

Abandoned Materials Collection

At the request of the City, the Companies have proposed the assumption of a part of the abandoned materials collection program currently operated by the DPW compactor trucks. This proposed program includes the collection of items identified through the City's 311 reporting system, along with abandoned materials identified by Company personnel. The Companies propose to operate the program similar to Bulky Item Recycling, with utilization of five rear-loading packer trucks, five box trucks (for mattresses, electronics, appliances, etc.) and one pickup truck. Each crew would consist of two drivers, one in a rear loader and one in a box truck. Drivers would be assigned to a specific service area, and would be routed to collect abandoned materials reported through the 311 system. The company's goal is to respond to abandoned waste requests within a four-hour window on weekdays and an eight-hour window on weekends and holidays. Drivers would also be expected to collect any abandoned materials present on their routes where practical, even if it is not part of the 311 calls. All stops and collections will be documented. This program structure will increase collection and diversion of abandoned materials.

In addition to collection of materials related to 311 calls, the abandoned materials program will provide support for events identified by the City, including selected parades, festivals and holidays. The proposed plan includes all program costs, including 10 drivers each weekday, 8 drivers on Saturday, 6 drivers on Sunday, supervision, administrative support, vehicle costs, and disposal costs corresponding to expected tonnage.

Response Time Goal

As indicated in the narrative, the service standard of response within four hours on weekdays and eight hours on weekends was proposed as a goal by the Companies. It is important to note that service standards may be impacted by several factors, many of which are beyond the Companies' control. We have outlined below the assumptions used to help establish that service goal. Consistent with our practice in other areas, Recology looks forward to working with the City to better define service parameters and conditions related to the Abandoned Material Collection program.

Assumptions:

- Staffing and costs are based on collection information provided by City staff
- Calls to collect abandoned waste would originate from 311 system and would be routed automatically to Companies.
- Abandoned materials is defined as bags and/or piles of material, furniture, appliances and other material (tires, etc.).

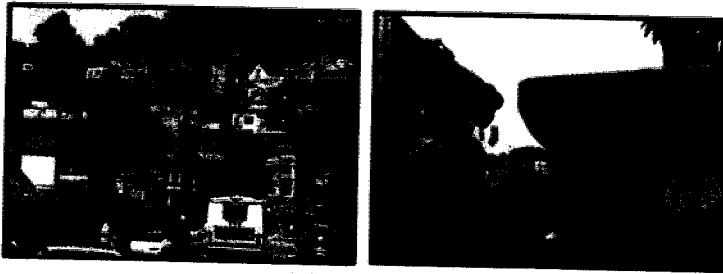
If there are changes in the assumptions regarding number of calls or other program inputs, it could impact service standards. That is why the Company proposed the standards as "goals".

Abandoned Materials Collection

Summary

	# of Units	Unit Rate	Amount
Labor Hours - Union			
Driver - Regular	21,248 Hrs	85.51	1,816,883
Driver - Saturday	3,600 Hrs	88.57	318,858
Driver - Sunday	2,560 Hrs	118.10	302,325
Driver - Holiday	176 Hrs	118.10	20,785
	<u>27,584 Hrs</u>		<u>2,458,850</u>
Labor Hours - Non/Union			
Supervisor - Regular	2,080 Hrs		138,054
Supervisor - Saturday	416 Hrs		-
Supervisor - Sunday	416 Hrs		-
Labor Hours - Union			
Administrative Support - Weekday	2,080 Hrs		99,563
Vehicles			
Rear loaders	5	59,542.72	297,714
24' MEA Vans	5	27,161.30	135,806
Pickup Trucks	1	11,797.11	11,797
Electronics			
Computers	2	1,030.00	2,060
Printer	1	1,855.00	1,855
Nextel Phones	12	155.00	1,860
Hand Held Computers	1	525.00	525
Supplies			
Brooms, Shovels an Tools	10 HC	515.00	5,150
Personal Protective Equipment	10 HC	515.00	5,150
Disposal			
3,062 Tons	3,086	149.84	462,398
Total:			<u><u>3,620,783</u></u>

FINAL REPORT
Phase 2 of Study to Examine
Practices for Selecting Refuse
Collection, Hauling and Disposal
Providers



Prepared for:
San Francisco Local Agency Formation
Commission

May 26, 2011

R3 Resources, Respect, Responsibility
Consulting Group, Inc.

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1.0 Purpose of the Study

1.1 Introduction

The San Francisco Local Agency Formation Commission (LAFCo) engaged R3 Consulting Group, Inc. (R3) to analyze the policies and procedures that jurisdictions within the Greater Bay Area, including the City and County of San Francisco (San Francisco), use to select refuse collection, transfer, recycling and disposal service providers. To address LAFCo's request, R3 surveyed the procurement practices of jurisdictions in the Greater Bay Area in order to compare those practices to those currently used by San Francisco. R3 also examined jurisdictions outside of the Greater Bay Area that use barge and rail as a way to transport waste. The Final Report for that study (Phase One report) was released on April 14, 2011.

LAFCo has extended the scope of the study to include: 1) a comparison of the fees and "free" or discounted solid waste services received by San Francisco and other local jurisdictions from their exclusive collection service provider along with a comparison of the total of those fees and services as a percentage of gross revenues from the provision of the exclusive services (the Fee and Service Percentage); 2) a comparison of reported diversion rates and current residential and commercial rates for selected jurisdictions to determine if there is any quantifiable correlation between the reported diversion, the Fee and Service Percentage and the residential and commercial rates; 3) a description of the fixed assets that are held by Recology in San Francisco, including original and book value of each property if available; and 4) and a summary of the potential benefits and consequences of barging various materials from the Port of San Francisco based on the current report commissioned by the San Francisco Department of the Environment and information received from Port of San Francisco staff and Recology. This report addresses the expanded scope.

1.2 Limitations

The study was limited to those jurisdictions in the Greater Bay Area Bay that were willing and able to provide the requested information or whose service provider was willing and able to provide the requested information. The fee and service data included in this portion of the study was provided by the City of San Francisco, the City of San Jose, Recology, and Waste Management of Alameda County. The data has been accepted

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as presented and has not been subjected to independent audit or verification.

This study is not intended to analyze San Francisco's solid waste system, nor is it intended to be used as a basis to revise the current system.

2.0 Data Sources and Methodology

2.1 Data Sources

R3 used a combination of phone and e-mail surveys, interviews, and Internet research to compile the information used in this report. Data compiled for this report was gathered from the following sources:

- Surveys and discussions with agencies and service providers;
- Data gathered in previous studies and projects by R3 including Alameda County, South Bayside Waste Management Authority, and the previous report prepared by R3 for LAFCo;
- Interviews with San Francisco agencies, including the San Francisco Port Authority (Port), the Department of Public Works and the Department of the Environment (DOE);
- Interviews with the Department of Sanitation New York City (DSNY);
- Interviews with Visy Paper Mill;
- Documents provided by various entities; and
- Internet research.

2.1.1 Jurisdiction and Hauler Surveys

A total of 13 jurisdictions in the Greater Bay Area and two franchised solid waste service providers were contacted by phone and/or by email. Information was received from the City and County of San Francisco, City of San Jose, Recology, and Waste Management of Alameda County.

Table 1 lists the jurisdictions in descending order by population for which complete information was received and which are included in this report.

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San Jose	Santa Clara	1,023,083
San Francisco	San Francisco	856,095
Oakland	Alameda	430,666
Hayward	Alameda	153,104
San Mateo	San Mateo	97,535
Redwood City	San Mateo	78,568
East Palo Alto	San Mateo	33,524
Menlo Park	San Mateo	32,185
Foster City	San Mateo	30,719
Burlingame	San Mateo	29,342
San Carlos	San Mateo	29,155
Belmont	San Mateo	26,507
Emeryville	Alameda	10,227

The key information that was gathered from jurisdictions and service providers is listed below:

- Fees included in rates that are exclusive to the provision of the franchised services;
- Value of "free" or discounted services included in rates; and
- Gross revenues of haulers from the provision of exclusive collection services.

Appendix A provides data collection forms used in the surveys.

2.1.2 Documents Provided by Various Entities

Documents provided by various entities for this study include:

- The Technical Memorandum, Comparison of Waste Transportation Methods from San Francisco to the Ostrom Road Landfill, prepared by HDR Engineering, Inc. for the San Francisco Department of the Environment (DOE);
- RFP for the Ports of Stockton, West Sacramento M-580/180 Marine Highway Corridor Project;
- New York City's Solid Waste Management Plan; and
- The 2010 DSNY Annual Report.

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2.1.3 Internet Research

R3 conducted Internet research to collect information on the diversion rates of jurisdictions in Alameda County and San Jose and information related to New York City's barge system.

2.2 Methodology

2.2.1 Fees and Free or Discounted Services Received by San Francisco and Other Local Jurisdictions

For this study R3 requested information on public agency fees, free or discounted services, and gross revenue from collection services from public agencies and service providers for San Francisco, Oakland, San Jose and other selected municipalities in the Greater Bay Area.

Customer Billing Services

In most cases, the service providers for the municipalities included in this report are responsible for providing customer billing services. Therefore, the various service fees implemented by the municipalities are collected by the service provider and remitted to the municipality.

However, there are two exceptions noted in this study. The City of San Jose is responsible for customer billing services; therefore, all funds are remitted directly to San Jose from the customer. The solid waste service provider for the City of Oakland is responsible for collecting the fees needed to pay a separate contractor who performs a portion of the recycling collection services. These monies are remitted to the City which uses them to pay the second contractor. Even though these fees are collected by a service provider and remitted to the City they are not considered fees for purposes of this study.

Fees

With three exceptions, fees included in this report were limited to those fees that were collected by the service provider and remitted directly to the municipality. The first and second exceptions relate to the cities of San Jose and Oakland and were discussed above. The third exception relates to Alameda County where Measure D monies are collected through customer rates and remitted to StopWaste.Org. Portions of those funds are then remitted to the municipalities by StopWaste.Org. Those fees remitted to the municipalities have been included in this study.

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Free or Discounted Services

Free or discounted services were limited to those services that are provided to a municipality by the service provider as part of the provision of exclusive residential and commercial collection services for which there is no charge or a reduced charge.

In most cases, this category does not include standard services that may be bundled into a single rate. For example, many residential collection rates include the cost of collecting solid waste, recyclables, organics, used oil and bulky items. The single rate covers the cost of providing each of the services even though the individual costs are not segregated in the rate.

However, certain services, such as holiday tree collection, which were incorporated into the initial service data provided for San Francisco, have been included in the study in order to provide for fair comparison of the value of free or discounted services.

Gross Revenue

Gross revenue was limited to those revenues directly related to the provision of exclusive residential and commercial collection services. It does not include gross revenues from the provision of non-exclusive services, such as the collection of construction and debris boxes or the sale of recyclable materials.

Fee and Service Percentage Methodology

Using the gross revenue from exclusive collection operations and the value of the fees and free or discounted services provided R3 calculated the "Fee and Service Percentage" for each jurisdiction by dividing the value of the fees and services received by the gross revenues.

R3 also compared reported diversion rates and current residential and commercial rates for the selected jurisdictions to determine if there is any quantifiable correlation between the reported diversion, the Fee and Service Percentage, and the customer rates.

2.2.2 Recology Fixed Assets in San Francisco

R3 met with and toured Recology-owned facilities in order to gather information on the fixed assets owned by Recology in San Francisco that are being, or have been, paid for with funds received from the ratepayers of San Francisco. Financial data on these assets were obtained from Recology.

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2.2.3 Barging as a Way to Transport Waste

This report provides an analysis of the potential benefits and consequences of various options in regards to barging solid waste from San Francisco. The analysis is based mainly on a review of the report prepared for the DOE by HDR, and discussions with staff of the Port of San Francisco and other San Francisco Agencies. For this analysis R3 also interviewed DSNY staff regarding New York City's current operations and future plans in regards to using barge and rail as a way to transport waste, as well as Visy Paper Mill staff.

3.0 Analysis

3.1 Fees and Free or Discounted Services Received by San Francisco and Other Local Jurisdictions

Information on fees, free and discounted services and gross revenues were collected in order to calculate a Fee and Service Percentage. That percentage, along with diversion and customer rates, was then used for comparison purposes in order determine if any correlation exists between the three factors (Section 3.1.2). Table 2 summarizes the fee and service information gathered.

City	Total Fees Paid Directly to City	Total Free Services Received by City	Total Value of Fees & Services	Gross Revenue From Collection Operations	Fee and Service %
Emeryville	\$ 918,126	\$ 174,100	\$ 1,092,226	\$ 3,181,000	34.34%
Oakland ⁽¹⁾	\$ 23,548,211	\$ 1,326,231	\$ 24,874,442	\$ 80,886,000	30.75%
Belmont	\$ 1,465,292	\$ 114,150	\$ 1,579,442	\$ 5,394,156	29.28%
East Palo Alto	\$ 786,384	\$ 156,114	\$ 942,498	\$ 4,639,960	20.31%
Hayward	\$ 4,884,992	\$ 438,154	\$ 5,323,146	\$ 27,521,000	19.34%
San Mateo	\$ 2,553,963	\$ 421,275	\$ 2,975,238	\$ 16,506,640	18.02%
Redwood City	\$ 2,177,316	\$ 323,040	\$ 2,500,356	\$ 15,951,066	15.68%
Burlingame	\$ 1,084,272	\$ 239,622	\$ 1,323,894	\$ 8,686,950	15.24%
Menlo Park	\$ 1,171,139	\$ 226,123	\$ 1,397,262	\$ 9,630,852	14.51%
San Francisco	\$ 12,465,689	\$ 18,755,087	\$ 31,220,776	\$ 219,515,497	14.22%
San Carlos	\$ 771,576	\$ 97,655	\$ 869,231	\$ 6,333,212	13.72%
San Jose	\$ 9,193,621	\$ 415,696	\$ 9,609,317	\$ 99,887,184	9.62%
Foster City	\$ 386,072	\$ 89,336	\$ 475,408	\$ 5,548,318	8.57%

Note 1 - The City's service provider remits \$30,348,211 in fees to the City of Oakland. \$6,800,000 of these fees are used to pay the City's second recycling contractor and have been subtracted from the total fees paid directly to the City leaving a balance of \$23,548,211.

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3.1.1 Fee and Free or Discounted Services Comparison

Fees and Free or Discount Services for the 13 jurisdictions were reported by service providers and/or jurisdictions. The data form used to collect fee and service information is included in Appendix A.

As discussed previously, with the exception of Measure D fees and San Jose and Oakland customer billings, the fees used in this study are limited to those fees which were collected directly by the service provider and remitted directly to the municipality. Fees reported in this study include:

- Franchise Fee;
- Franchise Extension Fee;
- Impound Account/Balancing Account;
- City Fees/Administrative Fees;
- Recycling Fees/Program Fees;
- Vehicle License Fees;
- Vehicle Impact Fees;
- Disposal Facility Tax;
- Route License/Permit Fees;
- Performance and Billing Review Fees;
- Administrative Enforcement Contribution Fees;
- Street Sweeping Fees;
- Public Education Fees;
- Measure D Fees;
- Rate Stabilization Fees; and
- Landfill Closure Fees.

Many franchise agreements require service providers to offer "free" or discounted services. The cost of these services was calculated by the service providers or the jurisdiction in order to determine the total value of "free" services. Free services reported in this study include:

- City Litter Can and Recycling Collection;
- City Sponsored and Non-Profit Events;
- City Collection Services;
- DPW Collection & Disposal;

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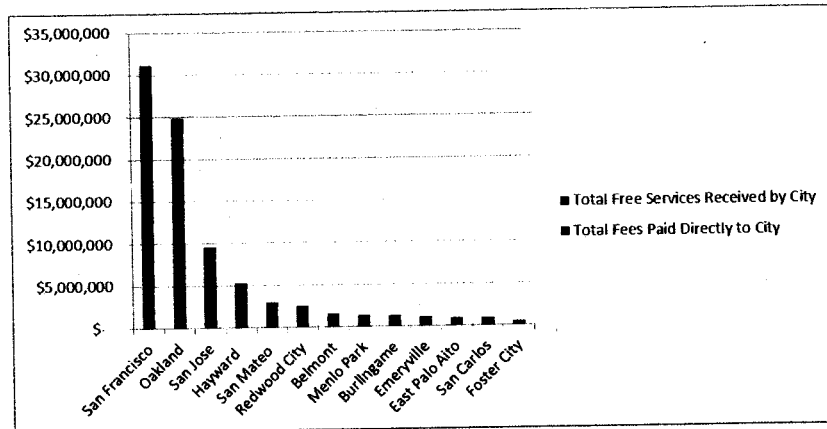
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- Holiday Tree Collection;
- Clean Team Event/Neighborhood Cleanup;
- Free Disposal;
- Battery Collection;
- Compost Give-a-Ways;
- Compact Fluorescent Light (CFL) Collection;
- Sharps Program; and
- Free Collection for Public Schools.

R3 added the total dollar amount of fees paid to the cities to the total value of services in order to quantify the total value of fees and services received by each city. We noted that while Oakland receives the largest amount of fees, San Francisco receives much more in free or discounted services; with the total value of fees and services for the two cities being nearly equal and considerably higher than those of the other cities included in this study. Chart 1 and Table 3 illustrate the total amount of fees and free or discounted services that each of the jurisdictions receive.

CHART 1
Total Value of Fees and Services



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San Francisco	\$ 12,465,689	\$18,755,087	\$ 31,220,776
Oakland ⁽¹⁾	\$ 23,548,211	\$ 1,326,231	\$ 24,874,442
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Emeryville	\$ 918,126	\$ 174,100	\$ 1,092,226
East Palo Alto	\$ 786,384	\$ 156,114	\$ 942,498
San Carlos	\$ 771,576	\$ 97,655	\$ 869,231
Foster City	\$ 386,072	\$ 89,336	\$ 475,408

Note 1 - The City's service provider remits \$30,348,211 in fees to the City of Oakland. \$6,800,000 of these fees are used to pay the City's second recycling contractor and have been subtracted from the total fees paid directly to the City leaving a balance of \$23,548,211.

Gross Revenue

The service provider's gross revenue was collected for the 13 jurisdictions. These amounts reflect only those revenues associated with exclusive collection services. Gross revenue is used in calculating the Fee and Service Percentage for each city. Chart 2 shows a comparison of those revenues and Table 3 lists the gross revenues of each jurisdiction along with population and the calculated gross revenues per capita. For the majority of the jurisdictions included in this report gross revenues are related to the provision of exclusive residential solid waste, recycling and organics collection services and exclusive commercial solid waste and recycling services.

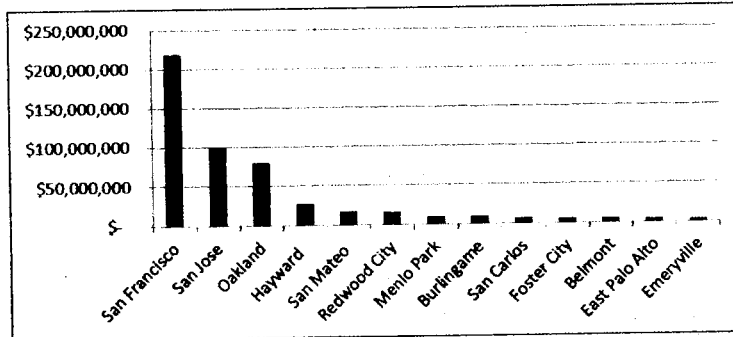
However, commercial solid waste, recycling and organics collection service in the City of San Jose are not exclusive but are provided by a variety of companies on a free market basis and thus the gross revenues for San Jose are only related to the provision of exclusive residential solid waste, recycling and organics collection services. We noted that commercial collection services in the City of San Jose will be regulated under the terms of an exclusive Franchise agreement in 2012. In addition, commercial recycling and organics collection services in the City of Oakland are not exclusive but are provided by a variety of

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companies on a free market basis and thus the gross revenues for Oakland are only related to the provision of exclusive residential solid waste, recycling and organics collection services and exclusive commercial solid waste collection services

**CHART 2
Gross Revenues of Service Providers**



San Francisco	\$	219,515,497	856,095	\$	256.41
San Jose	\$	99,887,184	1,023,083	\$	97.63
Oakland	\$	80,886,000	430,666	\$	187.82
Hayward	\$	27,521,000	153,104	\$	179.75
San Mateo	\$	16,506,840	97,535	\$	169.24
Redwood City	\$	15,951,066	78,568	\$	203.02
Menlo Park	\$	9,630,852	32,185	\$	299.23
Burlingame	\$	8,686,950	29,342	\$	296.06
San Carlos	\$	6,333,212	29,155	\$	217.23
Foster City	\$	5,548,318	30,719	\$	180.62
Belmont	\$	5,394,156	26,507	\$	203.50
East Palo Alto	\$	4,639,960	33,524	\$	138.41
Emeryville	\$	3,181,000	10,227	\$	311.04

Fee and Service Percentage

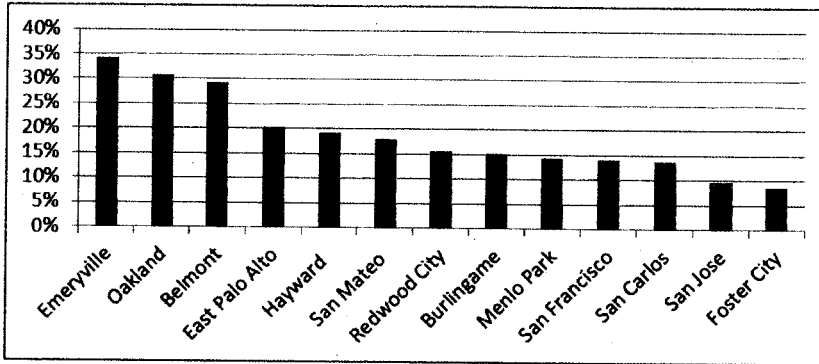
Fee and Service Percentages were calculated for each of the 13 jurisdictions by dividing the total value of the fees and services received by each city by the service provider's gross revenues. The higher the percentage, the more free services and fees are being received by the city in comparison to the gross revenues of the service provider.

As shown in Chart 3 below, and previously in Table 2, San Francisco's Fee and Service Percentage is lower than the majority

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of jurisdictions included in this study, while Emeryville has the highest Fee and Service Percentage of the cities included in this study.

**CHART 3
Fee and Service Percentage**



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3.1.2 Diversion Rate, Fee and Service Percentage and Customer Rate Comparison

Diversion Rate

Hauler and/or city reported diversion rates were gathered for the 13 jurisdictions included in this study in order to determine if there is any obvious relationship between diversion rates, customer rates and the Fee and Service Percentage.

Diversion rates for this report were obtained from the following sources:

- Recology reported the diversion rates for the jurisdictions located in San Francisco and San Mateo County;
- Stopwaste.org lists the diversion rates of jurisdictions located in Alameda County; and
- San Jose's reported diversion rate was obtained from a city staff report available on the city's website.

Table 5 lists the diversion rates reported for the jurisdictions included in this study.

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[REDACTED]	
East Palo Alto	82%
San Francisco	77%
Emeryville	70%
Hayward	68%
Oakland	67%
San Jose	62%
Belmont	61%
Redwood City	61%
Burlingame	60%
Menlo Park	55%
San Mateo	55%
Foster City	50%
San Carlos	47%

Customer Rates

The customer rates used in this study were taken from our Phase One report. As part of that report, residential customer rates were gathered for 20 gallon, 32 gallon, 64 gallon, and 96 gallon carts and commercial customer rates were gathered for once a week collection of 1 cubic yard, 2 cubic yard, and 4 cubic yard bins. As was discussed in more detail in the Phase One report, according to the San Francisco Department of the Environment (DOE), a 50% discount placed on commercial customer rates is the most common commercial customer rate paid in San Francisco; for this reason the San Francisco 50% discounted rate was used in this report. Charts 4, 5 & 6 present a comparison of the 20 and 32 gallon residential rates and the 2 cubic yard commercial rates. A complete list of customer rates is available in Appendix B.

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CHART 4
20 Gallon Rate

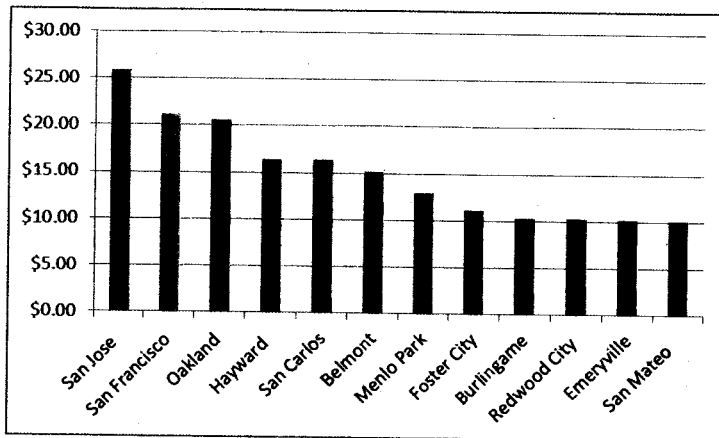
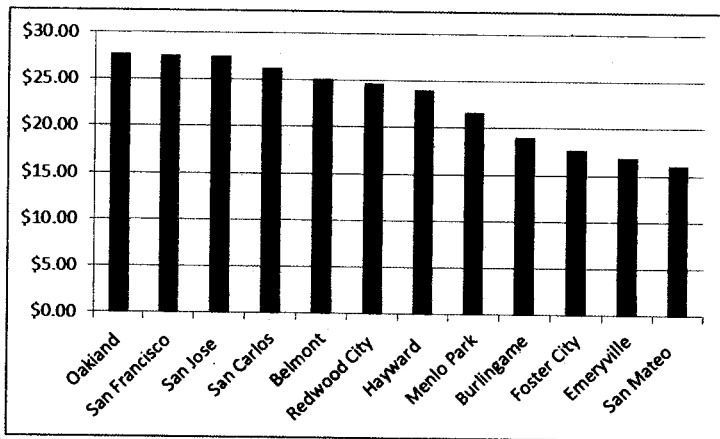


CHART 5
32 Gallon Rate

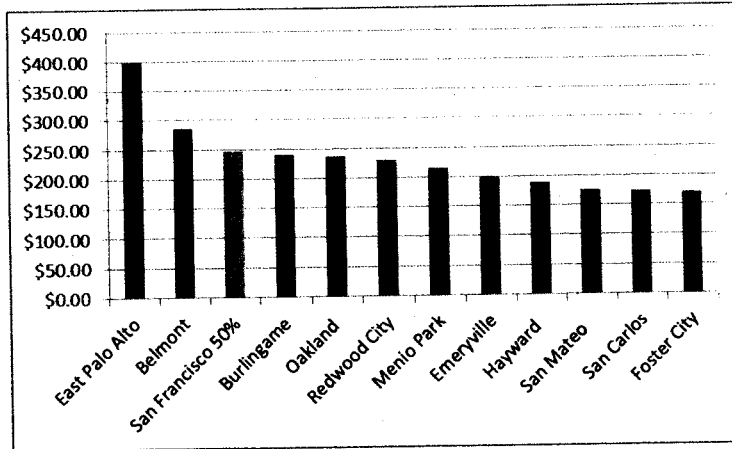


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CHART 6
2 Cubic Yard Rate



Correlation of Data

The costs associated with the development and implementation of programs to obtain high diversion rates along with fees and free or discounted services are two of the larger factors that can affect customer rates. Other factors include items such as basic services provided, disposal fees, residential versus commercial customer makeup, and collection density. This study is limited to considering the potential correlation between rates, reported diversion rates and fees and free or discounted services received. It does not include any consideration of the other factors that may affect customer rates.

In addition customer rates are often set to achieve a specific purpose as opposed to representing the actual cost of service. For example many jurisdictions structure customer rates to encourage recycling by setting rates for smaller solid waste containers below the actual cost of service and setting rates for larger solid waste containers above the actual cost of service. In addition some jurisdictions subsidize residential customer rates by increasing commercial customer rates or vice versa.

We have presented the results of our analysis in Charts 8, 9, and 10 below. These charts are sorted by in descending order by customer rate and compare the customer rates to the diversion rate and the Fee and Service Percentage to show the correlation, or lack thereof, between the customer rates and the diversion rate and Fee and Service Percentage. If there is a direct correlation between customer rates and diversion rates and Fee and Service Percentages, we would expect to find that those cities with the highest customer rates would also have the highest diversion

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rates and Fee and Service Percentages. Chart 7 presents an example of what the data would look like if there was a direct correlation between these items. However, as can be seen in Charts 8, 9, and 10 it appears that there is no direct correlation between customer rates, diversion rates and Fee and Service Percentages. For example, San Jose has the highest rate for 20 gallon residential service and close to the highest rate for 32 gallon residential service but has the second lowest Fee and Service Percentage. While San Mateo has the lowest rate for 20 gallon and 32 gallon residential service but has a Fee and Service Percentage that is above the median.

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CHART 7
Example of Data with Correlation

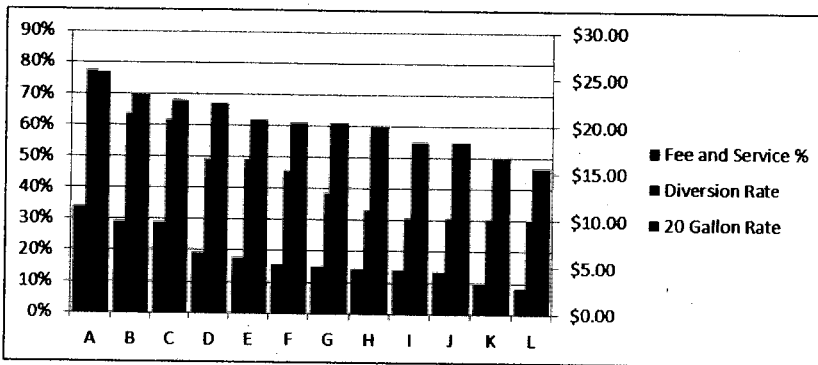
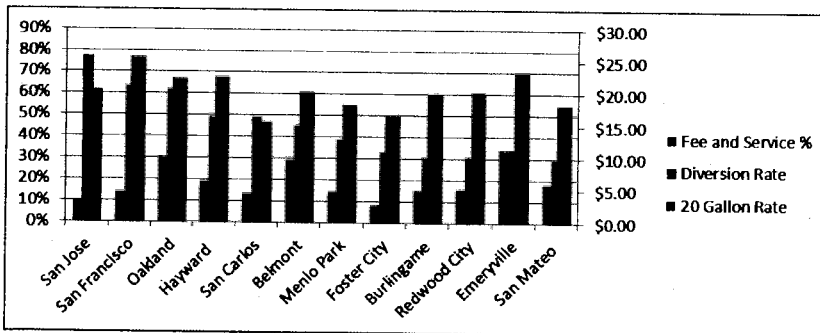


CHART 8
Residential Customer Rate for 20 Gallon Cart vs. Diversion
Rate and Fee and Service Percentage



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CHART 9
Residential Customer Rate for 32 Gallon Cart vs. Diversion Rate and Fee and Service Percentage

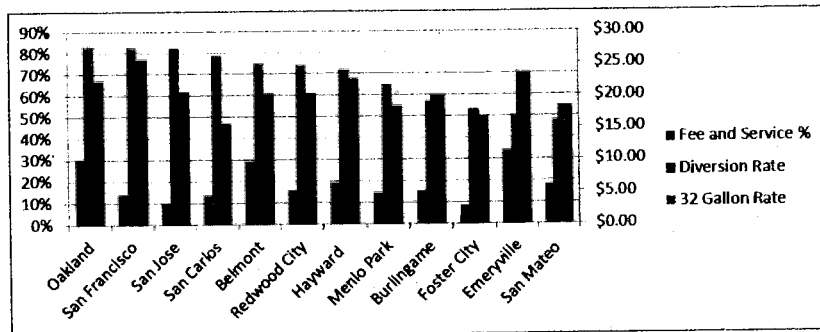
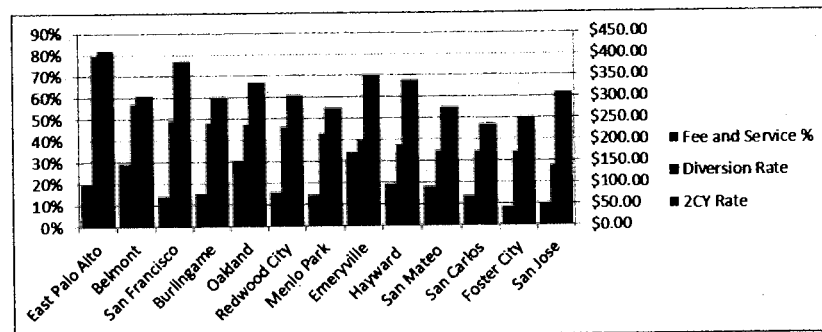


CHART 10
Commercial Customer Rate for 2 Cubic Yard Bin vs. Diversion Rate and Fee and Service Percentage



3.2 Recology Fixed Assets in San Francisco

Recology reports that the company's operations take place at five locations in San Francisco. Three of the five properties are leased:

- **250 Executive Park, Suite 2100** is 20,000 square feet of office space to accommodate Sunset Scavengers operating needs. The rent is recovered through customer rates;
- **Pier 96** is leased from the Port of San Francisco and is the site of Recycle Central. Rent is recovered through customer rates and capital improvements to the site are recovered through a lease charge from a Recology subsidiary, or through depreciation for those assets funded by Recology's operating entity at Recycle Central; and

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- **50 California Street, 24th Floor** is the location of Recology's headquarters. A portion of the rent allocable to San Francisco operations is recovered through customer rates.

The remaining two properties are Recology owned:

- **Tunnel and Beatty Complex** consists of approximately 42 acres of land located partially in San Francisco and partially in Brisbane. Several Recology entities own the property as it has been accumulated over time beginning in approximately 1950. Located on the property are a transfer station, construction materials recovery facility, organics annex, household hazardous waste facility, public disposal facility, maintenance facilities for Sunset Scavenger, office facilities, warehouses, scale systems and equipment parking area.
 - Cost: \$53,783,625
 - Net Book Value: \$39,341,209
 - Assessed Value: \$35,923,559
- **900 7th Street** has been the location of Golden Gate Disposal since 1974. The property consists of office and maintenance facilities with storage for equipment. The property has expanded three times and now consists of 6.72 acres. Rent paid to a Recology subsidiary is recovered through customer rates.
 - Cost: \$15,673,652
 - Net Book Value: \$13,681,056
 - Assessed Value: \$10,790,079

The two properties have a combined cost of \$69,457,277, a net book value of \$53,022,265, and an assessed value of \$46,713,638. These numbers include land, buildings, and leasehold improvements.

3.3 Barging as a way to Transport Waste

3.3.1 HDR Memo, San Francisco

HDR released a technical memorandum on April 15, 2011, prepared for the City and County of San Francisco, titled *Comparison of Waste Transportation Methods from San Francisco to the Ostrom Road Landfill* (Memo). The Memo was prepared in order to provide the San Francisco with an overview of the cost and feasibility of various intermodal options. As requested this

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section of our report includes a summary of portions of the HDR Memo.

3.3.1.1 Origin Considerations

The Memo focused on transporting waste by barge from two points of origin (Tunnel Avenue Transfer Station and Port of San Francisco) and one destination (Ostrom Road Landfill (Ostrom)). In both scenarios the waste would be transported by truck to the point of origin where it would be loaded into the barge and then transported to the receiving port. Once at the receiving port the refuse would be taken by either truck or rail to Ostrom.

The following are the associated costs of the Tunnel Avenue Transfer Station if it were to be the point of origin:

- The purchase of the containers used to barge the waste;
- Possible cost for appropriate transfer trucks (although the trucks currently being used to transfer waste to Altamont Landfill could potentially be used);
- Barge terminal improvements; and
- Additional equipment in order to load containers onto the barge.

In order to transport waste by barge from the Port of San Francisco, a new transfer station will have to be built. HDR compared two separate options: a Marine Barge Transfer Station (MTS) and a transfer station located on dry land designed for the same purpose as the MTS. Capital costs for the MTS would be significantly higher than that of a transfer station built over dry land due to the need for the following:

- Significant structural reinforcement;
- Intensive underwater work, including potential dredging;
- Reinforcement of the deck and water wharf;
- Embankment protection and restructuring;
- Ties to the embankment using key wall;
- Seismic retrofit; and
- More substantial electrical connectivity including a substation.

The operating costs of the MTS would also be higher, and it is uncertain that an MTS would be operational by 2015 due to unknown factors such as the amount of permitting and underwater work that would be required.

3.3.1.2 Refuse Loading and Handling Considerations

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Transporting the waste in containers is generally accepted to be the easiest way to transport as well as the most environmentally friendly. Rigid Containers would be needed to haul refuse as they are able to hold larger quantities of refuse than other loading methods; and the materials can be compacted due to the more rigid standards than that of common sea containers. The containers exist in 8-foot or 10-foot widths and heights, 20-foot and 40-foot common lengths, and a maximum weight of approximately 20 tons of refuse. An advantage to using these types of containers is that standardized handling equipment and methods are used in all aspects of the transportation, including trucks, vessels, and rail. Disadvantages include the initial cost of the system development and ongoing maintenance of the containers and the barges are limited in the ability to transport other cargo on the return trip.

Once the refuse is compacted into the containers, the containers would be delivered to the marine facility and kept in storage. When ready, they are loaded by crane from the berth area into the vessel. The easier handling reduces loading and unloading times at the dock. Once on the barge, the containers are interlocked forming a rigid connection, and are able to be transferred using open deck barges. Containers may be stacked up to three or four levels, if necessary although the stacking subjects the containers to more environmental forces.

3.3.1.3 Receiving Port and Barge Transport Considerations

The cost of transporting waste by barge ranges depending on the type and size of the barge, the number of equipment units, and the chosen transportation cycle. The tug and barge are usually provided by the contracted marine transportation company. For contracts involving long extended periods of time, barges can be purchased or purpose built for this service which reduces the cost over a period of time for the contract. Initially smaller barges could be used until an increase in the waste stream occurs, although the most effective economies would be used by a larger barge in the initial phase (after the demand increased the flow could be handled with the existing capacity). As capacity demand increased, a second barge could then be employed on either route. The Memo examined two receiving ports; the Port of Oakland and the Port of Sacramento.

The Port of Oakland is 8 nautical miles away from San Francisco and 177 rail miles away from Ostrom. A route between San Francisco and the Port of Oakland could utilize a single tug by dropping off and picking up loaded or unloaded barges thereby reducing the transit cycle. This would work best with three barges which could be of a smaller size to meet demand periods.

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The Port of Sacramento is 79 nautical miles away from San Francisco and 50 miles away from Ostrom. Due to the longer route, a second set of units, including a barge with more horsepower and a larger barge, would work effectively.

3.3.1.4 Conclusions

HDR concluded that overall, the cost for using the existing Tunnel Avenue Transfer Station are lower than using the Port of San Francisco owing to the additional infrastructure needed at the Port of San Francisco, which already exists at the Tunnel Avenue site. Also, due to the handling costs associated with additional changes between modes of transportation, all options that use barge transportation are higher in cost (\$ 57- \$99 per ton) than the base proposal offered by Recology (\$30.41 per ton)¹ which uses only truck and rail transportation.

3.3.2 Barging, San Francisco

According to the San Francisco Port Authority (Port), the company that has provided most of the barges for the bay bridge project owns numerous barges of various sizes that could potentially be used to transport solid waste. The first step would be to determine the best method for moving the waste (bulk, container or trailer) and then discuss the volume requirements, destinations, frequency, etc. which will help the company determine the optimal size of the barge.

As mentioned in the HDR Memo, the company indicated that if they did not have the optimal-size barge equipment on hand, the equipment could be easily acquired on the open-market system, providing that the customer be willing to enter into a long-term contract.

It should also be noted that the Ports of Stockton and West Sacramento released a Request for Proposals (RFP) seeking a multimodal and logistics company to oversee and manage a business model supporting the Container on Barge Service known as the M-580/180 Marine Highway Corridor Project. The America's Marine Highway program is a congressionally approved initiative to transport cargo and passengers, when possible, on designated water routes to relieve traffic congestion on land and reduce greenhouse gas emissions. In August of 2010, \$7 million of federal funding became available for the existing 18 rivers and

¹ The \$30.41 is the number included in Recology's proposal. The HDR report calculated the cost per ton at \$38 using the cost estimate based on the same cost assumptions used for the barge options.

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coastal routes throughout the nation.² Additionally, a \$30 million Transportation Investment Generating Economic Recovery (TIGER) grant from the U.S. Department of Transportation was awarded to the California Marine Highway Project, which connects Oakland, Stockton, and West Sacramento.³ The goal of the project is to have inaugural service established between the Port of Stockton and terminal operator(s) at the Port of Oakland.

According to the 2011 America's Marine Highway Report to Congress, the public benefits to the M-580/I 80 Marine Highway Corridor are reduced miles of truck travel on congested regional highways; less wear-and-tear on highways and bridges by removing heavy and overweight loads; lower fuel consumption by shipping via barge than via exclusive truck movements; reduced GHG production, improved air quality by reducing diesel emissions from trucks, and improved public safety by reducing truck traffic.

Also according to the report, in general, barging is the most energy efficient mode of transportation; however, origin-to-destination trucking can have energy efficiency advantages over water and rail transportation, particularly for short haul freight movements where goods must be trucked to and from vessel and rail loading facilities. The constructions and maintenance of waterways, in particular dredging, can also have adverse environmental effects, including impacts in downstream waters, wetlands and estuaries. Barging may also increase corrosion along waterways and impair aquatic habitats.

Proposals for the Marine Highway Corridor Project are due June 30, 2011 and the Port has indicated they will be monitoring the project closely and hope to model their own potential barge system after the project. According to a press release from the Port of Stockton, vessel operations for the project are scheduled to begin in early 2012.

3.3.3 Barging, New York

3.3.3.1 Fresh Kills

Before the closing of Fresh Kills Landfill on Staten Island in 2001, New York barged approximately 20,000 tons of solid waste daily from nine different transfer stations around the city. The 650-ton

² United State Department of Transportation Maritime Administration "America's Marine Highway Program."
http://www.marad.dot.gov/ships_shipping_landing_page/mhi_home/mhi_home.htm#

³ Department of Transportation Final TIGER Grant Report.
<http://www.dot.gov/documents/finaltigergrantinfo.pdf>

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capacity barges were transferred through the New York Harbor down the Arthur Kill, a major navigable waterway between Staten Island and New Jersey to NYC's marine unloading facility. The refuse was then unloaded by four 10 cubic yard clamshell crawler cranes onto side-dumping tracked vehicles and then transported to the landfill itself.

3.3.3.2 Visy Paper Mill

Presently, New York is only barging a portion of residential curbside collected mixed paper. Visy Paper Mill signed a 30 year contract with New York City in 1997 for the processing of the paper and use of the mill's barges; the city issues annual Request for Proposals to contract out tugboat services.

The barge travels from a MTS in Manhattan to the Visy Paper Mill on Staten Island, approximately 10 nautical miles away. Visy Paper Mill owns four barges; one barge is unloaded per day, while one is loaded and another is ready to depart. The barge carries approximately 450 tons of loose paper which is covered by net in order to prevent the paper from being blown away. Once the barge arrives at the paper mill, it is pulled into the facility and the loose paper is offloaded by a five ton crane/grab system and dropped into a storage facility where it stays until it is ready to be fed into the pulper. After the barge arrives, another empty barge is returned to Manhattan.

3.3.3.3 The Future of Barging in New York

New York's future plans for the barging of MSW includes converting four MTSs, the opening of a Materials Recovery Facility (MRF) that will accept recyclables by barge and a barge to rail facility at Greenville Yards in Jersey City, New Jersey.

Converted MTS Facilities

Future plans for the transporting of solid waste are outlined in New York's Solid Waste Management Plan (SWMP). The SWMP is designed to reduce truck traffic through the use of barge and rail. The conversion of two of the four planned MTSs has begun and are scheduled to be completed in 2013. The following outlines the organization of the four Converted MTS facilities:

- Facility Operations:
 - Collection vehicles enter a tipping floor at the uppermost level and tip waste onto a second level loading floor 12 feet below;
 - On the loading floor waste is sorted and pushed by front-end loaders through slots in the floor directly

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- over the intermodal containers, located on the first level of the processing building;
 - Equipment operating over the slots in the loading floor evens and tamps the waste in the containers which are then lidded with leak-proof gasketed covers and moved by trolley to the external pier of the facility;
 - A gantry crane on the pier loads full containers onto and unloads the empty containers off of a flatbed barge moored to the pier;
 - Each barge has a capacity for 48 containers; and
 - Tugboats move full/empty barges directly to an out of city disposal site or between the MTS and an intermodal transloading facility where they are loaded onto rail cars or a large ocean barge for transport to a disposal facility.
- Containers:
 - Approximately 20-foot long, 12-foot high and 8.5-foot wide;
 - Hold approximately 62 cubic yards of refuse;
 - Density of the container is increased from approximately 450 lbs. per cubic yard to approximately 700 lbs. per cubic yard by tamping; and
 - On average it is estimated that each container will contain approximately up to 22 tons of waste.
 - Capacities:
 - Tipping floor can accommodate 30 collection vehicles per hour; and
 - Loading level will be able to process and containerize 220 tons of municipal solid waste per hour and 4,290 tons per day.

Material Recovery Facility

In 2004, New York City selected Simms Metal Management to process and market recyclable materials collected. Simms will build and operate the Sunset Park Material Recovery Facility which will be located at the South Brooklyn Marine Terminal in Sunset Park, Brooklyn. The facility will process barged recyclables and will also be capable of shipping out the processed materials by barge and rail. Construction for this facility is scheduled to begin later this year.

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Greenville Yards

Greenville Yards in New Jersey will be one of the two barge-to-rail transfer stations that New York's refuse will be barged to. The Port Authority of New York and New Jersey approved the purchase and redevelopment of the yards in May, 2010, and the project is scheduled for completion by 2013. New York will ship an estimated 60,000 to 90,000 containers per year through the site; which will eliminate 1,000 collection vehicles per day that travel between the two cities. The refuse will be sealed in water tight containers. The other receiving port has yet to be decided on.

3.3.4 Summary of the Potential Benefits and Consequences of Barging

A potential benefit of barging is that less environmental impacts are associated with water transportation than other forms of transport. If barging waste reduces the amount of trucks on the road there will be a decrease in damage to city streets, bridges and highways, lower fuel consumption, reduced greenhouse gas emissions due to garbage trucks, improved air quality and reduced traffic congestion due to garbage trucks. Also, according to the 2011 America's Marine Highway Report to Congress, in general, barging is the most energy efficient mode of transportation; however, origin-to-destination trucking can have energy efficiency advantages over water and rail transportation, particularly for short haul freight movements where goods must be trucked to and from vessel and rail loading facilities. The construction and maintenance of waterways can also have adverse environmental effects and barging may increase corrosion along waterways and impair aquatic habitats. Another potential consequence of barging waste is that, according to the HDR memo, the cost of transporting waste by barge is considerably higher than that of Recology's proposal which uses only rail and truck. The Memo points out that if barging was to be used to transport waste, the cost for using the existing Tunnel Avenue Transfer Station as a point of origin are lower than using the Port of San Francisco.

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Appendix A

Data Collection Form

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CITY	Fees and Services	Amount	Notes
	Fees Paid Directly to City		
	Franchise Fee		
	Franchise Extension Fee		
	Impound Account		
	City Fees		
	Recycling Fees/Program Fees		
	Vehicle License Fees		
	Vehicle Impact Fees		
	Debris Box Permit Fees		
	Business Tax		
	Facility Permit Fees		
	Performance and Billing Review		
	Annual Service Contribution		
	Administrative Enforcement Contribution		
	Transition Services		
	Street Sweeping		
	Public Education		
	Measure D Fees		
	Total Fees Paid Directly to City		
	Free Services Received by City		
	City Litter Can and Recycling Collection		
	City Sponsored and Non-Profit Events		
	City Collection Services		
	Street Sweeping		
	Holiday Tree Collection		
	Clean Team Event/Neighborhood Cleanup		
	Free Disposal		
	Battery Collection		
	Compost Give-a-Ways		
	CFL Collection		
	Cell Phone Collection		
	Abandoned Waste Collection		
	Free Collection for Public Schools		
	E-waste/U-waste Collection Event		
	Total Free Services Received by City		
	Total Value of Payments & Services		
	Gross Revenue		
	Fee and Service %		



Appendix B

Customer Rates

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**APPENDIX B
Customer Rates**

	2011	2012	2013	2014	2015	2016	2017
Belmont	\$15.17	\$25.12	\$53.35	\$89.48	\$142.74	\$287.12	\$591.11
Burlingame	\$10.32	\$19.08	\$38.17	\$56.64	\$120.42	\$240.82	\$481.63
East Palo Alto	N/A	N/A	N/A	\$41.18	\$211.10	\$400.57	\$543.14
Emeryville	\$10.21	\$16.91	\$33.80	\$50.71	\$100.67	\$201.34	\$402.68
Foster City	\$11.11	\$17.78	\$35.56	\$53.34	\$85.30	\$170.59	\$341.19
Hayward	\$16.45	\$24.03	\$42.87	\$61.67	\$105.16	\$189.95	\$356.48
Menlo Park	\$12.95	\$21.67	\$51.84	\$77.52	\$107.90	\$215.81	\$431.62
Oakland	\$20.63	\$27.68	\$60.36	\$93.00	\$129.95	\$237.75	\$439.06
Redwood City	\$10.30	\$24.73	\$49.46	\$74.18	\$115.60	\$231.20	\$462.40
San Carlos	\$16.44	\$26.30	\$54.72	\$83.72	\$86.92	\$173.84	\$347.68
San Francisco	\$21.21	\$27.55	\$55.10	\$82.65	\$277.44	\$494.01	\$861.39
San Francisco 50%					\$138.72	\$247.01	\$430.70
San Jose	\$25.90	\$27.50	\$55.00	\$82.50	\$91.01	\$138.21	\$231.62
San Mateo	\$10.10	\$16.16	\$35.61	\$55.28	\$87.72	\$175.48	\$350.97



Appendix C

Comparison of Fees and Services

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APPENDIX C
Comparison of Fees and Services

Comparison of Fees and Services													
	San Francisco	Belmont	Burlingame	East Palo Alto	Emeryville	Foster City	Hayward	Menlo Park	Oakland	Redwood City	San Carlos	San Jose	San Mateo
Fees Paid Directly to City													
Franchise Fee		\$ 539,412	\$ 588,541	\$ 353,848	\$ 668,010	\$ 259,001	\$ 3,723,975	\$ 1,065,924	\$ 4,779,816	\$ 2,073,636	\$ 566,164		\$ 558,148
Franchise Extension Fee					\$ 25,000								
Impound Account/Balancing Account	\$ 11,798,284		\$ 67,606										
City Fees/Administrative Fees		\$ 413,440	\$ 147,135	\$ 200,000				\$ 52,500	\$ 17,413,816	\$ 39,876		\$ 6,707,657	
Recycling Fees/Program Fees													
Vehicle License Fees		\$ 587,478						\$ 52,715	\$ 6,800,000	\$ 63,804	\$ 52,260		\$ 862,371
Vehicle Impact Fees		\$ 134,852											
Disposal Facility Tax													
Route License/Permit Fees		\$ 79,927										\$ 2,485,964	
Performance and Billing Review					\$ 35,000								
Administrative Enforcement Contribution					\$ 150,000								
Street Sweeping		\$ 323,648	\$ 75,000	\$ 232,536			\$ 688,025			\$ 61,556			
Public Education					\$ 10,000				\$ 80,000		\$ 101,986		\$ 320,000
Measure D Fees		\$ 53,940			\$ 30,116		\$ 452,992		\$ 1,274,579				
Rate Stabilization Fee			\$ 205,990										
Landfill Closure Fees			\$ 1,084,272	\$ 788,384	\$ 918,126	\$ 386,072	\$ 4,884,992	\$ 1,171,139	\$ 30,348,211	\$ 2,177,316	\$ 771,576	\$ 9,193,621	\$ 813,444
Total Fees Paid Directly to City		\$ 12,465,689	\$ 1,465,292	\$ 788,384	\$ 918,126	\$ 386,072	\$ 4,884,992	\$ 1,171,139	\$ 30,348,211	\$ 2,177,316	\$ 771,576	\$ 9,193,621	\$ 2,553,963
Free Services Received by City													
City Litter Can and Recycling Collection			\$ 65,739	\$ 3,420	\$ 85,000	\$ 7,421	\$ 290,000	\$ 40,119		\$ 46,717	\$ 2,187	\$ 405,060	\$ 40,883
City Sponsored and Non-Profit Events		\$ 2,938	\$ 9,018	\$ 4,791	\$ 20,000	\$ 2,751	\$ 50,000	\$ 3,826	\$ 50,000	\$ 7,324	\$ 2,591		\$ 13,070
City Collection Services		\$ 1,506,133	\$ 45,097	\$ 119,919	\$ 15,000	\$ 38,776		\$ 17,662	\$ 580,000	\$ 62,619	\$ 41,465		\$ 214,906
DPW Collection & Disposal		\$ 8,670,253											
Holiday Tree Collection		\$ 313,971			\$ 15,000		\$ 11,154		\$ 89,231				
Clean Team Event/Neighborhood Cleanup		\$ 176,491	\$ 43,588										
Free Disposal			\$ 119,768	\$ 27,984	\$ 4,000	\$ 40,388	\$ 80,000	\$ 164,516	\$ 600,000	\$ 206,380	\$ 51,412	\$ 10,636	\$ 152,616
Battery Collection		\$ 227,449			\$ 22,500		\$ 5,000		\$ 5,000				
Compost Give-a-Ways		\$ 47,471			\$ 600		\$ 2,000		\$ 2,000				
CFL Collection					\$ 10,000								
Sharps Program		\$ 233,933											
Free Collection for Public Schools					\$ 2,000								
Total Free Services Received by City		\$ 19,755,087	\$ 114,150	\$ 239,622	\$ 156,114	\$ 89,336	\$ 438,154	\$ 226,123	\$ 1,326,231	\$ 323,040	\$ 87,655	\$ 415,698	\$ 421,275
Total Value of Payments & Services		\$ 31,220,776	\$ 1,579,442	\$ 1,323,004	\$ 942,498	\$ 475,408	\$ 5,323,146	\$ 1,397,262	\$ 31,674,442	\$ 2,500,358	\$ 869,231	\$ 9,609,317	\$ 2,975,238
Gross Revenue From Collection Operations		\$ 2,181,515,497	\$ 5,394,156	\$ 8,886,950	\$ 4,639,960	\$ 5,548,318	\$ 27,521,000	\$ 9,630,852	\$ 80,886,000	\$ 15,951,086	\$ 6,333,212	\$ 99,887,184	\$ 16,506,640
Fee and Service %		14.22%	29.28%	15.24%	20.31%	8.57%	19.34%	14.51%	39.16%	15.68%	13.72%	9.62%	18.02%
Fee and Service % Using Total Value, Net of Recycling Contractor Fees as Base									30.75%				



Recology Organics Infrastructure and Operations

General

The success of San Francisco's organics programs has resulted in the highest concentration of commercially derived post-consumer food waste feedstock in the Bay Area and the United States. As such, the material is unique in terms of the level of sophistication and duration of processing time required to convert this waste stream into organically listed finished compost. The only customer that currently approaches a similar level of contamination removal and processing requirement is the pre-consumer food waste produced by Safeway who is charged a similar rate.

Infrastructure

The putrescible nature of food waste requires substantial sorting, aeration, emissions reduction, and odor and liquids management infrastructure not required in green waste processing. Properly and responsibly managing food scraps in a way that protects air, water and human health and safety requires a significant investment and can not be achieved in an environmentally sound manner without substantial infrastructure and food waste related management practices. Additionally, though contamination as a percentage of weight is minimal, the removal of the film plastic and incidental non-compostables to ensure marketability of finished compost is highly labor intensive. In the past 4 years Recology has invested ~\$4 million at Jepson Prairie Organics (JPO) to address the challenges of managing commercial food waste and we are investing another \$4.4 million at Grover Environmental Products to achieve the same. Distributing the volume between these two operations improves control over the key ratio of green to food mixture at both sites, and the combined capacity of both facilities is necessary to process the volume of material produced by the City of San Francisco.

- A series of pre-processing machinery is required to manage San Francisco's organics and removal of contaminants.
- Low speed high impact grinder to open bags
- Trommel to minimize sorting
- Sort line to remove film plastic and non-compostables
- Air lift separators are employed to remove plastics
- Blending area to combine pre-processed food waste with green waste to establish proper carbon:nitrogen ratio and porosity
- Food waste produces substantially more volatile organic compound (VOC) emissions and odors than green and yard waste. These emissions and odors require mitigation measures including intensified aeration, processing and bio-filtration where necessary.
 - Intensified aeration is achieved through the ECS system at JPO and the Lubke method of processing (more and smaller windrows turned at a high frequency) at Grover Environmental Products
 - Bio-filters and pseudo-bio-filters are employed at both JPO and Grover to address emissions and odors

- Food waste produces a high strength leachate that requires treatment to manage odors and protect surface and ground water

Operations

- To produce fully mature compost from commercial food waste, aeration and turning continues through a 90 – 100 day process versus a 45 – 60 process for green waste
- Substantially greater odor management and monitoring is required for food waste as compare to green waste
- Additional shifts have been added periodically to conduct more odorous operations during evening hours
- Site wash down is conducted regularly to minimize surface leachate
- Compost overs are re-incorporated to improve porosity required by the dense nature of food waste
- Community stake holder meetings conducted to address odor issues
- Green waste blending with food waste is critical to facilitate food waste composting.
 - Due to the necessity of blending green with food, the more desirable and marketable green waste compost product has all but been eliminated, thus reducing compost sales pricing on a per ton and overall basis
 - Food based compost is sold at a lower rate than green waste compost due to perceived quality
 - Blended food and green derived compost must be screened to a smaller screen size (1/4 inch minus) requiring additional time and
- Approximately two dozen food related BMP's have been established to manage food waste composting in the broader categories of:
 - Leachate management and treatment
 - Odor control/reduction
 - Staffing/added shift
 - Finished compost curing/quality
 - Aeration pad prep
 - Ph control
 - Litter control
 - Vector control
- Food to total ratios (visual observation)
 - SF 75 – 90%
 - Safeway 70 – 90%
 - SBWMA ~35%
 - Berkeley ~15%
 - Livermore ~15%
 - WMI ~5%
- The SBWMA rate was bid under Grover Landscape Services management before Recology acquired Grover in 2010. Recology bid on the same contract, proposing to process the material

at JPO. Recology bid a higher rate for food waste based on its recognition that substantial investment in infrastructure and development of Best Management Practices (BMP) would be required to properly manage San Francisco's volume of food waste. Grover had not previously managed high volumes of food waste either, thus requiring the substantial investments Recology has made since acquiring Grover.

April 22, 2013



SF Feedstock





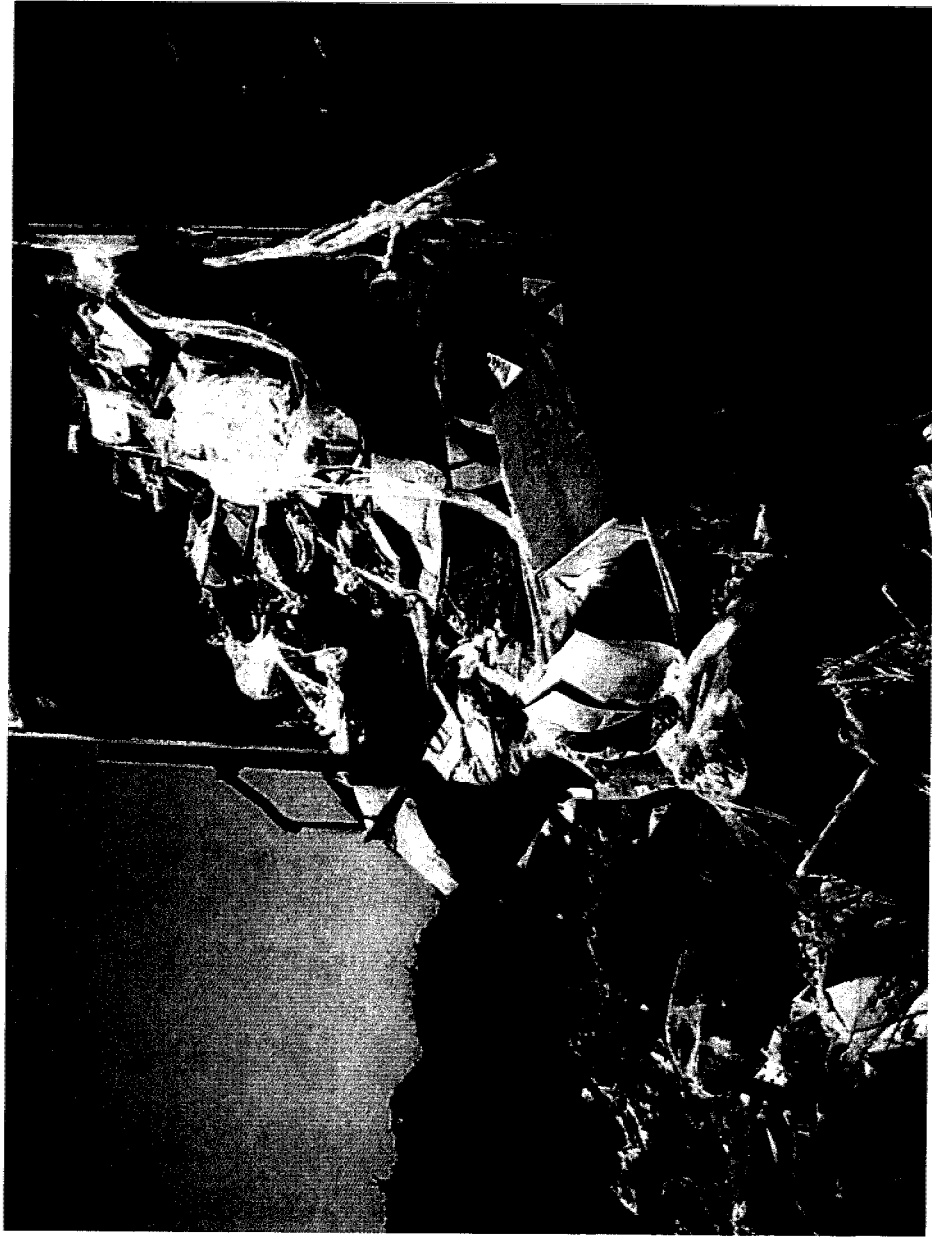
SF Feedstock







Safeway Feedstock





Safeway Feedstock





SBWMA Feedstock





SBWMA Feedstock

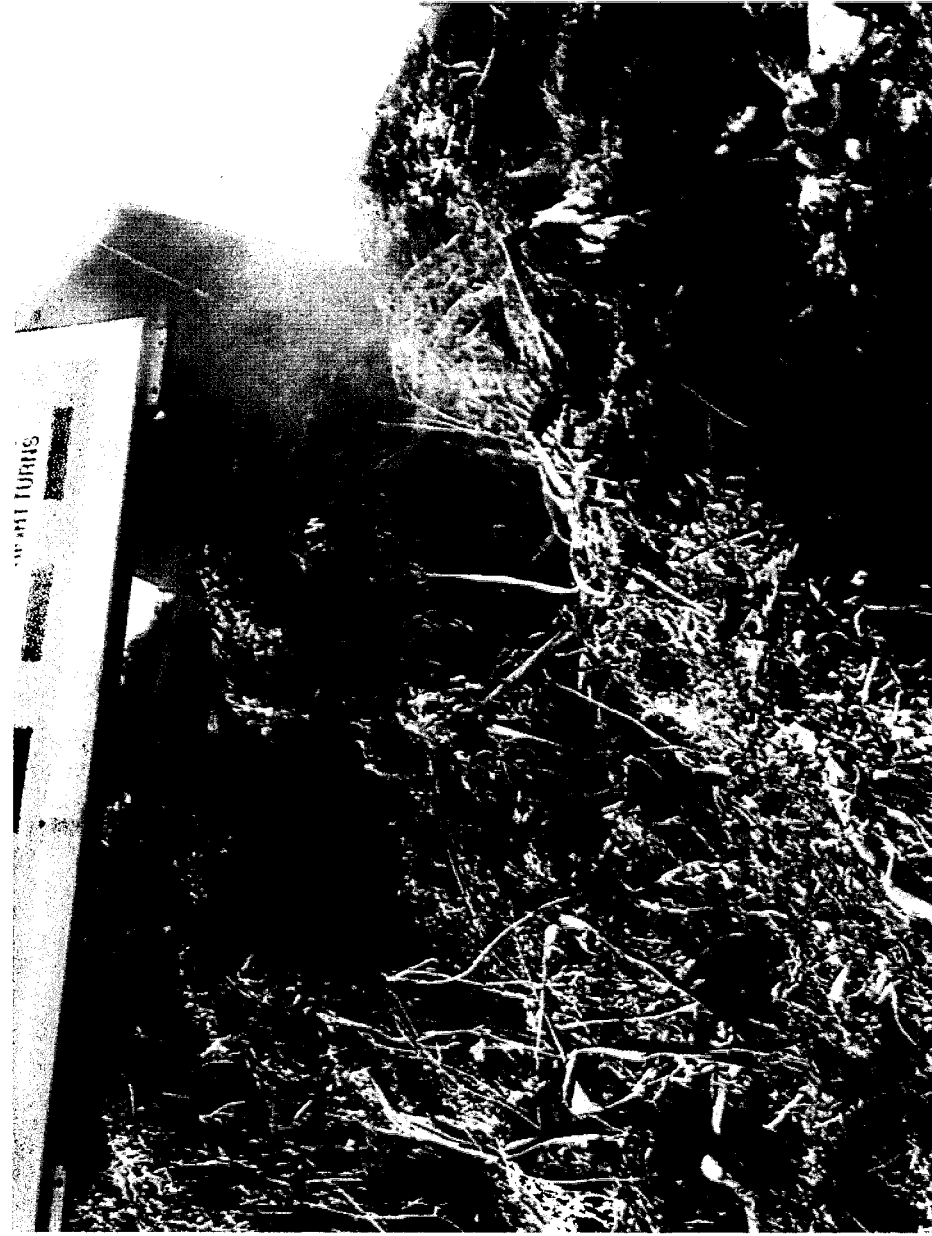






Recology
WASTE ZERO

WM Feedstock





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Food Scraps Capacity in the Bay Area 2013
Benchmark Data

FINAL REPORT

April 2013

Prepared by:

INTEGRATED WASTE MANAGEMENT CONSULTING, LLC

Nevada City, California

Prepared for:

Recology

San Francisco

Food Scraps Composting Capacity in the Bay Area

Determining the Ability of Bay Area Composting Sites to take Additional Food Scraps

Executive Summary

This report examines existing permitted capacity for food scraps composting in the Bay Area. The report also seeks to compare available sites, capacities, and rates with what Recology is proposing in its most recent Rate Application.

While there are a number of permitted composting facilities within 100 miles of 501 Tunnel Avenue, few of these have the combination of permits and capacity that could accommodate 600 - 700 tons per day of new mixed green material and food scraps. This report examines those facilities and provides additional information relative to these facilities including a range of likely tipping fees.

The data for this report included Solid Waste Facility Permits, Local Enforcement Agency records, publicly available data, and personal communications. The report makes general conclusions based on the data that was available. Prices quoted in the report are cited when possible, and reflect an order-of-magnitude rather than a specific price. Prices for disposal of green waste and food scraps are elastic and are typically negotiated rates rather than posted gate rates. Data shown in Table 3 are a mix of gate rates and negotiated rates based on recent bid activity (when available). Both should be seen as order-of-magnitude costs.

The conclusion of this research is that few available facilities exist within the study area which are capable of accepting an additional 600 - 700 tons per day. These potentially available facilities include, the Newby Island Composting Facility, the Forward Resource Recovery Composting Facility, and the West County SLF Composting Facility. The unit cost of accepting yard trimmings mixed with food scraps at these facilities ranges from \$55 - \$65 per ton.

Estimating *available* capacity (as opposed to *permitted* capacity) at composting facilities can be difficult due to a number of factors which an operator can manipulate to increase the operational capacity of a given site by increasing pile size, decreasing compost retention time, increasing management intensity, or by displacing certain sources of feedstocks (i.e., dropping lower priced volumes in favor of higher priced ones). *Permitted* capacity is not the same thing as *available* capacity. In some cases, facilities with very high permitted capacity numbers would not be able to meet that capacity under normal operating circumstances. Further, operational limitations may limit a given facility's ability to manage additional capacity. However, estimating available and operational capacity is beyond the scope of this report. Thus the determination of which facilities might *potentially* be available for Recology to access was made based on an analysis of permit documents and permitted capacity. To be clear, this analysis identified existing permitted capacity, not planned or actual capacity, as several of the identified facilities are in the process of expanding, but there is no guarantee of when or if planned expansions may be achieved.

Food Scraps Composting Capacity in the Bay Area

Determining the Ability of Bay Area Composting Sites to take Additional Food Scraps

Contents

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Food Scraps Composting Capacity in the Bay Area

Determining the Ability of Bay Area Composting Sites to take Additional Food Scraps

The Bay Area leads the nation in food scraps diversion to composting. Despite the enviable amount of programs and infrastructure that has been developed, there remains inadequate capacity to process municipal and commercial food scraps within a reasonable distance of the Bay Area. While there are over 100 permitted composting facilities in the state, less than 25 percent of these are permitted to take food scraps. Food scraps can be more challenging to compost, may require advanced technology to control odors and emissions, has more complicated permitting requirements, and can be more challenging to process and market than yard trimmings-only compost. There are few existing facilities capable of handling the significant amounts of organics that are being generated in the Bay Area.

In addition to Recology composting facilities, there are 3 large, commercial compost facilities that are possibly capable of handling an additional 600 - 700 tons per day of mixed food scraps in the Bay Area.

These facilities are described below and subject data is presented in the following series of tables.

West Contra Costa SLF Composting Facility (WCCSLFCF). This regional composting facility is the closest composting facility to 501 Tunnel Avenue. Owned by Republic Services, the WCCSLFCF is permitted for 1,100 tons and is reportedly not close to approaching this capacity.

Newby Island Composting Facility. The Newby Island Composting Facility is located in the city of Milpitas, and is a part of the larger Newby Island Landfill and associated facilities. The facility is permitted for 980 tons per day, though only a portion of this can be food scraps. Given the dense urban location of the Newby Facility, considerable changes would need to be made for this facility to accept 600 – 700 additional tons per day of food scraps.

Forward Resource Recovery Facility. The Forward Resource Recovery Composting Facility is the furthest permitted facility from 501 Tunnel Avenue. Forward possibly has the capacity to accept an additional 600 - 700 tons per day of food scraps.

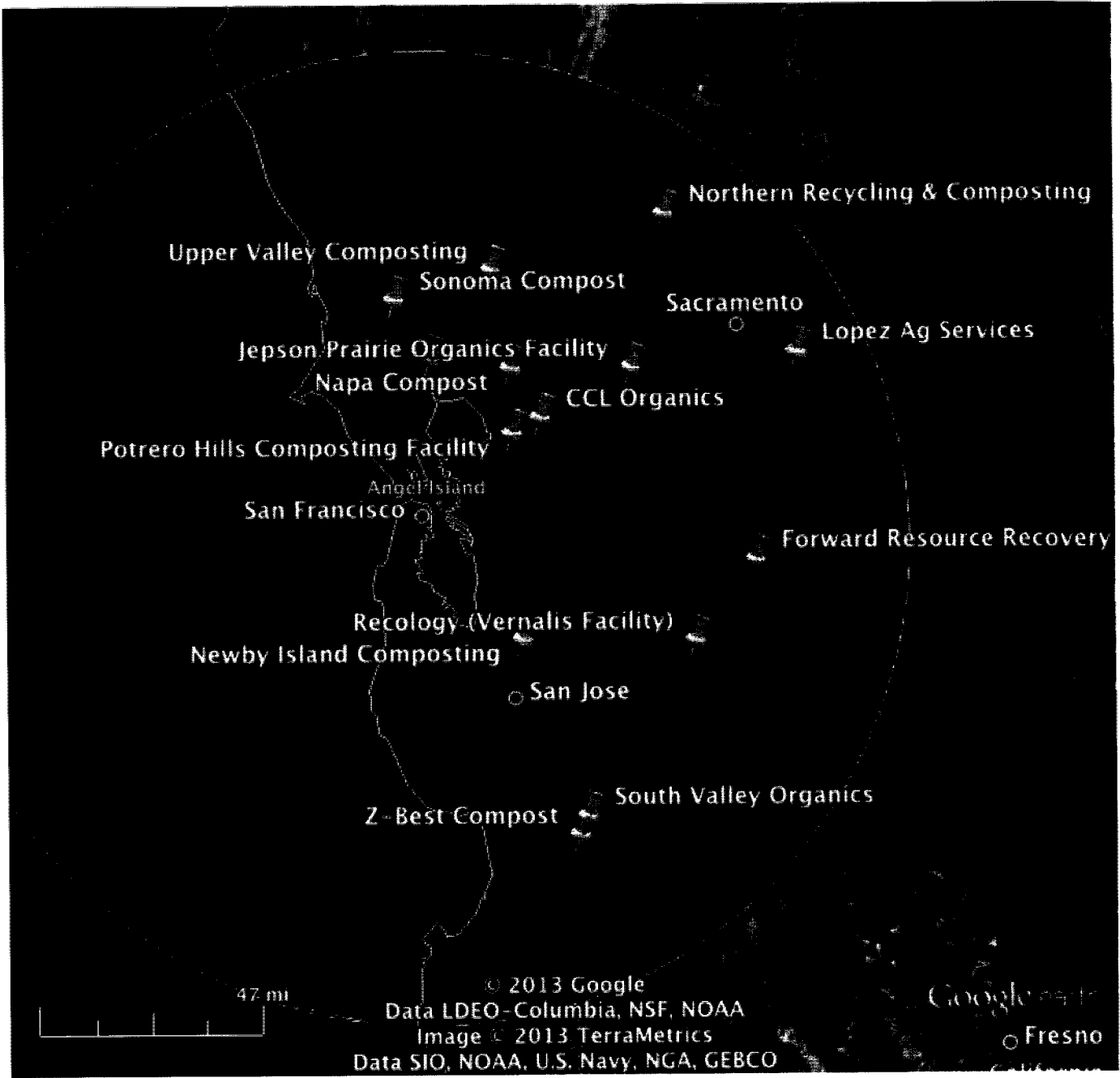
Food Scraps Composting Capacity in the Bay Area

Determining the Capacity of Composting Sites in the Bay Area to take Additional Food Scraps

Table I
Identified Facilities within 100 miles of 501 Tunnel Ave

Facility	Location	In/Out ¹	Reason
CCL Organics	Benicia	OUT	Too small, not permitted for food scraps
Lopez Ag Services	Sacramento	OUT	Not permitted for food scraps
Sonoma Compost	Petaluma	OUT	Publicly –owned facility (not accepting merchant loads), limited capacity.
City of Palo Alto Compost Facility	Palo Alto	OUT	Limited to City-generated materials
Upper Valley Compost	Rutherford	OUT	Limited capacity for food scraps.
City of Napa Compost Facility	Napa	OUT	Limited capacity to manage food scraps.
EBMUD	Oakland	OUT	Limited capacity.
ZWED		OUT	Not currently built or operating
South Valley Organics	Gilroy	IN	
Jepson Prairie Organics	Vacaville	IN	
Recology/Grover Compost Facility	Vernalis	IN	
West Contra Costa Compost Facility	Richmond	IN	
Redwood Landfill Composting Facility	Novato	IN	
Newby Island Compost Facility	Milpitas	IN	
Potrero Hills Composting Facility	Fairfield	IN	
Z-Best Composting Facility	Gilroy	IN	
Forward Resource Recovery Facility	Stockton	IN	
Northern Recycling Composting Facility	Zamora	IN	

¹ For this analysis, large permitted composting facilities within 100 miles of 501 Tunnel Avenue in San Francisco were identified. Facilities that were not permitted for food scraps, do not accept merchant feedstocks (i.e., county-owned facilities) or otherwise were not likely to have the potential to accept 500 – 600 tons per day of food scraps were deemed “out”. Facilities with the potential to meet these criteria were identified as “in”.



Google earth



Food Scraps Composting Capacity in the Bay Area

Determining the Capacity of Composting Sites in the Bay Area to take Additional Food Scraps

Table 2
Location and Ownership of Compost Facilities

Facility Name	Location	Owner	Distance from 501 Tunnel
West Contra Costa Compost Facility	Parr Blvd Richmond, CA 94801	Republic Services	25 miles
Redwood Landfill Composting Facility	8950 Redwood Highway Novato, CA 94945	Waste Management	38 miles
Newby Island Compost Facility	1601 Dixon Landing Road San Jose, CA 95035	Republic Services	44 miles
Potrero Hills Composting Facility	3675 Potrero Hills Lane, Suisun City, CA 94585	Waste Connections	55 miles
Jepson Prairie Organics	6426 Hay Road Vacaville, CA 95687	Recology	69 miles
South Valley Organics	3675 Pacheco Pass Road Gilroy, CA 95020	Recology	78 miles
Z-Best Composting Facility	State Hwy. 25 Gilroy, CA 95020	Zanker Road Resource Management Limited	78 miles
Recology/Grover Facility	3909 Gaffery Road, Vernalis, CA 95385	Recology	83 miles
Forward Resource Recovery Facility	999 S. Austin Road Stockton, CA 95206	Republic Services	89 miles
Northern Recycling	11220 County Road 94 Zamora, CA 95698	Northern Recycling & Composting	93 miles

Food Scraps Composting Capacity in the Bay Area

Determining the Capacity of Composting Sites in the Bay Area to take Additional Food Scraps

Table 3
Tipping Fees and Permitted Capacity

Facility	Allowable Feedstocks	Tipping fee		Permitted Capacity	Limitations
		Yard Trimmings	Food Scraps		
Forward Resource Recovery	Green material, food scraps	--	\$56.94 ²	1,100 TPD	Although Forward appears to have excess permitted capacity for composting, they do not seem to be utilizing this resource. ³
Jepson Prairie Organics	Green material, food scraps	--	--	600 TPD(7) (750 Peak)	
Newby Island Compost Facility	Yard trimmings (Type I), food scraps (Type II) ⁴	\$40 - \$60	\$55 ⁵ - \$60	980 TPD	
Northern Recycling	Yard waste with up to 40% food	--	\$30	300 TPD (Up to 5,000 cubic yards)	Currently limited to 5,000 cubic yards of mixed green waste & food scraps (40%).
Potrero Hills Composting Facility	Green material (food scraps allowable with notification)	--	n/a	200 TPD (320 avg)	Not actively composting food scraps, need ops plan prior to accepting.
Recology/Grover Compost Facility	Green material, food scraps	--	--	2,000 TPD(6)	
Redwood Landfill Composting Facility	Feedstock limited to Class B biosolids, food waste and green/yard waste	\$33/cubic yard ⁶	Neg. ⁷	170 TPD	Compost operation currently limited to 60,000 cubic yards of feedstock, active compost, and finished product at any one time.
South Valley Organics	Green material, food scraps	--	--	750 TPD (7)	
West County SLF Compost Facility	Green waste, food waste, ag. materials, manure, biosolids	\$51.50	\$63.50 ⁸	630 TPD	
Z-Best Composting Facility	Municipal Solid Waste/Yard Trimmings	--	~\$85 ⁹	1,500 TPD* (700 TPD)	Latest inspection report mentions maximum tonnage exceeded in 2012

² Personal Communication, City of San Ramon staff, 2/22/13.

³ Personal Communication, Chuck Helget, 3/6/13

⁴ Solid Waste Facility Permit SWIS #43-AN-0017 dated January 29, 2002.

⁵ Proposed rates submitted to SBWMA in 2008.

⁶ Rates as posted on <http://Redwoodlandfill.wm.com/about-us/rates.jsp> accessed 2/7/13, 2:00 pm.

⁷ The operator of this facility would not provide an estimated rate as these types of commercial volumes would be negotiated on a case-by-case basis.

⁸ Rates as quoted from WCCSWA, Personal Communication 2/19/13.

⁹ Personal Communication, Michael Gross, 2/21/13

Food Scraps Composting Capacity in the Bay Area

Determining the Capacity of Composting Sites in the Bay Area to take Additional Food Scraps

Table 4
Facility Information

Facility	Compost Product Names	OMRI Listed ¹⁰	C DFA Registered ¹¹	STA ¹² Participant ¹³	Markets
Forward Resource Recovery	Unknown	NO	NO	NO	Unknown
Jepson Prairie Organics	"Clean City Compost" "Four Course Compost"	YES	YES	YES	Agriculture and horticulture
Newby Island Compost Facility	"Super Humus Compost"	YES	YES	YES	Agriculture and horticulture
Northern Recycling	"Compost"	YES	YES	YES	Predominantly agriculture
Potrero Hills Compost Facility	Unknown	NO	NO	NO	Not aggressively marketing compost
Recology/Grover Composting Facility	"Grover Wonder Grow Compost"	YES	YES	YES	Predominantly agriculture
Redwood Landfill Composting Facility	WM EARTHCARE™ Homegrown Compost	YES	YES	YES	Unknown
South Valley Organics	"SVO Clean City Compost"	YES	YES	YES	Predominantly agriculture
West Contra Costa Compost Facility	Unknown	NO	YES	NO	Unknown
Z-Best Compost Facility	"Z-Best Organic Compost"	YES	YES	YES	Various, Primarily agricultural compost

¹⁰ Based on OMRI Product List search for "Compost" on <http://www.omri.org/simple-opl-search/results/compost> accessed 2/13/13

¹¹ Based on spreadsheet of entities that manufacture, produce, or distribute compost in California produced by CDFA.

¹² "STA" is the acronym for the US Composting Council's Seal of Testing Assurance, a voluntary customer assurance, testing, and disclosure program.

¹³ Based on listing on USCC website for STA Participants, <http://compostingcouncil.org/participants/>, accessed 2/13/13.

Food Scraps Composting Capacity in the Bay Area

Determining the Capacity of Composting Sites in the Bay Area to take Additional Food Scraps

Table 5
Composting Method(s)

Facility	Composting Method(s)
Forward Resource Recovery	Windrow
Jepson Prairie Organics	Negative Aerated Static Pile (ASP)
Newby Island Compost Facility	Windrow for Yard Trimmings, ASP for food scraps
Northern Recycling	Windrow for yard trimmings, ASP for food scraps.
Potrero Hills Compost Facility	Windrow for yard trimmings, likely ASP for food scraps.
Recology/Grover Compost Facility	Luebke Composting Method ¹⁴
Redwood Landfill Composting Facility	Windrow for yard trimmings, ASP for food scraps.
South Valley Organics	ASP for food scraps
West Contra Costa Compost Facility	Windrow
Z-Best Compost Facility	Windrow for Yard Trimmings, ASP for food/MSW

The level of contamination present in curbside collected and commercial food scraps often requires additional operational capacities beyond basic windrow composting including closer attention to porosity, feedstock balance, carbon to nitrogen ratio, and odor and moisture management.

¹⁴ The Recology/Grover compost facility uses a version of the Luebke method of composting, which involves maximizing air flow via smaller windrow sizes and more frequent windrow turning.

Food Scraps Composting Capacity in the Bay Area

Determining the Capacity of Composting Sites in the Bay Area to take Additional Food Scraps

Table 6
Tonnage and Capacity 2012*

Processing Facility	Annual Incoming Volume (tons)	Average Tons Per Day (incoming) ¹⁵	Permitted Tons Per Day ¹⁶	Calculated Available Capacity ¹⁷
Forward Resource Recovery	N/A	N/A	1,100 TPD	Unk.
Jepson Prairie Organics	--	--	600 TPD (7) (750 TPD Peak)	N/A
Newby Island Compost Facility	152,411 tons ¹⁸	488 TPD	980 TPD	~500 TPD
Northern Recycling	N/A	N/A	300 TPD	Unk.
Potrero Hills Compost Facility	N/A	N/A	200 TPD	Unk.
Recology/Grover Compost Facility	--	--	2,000 TPD	N/A
Redwood Landfill	35,985.91 ¹⁹	115.3 TPD	170 TPD	~50 TPD
South Valley Organics	--	--	750 TPD (7)	N/A
West County Resource Recovery Facility	N/A	N/A	630 TPD	UNK.
Z-Best Composting Facility	315,496.80 ²⁰	1,011 TPD	1,500 TPD (750 TPD)	~500 TPD

*Information in this table comes from LEA reports as required by Solid Waste Facility Permits. Sites without data indicate that the LEAs did not provide this data within the time constraints of this report.

¹⁵ This data assumes a 6-day week divided by total annual incoming tons.
¹⁶ See Table 3 for details.

¹⁷ This column attempts to subtract the calculated average tons per day incoming from the permitted tons per day to estimate "available capacity".
¹⁸ "Newby Island Recyclery, Summary 2012 Tons" Provided by City of San Jose LEA.

¹⁹ Personal Communication Marin County LEA 2/21/13

²⁰ LEA Tonnage data based on required submittals from Z-Best Composting Facility.

Food Scraps Composting Capacity in the Bay Area

Determining the Capacity of Composting Sites in the Bay Area to take Additional Food Scraps

Limitations

The information contained in this Report was gathered consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. This Report was completed consistent with our agreement with Recology. The report is solely for the use and information of Recology. Any reliance on this plan by a third-party is at such party's sole risk.

Information and opinions contained in this Report apply to conditions existing when services were performed and are intended for the client, purposes, locations, timeframes, and project parameters indicated. IWMC does not warrant the accuracy of information supplied by others, nor the use of segregated portions of this Report.

MEMO

To: Bill Lyons
From: Aaron Newhoff, FCAS, MAAA
Date: February 25, 2013
Subject: Recology Allocation and Trends



The attached exhibits summarize our most recent analysis of Recology loss history. Based on this history we have forecast future payout estimates and we have also allocated future costs to operational units within Recology.

We review historical Recology data and we compare that to CA Workers' Compensation trends that are tracked by the rating bureau in the state (WCIRB). The WCIRB has projected dramatic increases in loss costs from 2011 to 2012. For example, the refuse collection class code has seen an increase in loss cost of over 50% in the last year. Numerous factors in the state account for the increase (medical inflation, recent court decisions regarding benefits). While Recology has seen increases in losses which are below the overall state increases, they are not entirely immune from the deterioration seen by most employers.

The first exhibit shows our estimate of future payments over a three year period. Because of exposure growth combined with increasing loss rates, we estimate that paid losses will grow from \$10.4m in the 9/30/12-13 period to \$12.0m in the 14/15 period.

The second exhibit shows an estimate of allocated costs for two particular Recology operations, San Francisco Collections and San Francisco Processing. This exhibit summarizes the overall increase in expected cost, and the subsequent increase in allocated costs for these operations.

In the case of Collections, poor historical loss experience has resulted in an increase in the portion of loss allocated to this operation. The portion of the total allocation attributable to Collections has increased from 37% two years ago to the current estimate of 44%. So while overall allocated costs have increased by 17% over the last two years, costs for Collections have increased by 38%. As an addendum to this memo, we have included detailed analysis performed by Recology which illustrates the deterioration in loss experience for Collections in recent years. This analysis supports and confirms our observations regarding this experience.

For Recology SF, loss experience has generally been better than overall, and thus the proportion allocated to this operation has decreased (from 26% to 17%).

In general, our estimates of allocated costs for each division are based on a combination of loss experience and exposure (payroll). We believe this process results in a fair assignment of costs to each

division. For large divisions where substantial historical loss experience exists, we have given more weight to this experience in determining allocated costs. For smaller, newer divisions where loss history is sparse, the allocation is based primarily on exposure.

**RECOLOGY
WORKERS' COMPENSATION
OUTSTANDING LOSS ESTIMATES**

Accident Period	Estimated Ultimate Losses	Paid @ 09/30/13	Paid @ 09/30/14	Paid @ 09/30/15	Outstanding @ 09/30/12	Outstanding @ 09/30/13	Outstanding @ 09/30/14	Outstanding @ 09/30/15
2004	\$11,069,000	\$9,613,000	\$9,912,000	\$10,170,000	\$1,831,000	\$1,456,000	\$1,157,000	\$899,000
2005	\$10,991,000	\$9,323,000	\$9,665,000	\$9,937,000	\$2,026,000	\$1,668,000	\$1,326,000	\$1,054,000
2006	\$6,617,000	\$5,405,000	\$5,619,000	\$5,824,000	\$1,490,000	\$1,212,000	\$998,000	\$793,000
2007	\$9,072,000	\$7,361,000	\$7,681,000	\$7,927,000	\$2,218,000	\$1,711,000	\$1,391,000	\$1,145,000
2008	\$8,384,000	\$6,742,000	\$7,118,000	\$7,355,000	\$2,074,000	\$1,842,000	\$1,266,000	\$1,029,000
2009	\$9,461,000	\$6,973,000	\$7,482,000	\$7,942,000	\$3,310,000	\$2,488,000	\$1,969,000	\$1,519,000
2010	\$8,623,000	\$5,666,000	\$6,401,000	\$6,864,000	\$3,801,000	\$2,957,000	\$2,222,000	\$1,759,000
2011	\$12,515,000	\$7,094,000	\$8,298,000	\$9,345,000	\$6,899,000	\$5,421,000	\$4,217,000	\$3,170,000
2012	\$12,145,000	\$5,423,000	\$6,816,000	\$7,999,000	\$10,039,000	\$6,722,000	\$5,329,000	\$4,146,000
2013	\$12,675,000	\$2,071,000	\$5,574,000	\$7,046,000	\$10,604,000	\$10,604,000	\$7,101,000	\$5,629,000
2014	\$13,316,000	\$0	\$2,312,000	\$6,094,000	\$11,004,000	\$11,004,000	\$7,222,000	\$7,222,000
2015	\$13,990,000	\$0	\$0	\$2,429,000	\$11,561,000	\$11,561,000	\$11,004,000	\$11,561,000
Total	\$128,858,000	\$65,671,000	\$76,888,000	\$88,932,000	\$33,628,000	\$35,881,000	\$37,980,000	\$39,926,000

**RECOLOGY
WORKERS' COMPENSATION
INCREMENTAL LOSS ESTIMATES**

Accident Period	Estimated Ultimate Losses	Paid @ 09/30/13	Paid @ 09/30/14	Paid @ 09/30/15	Outstanding @ 09/30/13	Outstanding @ 09/30/14	Outstanding @ 09/30/15
2004	\$11,069,000	\$375,000	\$299,000	\$268,000	(\$375,000)	(\$299,000)	(\$258,000)
2005	\$10,991,000	\$358,000	\$342,000	\$272,000	(\$358,000)	(\$342,000)	(\$272,000)
2006	\$6,617,000	\$278,000	\$214,000	\$205,000	(\$278,000)	(\$214,000)	(\$205,000)
2007	\$9,072,000	\$507,000	\$320,000	\$246,000	(\$507,000)	(\$320,000)	(\$246,000)
2008	\$8,384,000	\$432,000	\$376,000	\$237,000	(\$432,000)	(\$376,000)	(\$237,000)
2009	\$9,461,000	\$822,000	\$519,000	\$450,000	(\$822,000)	(\$519,000)	(\$450,000)
2010	\$8,623,000	\$844,000	\$735,000	\$463,000	(\$844,000)	(\$735,000)	(\$463,000)
2011	\$12,515,000	\$1,418,000	\$1,204,000	\$1,047,000	(\$1,418,000)	(\$1,204,000)	(\$1,047,000)
2012	\$12,145,000	\$3,317,000	\$1,393,000	\$1,183,000	(\$3,317,000)	(\$1,393,000)	(\$1,183,000)
2013	\$12,675,000	\$2,071,000	\$3,503,000	\$1,472,000	\$10,604,000	(\$3,503,000)	(\$1,472,000)
2014	\$13,316,000	\$0	\$2,312,000	\$3,782,000	\$11,004,000	\$11,004,000	(\$3,782,000)
2015	\$13,990,000	\$0	\$0	\$2,429,000	\$11,561,000	\$11,561,000	\$11,561,000
Total	\$10,422,000	\$11,217,000	\$12,044,000	\$12,044,000	\$2,253,000	\$2,099,000	\$1,946,000

San Francisco Collections

Year	Total Allocated All Entities	Allocated Amount	Percent of Total	Payroll (00's)	Rate per \$100	
			[b]/[a]		Payroll	Industry Rate
2011	\$11,912,526	\$4,414,943	37.061%	\$510,841	8.643	6.10
2012	\$12,149,041	\$4,782,576	39.366%	\$572,970	8.347	5.32
2013	\$14,043,147	\$6,179,935	44.007%	\$602,922	10.250	7.63

PROCESSING

Recology SF

Year	Total Allocated All Entities	Allocated Amount	Percent of Total	Payroll (00's)	Rate per \$100	
			[b]/[a]		Payroll	Industry Rate
2011	\$11,912,526	\$3,091,070	25.948%	\$292,060	10.584	6.27
2012	\$12,149,041	\$2,528,059	20.809%	\$322,218	7.846	6.73
2013	\$14,043,147	\$2,409,467	17.158%	\$342,337	7.038	8.12

From: Mike Harrington <mharrington@bickmore.net<mailto:mharrington@bickmore.net>>
Date: April 19, 2013, 4:00:41 PM PDT
To: Adam Tabak <atabak@recology.com<mailto:atabak@recology.com>>, William Lyons
<wlyons@recology.com<mailto:wlyons@recology.com>>
Cc: Jon Braslaw <jbraslaw@recology.com<mailto:jbraslaw@recology.com>>
Subject: RE: Questions

Happy Friday All,

Here is my response to William's questions.

As an actuarial consultant, I typically perform more than 100 analyses of self-insured liability programs each year in the State of California. Based upon my professional experience with these programs, the prevailing loss trends for Recology are more the rule than the exception. In the most recent two years, loss costs for liability programs have begun to increase in a very significant way, driven both by increased frequency of claims and much larger average claim sizes. The number of liability claims exceeding \$1 million has become a much more significant portion of claims experience. This plays out in the loss experience for the self-insured entities for which I analyze directly, and is further supported by the feedback I receive from clients and their insurance brokers. The price of excess liability coverage has been on the increase, and availability of insurance to cover these high layers of loss has been decreasing. All of this information indicates that this trend in loss experience is by no means an anomaly, but likely a new normal.

More specifically, with regard to the loss experience of Recology's self-insured liability program, the latest two years have increased significantly, very consistent with the prevailing market trend. Based upon a six-year trend calculation the indicated annual inflationary trend is approximately 6% with an r-squared statistic of 36%. Based upon a four-year trend calculation the indicated annual inflationary trend is approximately 14% with an r-squared statistic of 86%. The r-squared statistic is a figure which measures "goodness of fit", or in other words, how well does the indicated trend fit with the historical data. The closer to 100% this figure is indicates a stronger relationship with historical data, and thus increased predictive value. That being said, the annual trend figure of 14% becomes an even stronger indication of the future direction of costs. All things considered, I am comfortable with an annual trend assumption of 10% based upon the data analyzed.

The alternative of utilizing a recent average in the projection of loss costs is valid, given that there is no prevailing trend. However, given the very apparent increasing trend seen in the loss data, as well as the supporting evidence seen in the liability market as a whole, merely taking a three year average to project loss costs is not appropriate and will likely result in understated cost estimates.

Possible explanations for these adverse loss trends are many and varied. The state of the economy may be a significant factor. Given that a large portion of the population remains unemployed, some of this trend may be driven by an increased incentive to replace income with funds from any source, settlements from claims filing and litigation being one potential source. Further exacerbated by economic trends is the likelihood that those serving on juries may also be suffering the effects of the down economy, thus providing motivation to give more generous jury verdicts. Inexperience and lack of training may also be a contributing factor to poor loss experience.

Regarding the specific figures contained in the previously submitted letter, the years utilized in the analysis correspond to Recology's fiscal years which run from October 1 to September 30 of each year. Regarding the 2011-12 projected loss rate of \$2.00 per \$100 of payroll, this is based upon projected ultimate self-insured losses of \$3,769,000 for Recology's liability program, divided by payroll of \$188,489,359, times 100.

Let me know if there are any other questions.

Thanks,
Mike

-----Original Message-----

From: Adam Tabak [mailto:atabak@recology.com]
Sent: Wednesday, April 17, 2013 7:05 AM
To: Mike Harrington; William Lyons
Cc: Jon Braslaw
Subject: Re: Questions

All,

William just sent one additional question as follows:

On the Liability Insurance questions I just sent, my statistics are a little rusty and rather than the requested confidence interval (Question #7) can you provide the R-squared factor for the exponential trendline and comment on its "reliability" based on that factor.

Adam

Sent from my iPhone

On Apr 17, 2013, at 5:39 AM, "Adam Tabak"
<atabak@recology.com<mailto:atabak@recology.com><mailto:atabak@recology.com>> wrote:

Bill, Mike,

See below the questions from William for our call later today. Talk to you at 2:30pm.

Thanks,
Adam

Sent from my iPhone

Begin forwarded message:

From: William Schoen <wschoen@r3cgi.com<mailto:wschoen@r3cgi.com><mailto:wschoen@r3cgi.com>>
Date: April 17, 2013, 4:16:54 AM PDT
To: Adam Tabak <atabak@recology.com<mailto:atabak@recology.com><mailto:atabak@recology.com>>
Subject: RE: Questions

Adam

Please see below. I will try to get you questions for workers compensation discussion later today or tomorrow am - thanks

The Company reported that "ultimate losses for the most recent two years have been significantly higher than previous years, the result of much higher frequency claims" and that this much higher frequency claim rate = "New Normal".

1. What is the basis for the assumption that the significantly higher ultimate losses experienced during the past two years = "New Normal" versus atypical events or "poor" company performance?
2. What are the specific reasons for the significantly higher losses?
3. Has the Company conducted any diagnostic review to determine if the extent to which the past two years' experience may be due to atypical factors or factors under the Company's control that if effectively addressed would be expected to reduce losses?
4. Unless there are specific reasons for the significantly higher claims over the past two years that we would expect to continue on an ongoing basis does basing the projection on such atypical (significantly higher) results seem reasonable?
5. The Company's projections will result in costs for the next 5 years (or until this expense is addressed in a future rate review) that increase each year, which is not consistent with the historical trend of increases and decreases? If last 2 years are the "new normal" is it any less reasonable to assume (project) that experience will continue (i.e., 2013 will be about 2.0 as will 2014 (i.e., 2013 expense would be similar to 2012). Is that any less valid a basis for the projection than the proposed trend analysis?
6. Is projecting 2013 based on the past three years of actuals (similar to the way many of the other highly variable expenses were projected) any less valid a basis for the projection than the proposed trend analysis? (This would result in a 4% increase for 2013 vs. 2012 x 2.2% to project 2014 which we could accept)
7. What is the confidence interval and confidence level of the projected trend? If the confidence interval is high (which we would expect given the high variability in historical results), doesn't that further support the fact that there are alternative projections (e.g., 3 -year average) that may be as reasonable as the Company's trend analysis?
8. Can you provide the calculation for the 2011-2012 \$2.00 Loss per \$100 of Payroll?
9. Is the 2011-2012 period cited on the Loss Rate Trend analysis provided the same as RY 2012 (July 11 - Jun 12)?

We've Moved - Please note new address and phone number

William Schoen
Principal
R3 Consulting Group
1512 Eureka Road, Suite 220
Roseville, CA 95661
Phone (916) 782-7821
Cell (916) 947-4880
Fax (916) 782-7824

-----Original Message-----

From: Adam Tabak [mailto:atabak@recology.com]
Sent: Tuesday, April 16, 2013 6:09 PM
To: William Schoen
Subject: Questions

Hi William,

I think we have a good sense of your questions, but can you provide them in advance of the call tomorrow/Thurs? Hopefully that will help the call move along.

Thanks and talk to you tomorrow.

Adam

Sent from my iPhone

Recology Sunset Scavenger/Recology Golden Gate
Revenue Trend (\$000)

	Revenue			Cumulative Change from Dec-10 (\$)			Cumulative Change from Dec-10 (%)			
	Residential & Apartment	Commercial	Compactors & Debris Box	Residential & Apartment	Commercial	Compactors & Debris Box	Residential & Apartment	Commercial	Compactors & Debris Box	Total
Dec-10	9,488	7,467	3,065	(9)	28	(78)	-0.1%	0.4%	-	-
Jan-11	9,478	7,496	2,987	(36)	(62)	(278)	-0.4%	-0.8%	-2.6%	-0.3%
Feb-11	9,451	7,405	2,787	(90)	(169)	(78)	-0.9%	-2.3%	-9.1%	-1.9%
Mar-11	9,398	7,299	3,051	(122)	(164)	(178)	-1.3%	-2.2%	-5.8%	-1.4%
Apr-11	9,365	7,303	2,887	(154)	(240)	(162)	-1.6%	-3.2%	-5.3%	-2.3%
May-11	9,333	7,227	3,227	(162)	(243)	194	-1.7%	-3.2%	6.3%	-1.2%
Jun-11	9,326	7,225	3,259	(173)	(197)	(23)	-1.8%	-2.6%	-0.8%	-1.1%
Jul-11	9,315	7,270	3,042	(171)	(274)	348	-1.8%	-3.7%	11.3%	-2.0%
Aug-11	9,316	7,194	3,413	(193)	(245)	169	-2.0%	-3.3%	5.5%	-0.5%
Sep-11	9,295	7,222	3,234	(189)	(191)	36	-2.0%	-2.6%	1.2%	-1.3%
Oct-11	9,299	7,276	3,101	(203)	(255)	66	-2.1%	-3.4%	2.2%	-1.7%
Nov-11	9,285	7,212	3,131	(194)	(243)	51	-2.0%	-3.3%	1.7%	-2.0%
Dec-11	9,294	7,224	3,116	(208)	(315)	(80)	-2.2%	-4.2%	-2.6%	-1.9%
Jan-12	9,280	7,153	2,985	(218)	(269)	(201)	-2.3%	-3.6%	-6.6%	-3.0%
Feb-12	9,270	7,199	2,864	(220)	(338)	98	-2.3%	-4.5%	-3.2%	-3.4%
Mar-12	9,268	7,129	3,163	(215)	(276)	(101)	-2.5%	-3.7%	-3.3%	-2.3%
Apr-12	9,273	7,192	2,964	(239)	(389)	231	-2.5%	-5.2%	7.5%	-2.0%
May-12	9,248	7,078	3,296	(235)	(309)	93	-2.5%	-4.1%	3.0%	-2.3%
Jun-12	9,253	7,158	3,158	(258)	(309)	36	-2.7%	-5.0%	1.2%	-2.6%
Jul-12	9,230	7,158	3,101	(256)	(371)	399	-2.7%	-5.0%	13.0%	-2.1%
Aug-12	9,232	7,096	3,464	(258)	(255)	39	-2.7%	-3.4%	1.3%	-1.1%
Sep-12	9,229	7,212	3,104	(276)	(329)	430	-2.9%	-4.4%	14.0%	-0.9%
Oct-12	9,212	7,138	3,495	(271)	(293)	29	-2.9%	-3.9%	0.9%	-2.7%
Nov-12	9,217	7,174	3,094	(290)	(216)	(39)	-3.1%	-2.9%	-1.3%	-2.7%
Dec-12	9,198	7,251	3,026	(298)	(340)	167	-3.1%	-4.6%	5.4%	-2.4%
Jan-13	9,190	7,127	3,232	(298)	(208)	(137)	-3.1%	-2.8%	-4.5%	-2.4%
Feb-13	9,189	7,259	2,929	(295)	(272)	126	-3.1%	-3.6%	4.1%	-3.2%
Mar-13	9,193	7,195	3,191	(295)	(272)	126	-3.1%	-3.6%	4.1%	-2.2%



REVENUE AND WASTE GENERATION vs. ECONOMIC INDICATORS San Francisco

OVERVIEW

To determine the impact of economic changes in San Francisco on Recology's business, various published economic indicators for San Francisco were compared to Recology's collection company revenues and total tonnage handled in its operations. The analysis was performed for the last two full calendar years, 2011 and 2012. Five different economic indicators were included in the analysis: office occupancy, hotel occupancy, employment, tourism, and population. Certain economic indicators are only published on a calendar year basis, and seasonal variations make annual figures more appropriate for others. Therefore, a full calendar year is required for comparison.

The results of the analysis are presented in graphical form, normalized to the beginning of 2011. Economic indicators for a given calendar year are assigned to December of that year, and values are extrapolated in between these points. All economic indicators are presented on bases whereby increases in the indicator correspond to increased economic activity. Sources for the economic indicators are given below. Recology's tonnages correspond to calendar year tonnage reports provided to the City each year. Recology's monthly collection revenues tie to annual revenues presented in Recology's rate application.

SOURCES OF ECONOMIC INDICATORS

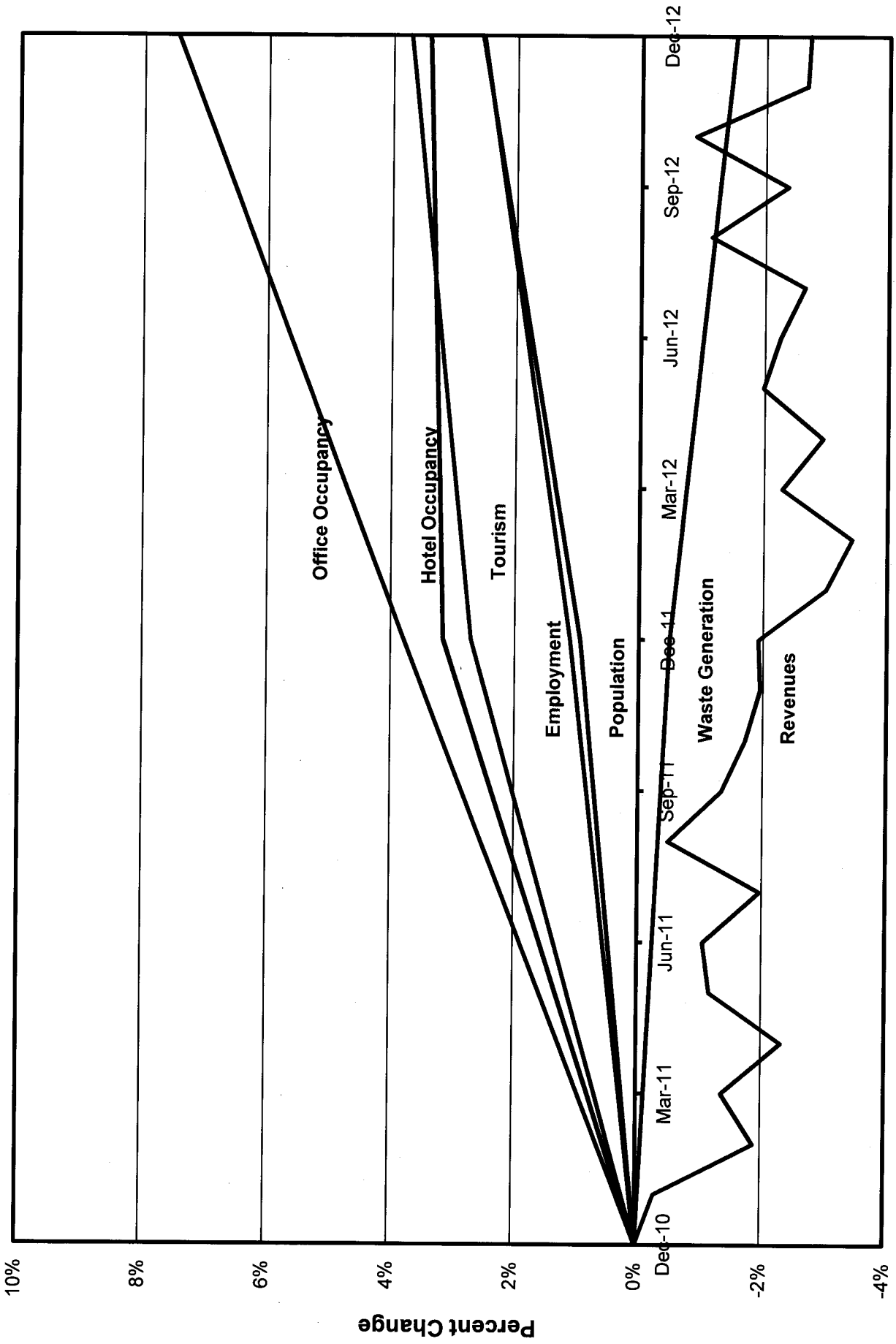
1. Office Occupancy: Cassidy Turley Market Report
2. Hotel Occupancy: San Francisco Travel Association (formerly San Francisco Convention and Visitors Bureau)
3. Employment Rate: United States Bureau of Labor Statistics
(Employment Rate = 1 – Unemployment Rate)
4. Tourism: San Francisco Travel Association (formerly San Francisco Convention and Visitors Bureau)
5. Population: United States Census Bureau

CONCLUSION

All five economic indicators have increased over the two-year period. In contrast, Recology's collection revenues and tonnage handled have decreased over the same period. Therefore, the economic indicators do not correlate to the state of Recology's business.



REVENUES AND WASTE GENERATION vs. ECONOMIC INDICATORS San Francisco





PARAMETER VALUES

Month	Revenues	Office Occupancy	Hotel Occupancy	Employment Rate	Tourism	Population	Waste Generation
December 2010	\$20,020,027	84.4%	79.3%	90.4%	15,920,000	805,235	765,813
January 2011	\$19,960,925	84.7%	79.5%	90.5%	15,955,833	805,868	765,495
February 2011	\$19,643,717	84.9%	79.7%	90.6%	15,991,667	806,500	765,176
March 2011	\$19,747,678	85.2%	79.9%	90.7%	16,027,500	807,133	764,858
April 2011	\$19,555,449	85.5%	80.1%	90.7%	16,063,333	807,765	764,540
May 2011	\$19,787,772	85.7%	80.3%	90.8%	16,099,167	808,398	764,221
June 2011	\$19,809,748	86.0%	80.6%	90.9%	16,135,000	809,031	763,903
July 2011	\$19,626,847	86.3%	80.8%	91.0%	16,170,833	809,663	763,585
August 2011	\$19,922,862	86.5%	81.0%	91.1%	16,206,667	810,296	763,266
September 2011	\$19,751,085	86.8%	81.2%	91.2%	16,242,500	810,928	762,948
October 2011	\$19,675,931	87.1%	81.4%	91.2%	16,278,333	811,561	762,630
November 2011	\$19,628,238	87.3%	81.6%	91.3%	16,314,167	812,193	762,311
December 2011	\$19,634,058	87.6%	81.8%	91.4%	16,350,000	812,826	761,993
January 2012	\$19,416,946	87.9%	81.8%	91.5%	16,363,333	813,912	761,339
February 2012	\$19,333,013	88.1%	81.8%	91.6%	16,376,667	814,999	760,685
March 2012	\$19,560,559	88.4%	81.9%	91.7%	16,390,000	816,085	760,031
April 2012	\$19,428,897	88.6%	81.9%	91.8%	16,403,333	817,172	759,377
May 2012	\$19,622,357	88.9%	81.9%	91.9%	16,416,667	818,258	758,723
June 2012	\$19,568,753	89.2%	81.9%	92.1%	16,430,000	819,345	758,069
July 2012	\$19,489,518	89.4%	81.9%	92.2%	16,443,333	820,431	757,414
August 2012	\$19,792,141	89.7%	81.9%	92.3%	16,456,667	821,517	756,760
September 2012	\$19,545,818	89.9%	82.0%	92.4%	16,470,000	822,604	756,106
October 2012	\$19,845,132	90.2%	82.0%	92.5%	16,483,333	823,690	755,452
November 2012	\$19,484,941	90.4%	82.0%	92.6%	16,496,667	824,777	754,798
December 2012	\$19,475,260	90.7%	82.0%	92.7%	16,510,000	825,863	754,144

NORMALIZED VALUES

Month	Revenues	Office Occupancy	Hotel Occupancy	Employment Rate	Tourism	Population	Waste Generation
December 2010	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
January 2011	-0.3%	0.3%	0.3%	0.1%	0.2%	0.1%	0.0%
February 2011	-1.9%	0.6%	0.5%	0.2%	0.5%	0.2%	-0.1%
March 2011	-1.4%	0.9%	0.8%	0.3%	0.7%	0.2%	-0.1%
April 2011	-2.3%	1.3%	1.1%	0.4%	0.9%	0.3%	-0.2%
May 2011	-1.2%	1.6%	1.3%	0.5%	1.1%	0.4%	-0.2%
June 2011	-1.1%	1.9%	1.6%	0.6%	1.4%	0.5%	-0.2%
July 2011	-2.0%	2.2%	1.8%	0.6%	1.6%	0.5%	-0.3%
August 2011	-0.5%	2.5%	2.1%	0.7%	1.8%	0.6%	-0.3%
September 2011	-1.3%	2.8%	2.4%	0.8%	2.0%	0.7%	-0.4%
October 2011	-1.7%	3.2%	2.6%	0.9%	2.3%	0.8%	-0.4%
November 2011	-2.0%	3.5%	2.9%	1.0%	2.5%	0.9%	-0.5%
December 2011	-1.9%	3.8%	3.2%	1.1%	2.7%	0.9%	-0.5%
January 2012	-3.0%	4.1%	3.2%	1.2%	2.8%	1.1%	-0.6%
February 2012	-3.4%	4.4%	3.2%	1.3%	2.9%	1.2%	-0.7%
March 2012	-2.3%	4.7%	3.2%	1.5%	3.0%	1.3%	-0.8%
April 2012	-3.0%	5.0%	3.2%	1.6%	3.0%	1.5%	-0.8%
May 2012	-2.0%	5.3%	3.3%	1.7%	3.1%	1.6%	-0.9%
June 2012	-2.3%	5.6%	3.3%	1.8%	3.2%	1.8%	-1.0%
July 2012	-2.6%	5.9%	3.3%	1.9%	3.3%	1.9%	-1.1%
August 2012	-1.1%	6.2%	3.3%	2.1%	3.4%	2.0%	-1.2%
September 2012	-2.4%	6.5%	3.3%	2.2%	3.5%	2.2%	-1.3%
October 2012	-0.9%	6.9%	3.4%	2.3%	3.5%	2.3%	-1.4%
November 2012	-2.7%	7.2%	3.4%	2.4%	3.6%	2.4%	-1.4%
December 2012	-2.7%	7.5%	3.4%	2.5%	3.7%	2.6%	-1.5%

ZERO WASTE INCENTIVES

Rate Year	Disposal Tonnages			
	Tier 1	Tier 2	Tier 3	Tier 4
2014	366,317	354,924	343,532	332,139
2015	366,317	343,532	320,747	297,962
2016	366,317	332,139	297,962	263,784
2017	366,317	320,747	275,176	229,606
2018	366,317	309,354	252,391	195,428
2019	366,317	297,962	229,606	161,251
2020	366,317	286,569	206,821	127,073
2021	366,317	275,176	184,036	92,895

