APPENDIX B

(Previously Section 4)

WASTE REDUCTION, RECYCLING AND COMPOSTING POLICIES, PROGRAMS AND SHOREWAY INFRASTRUCTURE

B. Waste Reduction, Recycling and Composting Policies, Programs and Shoreway Infrastructure

1. Overview

a. Collection and Processing Systems Overview

The RethinkWaste-owned Shoreway Environmental Center serves as a regional solid waste and recycling facility for receiving, handling and transferring of recyclables, organics and garbage. The 16-acre integrated campus (**see Figure B.1** on the next page) includes the following buildings and uses: Transfer Station, Materials Recovery Facility (MRF), Public Recycling Center, Environmental Education Center, Recology San Mateo County administrative offices and corporation yard, vehicle fueling stations, and SBR offices. The JPA, as the Shoreway facility owner and landlord, is responsible for all facility capital projects and ongoing maintenance of the facility, including nearly 200,000 square feet of building space and $17 million of SBWMA owned materials processing equipment.

Recology occupies approximately six to seven acres of the 16-acre Shoreway Environmental Center which is used as its base of operations for the franchised collection services provided to the twelve RethinkWaste Member Agencies. The Recology administration office building and corporation yard buildings and ancillary areas are owned by the JPA and leased back to Recology via a License Agreement (trucks, other rolling stock, maintenance supplies and tools are provided by Recology). The rest of the Shoreway Environmental Center is occupied by the materials handling facilities which include the MRF, transfer station, scale house and Public Recycling Center which are all operated by SBR. Residential and commercial solid waste, recyclable materials and organics that are collected by the franchised hauler (Recology) are taken to Shoreway for processing, staging and shipment to offsite processors and end markets. In addition to the facility operations, SBR runs 22 long haul tractor-trailers to transport garbage, organic materials, and C&D to offsite processing and/or disposal facilities. As with Recology's Franchise Agreements, SBR's Operations Agreement with the JPA extends through December 31, 2020.

RethinkWaste purchased the Shoreway facility in March 2000 from BFI Waste Systems of North America for $20 million with such debt retired in 2008. Groundbreaking on a $46 million master plan capital improvement project to transform the outdated facility into the new Shoreway Environmental Center took place in December 2008 with a grand opening held on September 27, 2011. The capital improvements provided the necessary infrastructure for the new franchised collection programs rolled out on January 1, 2011 and replaced inefficient site operations.

Figure B.1

Components of the Shoreway Environmental Center

The Shoreway Environmental Center functions as an integrated recycling and waste management campus with separate buildings used as follows:

- **Transfer Station:**
  The Transfer Station is used for the unloading and transfer of garbage, construction and demolition (C&D) debris, and organics from public and private vehicles.
- **Materials Recovery Facility (MRF):**
  The MRF is used for the unloading and processing of recyclables from homes and businesses; and the shipment of commodities to domestic and export markets.
- **Public Recycling Center:**
  The Public Recycling Center at the front of the complex offers the buyback of recyclables, and free drop off of a wide variety of materials such as electronic waste (TVs, computers, etc.) and some household hazardous waste (batteries, paints, waste oil, etc.) items.
- **Environmental Education Center and tours Program:**
  RethinkWaste offers free tours to schools and the general public of the Shoreway Environmental Center. Visitors learn about resource conservation, the 4Rs and what happens to materials once they are picked up from homes and businesses.
- **Recology San Mateo County Offices:**
  Recology has its administrative offices located at 225 Shoreway Road, San Carlos and is open to the public for bill payments and customer questions. Recology's operations yard is also located at Shoreway.
- **South Bay Recycling (SBR) Offices:**
  SBR, which operates the Shoreway Environmental Center on behalf of RethinkWaste, has its administrative offices housed in the MRF building. SBR's operations yard is also located at Shoreway.

All twelve Member Agencies participated in the RethinkWaste-led competitive procurement request for proposals (RFP) process which resulted in each Agency executing a ten-year Franchise Agreement with Recology San Mateo County, commencing January 1, 2011 through December 31, 2020. These Franchise Agreements provide the exclusive right for Recology to collect recyclables, organic materials and garbage from single-family dwelling (SFD) residential customers and garbage from commercial customers, which include multi-family dwellings (MFD), businesses and Member Agency facilities. Recyclables and organic materials are also collected from commercial customers on a non-exclusive basis. Recology utilizes a mix of collection vehicles which includes both automated (for carts) and semi-automated (for carts and bins) truck types, all collecting a single material (i.e., recyclables, organic materials or garbage). All materials collected by Recology are delivered to the RethinkWaste-owned Shoreway Environmental Center in San Carlos for recycling processing, transportation and disposal.

The franchised services also include an array of other appointment based or seasonal services that customers can use including but limited to:

- Twice annual on-call bulky item collection program
- Holiday tree collection
- Community events such as compost giveaway events, shred/e-scrap events, etc.

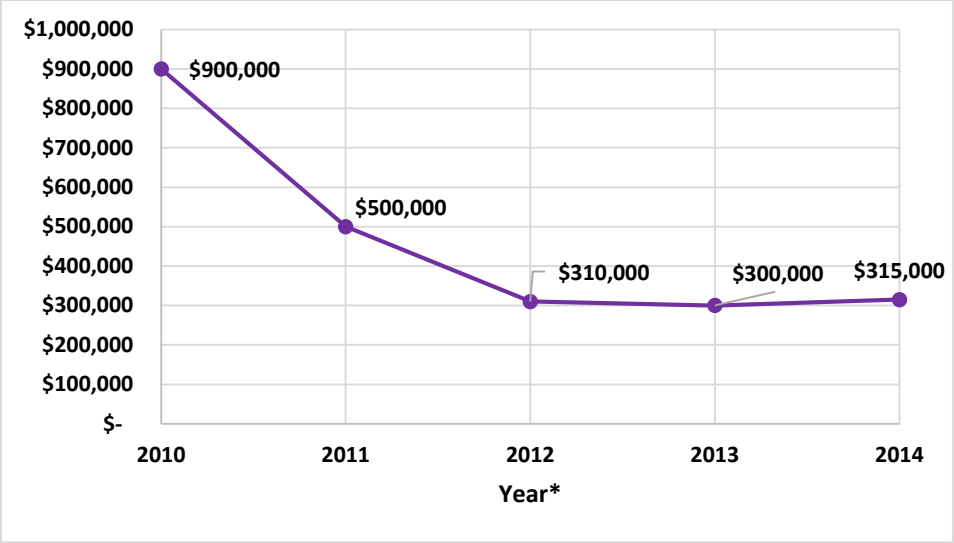
There are also "unscheduled" services provided for an additional fee that customers can subscribe to such as back-yard service, extra pick-ups, additional carts, container cleaning, etc. These services and the associated costs are detailed in Attachment Q (Unscheduled Services) to the Franchise Agreement.

RethinkWaste also manages a separate contract with At Your Door Special Collection (WM Curbside, LLC) to provide door-to-door collection of household hazardous waste (HHW) upon request from SFD and MFD customers. All twelve Member Agencies participate in the Door-to-Door HHW Collection Program as of March 1, 2015.

All of the above programs and services are supported by a robust, multi-faced public education and outreach effort focused on maximizing customer knowledge of and proper use of the services offered. This public education and outreach effort is managed primarily by RethinkWaste with Recology taking the lead only on direct technical assistance to help businesses set-up recycling and compost collection programs.

RethinkWaste has historically used, and continues to use, a multi-faceted and comprehensive approach to deliver messages to its customers based on survey results, benchmarking data and analysis of its efforts to ensure its effectiveness. This includes a combination of direct mail, newsletters, electronic media, social media, collection vehicle signs, website, and bill inserts, among others, for message delivery. **Table B.1** on the following page shows the historical amount spent on all public education and outreach efforts from 2010-2014. The magnitude of service changes that were launched in 2011, primarily affecting single-family residential customers, resulted in the need for major outreach efforts to educate customers on the changes. This resulted in the significantly higher outreach costs in 2010 leading up to the program transition and carrying into 2011. The outreach costs were significantly reduced starting in 2012 and have stayed consistent as public education and outreach efforts have transitioned to ongoing maintenance of the existing programs.

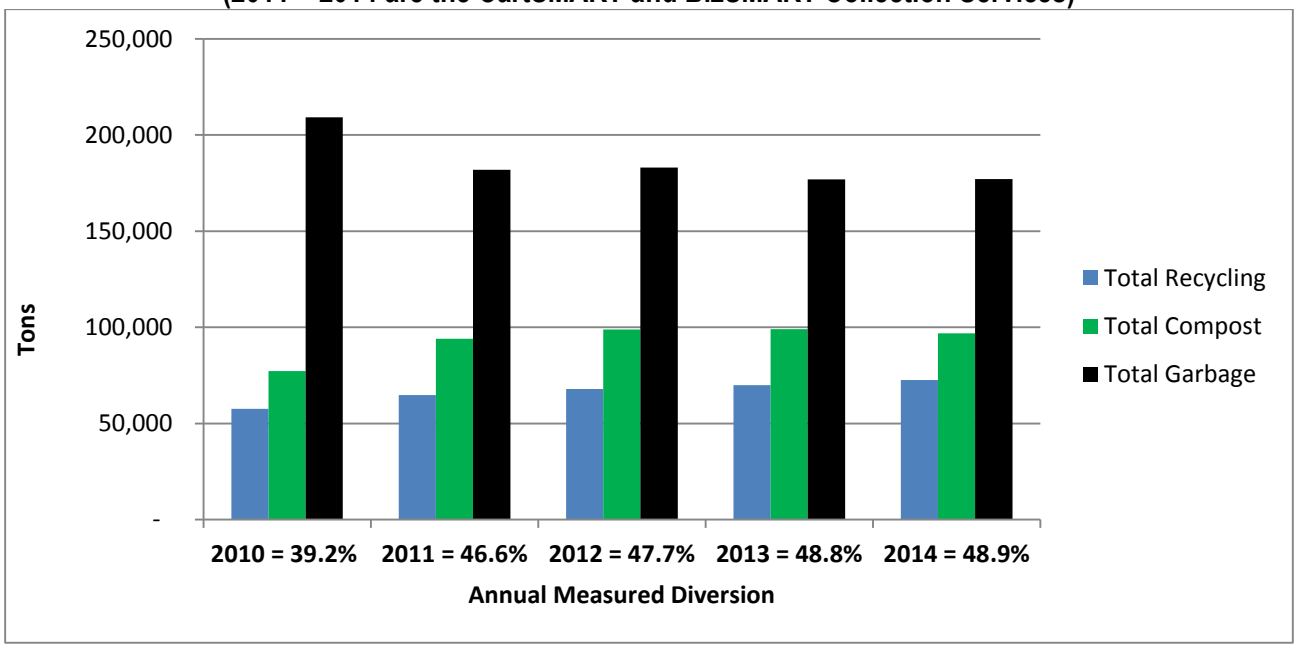
Table B.1: Total Outreach Spending for 2010 – 2014



**RethinkWaste operates on a fiscal year budget. The amounts shown in the table are averaged to show costs on a calendar year basis.*

Table B.2 below shows annual tonnage data by material type (i.e., recycling, compost, garbage) and overall (inclusive of residential and commercial sectors) annual measured diversion rates from 2010-2014. Recycling and composting rates improved significantly with the rollout of new services in 2011 and small year over year improvements continue.

Table B.2: Total Franchised Collection Tons for 2010 – 2014
(2011 – 2014 are the CartSMART and BizSMART Collection Services)



**RethinkWaste will begin collecting non-franchise commercial diversion data in 2015 with the Board passage of the Commercial Recycling Reporting Ordinance in October 2014. This data will supplement the only currently available data on commercial recycling which is provided by Recology for franchised services.*

b. Existing Collection Programs

CartSMART Residential Services

Approximately 93,000 SFD households (one to four living units) are provided weekly curbside recycle, compost and garbage collection services through the CartSMART residential program. Each household sets its materials out in wheeled carts (20, 32, 64 and 96 gallon) provided by Recology which are then collected by automated trucks. Recycling is single stream (commingled), and the compost program includes yard trimmings, food scraps and food- and beverage-soiled paper products. Used motor oil and motor oil filters, cell phones and household batteries are also collected curbside weekly by Recology.

Table B.3 below captures the significant increase in diverted tons and measured diversion rate for the residential sector from 2010 to 2011 after rollout of the new franchised collection services. Since 2011 both tonnages and diversion rates have changed very little with an actual slight drop in the diversion rate from 2013 to 2014. In fact, only two of the 12 Member Agencies, Foster City and Hillsborough, experienced a very minor increase in their residential diversion rates from 2013 to 2014.

Residents are kept apprised of key service details (e.g., what materials should be placed in each cart) through an ongoing public outreach and education effort which includes regular communications such as a quarterly newsletter, bill inserts, posters, website postings, social media, collection vehicle signage and direct mail, among others.

Table B.3: Residential Franchised Collection Tons for 2010 – 2014
(2011-2014 is the CartSMART Collection Services)

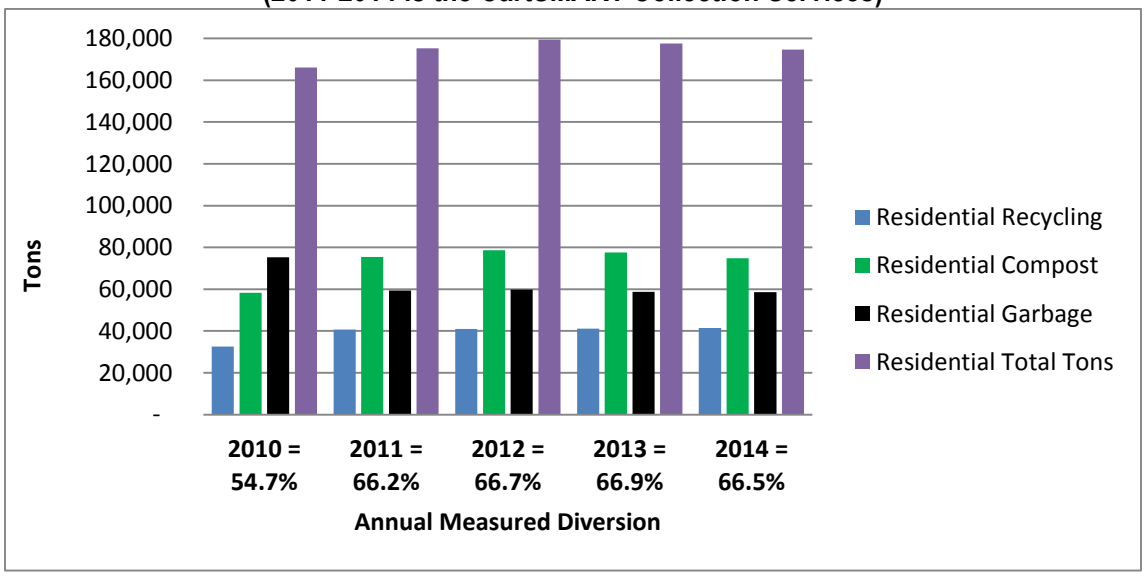
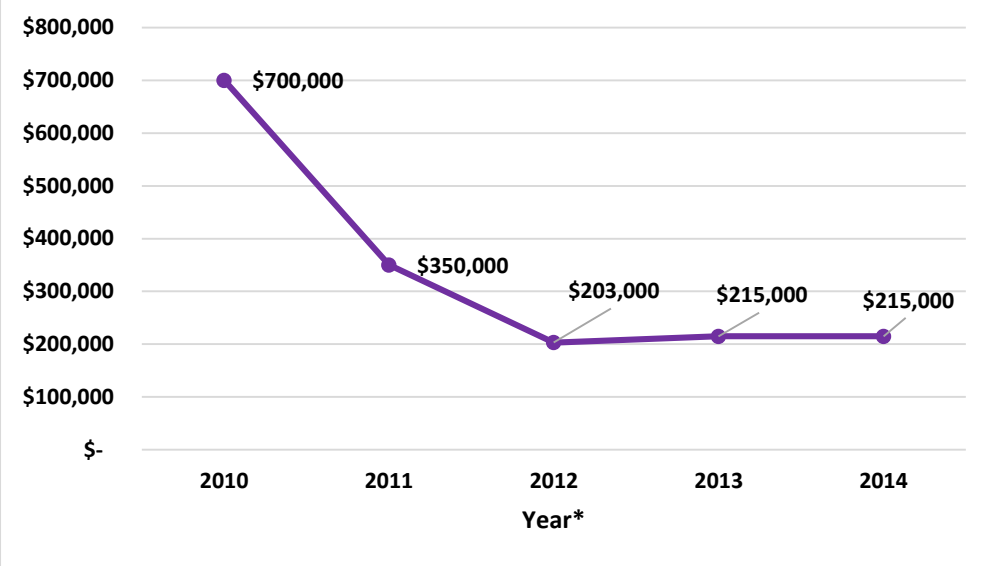


Table B.4 on the following page shows the historical amount spent on the CartSMART residential public education and outreach efforts from 2010-2014. Again, the significantly higher costs in 2010 and 2011 are a result of the rollout of the new franchised collection services in 2011. Since the rollout, residential outreach costs have remained consistent but substantially below the 2010/2011 levels.

Table B.4: CartSMART Residential Outreach Spending for 2010 – 2014

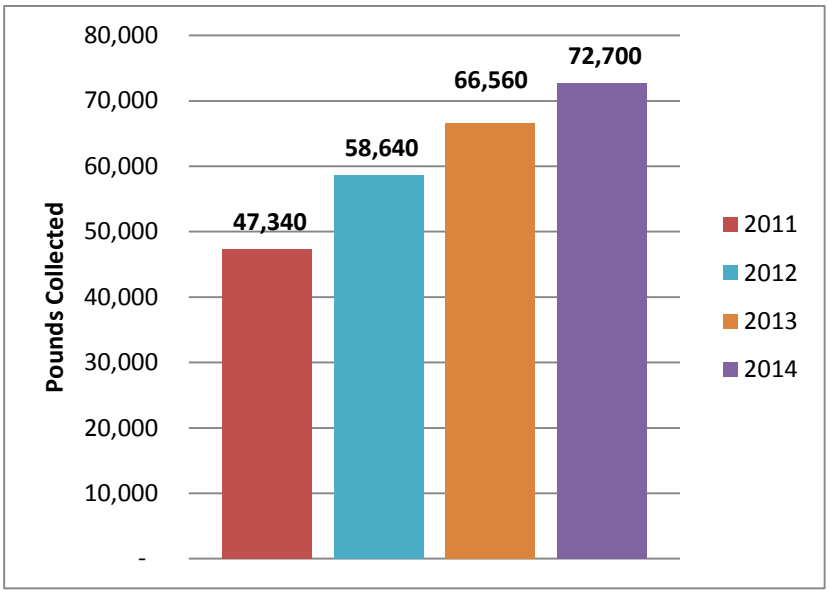


**RethinkWaste operates on a fiscal year budget. The amounts shown in the table are averaged to show costs on a calendar year basis.*

Program metrics such as diversion rates and participation rates are regularly monitored to track program results. Surveys have also been done periodically to further drill down on customer knowledge or awareness of the services offered. For example, through a 2012 Customer Satisfaction Survey of residents, it was discovered that residents were not very aware of certain services such as door-to-door HHW collection program, the twice annual on-call bulky item collection program, and the curbside collection of household batteries and cell phones.

Staff took the survey results and devised specific strategies to increase customer awareness and participation in these programs in 2013 and such efforts were largely successful. **Tables B.5, B.9** and **B.10** on the following pages show the historical trends of program participation in the curbside collection of household batteries and cell phones, the twice annual on-call bulky item collection program and the door-to-door HHW collection program, respectively. All three show a significant increase in participation following the focused outreach efforts in 2013.

Table B.5: Curbside Collection of Household Batteries and Cell Phones for 2011 – 2014 CartSMART Collection Services



BizSMART Commercial Services (for businesses and multi-family dwellings)

Approximately 9,200 MFD (five or more units) complexes (totaling 45,000 units), businesses and Member Agency Facilities are provided recycle, compost and garbage collection services through the BizSMART commercial collection program. These customers subscribe to a minimum of weekly garbage collection in Recology provided carts or bins of various sizes. Recycle collection services is offered at no additional charge for customers who subscribe to the garbage collection services provided by Recology. Compost/plant materials collection is offered at a discounted rate that is 25% to 50% below the cost of garbage service depending on the Member Agency.

Also included in the BizSMART service is collection of Member Agency public containers located on streets and in parking lots and parks that are accessible for curbside collection. MFD complexes are also eligible for household battery and cell phone collection with their BizSMART carts or they can request a designated container to centralize collection.

Commercial Recycling Technical Assistance

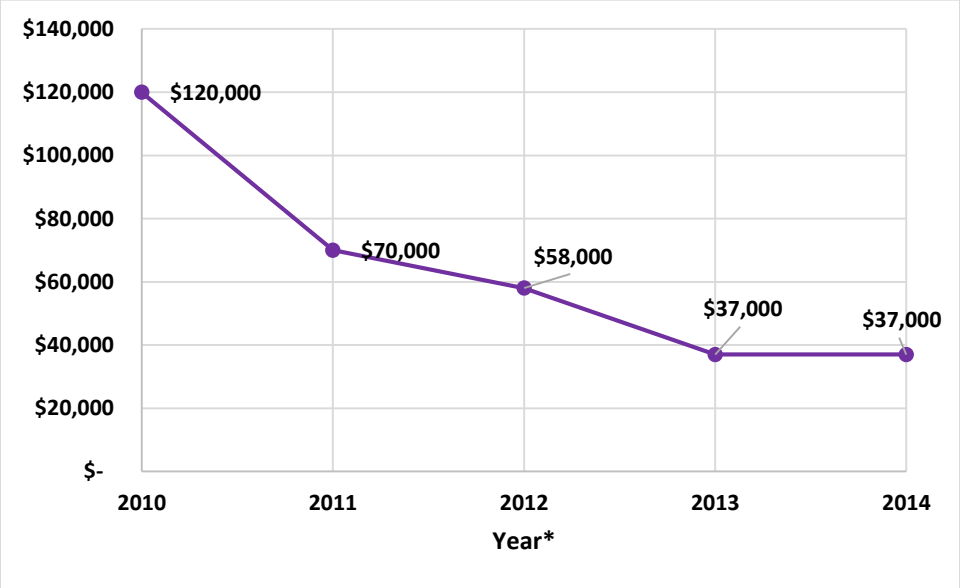
A key component of the BizSMART commercial services is the Franchise Agreement required commercial recycling outreach staff of nine full-time Recology employees to increase waste diversion. This team is exclusively dedicated to promoting the BizSMART collection services and providing technical assistance to all commercial customers, including MFDs and Member Agency Facility customers. The technical assistance includes on-site waste assessments, visual audits, and direct contact/meetings with customers to promote programs and services, and distribution of outreach materials and other assistance as needed.

RethinkWaste works closely with Recology to develop specific outreach tools (e.g., “buddy bags” and MFD toolkits to MFD complexes, posters, labels and other related collateral) and also provides internal containers to businesses (e.g., cardboard and plastic deskside recycling bins, “slim-jims” for recycling and organics) and

Member Agency Facilities. The cost for these items is included in the RethinkWaste annual budget and $70,000 was included in the FY1415 budget.

Table B.6 below shows the historical amount spent on public education and outreach for the commercial sector from 2010-2014. Again, the significantly higher spending in 2010 and 2011 are a result of the rollout of the new franchised collection services in 2011. Since the rollout, commercial outreach costs have remained consistent but substantially below the 2010/2011 levels. The majority of the ongoing outreach costs are primarily associated with the purchase of the "buddy bags" and internal containers.

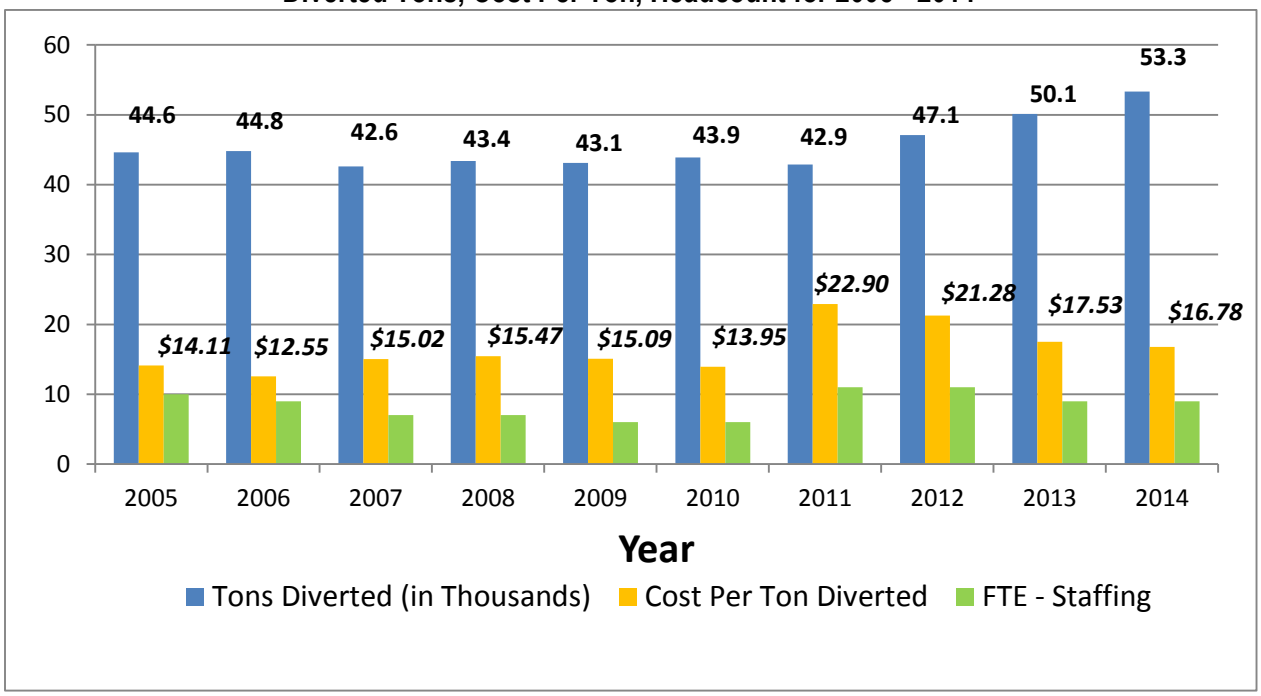
Table B.6: BizSMART Commercial Outreach Spending for 2010 – 2014



**RethinkWaste operates on a fiscal year budget. The amounts shown in the table are averaged to show costs on a calendar year basis.*

Table B.7 on the next page captures several key metrics for the commercial recycling outreach program over the past 10 years including: total tons diverted, SG&A ("sales, general and administrative") cost per diverted ton, and staffing levels (for outreach staff). The cost per diverted ton figures shown in orange reflect the annual SG&A costs associated with the outreach program divided by the actual annual tons diverted. These SG&A costs went up significantly in 2011 with the much higher headcount levels with Recology, though staff negotiated with Recology for the elimination of two waste diversion auditor positions in 2013 so the costs are now more in line with historical figures.

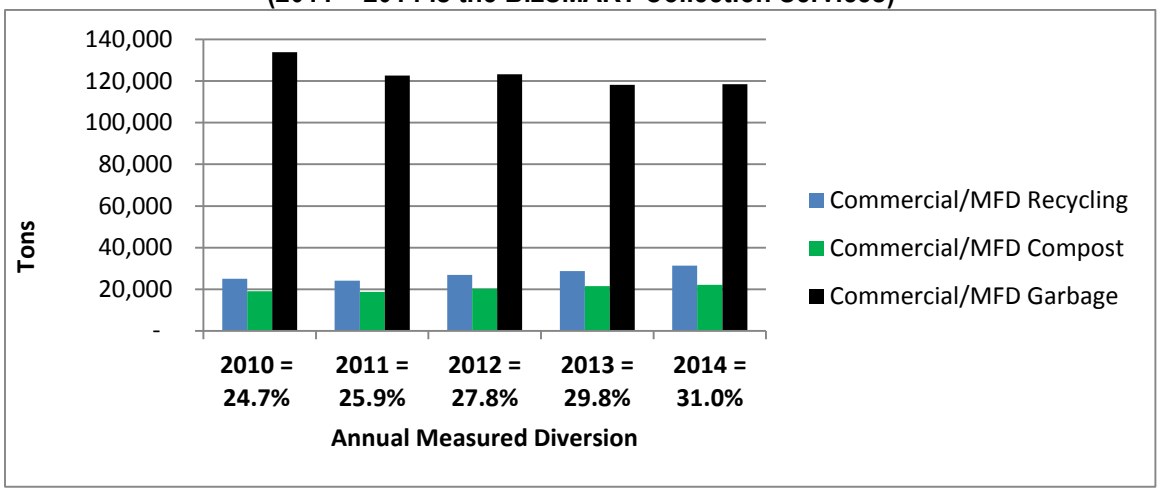
Table B.7: Franchised Commercial Outreach: Diverted Tons, Cost Per Ton, Headcount for 2005 - 2014



Over time it appears headcount levels for outreach staff don't necessarily correlate with higher or lower diversion rates. It should be noted that Recology took over the commercial outreach effort from Allied in July 2010, six months before the rollout of new collection services. Recology's scope of services within the new franchised agreements included a "sales blitz" starting six months before the rollout to essentially reach out and contact all businesses that did not have recycling and/or compost collection services.

Table B.8 on the following page provides additional details on the franchised commercial recycling outreach effort by showing the historical tonnage data for commercial customers broken out by material type and annual measured diversion rates from 2010-2014. While the overall measured commercial diversion rate has increased year-over-year since the launch of the BizSMART services in 2011, two-thirds of the materials being generated by this sector continue to be landfilled. However, two positive trends are that disposal continues to decline annually while the diversion rate increases. A reason for the increase in overall diversion is that while disposal is decreasing, recycling and compost collection remains stable or has increased slightly. Thus, the reduced disposal contributes significantly to the annual increase in diversion; however, there still remains considerable room for improvement in increasing both recycling and compost collection.

Table B.8: Commercial and Multi-Family Collection Tons for 2010 – 2014
(2011 – 2014 is the BizSMART Collection Services)



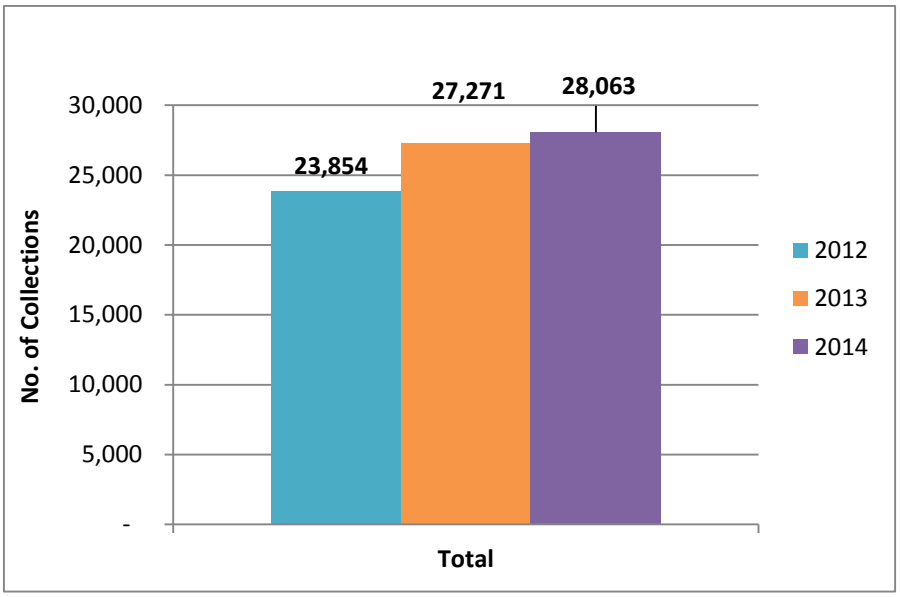
Beyond the Cart (other services)

In addition to the Recycle, Compost and Garbage collection services included in the CartSMART and BizSMART programs, SFD and MFD customers are provided the following services:

- ***Twice Annual On-Call Bulky Item Collection Program*** – SFD residents contact Recology to schedule a recycling collection of large items such as mattresses or appliances, excess plant materials and wood, and to dispose of excess trash or bulky items. The twice annual service is provided between February 1 and December 31 and households are limited to the amount of materials they can set out each collection. MFD complexes are also eligible to schedule this service twice annually and the amount collected is based on the number of units. MFD property owners/managers must schedule the collection. In addition, Member Agency Facilities can receive this service annually upon request and the amount of materials collected is limited. Additional collections for SFDs, MFDs and Member Agency Facilities can be scheduled for a fee for service based on approved rates.

  Table B.9 on the next page shows the historical number of collections from 2012-2014, with a significant increase in 2013 due to the focused outreach efforts. The increased outreach efforts included adding a second bill insert to promote the program, regular inclusion in newsletters and promotion through social media.

Table B.9: On-Call Bulky Item Collection Program for 2012 – 2104
CartSMART Collection Services



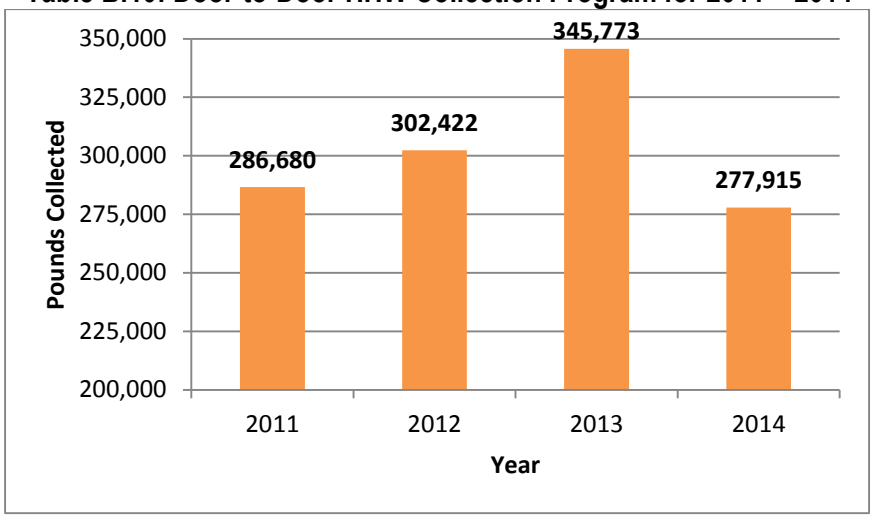
**2011 data not available/provided by Recology.*

- ***Holiday Tree Collection*** - Recology collects holiday trees curbside from SFD residential customers between December 26 and January 31 each year when placed adjacent to resident's green Compost cart. Trees up to eight feet in length can be set out, but all decorations and tree stands must be removed. Flocked trees are accepted. Multi-family complexes are provided holiday tree collection in bins or drop boxes per request of the property owner/manager at no additional cost.

- ***Door-to-Door Household Hazardous Waste Collection*** – All SFD and MFD residences are eligible for the Door-to-Door HHW Collection Program managed by RethinkWaste and provided by At Your Door Special Collection (WM Curbside, LLC). Residents can schedule this service throughout the year upon request.

  Table B.10 on the following page shows the historical number of pounds collected from 2011-2014, with a significant increase in 2013 due to the focused outreach efforts and including the City of Burlingame which increased the number of collections and pounds collected by approximately 15% from 2012. The drop in 2014 pounds are primarily attributable to three factors: 1) when initiating service in a community, we typically see a high level of participation given the extended outreach to that community; 2) residents participating for the first time contribute significant amounts of materials due to many residents storing their materials for a number of years and when this pent up demand is met, less items are set out going forward or residents have less need to schedule another appointment for a long time; and 3) reduced outreach efforts due to budgetary constraints during the first half of 2014 as RethinkWaste operates on a fiscal year budget. In addition, there is a lag time between when an outreach effort is initiated and when it has an impact due to how quickly thereafter appointments are made and when the material is collected.

Table B.10: Door-to-Door HHW Collection Program for 2011 – 2014



Community Events

The Franchise Agreements with Recology provide Member Agencies with compost giveaways, confidential document destruction and winter coat drive events and RethinkWaste organizes compost giveaway and shred/e-scrap events, as follows:

- ***Compost Giveaway Events*** – A Recology "Bring Your Own Bucket Event" is provided to each Member Agency annually at no additional charge. Member Agencies can also request to have additional compost giveaway events for a delivery fee. The compost provided by RethinkWaste at no additional cost for the giveaways is through the JPA's organics processing contracts with BFI Newby Island and Recology-Grover Environmental Products.

- ***Shred/E-Scrap Events*** – Recology provides one Confidential Document Destruction Event annually for each Member Agency and additional events are provided for a fee. Upon request by a Member Agency, RethinkWaste organizes E-Scrap collection to coincide with the Shred Event.

- ***Coats for Kids*** – Recology provides an annual "Coats for Kids Program" to collect used winter coats curbside and at drop-off locations for a period of one to two weeks typically in the fall for donation to local non-profits organizations.

  Table B.11 on the following page shows the historical number of Community Events held from 2012-2014.

Table B.11: Community Events for 2012 – 2014
CartSMART Collection Services

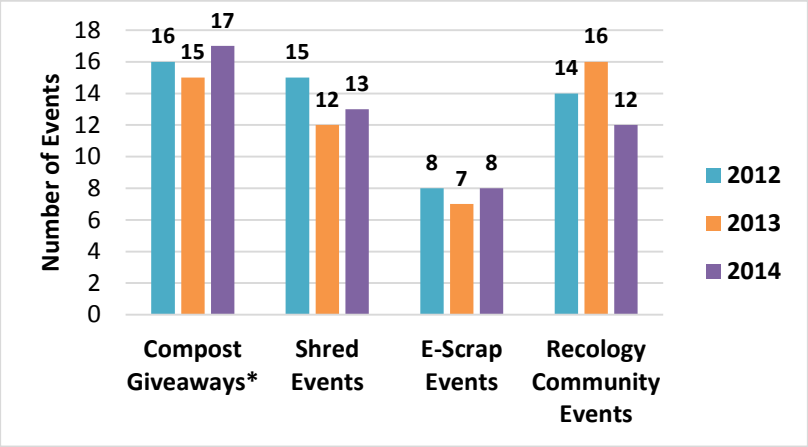


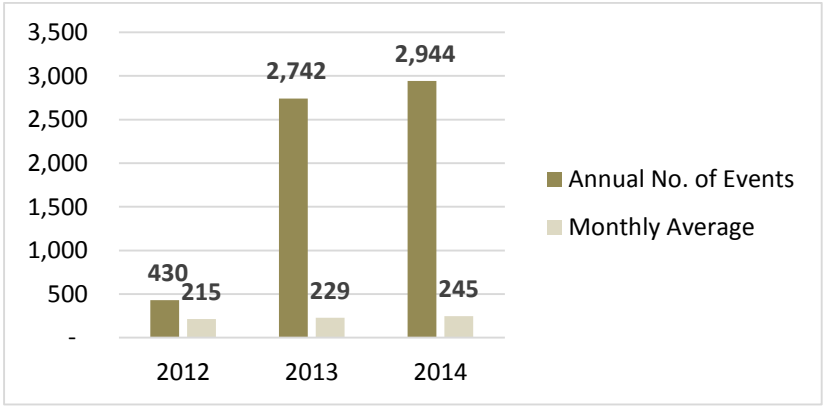
**Table does not include weekly compost giveaways held March-October annually by City of San Mateo.*

Commercial/Businesses, Large Events and Member Agency Requested Specific Services

- ***Community Events*** – Recology provides recycle, garbage and compost (if one or more cubic yard of compost material is generated per day at the venue or event) collection services for those events as specified in each Member Agency's Franchise Agreement - Attachment C. Member Agencies can also request the staffing of a booth hosted by Recology for these events. RethinkWaste supplements Recology's community events services by providing two trailers and 500 ClearStream® Recycle, Compost and Garbage containers owned by RethinkWaste. In addition, community groups, organizations and Member Agencies can also request the use of the ClearStreams for their events.

- ***Abandoned Waste Collection Services*** – Recology collects abandoned or illegally dumped waste from public rights of way within 24 hours upon request from Member Agencies. **Table B.12** below details the number of events for 2012-2014. Data was first reported in 2012.

Table B.12: Abandoned Waste Collection Events for 2012 – 2014
CartSMART Collection Services



c. Existing Processing and Transfer Infrastructure

Transfer Station

The Transfer Station is used for the unloading and transfer of garbage, yard trimmings and food waste ("organics"), C&D debris, and other materials from franchised (Recology) collection vehicles and public vehicles. Materials are consolidated and loaded into large transfer trailers for shipment to offsite processing and/or disposal sites. The north side of Transfer Station handles franchised collection vehicles and the south side of the building is used for the public loads.

Table B.13 below shows the tons received into the Shoreway facility by large categories of materials (i.e., solid waste, organics, and recyclables) and in aggregate by disposal, diversion and total for the years of 2011-2014. Overall, facility tonnage has been increasing each year.

Table B.13: Total Facility Tons 2011 - 2014

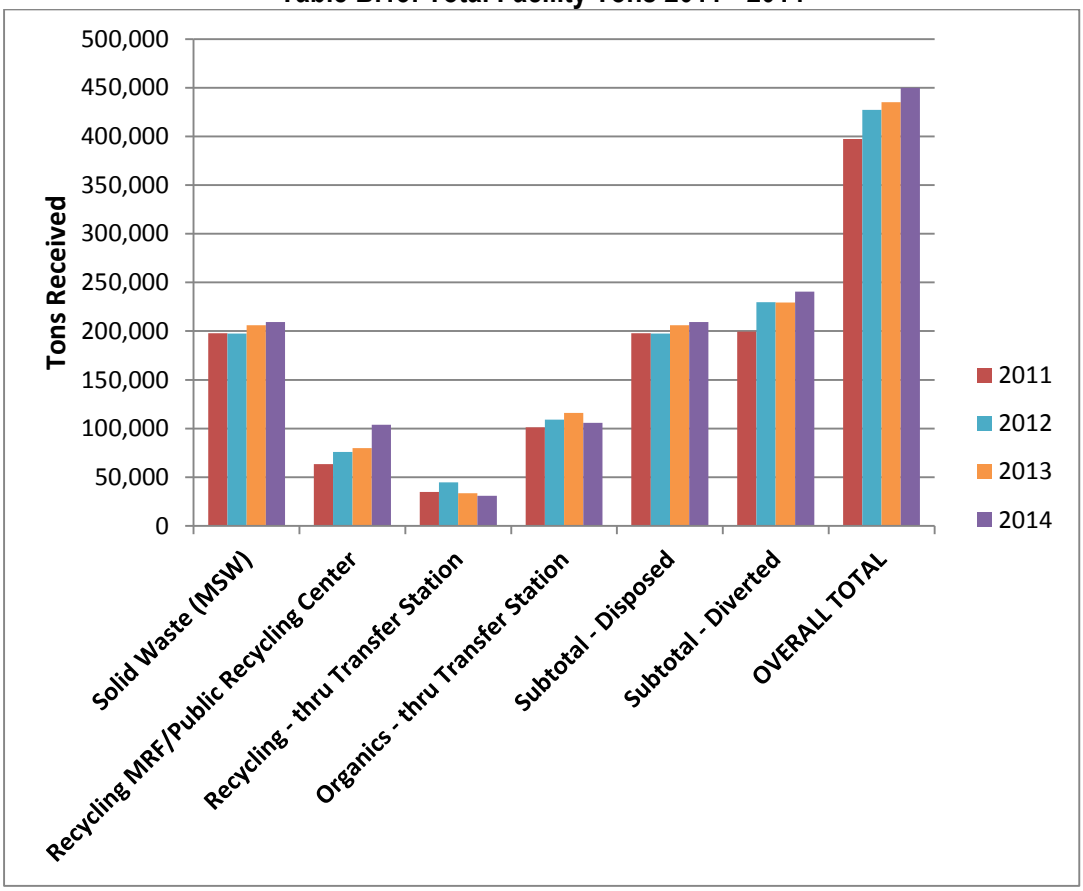


Table B.14 on the following page takes the major categories of materials handled through the Transfer Station in 2014 and shows their end destinations and the respective mileage of each destination from the Shoreway facility.

Table B.14: Transfer Station Material Destination

Material Type	Processor / Destination	Tons per Year	Distance from Shoreway
Inerts and C&D	Zanker Road Recovery	29,571	23 miles
Green/Organics	Recology-Grover	43,917	73 miles
Green/Organics	Newby Island	50,767	25 miles
Solid Waste	Ox Mountain Landfill	209,312	13 miles

To address operational efficiency and safety needs, significant improvements were made to the Transfer Station building during the 2011 master plan construction that included the following:

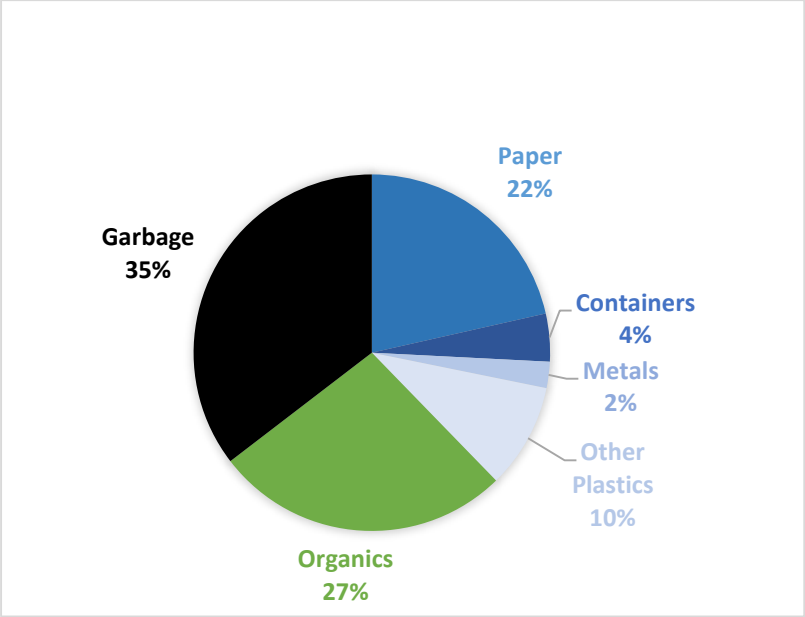
- Construction of a vehicle bridge across the tunnels and a north entrance to the tipping floor to provide more unloading space and easier access for franchise vehicles.
- Expansion of the public or self-haul side of the building by 15,000-sq. ft. to provide more space for customers to unload their vehicles.
- Construction of an equipment shop, office area, and employee restrooms to support the drivers and Transfer Station equipment operation.
- New building siding, installation of photovoltaics, new lighting, and the installation of translucent paneling on the walls and roof to improve the exterior aesthetics of the building and interior lighting to conserve energy.
- Refurbishment of the Transfer Station tunnels and tunnel scale system.

Master plan enhancements significantly improved the operations of the public side of the facility and improved traffic flow into the main floor area to make room for additional waste processing operations.

To better understand the composition of the waste materials being handled at the Transfer Station and to determine the potential for additional materials recovery, RethinkWaste conducted waste composition studies of the Commercial/MFD sector and SFD sector in February 2012 and November 2012 (the waste composition studies from the different sectors were combined to create an overall composition of the franchised garbage stream and the percentages of recyclable and organic materials to create **Table B.15** on the following page). Based on the data obtained from these studies, staff has identified a significant opportunity for additional diversion through a mixed waste processing system installed at the Transfer Station to recover the recyclable and organic materials remaining in the waste stream.

Mixed-waste processing systems are widely used throughout Europe, where by EU Directive, all waste must be processed for material recovery prior to disposal. Similar systems are gaining traction in California as municipalities and waste management companies work to gain greater diversion.

Table B.15: RethinkWaste Waste Composition Studies



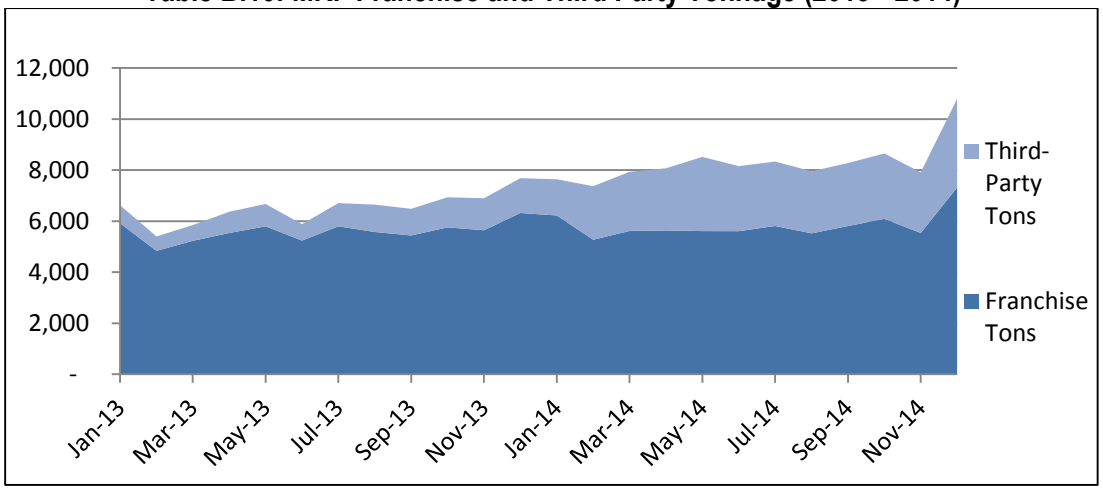
Materials Recovery Facility (MRF)

The MRF processes commingled recyclable materials collected by Recology from the RethinkWaste service area and "third-party" recyclable materials from cities outside the service area. The 70,200 square-foot building houses a $17 million state-of-the-art single stream (commingled) processing system designed and installed by Bulk Handling Systems (BHS). The sorting system uses mechanical separation technologies to cost effectively separate the mixed recyclable materials for maximum recovery. The MRF has separate tipping areas and processing lines for residential and commercial recyclables which are processed using a series of conveyors, screens, magnets and optical sorters to separate paper (fiber) from containers that are further sorted into newspaper, mixed paper, cardboard, glass, aluminum, tin and plastics. In addition to the mechanical sorting, sort-line workers from the San Mateo County's Vocational Rehabilitation Services program work to clean the recyclables to the standards of the commodity buyers.

The MRF sorting equipment is relatively new and there have been no major equipment failures since the system began operations in 2011. In addition to the regular preventative maintenance provided by SBR to keep the system at peak performance, BHS provides quarterly equipment maintenance through a long-term maintenance contract that was purchased with the system. As the site and equipment owner, SBWMA staff provide regular inspections to ensure that the Agency's assets are well maintained by SBR. In anticipation of some of the system's components wearing out, the SBWMA maintains an equipment replacement reserve fund to pay for equipment replacement over the remaining life of the system.

The MRF was designed to process all of the recyclables from the SBWMA service area in one shift of operation. As is shown in **Table B.16** below, the tonnage processed by the MRF has increased approximately 25% or 100 tons per day from additional third-party tons (materials from outside of the service area processed at the MRF in exchange for host fee payments to the SBWMA). To process the additional tonnage at the MRF, SBR added a second processing shift in 2014. Host fee payments to the SBWMA for each ton processed have generated approximately $525,000 in additional revenues over the 2013-2014 time period.

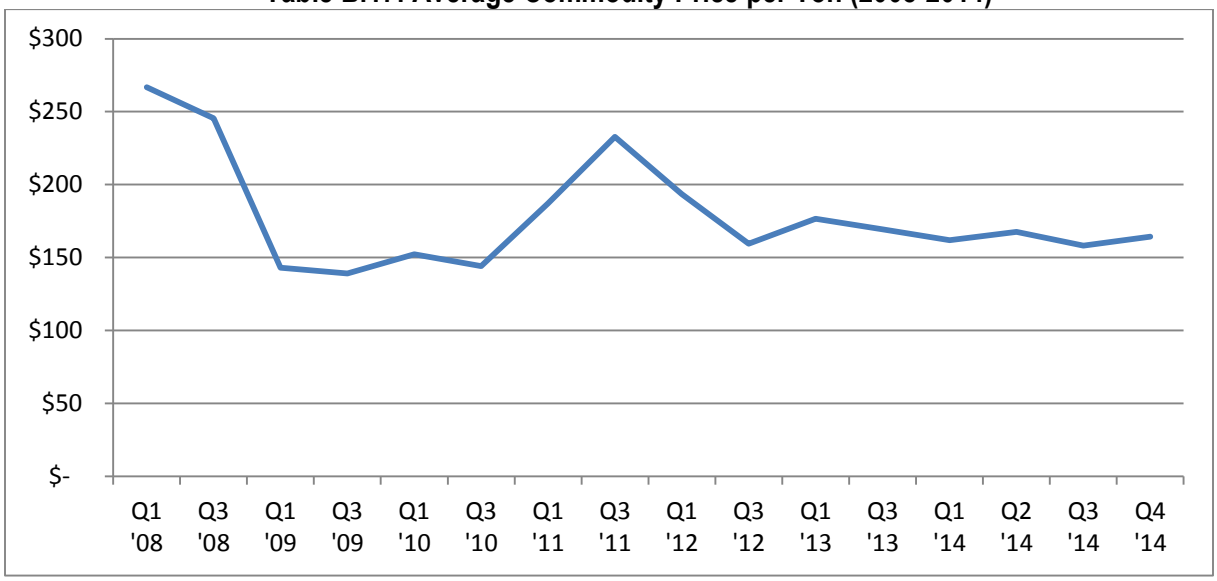
Table B.16: MRF Franchise and Third Party Tonnage (2013 - 2014)



While the host fees provide a financial benefit to the SBWMA, the additional third party tons have exceeded the building's material storage space, specifically, the tipping area is undersized for the extra trucks and additional inbound material. To address this issue, the Board has approved a capital budget with funds in FY1415 to complete a MRF tipping area extension construction project which will add 2,720 square feet to the building and is expected to be completed in 2015.

The SBWMA relies on SBR to market the commodities that are sorted from the mixture of residential and commercial recyclable materials. The commodities are traded on international commodity markets with most of the material being sold for use by manufactures in China. As illustrated by **Table B.17** on the following page, commodity revenues tend to fluctuate based on market supply and demand as well as geopolitical influences, policy changes in host countries, shipping costs and petroleum prices. There are several mechanisms in place to mitigate dramatic swings in commodity pricing, namely: 1) the Operations Agreement has a commodity revenue guaranty of $5.55 million dollars per year (the amount that SBR is obligated to pay the SBWMA each year as a "floor price" for commodities sold from Shoreway); 2) the commodity revenue share; and, 3) the SBWMA maintains a rate stabilization fund to mitigate dramatic commodity fluctuations (the SBWMA tapped this reserve as recently as 2008 when there was a worldwide drop in commodity pricing).

Table B.17: Average Commodity Price per Ton (2008-2014)



Under the terms of the Operating Agreement, the revenues from the sales of the recyclable commodities are shared between the SBWMA and SBR 73% and 27% respectively. The commodity share structure is a component of SBR's overall income and serves as an incentive for SBR to maintain high diversion and high commodity sales prices. The commodity revenues received by the SBWMA are used to offset the cost of materials handling at Shoreway and the provision of other SBWMA services. **Tables B.18** and **3.19** below provide a summary of the tons processed at the MRF in 2014 and the associated commodity revenues.

Table B.18: 2014 Total Tons by Commodity

Material Type	Tons
CONTAINERS	
Total Tons - CONTAINERS	18,249
FIBERS	
Total Tons - FIBERS	47,083
OVERALL TONS	65,332

Table B.19: 2014 Total Revenue by Commodity

Material Type	Revenue
CONTAINERS	
Total Revenue - CONTAINERS	$5,476,919
FIBERS	
Total Revenue - FIBERS	$5,434,779
OVERALL REVENUE	$10,911,697

Public Recycling Center

One of the unique features of the Shoreway Environmental Center is its redesigned Public Recycling Center (PRC). The PRC was rebuilt in 2011 to be easily accessible to the public and provides both a free drop-off area and a buy-back area where customers can recycle such items as cardboard, scrap metal, electronics, household cooking oil, sharps, and fluorescent tubes, as well as get paid for CRV containers and cardboard. The PRC is where RethinkWaste service area residents can recycle many household items that are not

collected as part of the curbside recycling or the HHW collection programs. The PRC is located in front of the MRF with its own entrance and exit that provides the public a safe and convenient recycling experience. In 2014, the PRC took in over 3,000 tons of materials that might otherwise have gone to landfill.

Environmental Education Center and Tours Program

At the LEED® Gold certified Shoreway Environmental Center, the SBWMA operates an award-winning environmental education program that offers indoor and outdoor educational features to teach school children and the general public about waste reduction, recycling, and composting and more broadly about resource conservation practices (e.g., visitors learn about conservation practices related to waste, water and energy). The indoor Environmental Education Center consists of museum-quality exhibits, reuse art, a talking robot and an educational classroom (called the Rethinker Room). The outdoor environmental education area includes a large solar installation, 10,000 gallon rainwater harvest tank and rainwater garden, water and energy conservation exhibits, garden and composting demonstration areas, and a covered area with tables and benches made from reclaimed wood and old tires.

These indoor and outdoor features take center stage in tours conducted by the environmental education staff; local school children and the general public experience firsthand what happens to their garbage, recyclables, yard trimmings and food scraps once they are collected and delivered to the Shoreway facility. In tours through the MRF and Transfer Station, visitors walk through the active operational areas in a safe manner. Children and adults alike come away amazed by the grand scale of the recycling operations and in seeing how their bottles, cans and paper are separated and prepared for sale. All visitors learn how to best participate in the CartSMART and BizSMART recycling and compost collection programs.

Tours for school children are designed to engage students and increase their knowledge through active learning experiences. The curriculum goal is to educate kids in resource conservation and 4Rs (Reduce, Reuse, Recycle and Rot/Composting) behaviors so that they will be empowered to conserve resources in their lives and practice recycling at their schools and residences. The tour activities are based on best practices in environmental education and provide connections to the California State Common Core Standards.

After the Shoreway facility tours, RethinkWaste staff provide teachers with a post tour packet that includes a lesson plan, reflection worksheet, post-tour surveys, a pledge to reduce waste and some fun facts about Shoreway. Follow-up with teachers and post tour engagement is limited by staffing and time constraints.

As a testament to its popularity and success, the education center has hosted over 16,000 visitors (see **Table B.20** below) in its first three years (2012-2014) of operation.

Table B.20: Shoreway Tour Visitors

	2012	2013	2014	Total
Public Tour Participants	690	1,216	1,496	**3,402**
School Participants	4,215	4,819	3,948	**12,982**
Total Tour Participants	4,905	6,035	5,444	**16,384**

The tour program has also touched a large percentage of schools, in our target age range of 4th to 6th grades, with at least one class attending from 72% of elementary schools and 51% of middle schools in San Mateo County.

Staff is also proud to share that when the environmental education program was benchmarked against five other successful programs, our tour program component was the most productive in terms of number of

tours conducted per year and tours conducted per staff person. **Tables B.21 and 3.22** below are for tours conducted in 2013 and this data was included in a benchmarking staff report provided in the May 22, 2014 Board packet.

Table B.21: Shoreway Tour Program Comparison

Organization	Program Age (Years)	Tours/Year
RethinkWaste	**2**	**232**
StopWaste (JPA in Alameda County)	19	225
Marin Sanitary Service (private company)	23	110
EcoCycle (nonprofit, Boulder County, CO)	27	100
SF Environment (San Francisco Dept. of Environment)	15	78
Recyclemore (Contra Costa County)	15	39

Table B.22: Shoreway Tour Program Staffing Comparisons

Organization	# of FTEs	Program Statistics		Tours/FTE
		# of Tours	**# of Visitors**	
RethinkWaste	**1.8**	**232**	**6,072**	**129**
SF Environment	0.7	78	2,367	111
Marin Sanitary	1	110	3,407	110
StopWaste	3.73	225	9,000	60
Recyclemore	1	39	1,191	39
Ecocycle*	6	100	2,500	17

**Ecocycle conducts 1500 in-classroom presentations to 45,000 students within the same program budget.*

Community Engagement Enhancements

RethinkWaste has made incremental but meaningful enhancements since the launch of our environmental education program in January 2012 to include educational outreach programs such as:

- Annual "Earth Day" event held in April each year since 2012. The event includes informational booths, music, food, arts and crafts, games, tours, free compost, and lots more. Over 750 people have attended this event over the past three years.

- Annual "Trash-to-Art Contest" for 4th-6th grade classes in which 30 classes have participated since the program was launched in 2013.

- Free School Compost Giveaway program where schools can receive up to five 50-pound bags of compost for a school garden project, or up to 20 cubic yards for a landscaping project. Since the program was launched in February 2013, a total of 35 bags and 95 cubic yards have been donated.

- The Night@Shoreway event where community groups get a "behind the scenes" night tour of the Shoreway Environmental Center and participate in fun learning activities. Three events have been held since this program was launched in November 2013.
- RethinkWaste, in collaboration with RecycleWorks San Mateo County and TechShop, held its first Fixit Clinic on July 26, 2014 from 11 am to 2 pm at the Shoreway Environmental Center. The general public was invited to bring their broken, non-functioning items such as electronics, small household appliances, computers, electronic toys and other items for assessment, disassembly and possibly repair. Fixit coaches were on hand to help disassemble and troubleshoot items. 100 people attended the workshop. (72% of the items were diagnosed and/or fixed.)
- An America Recycles Day Poster Contest launched in November 2014 to 3rd-6th grade students with the theme, "Rethink Waste – This Is How I Recycle!" Staff received over 200 posters from 20 schools by the December 19, 2014 deadline.

Other Buildings and Site Infrastructure

Administrative and Support Buildings

With the exception of the MRF and the Transfer Station improvements, the other buildings (occupied by Recology administrative staff, truck shop, container shop, and dispatch) were built prior to 1980. These buildings include a 10,000 sq. ft. administrative building and approximately 20,000 sq. ft. of maintenance buildings, driver, dispatch, and storage areas. The areas are generally unimproved since their original construction and because of their age and heavy use, require frequent maintenance and upkeep by the SBWMA. In general, the spaces meet Recology's current needs and no major building capital projects are anticipated based on Recology needs.

(Due to the SBWMA considering installation of a mixed waste processing system in the northern portion of the Transfer Station, and the JPA's interest in having office and public meeting space at Shoreway, the existing Recology administration building could be impacted. One option being considered includes expanding the Transfer Station westward to provide a mix of operational space, office space and public meeting space and relocating the Recology administrative building behind the Transfer Station.)

Fuel Storage and Dispensing System

Combined, all of Recology's and SBR's trucks consume an average of one million gallons of diesel fuel per year. This fuel is stored and dispensed from an onsite fuel station that is comprised of three 15,000 gallon underground storage tanks (USTs), one primary dispensing island and a satellite dispenser used by SBR. The USTs are single wall fiberglass that were installed in 1980 and are not compliant with current tank code. Except for the fuel monitoring software program that was installed by Recology in 2011, the fuel dispensing system is antiquated and in poor condition. While JPA staff has recommended the removal of these dispensers and tanks and replacing them with above ground storage tanks to reduce the risk for ground water contamination, staff is now in the process of assessing the potential largely to replace diesel fuel with compressed natural gas (CNG).

Traffic Flow, and Vehicle Safety and Parking

Traffic safety, back up at the facility scales, and efficient vehicle flow were major problems of the old facility and have been effectively eliminated thought the Shoreway master plan construction improvements. By relocating the scales and providing ample onsite vehicle stacking before the scales, the overflow of traffic onto Shoreway Road has been eliminated and waiting times have been reduced for collection and public vehicles. Also, onsite vehicle traffic flow and safety has been improved by creating clear lanes of travel for vehicles traveling to the different areas of the site. Public safety was also improved with the expansion of the Transfer Station to provide a separate area for small, public self-haul vehicles away from large commercial collection trucks.

Due to space constraints at the Shoreway site, vehicle parking is a challenge. The parking needs for daily operations include parking for 120 collection vehicles, 22 tractor trailers, and over 200 personnel vehicles. There is limited visitor / tour parking at the front of the MRF building and this is easily overwhelmed by large groups or meetings at the site. All future planning for the site will need to carefully consider the impact on parking and the potential for seeking off-site parking.

2. Assessment of Policies, Programs and Shoreway Infrastructure Enhancements

The previous section consisted of an inventory of the existing programs and infrastructure to help identify if any program and service enhancements are needed in the future. Meetings with Recology and South Bay Recycling (SBR) were held on September 10, 2014 and September 23, 2014; and the SBWMA's Technical Advisory Committee (TAC) on October 9, 2014 to obtain their feedback on whether existing programs and infrastructure should be kept as-is, changed or eliminated. SBWMA staff also worked with technical consultants to evaluate the existing programs and infrastructure and any proposed enhancements. The Board-approved Long Range Plan Guiding Principles were used as the primary criteria to make the determinations on program and service enhancements. Therefore, the considerations in selecting program and service enhancements included:

- meeting the State's 75% recycling goal by 2020;
- making sure product quality and end-market considerations reflect economic considerations;
- leveraging existing infrastructure and investment;
- programs that address any existing service voids or deficiencies;
- cost-effective and efficient programs; and,
- programs/services recommended by Recology and SBR.

Follow-up meetings and discussions with Recology continued through February 2015 on their recommendations, including using split-body collection vehicles for residential service and ongoing outreach and education for commercial customers to determine operational efficiencies, costs and diversion impacts.

Table B.23 on the following page summarizes the enhancements and new programs recommended for evaluation and consideration, and **Section 2** of this Plan provides a more detailed review of the identified programs, service needs and enhancements.

Table B.23

Name/Title	Existing Program/Infrastructure	Proposed Enhancement	Guiding Principle
COLLECTION PROGRAMS AND POLICY			
Compressed Natural Gas (CNG) Fleet Conversion Project	The Recology collection fleet currently runs on B5 biodiesel fuel (i.e., 5% biodiesel and 95% ultra-low sulfur diesel diesel).	The fuel used to run the collection fleet will be changed to compressed natural gas.	• Reduce collection fleet emissions • Provide cost-effective and efficient programs • Invest in new, safe technologies and processes for infrastructure
SFD Split-Body Collection Vehicle Pilot Project	The Recology collection fleet currently consists of single-compartment, fully automated collection vehicles.	Conduct a pilot project to study routing efficiencies using split-body collection vehicles.	• Ensure that program initiatives are convenient, accessible and appropriate • Provide cost-effective and efficient programs
SFD Every Other Week Garbage Collection Pilot Project	SFD residents currently have weekly garbage collection service.	Conduct a pilot project to study the cost effectiveness of collecting garbage every other week.	• Provide cost-effective and efficient programs • Support local, state and national mandates, including meeting the State's 75% recycling goal • Increase and maximize participation in programs and services to reduce and reuse waste
Commercial Recycling Outreach Program Project	The Franchise Agreements with Recology fund a commercial recycling outreach program costing approximately $800,000 per year and it can be refocused to target specific businesses.	Implement a metrics driven sales oriented approach to increase diversion coupled with enhanced public education and outreach efforts.	• Enhance public education to maximize participation • Promote behavior change through public education • Increase and maximize participation in programs and services to reduce and reuse waste • Provide cost-effective and efficient programs • Support local, state and national mandates, including meeting the State's 75% recycling goal
Public Spaces Recycling Pilot Program	There is currently no uniform program across the service area for recycling in public spaces such as parks, sports fields or downtowns.	Implement model public spaces recycling collection in a downtown area and a park setting.	• Promote behavior change through public education • Increase and maximize participation in programs and services to reduce and reuse waste • Provide cost-effective and efficient programs • Support local, state and national mandates, including meeting the State's 75% recycling goal • JPA Member Agency facilities and the Shoreway facility to serve as models for high diversion facilities
Enhanced Residential Public Education and Outreach Pilot Program	Current efforts are sector specific and primarily general with a focus on overall participation.	Conduct a pilot program focusing on cost-effective, measurable dedicated campaigns with incentives and new messaging/tools.	• Enhance public education to maximize participation • Promote behavior change through public education • Increase and maximize participation in programs and services to reduce and reuse waste • Provide cost-effective and efficient programs • Support local, state and national mandates, including meeting the State's 75% recycling goal
Mandatory Residential and Commercial Recycling Ordinance	There are no mandatory residential recycling requirements currently. Limited mandatory commercial requirements are in place through the State's AB 341 and San Carlos' ordinance only.	Develop a policy framework to implement mandatory recycling.	• Enhance public education to maximize participation • Promote behavior change through public education • Increase and maximize participation in programs and services to reduce and reuse waste • Provide cost-effective and efficient programs • Support local, state and national mandates, including meeting the State's 75% recycling goal
Organic Materials (Green Waste and Food Scraps) Disposal Ban	Can currently place organic materials in garbage for disposal.	Develop a policy framework to implement a Countywide ban on disposal of organic materials.	• JPA Member Agency facilities and the Shoreway facility to serve as models for high diversion facilities • Support local, state and national mandates, including meeting the State's 75% recycling goal • Ensure the highest and best use of recoverable materials and implications for end markets so programs are economically and environmentally sustainable
Extended Producer Responsibility (EPR) Policy Framework	The Board has not adopted a policy position on EPR and thus staff is unable to comment on or take a position on proposed legislation except on a case by case basis.	Establish a framework for Board consideration to facilitate supporting EPR legislation and policy.	• Support product stewardship policies and initiatives • Ensure the highest and best use of recoverable materials and implications for end markets so programs are economically and environmentally sustainable • Promote economic development where feasible

Name/Title	Existing Program/Infrastructure	Proposed Enhancement	Guiding Principle
SHOREWAY INFRASTRUCTURE			
Mixed Waste Processing in the Transfer Station	All garbage is directly hauled to the landfill and is not processed for additional recovery	Mixed waste processing system located at the Transfer Station to recover recyclables and organics. Recyclables to be processed further at onsite MRF. Organics to be transferred to SVCW for digestion and energy production.	• Invest in new, safe technologies and processes for infrastructure • Support local, state and national mandates, including meeting the State's 75% recycling goal • Leverage existing infrastructure • Develop and sustain strategic community partnerships
Shoreway Transfer Station Building Improvements	No processing of garbage.	Existing site and building layout will need to be altered to accommodate mixed waste processing system at Transfer Station.	• Leverage existing infrastructure • Provide cost-effective and efficient programs • Reduce and mitigate landfill and other facility impacts • Invest in new, safe technologies and processes for infrastructure • JPA Member Agency facilities and the Shoreway facility to serve as models for high diversion facilities
SBWMA Administrative Offices and Public Meeting Space	The SBWMA offices are located offsite and the JPA pays rent for office space.	Options for building SBWMA office space and public meeting space were researched and are presented.	• Provide cost-effective and efficient programs • Leverage existing infrastructure
MRF Single Stream Processing Equipment Replacement	Existing MRF single stream processing equipment operates two shifts per day Monday-Friday to process recyclables from franchise areas and non-franchise ("3rd party") sources.	Need to replace specific equipment components due to intensive use since original installation in 2011.	• Leverage existing infrastructure • Provide cost-effective and efficient programs • Reduce and mitigate landfill and other facility impacts • Invest in new, safe technologies and processes for infrastructure • JPA Member Agency facilities and the Shoreway facility to serve as models for high diversion facilities
MRF Building Tipping Area Expansion	Existing MRF tipping area is undersized to receive all franchise and non-franchise tons resulting in additional operational expense to keep materials "pushed up" into building so compliant with site permits.	Existing identified and budgeted project to construct a MRF canopy to expand tipping area for collection vehicles to unload recyclables. Project required to handle 3rd party tonnage into MRF.	• Leverage existing infrastructure • Provide cost-effective and efficient programs • JPA Member Agency facilities and the Shoreway facility to serve as models for high diversion facilities
Other Shoreway Infrastructure Improvements	Shoreway site issues include: antiquated diesel fuel system, deteriorating paving, and high energy costs.	Improvements include conversion to a CNG fueling system, improved paving and other enhancements promoting energy conservation.	• Provide cost-effective and efficient programs • Reduce and mitigate landfill and other facility impacts • Invest in new, safe technologies and processes for infrastructure • JPA Member Agency facilities and the Shoreway facility to serve as models for high diversion facilities • Reduce collection fleet emissions
Environmental Education Center and Tour Program Enhancements	RethinkWaste is only minimally engaged in school or community based environmental education outside of the tour program.	Determine what additional components can be added to support educational efforts.	• Enhance public education to maximize participation • Promote behavior change through public education • Increase and maximize participation in programs and services to reduce and reuse waste • Provide cost-effective and efficient programs • Develop and sustain strategic community partnerships • Support local, state and national mandates, including meeting the State's 75% recycling goal

a. Collection Programs and Policies

The CartSMART, BizSMART and Beyond the Cart programs and services provide a wide array of opportunities for the RethinkWaste Member Agency's customers to properly handle recyclables and discards. The implementation of these programs and services has resulted in increasing overall measured diversion service area wide from 39.2% to 48.9% and has also provided significant tangible benefits such as delivering a more robust and convenient system. The existing programs and services currently result in an overall measured diversion rate of 48.9%, which compares favorably to other Bay Area jurisdictions such as the cities of Fremont, and San Francisco as shown in **Table B.24** below. However, the current 48.9% diversion rate is still well below the State's 75% diversion goal by 2020 and the JPA's 75% goal.

Table B.24: Examples of Overall Diversion Rate

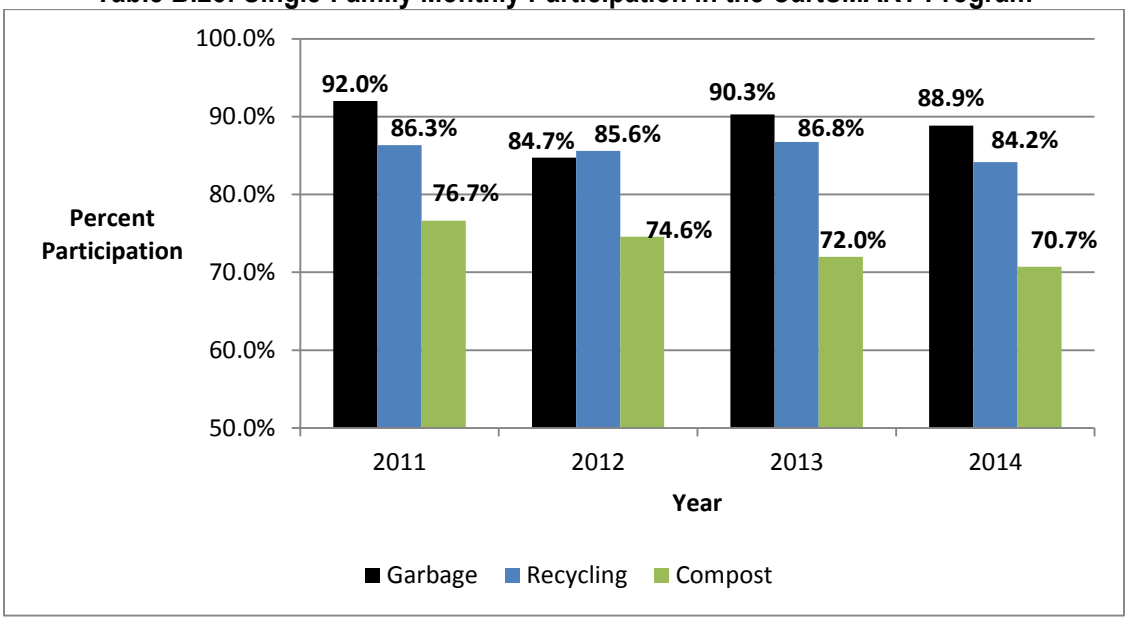
Agency	Overall Diversion Rate
SBWMA	**48.9%**
Fremont	33.7%
San Francisco	53.2%

With the Board approval of the Commercial Recycling Reporting ordinance, the JPA will begin obtaining non-franchise commercial diversion starting in the spring of 2015 which will likely significantly increase our overall measured diversion rate which only includes the materials collected through the Recology Franchise Agreements.

Analysis of Program Metrics

In order to identify opportunities for enhancing existing programs and services, specific program metrics were reviewed such as sector (e.g., residential, commercial, etc.) specific diversion rates, customer participation rates, and the types of materials (i.e., waste composition) that are being disposed. **Table B.25** on the following page shows that monthly participation in the CartSMART residential services varies by material type collected. Garbage collection participation rates went down in 2012 but have remained steady over the past two years. Recycling participation has remained steady since 2011 with a small reduction in 2014; however, participation in the organics program has declined annually by approximately 2% each year.

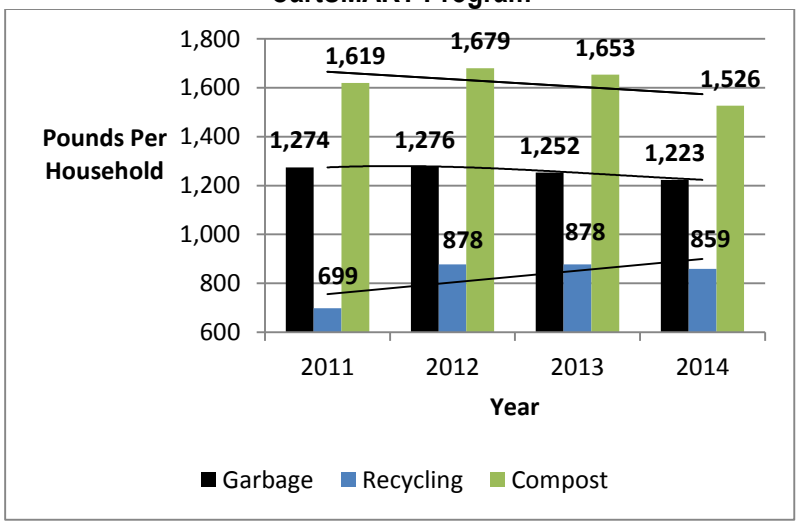
Table B.25: Single-Family Monthly Participation in the CartSMART Program



[1]*The Monthly Participation Percent is based on the Route Assessment data compiled by Recology over a 4-week period in April/May each year and thus represents the percentage of homes that set out materials during these four weeks.*

The amount of material generated by single-family households also varies by material type set-out (i.e., average amount of pounds set-out for collection over a specified period of time). As **Table B.26** shows, garbage collection pounds set out on an annualized basis have remained steady with a small decrease shown from 2011 to 2014. Recycling pounds set out increased significantly in 2012 but has leveled off since and while organics set-outs remained stable from 2011-2013, they dropped slightly in 2014. Thus, it appears that customers are setting out less organics for collection which in-part can be attributed to the ongoing drought in recent years.

Table B.26: Single-Family Annual Pounds per Household Set-Out in the CartSMART Program



In addition to looking at customer participation and set-out rates, it is also important to understand what percent of the materials targeted for diversion (i.e., recyclables and organics) are actually being diverted and what percent of recyclables and organic materials are still being disposed. **Table B.27** provides this data by sector as determined by waste characterization studies recently conducted for each sector (refer to **Table B.15**).

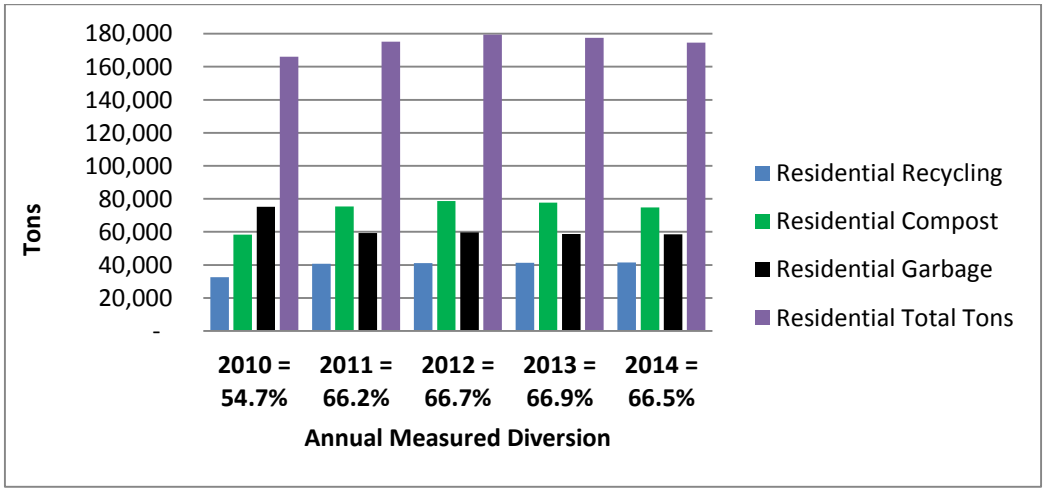
Table B.27: Franchised Disposal Rates of Existing Recycle and Compost Programs

Sector	Percent of Material Disposed	
	Recycling Program Targeted Materials	Organics Program Targeted Materials
Single-Family Residential	28%	24%
Multi-Family Residential	59%	93%
Commercial	45%	54%

As the data in **Table B.27** shows, there remains an opportunity to enhance residential diversion through a focus on increased recovery of recyclables and organic materials that could be diverted through the existing programs and services. The residential sector disposes of 28% of the targeted recycling materials and 24% of the compost materials. The MFD sector currently discards approximately 60% of the targeted recycling materials and over 90% of the organic materials. The commercial sector discards 45% of the recyclable materials and over 50% of the organic materials targeted for diversion. Therefore, there remains significant room for improvement in collecting the targeted recycling and organic materials.

In addition, while the start of the CartSMART services resulted in a significant increase in measured residential diversion in 2011, the measured diversion rate has remained fairly static since 2012 with 0.5% and 0.2% increases in 2012 and 2013, respectively, as shown in **Table B.28** below.

Table B.28: CartSMART Residential Measured Diversion 2010 – 2014



The diversion related effectiveness of the existing programs and services can be measured by assessing which additional quantities of targeted materials that are currently disposed are still available for recovery. In addition, the amount of disposal generated by each sector lends itself to determining the priorities in maximizing diversion from landfill. As the data in **Table B.29** on the following page shows, the Commercial (47%) and MFD

(20%) sectors combined account for approximately 2/3 (i.e., 67%) of all franchised disposal, while the residential sector contributes 1/3 (i.e., 33%).

Table B.29: Percentage of Disposal by Sector

Sector	Percent of Material Currently Disposed
Single-Family Residential	33%
Multi-Family Residential	20%
Commercial	47%
Total	100%

Another factor contributing to the volume and quality of recyclable materials set out for collection through both the BizSMART and CartSMART collection services programs is the amount of contamination of the targeted recyclable materials that is present. While there will always be some inherent contamination of materials due to the design of the collection system and customer behavior, the trend has been generally positive with regard to minimizing contamination through the collection services. **Table B.30** below shows how for the first time the last three consecutive contamination sampling events (i.e., for 2013 and 2014) have resulted in Recology complying with collecting materials that meet the contractually allowable maximum contamination thresholds.

Table B.30: Recology Contamination Sampling Compliance 2011 – 2014

Recology Contamination Sampling Compliance - Exceeding Allowable Contamination Threshold = "No"											
Material Category	Time Period (Year and Quarter)										
	2011				2012			2013		2014	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3/Q4[1]	Q1/Q2	Q3/Q4	Q1/Q2	Q3/Q4
Commercial Recyclables	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Residential Recyclables	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Commercial Organics	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Residential Organics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Commercial Plant	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

[1] The negotiated improvements to the Franchise Agreements and cost savings to the SBWMA in-part resulted in the SBWMA only conducting the contamination sampling procedure twice per year and applying the results from one quarters sampling to two quarters.

At a high level, what we see in the data captured in the above **Tables B.24-3.30** is as follows:

- While we have a relatively high residential diversion rate of 66.5%, there remains opportunity to further increase participation and setout rates to divert more materials.
- The overall diversion rate has remained stable and while still below 50%, it will likely increase once the data obtained through implementing the commercial recycling reporting Ordinance is included.
- Multi-family continues as a unique challenge and opportunity for diversion improvement especially due to this sector's high rate of disposal of both recycling and compost materials.
- The commercial sector contributes the largest percentage by sector of garbage and approximately half of the recycling and compost materials targeted for recycling are recovered through the BizSMART program. Therefore, while the extent of improvement in recycling and compost collection services remains unknown until more recycling data is obtained from this sector, there appears to be considerable room for improvement in existing recycling and compost collection services.
- Public education and outreach is critically connected to the success of all the programs and affects participation and diversion.

- The Franchise Agreements and Shoreway Operations Agreement place a high priority on minimizing the collection of recyclables with high levels of contamination and compliance with collecting recyclables below the allowable contamination thresholds continues to trend positively. In addition, this trend of reduced contamination can also be attributed to the ongoing public education efforts as the messaging to residents consistently focuses on the proper separation and placement of materials in their containers.
- After experiencing a large increase in recycling with the implementation of the Recology services in 2011, the overall diversion rate has remained flat since with small percentage increases annually. This despite a continued drought resulting in an annual reduction in residential compost set-out participation.

Identified Programs and Service Needs and Enhancements

The following is an overview of the enhancements and new programs recommended for evaluation and consideration that are detailed in **Section 2** of this Plan.

Compressed Natural Gas (CNG) Fleet Conversion

Recology currently uses a 5% biodiesel fuel blend in their collection fleet. The current popularity of collection fleets conversion by other public and private haulers seems to indicate that (under current fuel pricing) Compressed Natural Gas (CNG) provides a less expensive long-term fueling option as well as greater environmental benefits through emission reductions compared to the currently used biodiesel blend. Staff is working with Recology and CNG vendors to collect the necessary information to prepare a detailed assessment.

SFD Split-Body Collection Vehicle Pilot Project

While single-compartment collection vehicles used by Recology to service single-family residents result in larger route sizes (more homes collected per route) and less trips to unload at the Shoreway Environmental Center, it does result in having three vehicles collect from each home. This has resulted in customer complaints to Recology about the number of vehicles that are in their neighborhoods. To potentially address this issue, Recology is recommending a pilot program utilizing split-body collection vehicles to co-collect the garbage and recycling at each home. This would result in two vehicles servicing a home instead of three. The pilot would take place over two four-week periods, with approximately 8,000 homes in each period. The data gathered from the pilot would be used to determine any routing efficiencies, cost benefits and feasibility of expanding the program service area wide.

SFD Every Other Week Collection Pilot

Increasing outreach supporting and encouraging diversion efforts by the residential sector will continue to increase and instill positive behavior change, thus staff is recommending implementation of a pilot project to assess the feasibility and cost effectiveness of pursuing a every other week (EOW) garbage collection system. While a wide-scale change to EOW garbage collection would require overhauling the structure of how garbage/recycle/compost rates are charged, staff is not addressing this issue as part of the Long Range Plan.[2]

[2]This issue of restructuring rates is a larger policy decision that will likely be pursued individually by Member Agencies over time. Staff is not addressing this issue as part of the Long Range Plan, but will budget funds in FY1516 to assist Member Agencies with this issue if requested. It is staff's intention to conduct rate analysis work in FY 1516 and FY 1617 to address service area-wide rate scenarios and potential changes to the

The EOW garbage collection pilot would entail studying two residential routes. Numerous aspects of this change in collection service would be assessed including participation, diversion, contamination, collection cost savings, effectiveness of outreach, customer perceptions, etc. However, this pilot project would first require obtaining approval from the San Mateo County Department of Environmental Health who acts as the Local Enforcement Agency regulating the handling of solid waste.

Commercial Recycling Outreach Program Project

The existing commercial recycling outreach program has been successful in many respects, yet the Commercial sector still discards a significant quantity of materials targeted for diversion through the current programs and services. This program is funded through the Member Agencies Franchise Agreements and only with Recology's collaboration and cooperation can improvements be pursued. Staff is recommending a project to implement a metrics oriented approach to focus specifically on types of commercial accounts which potentially generate high volumes of targeted recycle and compost materials in their discards. This effort would require Recology's cooperation with modifying aspects of its current reporting and analyzing the reworked reports. In addition, this effort would also entail through direct outreach to the customers identified as potentially generating high volumes of targeted recycle and compost materials and strategically redeploying Recology's commercial recycling outreach staff in a focused effort to increase diversion. A pilot project to measure the effectiveness of supplemental public education and outreach are also included is part of this effort.

Public Spaces Recycling Program Pilot Project

The opportunity for the public to consistently and conveniently separate materials targeted for diversion through the current programs and services needs improvement service area wide. While the areas in need of improvement for each Member Agency vary, the common theme is that there is no standard system which provides a convenient and effective program for residents to source separate targeted recyclable and organic materials. Staff is recommending a pilot program in two Member Agencies to establish an infrastructure in a downtown area and a park setting which provides a convenient and effective program to capture recyclable and organic materials currently discarded. The FY1415 budget includes funding for a pilot project of this type. In addition, staff has supplemented the information and analysis provided in the Public Spaces Recycling research project report produced in 2014, in order to develop a framework of best practices to implement a program service area wide. The details and scope of the service area wide program will be brought to the Board once tangible experience is gained from implementation of the pilot project.

Enhanced Residential Public Education and Outreach Pilot Project

As previously discussed, except for the significant outreach campaigns deployed for the launch of the new CartSMART and BizSMART programs in 2011, which placed a heavy emphasis on educating customers and a call to action on how to use the new containers, including what specifically goes in each, the current efforts are sector specific and primarily general in their messaging to promote overall participation in the programs and services. As seen by the data, this has resulted in program participation and diversion, especially in the residential sector, leveling off or even declining. Staff is recommending a pilot program

current contractor's compensation adjustment methodology. This work will be pursued concurrently with the process to determine the Member Agency's preferences regarding extending the current contractor agreements or to conduct a competitive procurement.

focusing on cost-effective, measurable dedicated campaigns for the residential sector with targeted new messages, calls to action, incentives and tools.

Mandatory Residential and Commercial Recycling Ordinance Policy Consideration

Future consideration of mandatory residential and commercial recycling should potentially be explored after data is collected through implementation of the RethinkWaste Commercial Recycling Reporting System Ordinance. Until this data is obtained, the clear picture of how much actual diversion is occurring in the commercial sector cannot be formed.

Organic Materials Disposal Ban Policy Consideration

While the SBWMA cannot ban material at the landfill as it is outside of the Agency's jurisdiction, it can facilitate and collaborate with the County on developing such policy. A disposal ban on organic materials at the landfill would promote higher diversion efforts, preserve needed future capacity at the landfill, and reduce the generation of methane which is 27 more times potent of a greenhouse gas than carbon dioxide. Other jurisdictions have taken this approach and it has been successful in reducing the disposal of organic materials at a very low cost.

Extended Producer Responsibility (EPR) Framework

Passing a resolution adopting an Extended Producer Responsibility (EPR) Policy Framework will enable RethinkWaste staff to actively support legislation and the efforts of the California Product Stewardship Council (CPSC). The EPR programs/policies generally promote producer compliance in managing the reuse, recycling and/or safe disposal of products resulting in reducing the cost to ratepayers for the handling, recycling and disposal of various consumer products.

b. Processing and Transfer Infrastructure

The Shoreway Environmental Center serves the critical function of being the hub for the collection services and materials handling infrastructure that support the many programs and goals of the JPA. The Shoreway facility, as the central location where all the materials are handled, provides RethinkWaste additional diversion opportunities through both onsite and offsite materials processing. Cost effective waste diversion is a strategic goal considered in the Shoreway infrastructure assessment process. Other goals include: efficiency of facility operations, customer and worker experience and safety, and the consideration of how the Shoreway infrastructure fits into the long-term goals and regulatory compliance needs of the JPA. Specifically, the JPA still has work to do to boost the current 48.5% measured diversion rate to achieve the State's 75% diversion goal by 2020 and the JPA's 75% goal.

Mixed Waste Processing in the Transfer Station

As discussed earlier in this report, waste characterization studies performed by the SBWMA indicate that large amounts of organic materials, and to a lesser extent recyclables, remain in the waste stream. Staff has been working on a project to process the mixed solid waste at the Transfer Station to recover the remaining organic and recyclable materials. A key component of the project concept is the partnership with Silicon Valley Clean Water (SVCW) to process the organic materials (food waste) into energy using anaerobic digestion (AD). By leveraging the existing infrastructure and generating electricity to offset facility power costs, it is expected that SVCW will be able process the organic materials recovered from the garbage at a cost effective tipping rate.

Both agencies signed an MOU on April 24, 2014 and initiated a preliminary technical and feasibility study. Results of the study indicate that up to 160 tons per day of organic materials could be diverted from the SBWMA's waste and used to generate approximately two megawatts of power when incorporated into SVCW's AD process. Additionally, a mixed waste processing system at the transfer station could recover up to **60** tons per day of recyclable commodities that could be mixed with and sold with the other commodities from the MRF. In total, this project has the potential to divert up to 25-30% of the solid waste stream.

Shoreway Transfer Station Building Improvements

The MRF and Transfer Station buildings were substantially improved during the 2011 master plan construction. As part of the long range plan process and the need to achieve additional recovery, staff has assessed the current Transfer Station and other Shoreway buildings for a possible location to install a mixed waste processing system.

Due to the overall space constraints at Shoreway, the only location for a mixed waste processing system is at the current Transfer Station, however, the current building is too small and must be expanded in order to accommodate additional equipment and operations. Staff is currently in the process of evaluating mixed waste processing systems and conducting equipment layout scenarios. Preliminary results of this assessment have identified two preferred options: 1) a westward expansion of the Transfer Station building by 4,400 square feet that would fit behind the existing Recology administration building; and 2) a larger westward expansion of 12,000 square feet of operational area. Option 2 would require the demolition of the current Recology administration building and the construction of a new 10,000 square feet two-story building to the east of the Transfer Station.

SBWMA Administrative Offices and Public Meeting Space

The SBWMA is assessing the opportunity to relocate its offices from the current location at the San Carlos Library building to the Shoreway Environmental Center. The JPA currently leases office space from the City of San Carlos (for the past 12 years) and has the free use of the library's Community Room that is used for our monthly Board meetings. The current lease for approximately 2,500 square feet costs the JPA, with rent and utilities included, roughly $60,000 per year and expires after June 30, 2015. Staff is in the process of negotiating a lease extension with the City.

Staff has worked with JRMA Architects to develop three potential options for creating office space for the JPA staff and public meeting space at the Shoreway facility. These options are:

- Option 1 - take over and remodel approximately 3,000 square feet of space on the second floor of the Recology administration building. This space largely comprises the current upstairs meeting room where Board meetings were previously held and some adjacent office space near the kitchen.
- Option 2 - construct a new building in the visitors parking lot next to the MRF with a ground level parking garage and a second floor with office space a community meeting room (for Board meetings and other public needs.) The second floor area would be 5,500-6,000 square feet.
- Option 3 - construct office and meeting space that would be added to and be integrated with an expansion to the Transfer Station building.

The evaluation of options will be substantially influenced by the space needs for the mixed waste processing system in the Transfer Station. A small expansion of the Transfer Station (approx. 4,400 sq. ft.) would allow for consideration of Options 1 and 2. Option 3 is tied to a larger expansion (approx. 12,000 sq. ft.) of the Transfer Station. It should be noted that Option 1 would require the JPA to secure meeting space offsite for Board meetings. Both Options 2 and 3 would provide for office space for JPA staff and community meeting space.

MRF Single Stream Processing Equipment Replacement and MRF Building Tipping Area Expansion

As discussed earlier, the MRF equipment building and sorting system was constructed in 2011 and has been operating for roughly four years. The building and the sort system have fully met the original design goals and have exceeded the productivity and efficiency expectations of the JPA. Additionally, the system has performed reliably and there have been no large un-warrantied equipment failures that the SBWMA has had to pay for. Another measure of the MRF system performance has been the product quality and over last four years, there have been no commodity rejections or down-grades.

The MRF was designed to process all of the franchise recyclables (~280 tons per day) in one shift of operations. Over 2013 and 2014, SBR and the SBWMA have worked together to "market" the second-shift MRF processing capacity of the MRF. Currently the MRF has a full second shift and processing an additional 115 tons per day of third-party material supplied by Recology. The third party tonnage has financially benefited the SBWMA through the collection of host-fee payments of $13.37 per ton (2015 fee amount) and over the past two years the JPA has received a total of $525,000 in third party revenues.

While the MRF sorting equipment has kept up with the increase in operating hours and tonnage, the MRF building was not sized for the additional tonnage and truck unloading and there are frequent backs-ups during busy periods of the day. The Board has approved a budget amount of $450,000 for the construction of a MRF building tipping area expansion to alleviate the pressure on the tipping area and the risk of regulatory violation and construction of this project is planned for 2015.

CNG Fueling System

As discussed earlier in **Appendix B.2.a** (see page 155), The SBWMA is assessing the option of converting the Recology collection fleet from diesel to compressed natural gas (CNG) to obtain the benefits of using a cleaner burning and less expensive fuel. To support a CNG collection fleet, the existing diesel fuel system would need to be replaced with a CNG fueling system. This system would be connected to the PG&E pipeline and a gas compression and dispensing system would be installed in the Recology area currently used for vehicle fueling and parking. Prior to converting to CNG, the existing diesel fuel system would need to be removed – this system is antiquated, in need of replacement and contains underground storage tanks (USTs) that present an increased risk of leaking and groundwater contamination. (Note that the current UST's are tested quarterly and there is no indication of leaking.)

At this time, the use of CNG in large tractor trailers has not proven operationally viable so the SBR transfer trailer fleet would not be converted to CNG; these trucks may still need to be fueled using a small diesel system, however, it is likely that CNG tractor trailers will be available within the next 5 to 10 years.

Other Shoreway Infrastructure Improvements

During the master plan construction, half of the paving at the Shoreway Center was replaced with new concrete paving. The area of the Shoreway site that is used by Recology for truck parking, maintenance and employee parking and shown in the image on the following page, has original asphalt toping that is nearing the end of its useful life and is show signs of failure. The roughly six acres of paving is being patched on an as-needed basis as part of routine facility maintenance but within the next five years large portions of the six acres of asphalt will need to be removed and replaced.

Aerial Photo of Shoreway with Recology's Operational Area

Energy Saving Projects

LED Lighting Retrofit - At the time of the master plan construction, LED lighting technology was not reliable enough to use in the buildings or parking areas. LEDs are now available and are more energy efficient and longer lived than the 150 existing metal-halide light fixtures in the MRF and Transfer Station. By conducting an operating and replacement cost assessment, staff has determined that a complete re-lamping of the facilities to LEDs promises energy cost savings.

Battery Power Storage - PG&E provides power to Shoreway and charges for 1) the amount of power consumed and 2) the peak power used. Installation of photovoltaics at Shoreway in 2011 has helped reduce the facility's overall power use, but peak-power charges caused by the processing equipment create a high electricity bill. New battery storage systems offer a way to reduce peak power usage and associated PG&E "demand charges." Modeling of the power usage at Shoreway show that battery systems can save the SBWMA $10,000 per year in PG&E demand charges.

Environmental Education Center and Tour Program Enhancements

The JPA has a strong foundation to build upon with its popular and cost effectively managed environmental education program with public and school tours coupled with community events and service learning activities with art and poster contests. RethinkWaste is currently only minimally engaged in school or community-based environmental education/service learning outside of the Shoreway environmental education tour program.

Staff completed, with the support of a consultant, a follow-up study to the May 2014 benchmarking report to capture operational details and best practices associated with model environmental education programs. Excerpts from the study can be found in **Attachment E.**

RethinkWaste is fortunate in that there are several innovative and cost-effective programs in the Bay Area where local governments partnered with the community, their waste haulers, local businesses and schools to further robust educational and experiential programs that have quantifiable and measurable outcomes. These best practices provide a starting point for proven strategies that can be adapted or replicated in the RethinkWaste service area.

As shown in **Table B.31**, beyond the current scope of our program, there is a vast array of additional components that can be added to our program including a number of school-based programs and non-profit partnerships to support educational efforts.

There are many worthwhile non-profit and non-governmental organizations created by educators, parents and community groups to enhance and often times supplement in-classroom and service learning activities in the schools.

Many of these organizations offer their services for free to the schools but depend heavily on the financial support of the business community and local governments to fund long term sustainable programs.

Table B.31: Matrix of Environmental Education Programs

	RethinkWaste	StopWaste (JPA in Alameda County)	SF Dept. of Environment	Marin Sanitary (private company)	Eco-Cycle (nonprofit in Boulder County, CO)
FACILITY TOURS	✓	✓	✓	✓	✓
SCHOOL BASED PROGRAMS:					
Classroom Curriculum	Post-tour learning activity; on-site Rethinker classroom	✓	✓	On-site Environmental Classroom	✓
Service Learning	Fix-it Clinic, Trash to Art contest, etc.	✓	✓	Through Marin School of Environmental Leadership	✓
Assemblies/School Presentations		✓	✓	✓	✓
Diversion Programs	Currently limited to private schools subject to franchise.	✓	✓	✓	✓
District Level and School Based Green Teams		✓	✓	✓	✓
Waste Mgt. Policies		✓	✓	✓	✓
School Gardens	Limited compost donation program	✓	✓	✓	✓
NON-PROFIT PARTNERSHIPS		✓	✓	✓	✓

Staff is recommending that we identify environmental education and service learning program expansion options with a primary goal of supporting the JPAs goal of reaching 75% diversion. Those teachable moments from our existing tour program could be reinforced if the resource conservation messaging was integrated into the classroom to support and compliment the JPAs recycling outreach to homes, and businesses. We know that messaging needs to be continuous and pervasive where people live, learn, work and play.

Service learning also goes hand in hand with what is taught in the classroom or learned through the tour. It is an opportunity to put knowledge of resource conservation into action while encouraging community service and team building.

Before staff can recommend specific program options there remains a few critical unanswered questions: what do our customers want; what environmental education programs fit best into existing efforts in the schools in our service area and what areas for expansion make the most sense?

Staff's recommendation is to redeploy one of our environmental educators to conduct a nine-month stakeholder engagement process to answer these questions. The deliverable for this process would include:

- By April 2016, staff would come back with a final report and recommendations on what environmental education programs the JPA can best integrate into our current program to meet the needs of our customers; these will be recommendations vetted by key stakeholders from local schools, nonprofits and related organizations focused on environmental education.