.5% (2,965 tons) of the total disposed wastestream.

A summary of the quantity of materials disposed in the commercial sector is shown in **Exhibit 3-3.**

Exhibit 3-3. Commercial Disposed Waste composition- Percentages



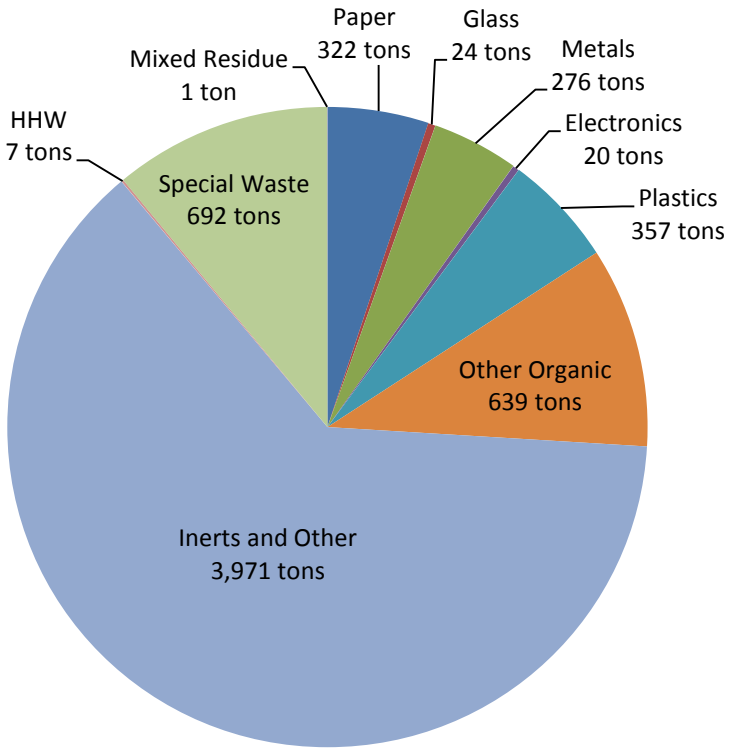
3.4.5 Self-Haul

Within the self-haul sector, the following key findings are identified:

- **Inerts and Other** makes up the largest category of materials, which is 63% (3,971 tons) of the sector's disposed wastestream.
- **Special Waste** makes up 11% (692 tons) of the wastestream, which consists entirely of *bulky items*.
- **Other Organic** makes up 10% (639 tons) of the wastestream; *carpet* is the largest material type and makes up approximately 4% (226 tons) of the total disposed wastestream.

A summary of the quantity of materials disposed in the self-haul sector is shown in **Exhibit 3-4**.

Exhibit 3-4. Self-Haul Disposed Waste Composition Percentages



3.5 Disposal Projections

3.5.1 Population Projections

Low and high population forecasts were provided in the City's 2010 Land Use and Circulation Element (LUCE)[6]. The forecasts used for the disposal projections are an average of the low and high population estimates from the LUCE. As shown in **Table 3-5**, the average 5-year percentage increase between 2010 and 2030 is 1.31%, and the 20 year cumulative growth is 5.23%. Refer to **Appendix B** for the reference LUCE data.

Table 3-5. Population Forecasts (2010-2030)

Source	2013	2014	2015	2020	2025	2030	20 year Cumulative % Change
Average Growth	91,578	91,820	92,063	93,275	94,488	95,700	
% change-5 yr.	-	-	1.33%	1.32%	1.30%	1.28%	5.23%

3.5.2 Future Disposal

The disposal projections for the City are calculated based on the population growth projections and waste composition data. Overall, it is anticipated the waste disposal will increase by over 2,650 tons between 2013 and 2030, which represents an increase of approximately 156 tons per year. A summary of the waste disposal tonnage projections for each sector is provided in **Table 3-6**. The commercial sector is expected to contribute an additional 75 tons per year to the disposal waste stream from 2013 to 2030. The multi-family residential sector disposal is expected to increase by 39 tons per year through 2030; the single-family residential sector disposal is expected to increase approximately 13 tons per year; and the self-haul sector by 12 tons per year. Utilizing the data in **Table 3-6**, the types and quantities of materials that can potentially be source reduced, recycled, and/or composted have been identified for each waste sector in the Zero Waste options in Section 4.

[6] City of Santa Monica Land Use and Circulation Element.

Table 3-6. Waste Disposal Projections (2013-2030), Tons

Source	2013	2014	2015	2020	2025	2030
SF Residential	6,994	7,013	7,032	7,050	7,143	7,236
MF Residential	20,747	20,802	20,857	20,912	21,187	21,463
Commercial	39,822	39,927	40,033	40,139	40,667	41,196
Self-Haul	6,326	6,343	6,360	6,377	6,461	6,545
C&D	1,403	1,406	1,410	1,414	1,433	1,451
Additional Disposal	7,926	7,947	7,968	7,989	8,094	8,199
Total*	**83,217**	**83,438**	**83,659**	**83,880**	**84,985**	**86,090**

* Values may not sum to total due to rounding

4.0 Zero Waste Options

4.1 Initial List of Potential Options

To meet its Zero Waste goal, the City will implement expanded and new policies, programs and infrastructure during the short, medium and long terms. For purposes of this plan, the short term is considered years 2013-2015, the medium term is years 2016-2022, and the long term is years 2023-2030.

Using the information on current policies, programs and facilities (Section 2), and the waste generation and composition of discarded materials (Section 3), zero waste options were identified for potential implementation in the single-family, multi-family, and commercial sectors. Policy, program, and facility options included opportunities to improve existing programs, as well as new programs for reducing generation and discarded materials and increasing diversion.

Initially, a list of 33 options was developed for review and evaluation. The options were categorized as follows:

Mandatory - Policies or programs that are compulsory (such as meeting a diversion requirement) or prohibit an activity (such as a disposal or use ban).

Collection - Programs for the collection of residential and commercial food scraps, recyclables, and bulky items.

Rate Setting – Revised fee structures to account for basic and additional services, for single-family, multi-family, and commercial sectors.

Upstream – Policies and programs to support re-design strategies to reduce the volume and toxicity of discarded products and materials, and promote low-impact or reduced consumption lifestyles.

Downstream – Policies and programs to address reuse, recycling and composting of end-of-life products and materials to ensure their highest and best use.

Facilities – Local and regional, existing and new, resource recovery facilities for processing recyclables, residuals, and other materials for beneficial use and energy recovery.

The list included three mandatory policies/program options, seven collection program options, two rate setting options, three upstream options, fourteen downstream options, and four facility options. A description of each option was included, along with the affected waste sector (single-family, multi-family, government); relevant guiding principles; implementation opportunities and obstacles, portion of discarded materials, potential capture rate by material type, implementation time frame, and examples from other jurisdictions, as available. A summary of the list of initial options is included in **Table 4-1**.

Table 4-1. Initial List of Zero Waste Options

	Title	Description	Affected Waste Sector
MANDATORY			
1.	Disposal bans	Restrict disposal of specific materials, such as plastic bottles and cardboard.	• S-F • M-F • Commercial
2.	C&D ordinance revision	Revise C&D ordinance to increase diversion requirement from 70% to 90%.	• S-F • M-F • Commercial
3.	Mandatory diversion rate	Require commercial, residential, and government sectors to meet specific diversion rates.	• S-F • M-F • Commercial
COLLECTION			
4.	Mandatory food scraps participation -commercial	Require food establishments to participate in the City's food scraps diversion program.	• Commercial
5.	Mandatory food scraps participation -residential	Require residents to participate in the City's food scraps diversion program.	• S-F • M-F
6.	Mandatory commercial recycling	Adopt an ordinance that expands on AB 341 to require all businesses to have recycling service.	• Commercial
7.	Mandatory recycling of new materials	Require recycling of carpets, textiles, mattresses, and other items currently not collected in the recycling bins.	• S-F
8.	Wet/Dry collection	Separate wet (food waste) and dry (non-recyclable materials) waste by different color bags to be separated at the MRF.	• M-F • Commercial
9.	Weekly organics collection and bi-weekly collection of trash and recyclables	Reduce the collection frequency of trash and recycling containers while maintaining organics collection at once per week.	• Phase 1: S-F • Phase 2: M-F
10.	Bulky item collection for reuse and recycling	Expand collection frequency with emphasis on reuse and recycling; partnership with reuse organizations	• M-F
RATE SETTING			
11.	Implement Integrated Waste Management Fee Structure	Revise fee structure to account for basic services and additional services Eliminate "free recycling and organics"	• S-F
12.	Implement Integrated Waste Management Fee Structure	Revise rate structure	• M-F • Commercial

	Title	Description	Affected Waste Sector
UPSTREAM POLICIES AND PROGRAMS			
13.	EPR for HHW, pharmaceuticals, and/or difficult to recycle items	Establish mandatory take back provisions for producers and/or businesses that sell batteries, fluorescent light bulbs, sharps and pharmaceuticals, or other difficult to recycle products. Difficult to recycle items can include Styrofoam, packaging materials, and toys.	• S-F • M-F • Commercial
14.	Packaging legislation	Support legislation that requires manufacturers to reduce packaging and to incorporate recycled content materials in all packaging.	• S-F • M-F • Commercial
15.	Behavior change marketing	Large scale, sustained, social marketing and media campaign	• S-F • M-F • Commercial
DOWNSTREAM POLICIES AND PROGRAMS			
16.	Expansion of the Single-Use Carry Out Bag ordinance	Establish a date to review the progress of the current ordinance and set a goal date to expand the program to all retailers and restaurants.	• Commercial
17.	Multi-Family recycling educational outreach	Require multi-family building managers to inform tenants about recycling resources upon move-in.	• M-F
18.	Move-in/Move-out program	Provides free excess waste pickup services for residents moving in/out of their homes	• M-F
19.	Self-haul waste origin reporting	Require more accurate reporting of self-haul waste origin at transfer and disposal sites	• S-F
20.	Regional Sustainability Collaboration Meetings	Host regular meetings with local jurisdictions to discuss opportunities, projects, and issues.	• S-F • M-F • Commercial
21.	Update Environmental Directory	Update the 2009 Environmental Directory.	• S-F • M-F • Commercial
22.	School recycling competitions	Hold competitions between schools to see who can divert the most materials from their waste stream within a fixed time frame. Prizes, money, trophies, etc. can be awarded to the school that collects the most.	• Commercial
23.	HHW collection bins at public events	Collect used batteries, cell phones, etc. at public events. Events can include farmer's markets, Santa Monica Festival, street fairs, etc.	• S-F • M-F

	Title	Description	Affected Waste Sector
24.	Expand items collected in the recycling bins	Materials could include clothing, diapers, chip bags, and other specific materials.	• S-F • M-F • Commercial • Government
25.	Centralized "garage sales"	Establish a program for residents to sell items in a centralized location, as opposed to the many garage sales typically held in the City.	• S-F • M-F
26.	Clothing drives	Hold clothing drives to collect clothing, shoes, blankets, etc. to donate to thrift stores, reuse centers, homeless shelters, etc.	• S-F • M-F • Commercial
27.	Business & restaurant food donation	Program to help businesses and restaurants find resources that will accept food donations.	• Commercial
28.	Diversion Recognition and Rewards Program	Reward residents for participating in recycling.	• M-F
29.	Product reuse/recycling grants	Offer grants and/or subsidies to individuals and businesses to develop businesses in the City that reuse or recycle materials.	• S-F • M-F • Commercial
FACILITIES			
30.	Transform residuals	Send all residual waste to a waste-to-energy facility.	• S-F • M-F • Commercial • Government
31.	MRF residual materials	Send residual materials to mixed waste MRF for further sorting prior to landfilling or transformation.	• S-F • M-F • Commercial
32.	Resource Recovery Park/Hard to Recycle Center	Facility that accepts materials that are difficult to recycle (e-waste, Styrofoam blocks, textiles, etc.) and identifies reuse/recycle opportunities; also works with manufacturers on take-back programs.	• S-F • M-F • Commercial • Government
33.	Alternative Technology Facility	Utilize regional facility for processing of residual waste into energy or other beneficial use.	• S-F • M-F • Commercial • Government

4.2 Recommended Strategies

The initial list of options was reviewed and evaluated by the City project team, and a final list of strategies was developed, incorporating the comments from all of the team members. A description of each of the recommended strategies is included below, and a summary table is included in **Appendix C**.

4.2.1 Mandatory

Mandatory requirements, new rules and ordinances can be the most effective strategies for achieving Zero Waste. The City will support these efforts through technical assistance, outreach and education, and reinforcement of desired behaviors. A description of these strategies is provided below.

4.2.1.1 Disposal Bans

To reduce discards that currently have recycling markets or uses, the City will consider product and material bans. Plastic water bottles, cardboard, yard trimmings and construction and demolition debris can be recycled, have available end-uses, and should not be disposed. These materials impact the collection system and take up space in landfills. The ban will start with government facilities, such as elimination of single-use water bottles at City facilities and events, and improved recycling of cardboard and landscaping debris.

4.2.1.2 C&D Ordinance Revision

Construction and demolition debris constitutes approximately 33% of the City's overall disposal. The existing ordinance requires all City-sponsored C&D projects, and all private C&D projects that are $50,000 or greater in value or 1,000 square feet or great to meet a minimum 70% diversion rate. This option will modify the existing Construction and Demolition Ordinance by increasing the diversion requirement from 70% to 90%. An amendment to the C&D ordinance will be required to implement the increased diversion requirements. The increase will be implemented in a phased approach, as follows:

- 75% in 2015
- 80% in 202
- 85% in 2025
- 90% in 2030

4.2.1.3 Mandatory Diversion Rate

The City will adopt an ordinance establishing diversion mandates for the single-family, multi-family, commercial, and government sectors. The diversion mandates will be implemented in a phased approach, as follows:

- 75% in 2015
- 80% in 202
- 85% in 2025
- 90% in 2030

The effort will be supported by education and outreach and enforcement through tagging of bins with recyclables and/or stop service notices.

4.2.1.4 Mandatory Recycling in Hotels/Motels

There are approximately 30 hotels/motels in the City, and an estimated 600,000 visitors stay in hotels/motels annually, with an average length of stay of three nights.[7] These visitors generate waste during their stay, and may not be aware of or have opportunities to recycle their waste. This ordinance will require all hotels and motels to implement a recycling program in guest rooms and common areas. The City will support the effort with education and outreach and technical assistance.

4.2.2 Collection

The Resource Recovery and Recycling Division is responsible for the collection of refuse, recycling, and yard trimmings from single-family, multi-family and commercial customers. Zero Waste collection initiatives that will be implemented by the Division include: mandatory food scraps participation for commercial and residential customers, mandatory commercial recycling, adding materials to the mandatory recycling of new materials, including mattresses, textiles, transitioning to bi-weekly collection of trash, wet/dry collection method, and bulky item collection. These initiatives are described below.

4.2.2.1 Require Commercial Food Scraps Collection

This policy represents a major shift from voluntary to mandatory participation in organics collection programs. It is intended to motivate all commercial generators within the City to separate organic materials from the waste they generate at their business, and place it in the appropriate organics collection container on a regular basis for collection. To effect this change, the City will need to develop and adopt a separate ordinance that requires waste generators to source separate organics from other waste, and set the organics out for collection.

The organics separation ordinance could be implemented in conjunction with or as a component of the mandatory commercial recycling ordinance (Option 7), or as a stand-alone ordinance. This ordinance will need to be carefully developed based on consideration of potential cost impacts on businesses and customers, and be consistent with City policy directives. The ordinance should be publicized adequately to inform all residents, businesses, and others of the intent and purpose of the ordinance.

This program requires availability of permitted compost facilities within the region that will receive, process, and market yard trimmings commingled with food scraps and other organic materials suitable for conversion to compost products. Before this program could be implemented on a citywide basis, the City will need to ensure that there is sufficient processing

[7] Santa Monica 2011Tourism and Economic Fiscal Impacts and Visitor Profile, Santa Monica Convention and Visitor's Bureau.

capacity in the region to handle the increased organics tonnages that will be collected through the expanded green bin program.

4.2.2.2 Require Residential Food Scraps Collection

This policy represents a major shift from voluntary to mandatory participation in organics collection programs. It is intended to motivate all residential generators within the City to separate organic materials from the waste they generate at their homes, and place it in the green collection container on a regular basis for collection. To effect this change, the City will need to develop and adopt a separate ordinance that requires waste generators to source separate organics from other waste, and set the organics out for collection.

The City will modify and expand its current food scraps collection program to include not only yard trimmings and food scraps, but also food-contaminated paper, and similar compostable materials. This program is designed to increase residential waste diversion by requiring residents to place food scraps and other organic materials in their green bins.

This program requires availability of permitted compost facilities within the region that will receive, process, and market yard trimmings commingled with food scraps and other organic materials suitable for conversion to compost products. Before this program could be implemented on a citywide basis, the City will need to ensure that there is sufficient processing capacity in the region to handle the increased organics tonnages that will be collected through the expanded green bin program.

4.2.2.3 Expand Mandatory Commercial Recycling

Assembly Bill 341 (adopted by the California legislature in 2011) established a statewide goal of 75 percent by 2020 and requires commercial generators (with four or more cubic yards per week of solid waste) and multi-family complexes (with five units or more) to recycle. However, it does not specify the materials to be collected or the level of recycling services received. Many communities have adopted ordinances specifying recycling requirements for multi-family residential and commercial customers.

This policy expands upon the requirements of AB 341, to mandatory participation in recycling collection programs. It is intended to motivate all commercial waste generators within the City to separate recyclable materials from the waste they generate at their business, and place it in the appropriate blue bin or recycling collection container on a regular basis for collection. To effect this change, the City will need to develop and adopt a “Mandatory Recycling” ordinance that requires waste generators to source separate recyclables from other waste, and set the recyclables out for collection.

The recycling ordinance will need to be carefully developed based on consideration of potential impacts to business and customers, consistent with City policy directives, and publicized adequately to inform all residents, businesses, and others of the intent and purpose of the ordinance.

4.2.2.4 Require Recycling of New Materials

This program allows the City to require the recycling of materials currently not collected in the blue bins from residential customers, including mattresses, carpet, and textiles. The materials could be added to the blue bin program, or alternatively, the City could collaborate with non-profit or other private organizations to increase the availability of collection or drop-off centers for these materials in the City.

Adding new materials to the recycling program will require the availability of viable long-term markets to ensure the materials are recovered to the maximum extent feasible and have a positive market value. Some items are more suited to recovery and processing, while others do not have viable markets or processors to accept them. The City will work with processors and representatives of the recycling industry to identify market opportunities in the Southern California region for various materials that could be recycled. Once appropriate program parameters are established, the City will need to provide appropriate public outreach so that residents can easily identify the acceptable items for recycling.

4.2.2.5 Weekly Organics and Recycling Collection; Bi-weekly Refuse Collection

The City collects refuse, recycling and organics (yard trimmings and food scraps) from residential customers on a weekly basis. This option will reduce the collection frequency of trash to every other week, while maintaining recycling and organics collection at once per week. The program will be implemented initially for single-family residences, and phased in later for multi-family residences. The City will support the transition with outreach and education to residents.

This program requires availability of permitted compost facilities within the region that will receive, process, and market yard trimmings commingled with food scraps and other organic materials suitable for conversion to compost products. Before this program could be implemented on a citywide basis, the City will need to ensure that there is sufficient processing capacity in the region to handle the increased organics tonnages that will be collected through the expanded green bin program.

It is anticipated the program will result in an increase in waste diversion, as organics comprise 47% of the single-family disposed waste stream, and 43% of the multi-family disposed wastestream. Reduced operations costs are also anticipated, based on results in other communities that have tested every other week refuse collection (e.g. Renton, Tacoma, and Seattle, Washington and Portland, Oregon). Other benefits of the program include fewer collection truck trips, which will reduce vehicle air, noise and green house gas emissions, and increased collection efficiency in terms of labor time, and maintenance.

4.2.2.6 Wet/Dry Collection

In a transition from the every other week collection, the City will re-route existing residential and commercial collections to keep “wet” discards (which include yard trimmings, food scraps and soiled paper, manure and other “putrescibles”) separate from “dry” discards, such as paper, glass, etc. Wet discards will be collected for processing through composting or anaerobic digestion, and dry products and materials will be reused, repaired or recycled. The dry waste routing and

processing takes advantage of the recyclables generated by residents and business, makes recycling less dependent on changing customer behavior and can dramatically increase diversion. It can also reduce disposal fees and increase revenues from the sale of recyclables due to the increase tons of materials recovered. It is anticipated the wet/dry collection will increase diversion by about 8% in the residential sector, and 6% in the commercial sector.

This program requires the availability of processing capacity in the region that can handle greater quantities of recyclables for separation and processing. This program requires availability of permitted facilities within the region that will receive, process, and market the organic materials. Before this program could be implemented on a citywide basis, the City will need to ensure that there is sufficient processing capacity in the region to handle the increased recyclables and organics that will be collected.

4.2.2.7 Bulky Item Collection; Move-in/Move-out Program

A significant source of trash is created when apartment dwellers move in and out of apartment buildings. Presently, the City provides bulky item collection Monday through Friday for a prearranged fee. The fee varies according to the size and weight of the item, and ranges from $50 for a small item to $250 or more for a major cleanup of debris and furniture pieces. Bulky items are limited to those large items that do not fit in a refuse container, such as: refrigerators, stoves, furniture and similar items. This service is available to both Residential and Commercial customers.

A new program will be implemented to provide excess waste pickup services for multi-family residents moving in/out of their homes. The purpose of the program is to reduce the frequency of illegal dumping in alleys and on curbs, and provide more convenient opportunity for residents to donate their materials for reuse and recycling. The City will collaborate with reuse entities (thrift stores, repair shops, and non-profits such as Goodwill Industries, Salvation Army, St. Joseph's Center, and American Cancer Society Discovery Shop) to repair, reuse, and resell appropriate bulky items that are currently being set out by residents for collection by the Division and landfilled.

The City recently entered into a service contract to establish Santa Monica SHARES, a program for the donation of items to non-profits and schools. The City will encourage residents to contact Santa Monica SHARES to donate useable items using the program's online service.

Information on this program will be conveyed through annual mailers to multi-family residences, through the City's web page and City events.

4.2.3 Rate Setting

Changes to the rate structure can have a significant effect in motivating customers to participate in new programs, and to account for basic services and additional services. The City presently follows a Pay-As-You-Throw (PAYT) structure for single-family refuse collection, based on the number and size of carts (either 68 or 95 gallons). Unlimited carts are provided for recyclables and yard trimmings.

For multi-family dwellings, a similar fee structure is established for refuse collection, based on the size, number, and frequency of collection of 68, 95 or 300 gallon carts, or 2, 3, or 4 cubic yard bins. In addition, a per unit charge is assessed for each unit in the complex. Commingled recyclables are collected in 300-gallon carts or 2, 3, or 4 cubic yard bins, and are either designated to specific complexes or are shared. There is no separate charge for recycling.

Commercial customers are also charged for refuse collection based on the size, number and frequency of collection (68, 95 or 300 gallon carts, or 2, 3, or 4 cubic yard bins), and are assessed street sweeping charges, based on the water meter size. There is no separate charge for recycling.

4.2.3.1 Implement Single-Family Integrated Waste Management Fee Structure

The intent of this option is to reduce the risk to the city of its existing disposal oriented rate structure, and more accurately account for basic services and additional services. The fee structure will also provide further incentives for customers to increase recycling and reduce disposal. Under this type of fee structure, a basic service fee will be assessed for each single-family residence, and will include one cart each for trash, recycling, and organics. An additional charge will be assessed for additional refuse carts, with a lower additional charge for recycling and organics carts.

The advantages of this type of fee structure are increased diversion and decrease disposal, and a potential reduction in collections costs for the City collections operations. Although residents may be resistant to a change in their fee structure, the option aims to communicate the value of the services to the customers. It is anticipated this type of fee structure will result in a 4% increase in diversion in the single-family sector.

4.2.3.2 Implement Multi-Family and Commercial Sector Integrated Waste Management Fee Structure

The goal of this option is to establish sufficient customer rate incentives for commercial and multi-family refuse customers to increase recycling and decrease refuse service. This policy will help to minimize the common industry practice of offering price incentives based on volume discounts to customers that subscribe for higher levels of refuse service, thereby creating pricing incentives for customers to shift to increased recycling services. It will also require full disclosure of the cost components of rates charged and eliminate the perception of “free recycling”.

Refuse rate component: Commercial customer rates will be modified to reflect a uniform “per cubic yard” rate for the whole range of bin or container sizes and collection frequency offered to customers. The amount of the cubic yard (unit) rate will be established to ensure that sufficient

revenues are generated to cover the City's costs. For example, the City would charge a rate of $100 for a one cubic-yard bin collected once per week, the rate would be $200 for the one cubic-yard bin collected two times per week, $400 for a four cubic-yard bin collected once per week, or $1,200 for a six cubic yard bin collected two times per week.

Recycling rate component: A recycling rate will be established under this fee structure, for example that is no higher than 75 percent of the refuse rate for service, as measured by the uniform "per cubic yard" rate for refuse service. If the City charges $100 for a one cubic yard bin of refuse, they would charge no more than $75 for a one cubic yard bin of commingled or source separated recyclables.

4.2.4 Upstream

4.2.4.1 Extended Producer Responsibility

Producer responsibility is a key strategy for achieving Zero Waste. Take-back requirements shift the costs of refuse from taxpayers to brand owners and producers. They also create a powerful economic incentive to redesign products and substantially reduce the use of toxic materials.

The City will consider the following problem materials for producer take-back:

- Materials that cannot be reused, recycled or composted and single-use items; and
- Regulated materials (e.g., pharmaceuticals, sharps, batteries, fluorescent bulbs).

The upstream extended producer responsibility (EPR) initiatives call for the City to take an active role in advocating for legislation that requires product manufacturers, retail establishments, wholesale distributors and other appropriate entities to take back certain products or packaging that currently are difficult to recycle, contain toxics or otherwise pose problems when they are discarded as waste. The City will work with various federal, state and regional agencies and community groups to ensure that effective take-back programs are enacted into law, thereby enhancing the City's goals to reduce the volume and toxicity of the materials entering the City's waste stream.

The following are the priorities the City will focus on under this program:

- Advocate for legislation making businesses responsible for their products that contain **toxics**, such as pharmaceuticals, fluorescent lights, household batteries, treated wood, and other materials banned from disposal statewide
- Advocate for legislation making businesses responsible for their products that are difficult to recycle materials, such as disposable diapers, composite materials, tires, white goods, durable goods, plastic, and food packaging.
- Advocate for legislation to incentivize manufacturers to use local reuse and recycling markets for the products they manufacture.

4.2.4.2 Packaging Legislation

The City's Office of Sustainability and the Environment is presently working with Green Cities California to identify opportunities for packaging legislation. The option will further the City's efforts of leadership by example and work towards regionalization of programs to address packaging. The goal of packaging legislation is to prevent or reduce the impact of packaging and packaging waste on the environment. Legislation will contain provisions not only for preventing packaging waste, but also the reuse, recovery and recycling of packaging waste.

Under this option, the City will advocate for packaging legislation making businesses responsible for their packages, including alternatives to expanded polystyrene containers, "peanuts" and "blocks" and plastic bags (statewide); and support for reusable shipping containers. The City will also support legislation to reduce packaging and to incorporate recycled content materials in all packaging.

4.2.4.3 Behavior Change Marketing

To significantly increase awareness of its existing and planned Zero Waste programs, the City will undertake a large scale media or social marketing campaign. The City will work closely with electronic and print media to encourage their coverage of the City's goals, plans, and project implementation, and to challenge them to help engage the public in creative new ways. Funding programs on an on-going basis (over multiple five-year campaign periods) to educate target audiences about the new rules and changes is an important part of implementing Zero Waste. This program will greatly enhance public awareness about where to reuse, recycle, and compost materials to keep them out of landfills, and encourage residents, businesses, workers, and visitors to fully participate in achieving a Zero Waste future.

A community-based social marketing program will be implemented to help change the culture and waste-related behavior in the City, with different messages targeted to different demographics using a wide assortment of tools. The City will work closely with electronic and print media to encourage their coverage of the City's goals, plans, and project implementation, and to challenge them to help engage the public in creative new ways. This program will greatly enhance public awareness about where to reuse, recycle, and compost materials to keep them out of landfills, and encourage residents, businesses, workers, and visitors to fully participate in achieving a Zero Waste future.

Social marketing campaigns involve the systematic application of marketing alongside other techniques and tools to achieve specific social behavioral goals. Some of the best practices that have been developed include starting from a detailed understanding of the needs, desires and attitudes of the individuals concerned, researching the underlying reasons for certain behaviors and developing an "offer" that will be attractive given existing needs, values and other pressures such as peer group influences.

There is also an important role for civic leaders and elected officials, to lead by example as exemplars of the new social norms. This requires clear and consistent messages from the City Council and City management and staff. Strategies for changing the norms of behavior include:

- Leaders who visibly encourage and reward successful innovation;

- Focusing financial resources on innovation, including both public and private sources;
- Using incubator models for testing and piloting innovations; and
- Establishing institutions to link small scale enterprises to larger organizations such as business and legislative bodies.

4.2.5 Downstream

4.2.5.1 Expand Single-use Carry Out Bag and Disposable Container Ordinance

The City's existing ordinances prohibit the distribution of single-use carry out petroleum and bio-based plastic bags by retail establishments; grocery, convenience and liquor stores; mini-marts; pharmacies; and at City events. The City also prohibits the distribution of disposable food service containers made of nonrecyclable plastic or expanded polystyrene foam from all food providers and at City events. The ban applies to single-use disposable containers intended for serving or transporting prepared, ready-to-eat food or beverages.

This policy will establish a date to review the progress of the existing ordinances, and to set a goal date to expand the program to all retailers and restaurants. Expansion of the bans will further help to reduce the amount of plastic that ends up on the City's beaches, reduce materials that go to the landfill, and reduce the amount of natural resources used to manufacture and transport the disposable products.

4.2.5.2 Multi-family Recycling Educational Outreach

This program will provide enhanced technical assistance to owners and managers of multi-family complexes in order to encourage them to initiate or expand recycling and waste reduction practices at their complexes, and to make tenants aware of the move-in/move-out program. Technical assistance will include conducting on-site waste assessments to identify target materials for recycling and waste reduction, providing information on arranging for recycling services, and distributing appropriate outreach materials describing best practices for setting up or expanding recycling services. Technical assistance will help to minimize or overcome various obstacles to recycling faced by multi-family complexes (space constraints, labor and sorting requirements, lack of information or training, etc.). Technical assistance provided by the City will encourage more complexes to set up an effective recycling program that is suited to the complex's site.

4.2.5.3 Self-haul Waste Origin Reporting

Misreported waste origin continues to be an ongoing problem for the City and throughout the region. The problem can impact a jurisdiction's ability to accurately monitor and report disposal, and to plan for new policies and programs. In Santa Monica, it is estimated that over 10,000 tons per year of waste is misallocated to the City. The intent of this option is to establish regional cooperation between cities, counties, and facilities that are responsible for reporting the origin of waste. Through regional cooperation, a more efficient process should be established to track misreported waste, and reduce the time and resources spent by individual jurisdictions on this

process. This option will be closely tied with the option for Regional Sustainability Collaboration described below.

4.2.5.4 Regional Sustainability Collaboration

There are several approaches to regional cooperation, including the formation of a regional Zero Waste Task Force and the development of inter-agency or interlocal agreements between neighboring communities. The approach will form the basis for establishing regional Zero Waste goals throughout Southern California. The City will support regional efforts in Zero Waste planning and will engage in dialogues with other cities to identify opportunities for regional coordination and to undertake project-specific regional opportunities. The City will explore possibilities through this process of developing regional Resource Recovery Parks, regional reuse, recycling and composting, and conversion technology infrastructure, and regional funding for Zero Waste.

4.2.5.5 Environmental Directory On-line version

The City provides an Environmental Directory booklet that includes a list of local resources for topics that range from energy efficiency programs to environmentally preferred purchasing. The booklet also includes resources for refuse, recycling, composting, and hazardous waste. The Directory was last updated in 2009, and has historically been provided in print form only. This option will create an on-line only version of the Directory, eliminating the print version entirely. The on-line version will include new and/or updated resources, and will be made available and searchable on the City's website.

4.2.5.6 Rewards Program

The City's Sustainable Quality Awards (SQA) was developed to identify and recognize businesses in the City that are successfully incorporating sustainable practices into their operations. An annual event promotes the efforts of local businesses that have made significant achievements in the areas of sustainable economic development, social responsibility, and stewardship of the natural environment. This option will expand the City's recognition of businesses to reward residents and businesses for developing programs in the City for reusing, repurposing, reducing, and recycling of waste. As part of this option, the City will initiate school waste reduction competitions, with rewards in the form of prizes, money, grants, etc. The City will coordinate with other civic organizations, such as the Chamber of Commerce, to identify grants and other funding opportunities. This intent of this option is to encourage community involvement in zero waste solutions, including individuals, business, schools and other institutions. The program may stimulate local job growth and markets for recovered materials, creating a new reuse industry in the City.

4.2.5.7 Household Hazardous Waste (HHW) Collection at Public Events

Presently, the RRR Division offers assistance to help organizations implement Zero Waste goals at their events. This program will entail placement and servicing of HHW collection containers at public events, and City events such as the Santa Monica Festival. This program will provide convenient opportunities for the general public to safely dispose of used batteries, mobile phones, and other HHW items.

4.2.5.8 Expand Items Collected In Recycling Cart

This program allows the RRR Division the ability to add new materials to the existing list of materials that can be placed in the recycling cart for collection by the City, including textile and other items. Adding new materials to the recycling cart will require that the City's contracted recycling processor identify viable long-term markets to ensure that the materials are recovered to the maximum extent feasible and have a positive market value. The City will initiate discussions with its processor to identify market opportunities in the Southern California region for new materials that could be recycled. Once opportunities are identified and new materials are selected, the City will need to provide appropriate public outreach to residents and businesses. Adding new materials will reduce the quantity of materials being disposed, create a convenient program to donate clothing and other materials for reuse and/or recycling, and provide the ability to divert specific hard-to-recycle items.

4.2.5.9 Centralized Garage Sales

The City presently schedules an annual citywide yard sale to promote waste reuse and repurposing. In addition, numerous yard sales are help privately throughout the City on a regular basis. The City has been considering and assessing the advantages and disadvantages of the citywide garage sales. This option will establish a program for residents to sell items in a centralized location, in lieu of the many garage sales that are typically held in the City. The program will be coordinated with the citywide yard sale event, and will be free and open to residents only. It is the intent of the program to encourage more residents to resell and reuse items before discarding them, and provide residents with limited space an opportunity to sell their items.

4.2.5.10 Business and Restaurant Food Donation

The many large businesses and restaurants in the City generate uneaten prepared foods that are typically disposed. Food comprises approximately 15% of the commercial waste stream. This program will help businesses and restaurants to find resources that will accept food donations. This program will reduce the amount of food scraps that is landfilled, and provide a source of food for persons in need. The City will publish resources in the environmental directory for businesses wishing to donate food, and will provide information on the program on its website.

4.2.6 Facilities

4.2.6.1 Regional Resource Recovery Center

Resource Recovery Centers (RRCs) can be small centers for drop-off of hard to recycle items, including mattresses, large blocks of Styrofoam, and textiles, or much larger facilities that include a reuse yard for building materials, and provide repair and refurbishment for reusable bulk items and other reusable materials delivered by the public. They can also handle HHW materials, brush, and other recoverable materials. The materials typically are brought in self-hauled loads by residents or businesses to a solid waste facility. Thus RRCs are usually developed at landfills or transfer facilities. Local facilities can redesign their sites to provide for a separate drop-off and staging area where the public can drop off their recoverable materials before proceeding to the designated tipping area. At some facilities, the diversion activity takes place after the fee gate and the public is required to separate materials for recycling and reuse. If users decide to proceed directly to the disposal area, they are required to pay an extra fee. Reduced tipping fees at RRCs can provide a significant incentive to users. Most provide drop-off or buyback options for revenue-generating recyclables. Some charge lower rates for certain items (e.g., yard trimmings, clean fill).

Diversion levels and costs at RRCs can vary widely depending on the extent and type of the diversion activities. These activities can include public area drop-off for traditional recyclables (cans, bottles, and paper), salvaging materials from the tipping area at a transfer station or landfill (large pieces of metal, cardboard or wood), diverting reusable items (furniture, building materials, and household goods), and providing retail sales on site. In some locations, RRCs could be combined in “clusters” of reusable, recyclables, compostable, and special discards (including regulated materials and C&D). Each of the clusters would utilize different approaches to collecting and processing, requiring different trucks, equipment and handling. The cluster approach requires that the combined categories of materials be sorted at other locations. Some activities may be co-located at a landfill, but others may be off-site. The City may support these efforts through helping apply for grants, recruiting businesses and industries to use materials generated by Zero Waste programs, and promoting the use of the RRC.

4.2.6.2 Alternative Technology Facility

Based on Zero Waste research some type of future alternative technology is anticipated to be developed that will help meet Zero Waste goals. A number of emerging technologies are currently under consideration or in development with the potential to provide substantial increases in diversion rates. Examples of these emerging technologies include thermal and biological processes, including anaerobic digestion, gasification, and pyrolysis. In addition, although mixed material processing facilities are currently in operation throughout the U.S., developments and improvements in this technology over time should render increased efficiencies, better economical feasibility and higher diversion processing capabilities.

A number of jurisdictions in Southern California are evaluating the feasibility of developing alternative technology facilities for processing the residual waste into energy or other beneficial use. The County of Los Angeles and cities of Los Angeles and Glendale are some of the local

jurisdictions that are continuing to evaluate the potential for implementation of such a facility. It is reasonable to predict that within the planning horizon of the Zero Waste Strategic Operations Plan, some current emerging technologies will be commercially viable to support the City in achieving its Zero Waste goals. The City will monitor and support the development of a regional alternative technology facility for the processing of the residual portion of the waste stream into waste or other beneficial use.

4.2.6.3 Residual Processing

A portion of the City's waste is presently transformed into energy at one of two permitted waste to energy facilities in Southern California. The City's Zero Waste Strategic Plan includes policies and programs to reduce, reuse, recycle, and compost to the greatest extent possible the maximum amount of materials for beneficial reuse. It is estimated the City can achieve a 93% diversion rate with the implementation of the policies, programs and infrastructure described in the previous option. However, in the future, the City may continue to utilize transformation of residuals to achieve 95% diversion by 2030.

5.0 Diversion and Greenhouse Gas Emissions Reduction Estimates

5.1 Diversion Estimates

Diversion estimates were prepared to identify the waste disposal reduction potential of each policy and program. The diversion estimates are based on comparable policies and programs implemented in other jurisdictions, research, and educated estimates. **Table 5-1** summarizes the diversion by implementation phase. As indicated, based on the City's 2012 diversion rate of 77%, it is estimated the City can achieve 92% diversion by 2030 through implementation of all the policies, programs and facilities identified; and 95% diversion with residual waste processing.

*Table 5-1. **Diversion Estimates by Implementation Phase***

Phase/Year	Existing (2012)	Short Term (2013-2015)	Short to Medium Term (2013-2020)	Medium Term (2021-2025)	Medium to Long Term (2021-2030)	Long Term (2026-2030)	2030 (with Residual Processing)
Estimated Diversion	77%	80%	84%	85%	88%	**92%**	**95%**

A breakdown of the zero waste plan diversion increases by sector and phase is included in **Table 5-2.** As indicated, options to be implemented in the commercial sector will have the greatest impact on increasing diversion, followed by the multi-family and single-family sector programs. The commercial sector programs with the greatest diversion potential include mandatory food scraps recycling, expanding the types of recycled materials collected, wet/dry collection, increasing the C&D ordinance diversion requirement, and behavior change marketing. For the residential sector, the options with the greatest diversion potential include mandatory food scraps recycling, mandatory diversion rate, behavior change marketing, wet/dry collection, In the multi-family sector, the options with the highest diversion potential include implementing an integrated waste management fee structure, behavior change marketing, mandatory food scraps recycling, mandatory diversion rate, wet/dry collection, and converting to bi-weekly refuse collection.

The detailed calculations used for estimating the diversion potential of each of the policies, programs, and facilities considered by the City are included in **Appendix D.** The diversion estimates are presented in the presumed order of implementation. Each one builds on the program or policy preceding it, and assumes the available waste was reduced by the previous program. Several policies will require new ordinances and regulations which will require City Council action and time to implement. Zero waste is a design framework for reducing generation of waste and maximizing diversion, not a strict tonnage goal. By implementing the proposed policies, programs and facilities, the City will be striving towards zero waste, but there will still be some residual wastes that will be disposed.

*Table 5-2. **Zero Waste Strategic Plan Diversion Estimates***

	Estimated Diversion Increase (tons)						Total Diversion Rate Increase (%)	Residual Processing Diversion (tons)	Total Diversion Increase with Residual Processing (tons)	Diversion Rate Increase with Residual Processing (%)
	Short Term (2013-2015)	Short to Medium Term (2013-2020)	Medium Term (2021-2025)	Medium to Long Term (2021-2030)	Long Term (2026-2030)	Total Diversion Increase (2013-2030)				
SF Residential	1,819	1,249	130	926	736	**4,860**	**1.3%**	1,248	6,107	**1.7%**
MF Residential	4,032	4,686	1,244	3,098	1,970	**15,031**	**4.1%**	3,377	18,408	**5.0%**
Commercial	5,410	5,090	4,669	6,168	10,490	**31,826**	**8.7%**	4,919	36,745	**10.0%**
Self-Haul	0	2,543	0	0	1,711	**4,254**	**1.2%**	0	4,254	**1.2%**
C&D	0	0	0	0	976	**976**	**0.3%**	0	976	**0.3%**
Diversion (tons)	**11,261**	**13,568**	**6,043**	**10,192**	**15,883**	**56,946**		**9,543**	**66,490**	
Diversion (%)	**3.1%**	**3.7%**	**1.6%**	**2.8%**	**4.3%**		**15.6%**			**18.2%**

5.2 Greenhouse Gas Emissions Reduction Estimates

The U.S. Environmental Protection Agency (U.S. EPA) developed the Waste Reduction Model (WARM) to help planners and organizations track and voluntarily report greenhouse gas emissions reductions from several different waste management practices. WARM calculates and totals Greenhouse Gas (GHG) emissions for baseline and alternative waste management practices—source reduction, recycling, composting, and landfilling. The model calculates emissions in metric tons of carbon equivalent (MTCE), metric tons of carbon dioxide equivalent (MTCO2E), and energy units (million BTU) across a wide range of material types commonly found in municipal solid waste.

The WARM was used to estimate the amount of GHG emissions that can potentially be reduced through implementation of the programs and policies outlined in the Zero Waste Strategic Operations Plan. The GHG emissions reductions are calculated based on the program implementation timeline (i.e. short term, short-to-medium term, medium term, etc.). The long term programs include residual processing, modeled as combustion (waste-to-energy) in WARM, therefore the GHG emissions reduction shown is the resulting net effect.

Based on the estimated diversion rates in the Zero Waste Strategic Operations Plan, the City's overall GHG emissions will be reduced by 17,629 MTCE by 2030. The GHG emissions reductions are shown in Table 5-3. The model assumptions and results are included in **Appendix E.**

*Table 5-3. **Zero Waste Strategic Plan Greenhouse Gas Emissions Estimates (MTCE)***

Source	Short Term	Short to Med Term	Med Term	Med to Long Term	Long Term	Residual Processing	Total
SF Residential	(517)	(255)	(58)	(307)	(262)	98	(1,301)
MF Residential	(1,482)	(1,438)	(556)	(1,094)	(920)	189	(5,301)
Commercial	(1,935)	(1,973)	(1,249)	(2,489)	(3,037)	545	(10,138)
Self-Haul	-	(467)	-	-	(284)	-	(751)
C&D	-	-	-	-	(138)	-	(138)
TOTAL	(3,934)	(4,133)	(1,863)	(3,890)	(4,641)	832	(17,629)

Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase

6.0 Financial and Cost Analysis

6.1 Financial Analysis

The first steps in determining the selected zero waste programs' costs and rate impacts involved developing an understanding of the Division's operational and capital costs for existing programs and establishing a baseline. In order to develop the baseline data included in **Tables 6-1 through 6-4**, data was gathered from the City on solid waste related revenue and expense data, and shared cost allocation methodologies. (**Appendix F**). The expense data provided by the City was categorized within specific cost categories for Direct Costs (the direct labor, equipment and other costs required for the collection activity), Material Handling Costs (the transfer, processing, and disposal costs associated with the post-collection handling of the collected material), and Administration and Overhead (the management, administrative, and other indirect overhead costs of the Division that is allocated back to each line of service).

Table 6-1. *Solid Waste Program Baseline Analysis – All Sectors*

	Total By Sector			
	Single Family	**Multi-Family**	**Commercial**	**Total**
Labor	$ 1,242,120	$ 1,949,142	$ 2,737,962	$ 5,929,224
Equipment	$ 1,195,730	$ 1,582,001	$ 1,980,410	$ 4,758,141
Other	$ 504,405	$ 658,729	$ 756,919	$ 1,920,053
Subtotal Direct Costs	**$ 2,942,255**	**$ 4,189,872**	**$ 5,475,291**	**$ 12,607,418**
Direct Transfer	$ 221,301	$ 402,488	$ 747,794	$ 1,371,583
Allocated Transfer	$ 53,053	$ 84,320	$ 160,140	$ 297,513
Processing	$ 230,303	$ (118,343)	$ 43,208	$ 155,168
Disposal	$ 428,105	$ 1,400,182	$ 2,599,087	$ 4,427,374
Subtotal Material Handling	**$ 932,762**	**$ 1,768,647**	**$ 3,550,229**	**$ 6,251,638**
Subtotal Operations Costs	**$ 3,875,017**	**$ 5,958,519**	**$ 9,025,520**	**$ 18,859,056**
Admin & Overhead	**$ 312,564**	**$ 445,993**	**$ 590,841**	**$ 1,349,398**
Total Program Costs	**$ 4,187,581**	**$ 6,404,512**	**$ 9,616,361**	**$ 20,208,454**
Total Program Revenue	**$ (2,924,978)**	**$ (7,802,736)**	**$ (8,855,434)**	**$ (19,583,148)**
(Surplus)/Shortfall	***$ 1,262,603***	***$ (1,398,224)***	***$ 760,927***	***$ 625,306***

Table 6-2. Solid Waste Program Baseline Analysis – Single Family Sector

	Single Family			
	Solid Waste	Recycling	Green Waste	Total
Labor	$ 363,443	$ 402,854	$ 475,823	$ 1,242,120
Equipment	$ 349,026	$ 396,323	$ 450,381	$ 1,195,730
Other	$ 70,041	$ 346,561	$ 87,803	$ 504,405
Subtotal Direct Costs	**$ 782,510**	**$ 1,145,738**	**$ 1,014,007**	**$ 2,942,255**
Direct Transfer	$ 117,399	$ 4,079	$ 99,823	$ 221,301
Allocated Transfer	$ 27,610	$ -	$ 25,443	$ 53,053
Processing	$ -	$ (134,934)	$ 365,237	$ 230,303
Disposal	$ 428,105	$ -	$ -	$ 428,105
Subtotal Material Handling	**$ 573,114**	**$ (130,855)**	**$ 490,503**	**$ 932,762**
Subtotal Operations Costs	**$ 1,355,624**	**$ 1,014,883**	**$ 1,504,510**	**$ 3,875,017**
Admin & Overhead	**$ 78,841**	**$ 131,558**	**$ 102,165**	**$ 312,564**
Total Program Costs	**$ 1,434,465**	**$ 1,146,441**	**$ 1,606,675**	**$ 4,187,581**
Total Program Revenue	**$ (2,924,978)**	**$ -**	**$ -**	**$ (2,924,978)**
(Surplus)/Shortfall	***$ (1,490,513)***	***$ 1,146,441***	***$ 1,606,675***	***$ 1,262,603***

Table 6-3. Solid Waste Program Baseline Analysis – Multi-family Sector

	Multi-Family			
	Solid Waste	Recycling	Green Waste	Total
Labor	$ 1,327,221	$ 558,006	$ 63,915	$ 1,949,142
Equipment	$ 1,052,983	$ 480,484	$ 48,534	$ 1,582,001
Other	$ 242,340	$ 405,506	$ 10,883	$ 658,729
Subtotal Direct Costs	**$ 2,622,544**	**$ 1,443,996**	**$ 123,332**	**$ 4,189,872**
Direct Transfer	$ 387,629	$ 5,195	$ 9,664	$ 402,488
Allocated Transfer	$ 81,894	$ -	$ 2,426	$ 84,320
Processing	$ -	$ (153,261)	$ 34,918	$ (118,343)
Disposal	$ 1,400,182	$ -	$ -	$ 1,400,182
Subtotal Material Handling	**$ 1,869,705**	**$ (148,066)**	**$ 47,008**	**$ 1,768,647**
Subtotal Operations Costs	**$ 4,492,249**	**$ 1,295,930**	**$ 170,340**	**$ 5,958,519**
Admin & Overhead	**$ 264,232**	**$ 169,335**	**$ 12,426**	**$ 445,993**
Total Program Costs	**$ 4,756,481**	**$ 1,465,265**	**$ 182,766**	**$ 6,404,512**
Total Program Revenue	**$ (7,802,736)**	**$ -**	**$ -**	**$ (7,802,736)**
(Surplus)/Shortfall	***$ (3,046,255)***	***$ 1,465,265***	***$ 182,766***	***$ (1,398,224)***

Table 6-4. Solid Waste Program Baseline Analysis – Commercial Sector

	Commercial			
	Solid Waste	Recycling	Organics	Total
Labor	$ 1,918,374	$ 649,706	$ 169,882	$ 2,737,962
Equipment	$ 1,392,244	$ 451,977	$ 136,189	$ 1,980,410
Other	$ 354,760	$ 377,236	$ 24,923	$ 756,919
Subtotal Direct Costs	**$ 3,665,378**	**$ 1,478,919**	**$ 330,994**	**$ 5,475,291**
Direct Transfer	$ 721,546	$ 4,812	$ 21,436	$ 747,794
Allocated Transfer	$ 151,187	$ -	$ 8,953	$ 160,140
Processing	$ -	$ (139,058)	$ 182,266	$ 43,208
Disposal	$ 2,599,087	$ -	$ -	$ 2,599,087
Subtotal Material Handling	**$ 3,471,820**	**$ (134,246)**	**$ 212,655**	**$ 3,550,229**
Subtotal Operations Costs	**$ 7,137,198**	**$ 1,344,673**	**$ 543,649**	**$ 9,025,520**
Admin & Overhead	**$ 369,302**	**$ 188,190**	**$ 33,349**	**$ 590,841**
Total Program Costs	**$ 7,506,500**	**$ 1,532,863**	**$ 576,998**	**$ 9,616,361**
Total Program Revenue	**$ (8,855,434)**	**$ -**	**$ -**	**$ (8,855,434)**
(Surplus)/Shortfall	***$ (1,348,934)***	***$ 1,532,863***	***$ 576,998***	***$ 760,927***

During the analysis of the solid waste revenues and expenditures, an estimated revenue shortfall of $3.5 million dollars was identified, based on fiscal year 2012/2013 budget data provided by the City. We understand the City has developed a plan to bring the expenditures and revenues into balance over the next five years by extending the replacement period of trucks, containers and other capital improvements, and reducing the amount of waste processed through transformation facilities.

6.2 Cost Analysis

The cost analysis is designed to assist the City in making planning-level decisions regarding the selection of appropriate programs for the Zero Waste Plan. The analysis considers two quantitative factors:

- Diversion potential (measured by tons per year); and,
- Cost effectiveness (measured by the cost per diverted ton).

The estimates presented herein are not intended to calculate the precise results of each program. The actual costs of the program will be impacted by general economic conditions during the implementation period, management decisions regarding the operations of each program, and customer behaviors that are too numerous to model. Instead, we estimated a reasonable range for each of these measurements based on data provided by the City, data gathered from other companies and communities who are operating similar programs, and in-house data from other

zero waste/high-diversion engagements. These planning-level estimates are intended to provide enough information for the City to evaluate the relative merits of each program in the development of the Zero Waste Plan.

For each selected program, the incremental change in the annual cost for the program and the cost per ton diverted was estimated. The cost estimates provide a reasonable basis for understanding the potential cost impacts and how costs between programs compare to one another.

Cost estimates are not inclusive of any indirect implementation cost associated with the development of implementation plans, general plan amendments, conduct of feasibility studies, or the process of procuring and negotiating the contracts associated with each program (if necessary). These are anticipated to be one-time costs incurred by the City. More precise cost estimates can be prepared during the implementation planning phase once decisions are made on issues such as program scope, facility operations, education and outreach, roles and responsibilities, and other factors.

Table 6-5 presents the incremental annual change in program costs, the estimated tons diverted by program, and the cost/(savings) per diverted ton for each of the selected programs. Details of the planning level cost estimate calculations for each program are included in **Appendix G.**

Table 6-5. *Planning-Level Cost Estimates for Selected Zero Waste Programs*

PROGRAM	PHASE	INCREMENTAL ANNUAL PROGRAM COST/(SAVINGS)		PROGRAM TONS DIVERTED	INCREMENTAL ANNUAL PROGRAM COST/(SAVINGS) PER TON		
Residential		**Low**	**High**		**Low**	**Midpoint**	**High**
Food Scraps Collection	Short	$ 90,346	$ 132,755	1,124	$ 80	$ 99	$ 118
Behavior Change Marketing	Short	$ 28,582	$ 60,418	410	$ 70	$ 109	$ 147
Weekly Organics and Recyclables Collection; Bi-Weekly Refuse Collection	Short-Med	$ (157,402)	$ (137,671)	504	$ (312)	$ (292)	$ (273)
Wet/Dry Collection	Med-Long	$ (295,135)	$ (252,622)	562	$ (525)	$ (487)	$ (449)
Residuals Processing	Long	$ 10,716	$ 13,211	1,248	$ 9	$ 10	$ 11
Multi-Family		**Low**	**High**		**Low**	**Midpoint**	**High**
Behavior Change Marketing	Short	$ 211,746	$ 375,609	1,549	$ 137	$ 190	$ 242
Bulky Item Collection; Move-In/Move-Out Program	Short-Med	$ 160,896	$ 230,483	176	$ 916	$ 1,114	$ 1,312
Wet/Dry Collection	Med-Long	$ 6,802	$ 20,362	1,615	$ 4	$ 8	$ 13
Residuals Processing	Long	$ 29,006	$ 35,760	3,377	$ 9	$ 10	$ 11
Commercial		**Low**	**High**		**Low**	**Midpoint**	**High**
Behavior Change Marketing	Short	$ (101,132)	$ (44,065)	2,831	$ (36)	$ (26)	$ (16)
Food Scraps Collection	Medium	$ 456,964	$ 615,261	3,975	$ 115	$ 135	$ 155
Wet/Dry Collection	Med-Long	$ (210,325)	$ (185,492)	2,620	$ (80)	$ (76)	$ (71)
Expansion of Mandatory Commercial Recycling	Long	$ 214,645	$ 355,382	906	$ 237	$ 315	$ 392
Residuals Processing	Long	$ 41,976	$ 51,750	4,887	$ 9	$ 10	$ 11

6.3 Customer Rate Impact Analysis

Using the cost analysis data, the percentage impact on existing customer rates for each of the selected program options was calculated. The rate impacts for each selected program are cumulative. The rate impacts are based on fiscal year 2013 budget data provided by the City, and cumulative future tonnage diversion assumptions developed by HDR. The "Low" and "High" rate impacts are illustrated in **Table 6-6**. Details of the rate impact calculations for each program are included in **Appendix G.**

Table 6-6. Customer Rate Impacts for Selected Zero Waste Programs

PROGRAM	PHASE	RATE IMPACT	
Residential		**Low**	**High**
Food Scraps Collection	Short	3.1%	4.5%
Behavior Change Marketing	Short	1.0%	2.1%
Weekly Organics and Recyclables Collection; Bi-Weekly Refuse Collection	Short-Med	-5.4%	-4.7%
Wet/Dry Collection	Med-Long	-10.1%	-8.6%
Residuals Processing	Long	0.4%	0.5%
Multi-Family		**Low**	**High**
Behavior Change Marketing	Short	2.8%	5.0%
Bulky Item Collection; Move-In/Move-Out Program	Short-Med	2.1%	3.1%
Wet/Dry Collection	Med-Long	0.1%	0.3%
Residuals Processing	Long	0.4%	0.5%
Commercial		**Low**	**High**
Behavior Change Marketing	Short	-1.2%	-0.5%
Food Scraps Collection	Medium	5.2%	7.0%
Wet/Dry Collection	Med-Long	-2.4%	-2.1%
Expansion of Mandatory Commercial Recycling	Long	2.5%	4.1%
Residuals Processing	Long	0.5%	0.6%

6.4 Program Impact Observations

The most cost effective programs are those that result in net cost savings. These programs are illustrated in **Table 6-7**.

Table 6-7. Most Cost Effective Zero Waste Programs Based on Incremental Annual Program Savings

Program	Incremental Annual Program Savings		Program Tons Diverted
Residential	**Low**	**High**	
Weekly Organics and Recyclables Collection; Bi-Weekly Refuse Collection	$ (157,402)	$ (137,671)	504
Wet/Dry Collection	$ (295,135)	$ (252,622)	562
Commercial	**Low**	**High**	
Behavior Change Marketing	$ (101,132)	$ (44,065)	2,831
Wet/Dry Collection	$ (210,325)	$ (185,492)	2,620

The other programs result in net cost increases. The most cost effective of these programs are those with the lowest cost per ton diverted. The programs in **Table 6-8** are sorted from most to least cost effective based on the diversion achieved.

Table 6-8. Programs with Net Cost Increases Sorted by Lowest to Highest Cost Per Ton

Program	Sector	Program Tons Diverted	Incremental Annual Program Midpoint Cost Per Ton
Wet/Dry Collection	Multi-Family	1,615	$ 8
Residuals Processing	Commercial	4,887	$ 10
Residuals Processing	Multi-Family	3,377	$ 10
Residuals Processing	Residential	1,248	$ 10
Food Scraps Collection	Residential	1,124	$ 99
Behavior Change Marketing	Residential	410	$ 109
Food Scraps Collection	Commercial	3,975	$ 135
Behavior Change Marketing	Multi-Family	1,549	$ 190
Expansion of Mandatory Commercial Recycling	Commercial	906	$ 315
Bulky Item Collection; Move-In/Move-Out Program	Multi-Family	176	$ 1,114

7.0 Implementation

Implementation of the recommended strategies will be undertaken over an approximately 20 year period, from 2013 through 2030. During the implementation, the City will continue to evaluate the efficacy of each strategy, and modify the Plan as necessary to meet the zero waste goals and objectives, and to adjust to the changing social, environmental, and economic conditions within the City. An implementation schedule is presented in **Exhibit 7-1**.

Exhibit 7-1. Implementation Schedule

Period	Program	Single-Family	Multi-Family	Commercial	Self-Haul	C&D
Short-Term	Require Food Scraps Collection					
	Behavior Change Marketing					
	Environmental Directory On-line Version					
	Integrated Waste Management Fee Structure					
	Bulky Item Collection; Move-In/Move-Out Program					
	Recycling Educational Outreach					
	Mandatory Recycling in Hotels/Motels					
	Business and Restaurant Food Donation					
	Santa Monica Shares /Bulky Item Reuse and Recycling					
Short to Medium-Term	Regional Sustainability Collaboration					
	Rewards Program					
	HHW Collection at Public Events					
	Centralized Garage Sales					
	Disposal Bans					
	Weekly Organics and Recyclables Collection; Bi-weekly Refuse Collection					
	Self-Haul Waste Origin Reporting					
Medium-Term	Packaging Legislation					
	Extended Producer Responsibility					
	Regional Resource Recovery Center					
	Require Food Scraps Collection					
	Expand Single-Use Carry Out Bag and Disposable Container Ordinance					
Medium to Long-Term	Wet/Dry Collection					
	Expand Items Collected in Recycling Cart					
Long-Term	Mandatory Diversion Rate					
	Require Recycling of New Materials					
	C&D Ordinance Revision					
	Expand Mandatory Commercial Recycling					
	Alternative Technology Facility					
	Residuals Processing					