The Business Case for a San Francisco Waste Offset Fee

A Collaboration of

San Francisco Environment

and ***Presidio School of Management***

December 10, 2007

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Introduction

When it comes to protecting the health of our environment and our communities, San Francisco earns its reputation as "The City that Knows How" every day. San Francisco is home of some of the world's most innovative environmental legislation and initiatives. SF Environment's mission is to improve, enhance, and preserve the environment, and to promote San Francisco's long-term well being by developing innovative, practical and wide-ranging environmental programs.

This document speaks to just that sort of innovative programming for San Francisco. It was generated in collaboration with Presidio School of Management, through its MBA program in Sustainable Management. Sustainable Management is the ability to direct the course of any venture in ways that restore and enhance all forms of capital - human, natural and financial.

Presidio's Project-Oriented Learning program gives local organizations and businesses such as SF Environment the opportunity to team up with Presidio MBA students to work on a sustainable initiative. This report was generated by 5 MBA candidates (bios at end of document) and reviewed by San Francisco Department of Environment. It describes one way San Francisco can continue to distinguish itself as an urban leader in sustainable action.

Imagine a world in which nothing goes to landfills or incinerators. We think it's achievable, and we're doing everything we can to make it happen in the residential, business, and city government sectors. Today, San Francisco recovers 69 percent of the materials it discards, bringing the city ever closer to its twin goals of 75 percent landfill diversion by 2010, and zero waste by 2020.

We can exceed that 75 percent diversion goal through increased consumer and producer responsibility. Reaching zero waste will require producer responsibility; meaning that manufacturers and distributors will have to redesign their products and take more responsibility for what happens after consumers are done with them.

The Waste Offset Fee is an initiative put forth by SF Environment in order to incentivize Zero Waste in the city of San Francisco. This innovative and unique initiative is based on a life cycle assessment of greenhouse gas emissions resulting from each component of the current waste stream sent to landfill that could potentially be recycled or composted. By calculating the impact on the environment through equivalent CO_2 (CO_2e)[1] emissions of each product category

[1] Carbon Dioxide Equivalent is a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as "million

throughout its life cycle, including mining of raw materials, transportation from mining site/forest to factory, manufacturing, and transportation to distribution centers and retail outlets, we can show the real value of measures that maximize the reuse and recycling of each product stream, and therefore incentivize Zero Waste.

According to an August 2005 Harris Poll, 74% of people agreed that “protecting the environment is so important that requirements and standards cannot be too high, and continuing environmental improvements must be made regardless of cost.” In 2004, a nationwide poll by the Global Strategy Group found that 70% of Americans consider global warming “a very serious” problem. A September 2005 ABC News/Washington Post poll found that 41% of Americans believe that global warming requires immediate government action, with an additional 47% believing that longer term action is necessary.

According to Dr. Jeffrey Morris’ Valuation of Environmental Benefits (August 2007), recycling and composting efforts decrease the potential for seven categories of damage to public health and ecosystems:

- Climate Change
- Human disease and death from particulates
- Human disease and death from toxins
- Human disease and death from carcinogens
- Eutrophication
- Acidification
- Ecosystems Toxicity

The proposed fee would not only mitigate/reduce resulting costs from damage outlined above long term, but also provide funds for local offset projects directly related to waste.

The Fee would be based on the difference between the CO2 associated with a ton of garbage in the city of San Francisco going to landfill currently and the C02 associated only with the materials in that ton of garbage that are not currently recyclable. The materials categories and quantities would be based on the Waste Characterization Study put forth by SF Environment. All calculations would be based on the EPA's Waste Reduction Model and a study published by the

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metric tons of carbon dioxide equivalents (MMTCO2Eq)." The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP. The use of carbon equivalents (MMTCE) is declining.

University of Bath, expressed in metric tons of CO_2. The Inventory of Carbon and Energy (ICE) from University of Bath in the UK is an inventory of building materials with values of embodied energy and carbon coefficients and was used as a supplement to the EPA model in order to most accurately account for all materials categories present in the waste stream.

The EPA created the Waste Reduction Model (WARM) to help solid waste planners and organizations track and voluntarily report greenhouse gas emissions reductions from several different waste management practices. The WARM tool is based on a life-cycle approach, which reflects emissions and avoided emissions upstream and downstream from the point of use. As such, the emission factors provided in this tool offer an account of the net benefit of these actions to the environment. WARM calculates and totals GHG emissions of baseline and alternative waste management practices—source reduction, recycling, combustion, composting, and landfilling. The model calculates emissions in metric tons of carbon equivalent (MTCE), metric tons of carbon dioxide equivalent ($MTCO_2E$), and energy units (million BTU) across a wide range of material types commonly found in municipal solid waste (MSW).

WARM is periodically updated as new information becomes available and new material types are added. Users may refer to the model history to better understand the differences in among various versions of WARM. WARM was last updated August, 2006.

SF Solid Waste Management Background and Status

San Francisco is running out of room for its solid waste despite the fact that less than one-third of the 5,400 tons of solid waste San Francisco generates daily, is landfilled.[2] As of Spring 2007, the City and County's has used 76.67% of its solid waste disposal allowance per its 1988 contract with SF Recycling & Disposal (formerly the Sanitary Fill Company) and Waste Management of Alameda County (formerly the Oakland Scavenger Company). The agreement allowed for SF City and County to dispose of solid waste until 2053 or 15 million tons, whichever came first. As of March 2007, there was only 3.5M tons of landfill capacity remaining.

Since 2005, waste generation in SF has slowed. Landfill diversion, on the other hand, has dramatically increased to some 1.4M tons in 2005 (from 400,000 tons in 1995). SF Department of the Environment concludes that there is a correlation between diversion programs and decreased landfilling. San Francisco solid waste disposal dropped from 872,000 tons in 2000 to 664,000 tons in 2005, while recycling has increased. San Francisco's Department of the Environment (SFDOE) has a strategic approach to incentivizing solid waste reduction in order to extend the lifetime of the Altamont contract. To this end, SFDOE has calculated these scenarios, listed in the Department's *Disposal Alternatives for San Francisco:*

[2] 82% of these approximately 1,800 land-filled tons is moved 62 miles from Norcal Waste System Transfer station to Altamont Landfill in Alameda County. The remainder is distributed to other regional landfill locations.

1. *The first scenario is based on Norcal being able to meet ambitious targets of reducing landfill at Altamont to 490,770 tons in rate year 2007, 475,190 tons in rate year 2008, 459,610 tons in rate year 2009, 444,030 tons in rate year 2010 and 428,450 tons in rate year 2011. Meeting these targets allows Norcal to increase its profit by about $2.48-2.75 million each year that it meets the target[3], which provides a powerful incentive to reduce the amount of waste going to the Altamont landfill. This incentive program is based on a successful diversion incentive account implemented during the last five-year rate period, which resulted in Norcal meeting such Tier 2 targets 80% of the time. If these new targets are met, landfill capacity will not be exhausted until August of 2014.*

2. *The second scenario is based on Norcal being able to meet slightly less ambitious targets of reducing landfill at Altamont to 500,108 tons in rate year 2007, 487,841 tons in rate year 2008, 472,126 tons in rate year 2009, 455,145 tons in rate year 2010 and 438,282 tons in rate year 2011. Meeting these targets allows Norcal to increase its profit by an average of about $1.24-1.38 million each year that it meets the target[4], which provides a strong incentive to reduce the amount of waste going to the Altamont landfill. This incentive program is also based on the successful diversion incentive account implemented during the last five-year rate period, which resulted in Norcal meeting such Tier 1 targets 100% of the time. If these new targets are met, landfill capacity will not be exhausted until July of 2014.*

3. *The third scenario is based on landfill at Altamont remaining constant at the current level of disposal, which is 542,563 tons a year (based on the 12 months ending March 31, 2007). This assumes that the Department of the Environment would miss the Board mandated requirement of achieving 75% diversion by 2010. If this scenario happens, landfill capacity would be exhausted in October of 2012.*

4. *The Department of the Environment has a "catastrophic" analysis (i.e.: if Altamont disposal increased 5% a year to 700,000 tons/year) in which San Francisco would reach its landfill capacity in December of 2011.*

Strategies to Minimize Waste Related Green House Gases

To reduce GHG associated with sending waste to the landfill, strategies and examples include:

- **Increase residential recycling and composting:** Example – Promote Fantastic 3

[3] The Diversion Incentive allows the Norcal companies to receive increased profits of 1% a year for meeting these targets, which would increase profits by about $2.48 million in rate year 2007, increasing to about $2.75 million in rate year 2011.

[4] The Diversion Incentive allows the Norcal companies to receive increased profits of .5% a year for meeting these targets, which would increase profits by about $1.24 million in rate year 2007, increasing to about $1.38 million in rate year 2011.

- **Increase commercial recycling and composting**: Example – Promote Recyclable and Compostable Food Service Ware;
- **Increase municipal programs**: Example – Continue Implementing the Public Works Construction Recycled Content Ordinance;
- **Expand construction and demolition debris recycling**: Example – Continue implementation of the Construction and Demolition Debris Recovery Ordinance;
- **Support alternate processing methods for recyclable and compostable Materials:** Example - Utilize or create local processing;
- **Promote source reduction, reuse and other waste reduction**: Example – Continue implementing Local and State Policies Targeting Bags, Food Service Ware and Water Bottles, Promote Double-Siding;
- **Ban landfilling of recyclable and compostable materials**

Calculating SF $MTCO_2E$ from Solid Waste

In 2004 the City and County of San Francisco Department of Environment (SFDOE) commissioned a study to determine the quantities and composition of Municipal Solid Waste (MSW) sent to landfill from San Francisco. The study was commissioned to help the SFDOE gather data in order to meet the City goals of 75 percent landfill diversion by 2010 and zero waste by 2020. The researchers generated a final report entitled "Waste Characterization Study – March 2006" (See Figure 3, Appendix). The results of the study indicate that a significant portion of the MSW sent to landfill in 2005 was recyclable or compostable. By entering data from this report and a previous report of the 1990 landfill composition into the Waste Reduction Model (WARM) tool designed by the U.S. Environmental Protection Agency (EPA)[4], which assists solid waste managers in determining the GHG impacts of their waste management practices, we were able to estimate the total amount of metric tons of CO_2 equivalent generated by the recyclable and compostable materials entering the landfill from San Francisco in 1990 and 2005. WARM compares GHG and energy impacts of landfilling, recycling, incineration, composting, and source reduction.

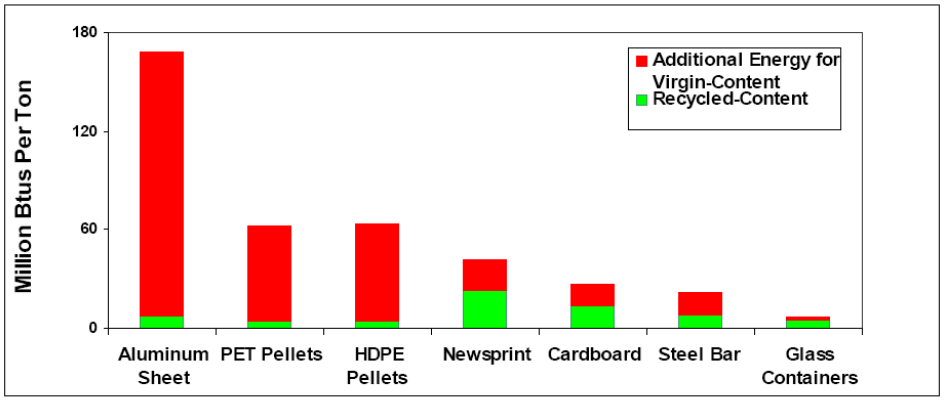
The WARM model estimates annual CO_2 emissions from transportation of municipal solid waste (MSW) to the landfill area and/or compost site as well as the CO_2 equivalent of methane (CH_4) and other GHG emissions that are released during the landfill process for the various materials. The model also estimates the embodied CO_2e for the manufacture, transportation and usage of

the materials that are landfilled. Here is a list of GHG sources and sinks that are incorporated into the EPA's WARM[5] model:

1. Energy consumption (specifically, combustion of fossil fuels) associated with making, transporting, using, and disposing the product or material that becomes a waste.
2. Non-energy-related manufacturing emissions, such as the CO_2 released when limestone is converted to lime (e.g., steel manufacturing).
3. CH_4 emissions from landfills where the waste is disposed.
4. CO_2 and nitrous oxide (N2O) emissions from waste combustion.
5. Carbon sequestration, which refers to natural or manmade processes that remove carbon from the atmosphere and store it for long periods or permanently.

Recycling and reusing materials results in dramatic reductions in both GHG emissions (see comparative energy table below) and toxic substances released. In large part due to upstream energy reductions, recycled-content manufacturing produces 0.8 tons of CO_2e, while virgin-content manufacturing releases 3.3 tons, over four times as much CO_2e. Recycling collection, processing, and hauling operations release 0.2 tons CO_2e per ton collected. In comparison, garbage collection and disposal operations release just over 1.0 ton of CO_2e per ton collected (see comparative emissions table below).

Comparative Energy Usage for Virgin- vs. Recycled-Content Products



Based on EPA, NCSU and RTI (2003), Morris (1996) and Morris (2005)

From Dr. Jeffery Morris, Sound Resource Management[6]

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[5] See: EPA (2006), Solid Waste Management and Greenhouse Gases – A Life-Cycle Assessment of Emissions and Sinks, 3rd edition, Environmental Protection Agency, Washington, D.C. for methodology associated with the WARM model

Estimated Emissions Reductions per Ton Recycled or Composted
(pounds of emissions reductions per ton recycled or composted)

	Pounds of Emissions Reductions/(Increase) Per Ton Recycled/Composted						
	Climate Change (eCO2)	Human Health - Particulates (ePM2.5)	Human Health - Toxics (eToluene)	Human Health - Carcinogens (eBenzene)	Eutrophication (eN)	Acidification (eSO2)	Ecosystems Toxicity (e2,4-D)
Recycled Materials							
Newspaper	4,937.4	3.2	2,793.5	0.9	-0.2	21.6	6.9
Cardboard	3,823.8	13.3	4,349.1	0.9	0.2	18.6	7.3
Mixed Paper	5,558.2	1.9	410.3	0.0	0.5	12.3	0.5
Glass Containers	675.2	2.9	310.1	0.5	0.1	0.0	1.1
PET Containers	3,452.5	3.4	7,838.7	7.3	1.8	60.8	0.7
HDPE Containers	2,691.6	0.9	2,279.8	2.3	0.8	13.8	0.2
Other Plastic Containers*	2,691.6	0.9	2,279.8	2.3	0.8	13.8	0.2
Plastic Film/Bags*	2,691.6	0.9	2,279.8	2.3	0.8	13.8	0.2
Aluminum Cans	19,830.7	36.7	11,930.1	5.8	3.0	217.5	78.4
Tin Cans	1,975.9	4.8			0.2	0.4	
Other Ferrous	1,975.9	4.8			0.2	0.4	
Composted Materials							
Yard Debris	429.1	-0.4	201.3	0.3	5.3	-0.9	4.0
Food Scraps	2,053.9	-0.4	201.3	0.3	5.3	-0.9	4.0
Compostable Paper	598.9	-0.4	201.3	0.3	5.3	-0.9	4.0

WARM Method of Calculations

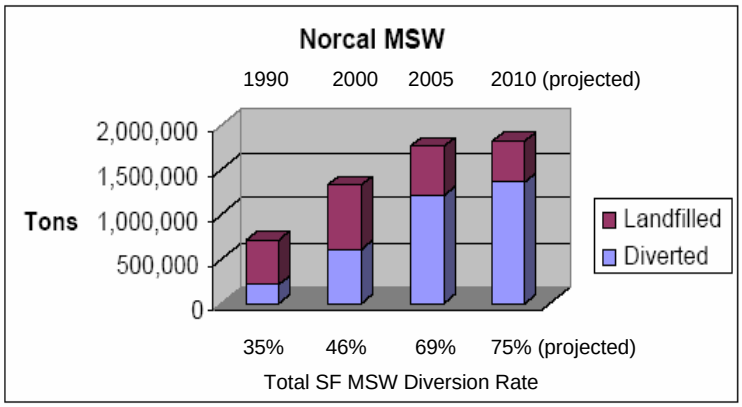
In order to use the WARM tool, the MSW categories from the Waste Characterization Studies were mapped to the categories in the WARM tool. Overlapping categories (i.e. Aluminum Cans, Aluminum Foil, and Other Aluminum all map to the WARM Aluminum Cans category) were added together and entered into the WARM tool. Split categories (i.e. White Goods and Appliance categories map to 90% Steel and 10% Mixed Metals) were split by weight into their corresponding WARM categories and added to the cumulative total weight of the corresponding WARM categories. We used the EPA's "Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks" report and the University of Bathe "Inventory of Carbon and Energy" (ICE) version 1.5 Beta to help determine appropriate WARM categories when there was not a direct map from the Characterization Study category to the WARM model category (for full detail see Figure 1, Appendix)

We initially calculated the Metric Tons of CO_2 Equivalent ($MTCO_2E$) from emissions and embodied in the materials separately for all categories, but determined that the most consistent way to calculate and present the $MTCO_2E$ data was to enter all the data into a single WARM model (one for each year 1990 and 2005) for the calculation of recyclable and compostable materials only. This method gave us the data we needed directly using a known and consistent methodology. Since there are currently no processing alternatives for materials that are not recyclable or compostable, this methodology also focuses solely on those materials that potentially could be diverted from the landfill.

[6] Morris, Jeffrey (2005), Comparative LCAs for Curbside Recycling Versus Either Landfilling or Incineration with Energy Recovery. International Journal of Life Cycle Assessment 10(4) 273-284.

Using transportation, landfill distance and methane capture data provided by the SFDOE, the WARM model calculated lifecycle emissions of 877,320 $MTCO_2E$ for waste sent to the landfill in 1990 and 649,103 $MTCO_2E$ for waste landfilled in 2005. These calculations are based on waste handled through Norcal, which represents about 82% of the total amount of Municipal Solid Waste MSW from San Francisco. These numbers represent the amount of CO_2e which could be reduced by recycling and composting all materials that could be recycled and composted. Approximately 26% reduction in landfilling of recyclable and compostable materials has already been achieved from 1990 to 2005 through existing programs.

Norcal MSW Collection



More efficient Methane Capture

The California EPA Air Resources Board recently proposed 'Landfill Methane Capture' as one of three discrete early action items approved by the Board at its June 2007 hearing. This

would set statewide standards for the installation and performance of active gas collection/control systems at uncontrolled municipal solid waste (MSW) landfills. In addition, ARB staff is also proposing to expand the scope of this strategy to include efficiency and emissions control resulting in total reductions on the order of 2 to 4 MMTCO2E by 2020. In developing the control measures, ARB staff will work closely with California Integrated Waste Management Board (CIWMB) staff. CIWMB is developing a guidance document for landfill operators and regulators that will recommend technologies and best management practices for improving landfill design, construction, operation and closure for the purpose of reducing GHG emissions.

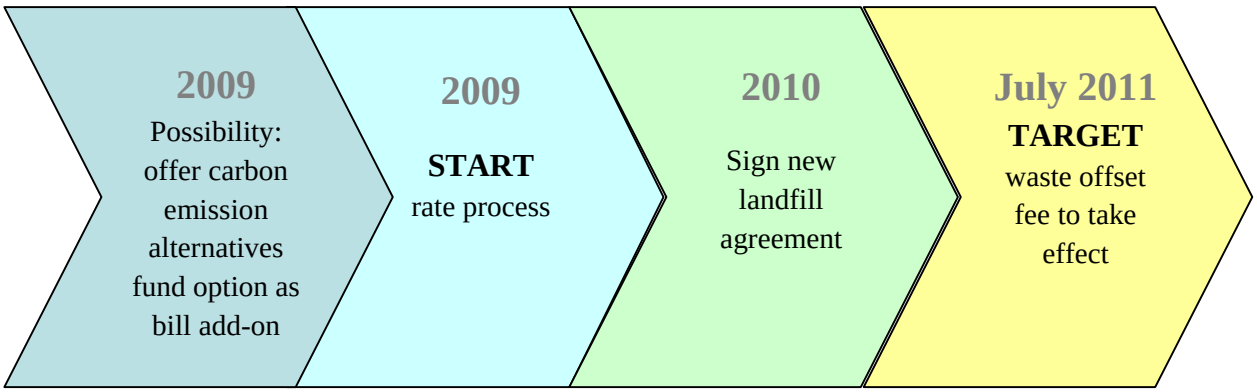
By increasing the Landfill Gas Recovery System Efficiency of the Norcal Altamont landfill site from an estimated level of 20% to 50% the WARM model shows reductions of 146,215 $MTCO_2E$ in 2005 and 161,723 $MTCO_2E$ in 1990. The landfill offset fee would complement State efforts that require landfills to adapt best management practices on site by discouraging collection of compostable materials for landfilling and reducing the amount of greenhouse gas produced by the landfill in the first place.

Waste Offset Fee

A waste offset fee will provide a variety of benefits to San Francisco on a city, community and environmental level. The fee will be an incentive to increase recycling and composting and a disincentive to disposing compostable and recyclable waste to be landfilled. The fees collected will provide funding for other GHG reduction strategies and encourage innovative mitigation and quantification technologies as it increases effectiveness and efficiency. The offset system will create incentives for projects with short and long-term reductions/removals. Through the resulting identification and development of low cost GHG reduction/removal projects, San Francisco will further benefit from enhanced economic signals that compel waste generators to develop and utilize technologies that reduce and remove emissions. This may provide a boon for San Francisco's local economy as well as a clear message of the community's commitment to be a national leader in GHG reduction, mitigation and elimination.

Since there are dramatic costs associated with increasing climate change, the benefits of implementing a waste offset fee will outweigh costs.

San Francisco Waste Offset Fee Timeline



Fee Structure

The fees will be structured according to a tiered bin assessment that is based on residential and business fee structures. There will be a variable charge depending on bin sizes; this will require distribution of additional, multi-sized bins. Consider mirroring Sunset Scavenger program, which is outlined as follows:

Basic Monthly Residential Collection Rate

- Basic monthly rate for the weekly collection of a 32-gallon container is $23.58.

- Collection rates are set to encourage recycling.
- Monthly collection charge is based on the black (garbage) cart.
- Blue and green carts are picked up at no additional charge.
- Recycle enough to consistently reduce weekly garbage volume to 20-gallons or less, and receive a 23% discount off the standard 32-gallon can rate.

Discounted Mini-can Rate

- The mini-can rate is designed for customers who generate 20-gallons or less of refuse every week.
- Customers who recycle all of their paper, bottles and cans in the blue cart, and compost their yard waste and food trimmings in the green cart are more likely to qualify for the 20-gallon can rate.
- Other ways to minimize the amount going into garbage cart is to reduce and reuse
- A 23% discount from the standard weekly rate for 32-gallon service is offered to customers who qualify.
- During the period of July 1, 2007 to June 30, 2008, the charges per month are $23.58 for a standard 32-gallon can and $18.16 for the discounted 20-gallon mini-can.

The fee is based on frequency of service and increases based on quantity of pickups. In the future it might be appropriate to assess fees based on actual weight or volume rather than container capacity to more accurately measure and charge for impact of waste at disposal.

Determining Fee Level

There are several ways through which SF can determine Waste Offset Fee amounts. Offset fee calculations can be based on either internal or external factors.

INTERNAL

1. One way to calculate the fee is to measure the amount of waste currently being landfilled, and measure diversion against City goals, and charge the waste offset fee on any shortfall from diversion goals. For example, if the diversion target for 2012 was 77%, but we achieved only 75%, we would charge the fee on the difference. In this example, the difference would be 40,000 tons. Since each ton landfilled, on average, produces 1.81 $MTCO_2E$, the total number of $MTCO_2E$ that could have been avoided, had the City met its target, would have been 72,400.

There are two ways of determining a per ton rate. One would be to use existing trading market values. For example, the cost of carbon offset credit traded in the European Union is $35 per ton (@ EUR 23.75*1.4739 FX rate). Using this rate, this scenario would raise $2.5 million for 2012 (72,400 X $35). Another methodology would be to determine the cost of implementing local offset programs, which preliminarily are costing out at about $100 per ton. Using this rate, this scenario would raise $7.24 million for 2012 (72,400 X $100)

Since all reductions are already measured by Norcal and presented to the city on an annual basis, the effect of the offset fee & any educational programs will be easier to measure.

2. Another way to determine offset fee levels is via the amount of GHG emissions generated by the waste. As our calculations using Environmental Protection Agency's Waste Reduction Model (EPA – WARM) have shown, SF can approximate the amount of GHG emissions associated with waste generated in any given year. By linking the offset fee to the aggregate of GHG emissions, the fee could be uniformly distributed to all of the actors contributing to waste generation within city limits. For example, the waste generated and sent to the landfill by the SF community in 2005 is associated with lifecycle emissions of 649,103 MTCO2E emissions. At a cost of $35/ton (Cost of carbon offset credit traded in the European Union @ EUR 23.75*1.4739 FX rate) SF would be able to generate $22.72 million in annual revenue from the waste offset fee program. Using a local offset per ton cost would result in a fee of $64.9 million.

In both of these cases, SF will not be able to directly charge the end-user based their personal waste generation. By charging this fee as a per ton fee at the landfill, all residential and commercial generators would pay their fair share of the fee. In addition since the WARM model uses a lifecycle emissions approach some discounted fee rate below market standards may be appropriate to consider.

EXTERNAL

SF can also determine offset fee based on expected costs to the city from GHG emissions & Climate Change. SF can use reports such as that issued by Sir Nicholas Stern on the economics of climate change as a guide to what the costs will be due to the effects of climate change. (Please see following link: www.sternreview.org.uk). SF can also rely on information provided by local research institutions (ex. The Pacific Institute), as well as the California Air Quality Board and other California State Agencies to determine the amount of funds needed to 1) combat climate change 2) deal with its after effects. Estimates of costs to the US from climate change could be used to determine the waste offset fee by attaching the GHG emissions from the waste stream to the city's overall carbon footprint. The percentage of the city's overall carbon footprint that comes from landfilled waste could be recouped from the offset fee.

Fee level as incentive

The offset fee can also be based on the level at which individual behavior of waste generation might begin to change. In effect, the fee becomes a deterrent because it is too costly to generate waste. The fee is simply tied to the overall amount of waste generated by the city. However, it is politically difficult to levy prohibitive fees directly to citizens and businesses. Thus, SF could work creatively around this dilemma by instituting a $0.01/lb fee on waste generation in the city. This amounts to a fee of $20/ton of waste, and will generate approximately $12 to $14 million dollars during the first year. This fee could then be adjusted by looking at the variance between expected and actual reductions in the waste stream. This type of fee structure works at the aggregate level, and so it has to be carefully monitored. Behavioral experts should be consulted in order to estimate an amount at which the program can become successful. One potential downside of this method is that it is difficult to determine if any waste reduction is taking place because of the amount of the fee acting as a deterrent or due to other reasons such as educational outreach programs or other factors.

For further information on consumer behavior, please see Fostering Sustainable Behavior website at: http://www.cbsm.com.

Management of Offset Revenues

SF will need to establish proper procedures in order to collect offset fees, hold them until need arises, and then disburse them as expediently as possible. It will be important that this process is transparent and that the revenue generated by the waste offset fee is used towards projects that work in conjunction or separately in reducing SF GHG emissions. For example, the fees could be used to fund increased waste characterization studies, from once every five years to at least once every two years, to enable better measurement of the reductions achieved by the program. A portion of these funds should be used in order to create outreach programs that help educate the public in two ways: 1) how to reduce waste 2) how to eliminate it from going to the landfill. The remaining funds can be funneled to other infrastructure development projects that help achieve SF overall goals in terms of climate change.

From a procedural standpoint, the fees could be collected by Norcal based on set levels or collection rates through monthly billing cycles. Norcal can then transfer these funds to the city on some pre-determined basis.

Program Measurement

Program measurement is a critical factor in order to determine the success of any initiative. As such, it becomes an important tool in measuring progress or identifying failure.

The amount and type of waste reduced in total tonnage should be the primary indicator that enables SF to measure success. Since data from past years is already available and sorted out, there is an established baseline against which future numbers can be compared. The city is

further aided by their contract with Norcal which requires the vendor to give a Total Tonnage Report annually as well as departmental procedure to produce a complete Waste Characterization Study every 5 years. Since this data is available in a standardized format and can be considered official data, SF does not need to devote additional resources to accumulate this information. Once this data is acquired from Norcal and the study is completed, SF can compare it to past performance and get reduction results. The offset fee can then be re-evaluated and adjusted based on these reductions.

One important limiting factor here is the manner and frequency with which Norcal delivers its reports to the city. If the Total Tonnage Report does not list waste categories, then it will be difficult to institute an offset fee based on annual GHG emissions. This is so because the type of waste being landfilled is important in calculating the amount/type of GHG emissions. If annual GHG emissions metric is used to determine the level of the fee, then changes to the fee should be made once every 5 years when the Waste Characterization Study is published. Ideally, SF should publish detailed Waste Characterization Studies on an annual basis.

Stakeholder Engagement

Stakeholders for the Waste Offset Fee initiative include groups from business, government, and civil society. Providing complete information about the proposed fee to these stakeholders and allowing them to have input into the decision-making process will help ensure that they are represented by the city agencies and officials involved. It will also lead to an easier, faster rate process and subsequent enactment of the fee, as well as more support and compliance by all stakeholders in achieving the city's waste reduction goals.

The fee initiative's business stakeholders are comprised of business associations such as the Building Owners and Managers Association, the San Francisco Chamber of Commerce, the Golden Gate Restaurant Association, the Hotel and Lodging Association, and the San Francisco Apartment Association. These groups advocate for adjustments to any proposed legislation in order to ensure that the least cost is borne by their members. Since they represent a large source of jobs and income for the city of San Francisco, they hold substantial power in lobbying elected officials to their position. The Department of the Environment can advocate for the Waste Offset Fee through the Business Council on Climate Change and inform local businesses about the impacts of emissions and how the Waste Offset Fee will benefit their company's long-term profitability.

Another business organization that singly holds a great deal of power is Norcal Waste Systems, Inc., the only provider of waste management services in the city of San Francisco. Since they are the original authors of the proposed rate increase, their priorities have some influence on the shape of the final legislation. Since revenues from the Waste Offset Fee will be used to further develop the infrastructure of their waste management system, they are likely to be supportive of the initiative.

Within the government, stakeholders to the Waste Offset Fee include the Department of the Environment, the Department of Public Works, the Rate Board, the Sunshine Ordinance Task Force, the Board of Supervisors, and the Mayor. The Sunshine Ordinance Task Force represents the public and ensures that deliberations are conducted before the people and that City operations are open to the people's review. All of these stakeholders have an interest in supporting any legislation that enables the city to reach the goal declared in both the Climate Action Plan and in a separate resolution by the Board of Supervisors: to divert 75% of waste from the landfill by 2010 and achieving "zero waste" by 2020. However, since some of these groups are appointed and some are elected, they themselves are influenced differently. Government departments and their employees are appointed or hired to reach the city's goals and serve the public interest. They must balance the burden of the fee on businesses and residents with the benefits that those same groups will receive through reduced greenhouse gas emissions and climate change impacts. They have job security and it is difficult for stakeholders to wage a campaign for the removal of a city department manager or employee. Conversely, while elected officials such as the Board and the Mayor serve the same stakeholders as government departments, they are held more directly accountable since they may be voted out of office. Elected officials also may fall prey to certain groups or individuals who, through their wealth and power, can promise substantial support or threaten opposition in future campaigns.

Individuals, community groups, and environmental non-profits are all stakeholders from civil society that are also impacted by the Waste Offset Fee. Individual home owners, landlords, and representatives of community groups such as the Sunset Parkside Education and Action Committee (SPEAK) and the Haight Divisadero Neighbors and Merchants Association (HDNMA) are often vocal participants in the rate process. In the public hearings on the refuse rate increase that began on July 1, 2006, stakeholders from these groups voiced concerns about the increase such as: a 15.7% increase in 2006 is too high; city costs should not be included in the rates; Norcal's profit margin is too high; the city should competitively bid, or split the business into two unaffiliated organizations; salary data was not provided; and the Board of Supervisors were not involved enough. Although individuals and community groups do not often hold as much power as business groups in impacting legislation, some thought to addressing these concerns should be given to ensure community support for the Waste Offset Fee. One way to influence individuals and community groups to support the Waste Offset Fee is through winning the endorsement of local environmental non-profit organizations, such as San Francisco Planning and Urban Research Association (SPUR), which brings together active citizens, public servants, business leaders, and elected officials to plan for the future of San Francisco.

The Department of Environment historically engages all stakeholders on rate changes through the city's Refuse Collection and Disposal Rate Hearings. These are part of a rate process that takes place every five years; the next rate process would commence in 2010. The rate process begins with a written notice submitted by Norcal Waste Systems, Inc. to the Director of Public

Works (DPW), who then informs the Rate Board and posts a public notice on the website. This is followed by technical workshops facilitated by Norcal and DPW, to facilitate public input and understanding of the issues involved. The technical workshops that were offered for the 2006 rate change were sparsely attended by the public, and DPW staff suggested that fewer technical workshops be offered in any rate process going forward (Director's Report, 2006). However, increased public outreach could increase attendance as well as demonstrate the City's commitment to open sharing of information and public service.

The technical workshops are followed by a report by the Department of the Environment and the Department of Public Works on the proposed rate change and a notice of public hearings. Notice of public hearings are published at least once in the San Francisco Chronicle newspaper at least twenty days in advance, posted at the San Francisco Main Library Government Information Center, and on the Department of Public Works' website not less than 72 hours in advance of the hearing. Then public hearings are held, in which any interested party may give presentations contesting the rate change. Again, increased outreach to the public would result in better attendance of these meetings, more input from stakeholders, and increased cooperation and support for rate changes. After the hearings, another report is issued by DPW, followed by any appeals from interested parties to the Rate Board. Finally, the application for the rate change is approved with any necessary changes.

In addition to the Refuse Collection and Disposal Rate Hearings, stakeholders may also impact the development of the Waste Offset Fee by lobbying the Board of Supervisors on the upcoming negotiation of a new landfill agreement for the city. In 2011, the City of San Francisco will need to extend the current landfill agreement, negotiate or bid for a new agreement, or pass ordinance to determine the site of the new landfill. In the case of this last option, legislation by the Board of Supervisors will be necessary. Lobbying the Board of Supervisors successfully is dependent on a number of factors, according to Dennis Brumm, who successfully lobbied the Board to pass a resolution on Peak Oil and offered some advice in his interview with Global Public Media. He suggested that the team advocating for any legislation be comprised of scientists, writers, and activists with adequate time to devote to the cause during working hours. The legislation should be worded using previously passed legislation as a guide. Effective lobbyists should meet in person with Board members to present on the topic, and each presentation should be fine tuned to target the interests of that Supervisor. The most important aspect of lobbying the Board of Supervisors successfully is to secure one of the members as a champion for your cause. It is also helpful to have the vote for your legislation packaged with other votes on proposals from many other Supervisors in order to increase the chances of its passing.

Conclusion

SF Environment is proposing this fee in order to create a deterrent for disposal of items than can currently be reused, recycled or composted. Norcal would collect this fee through monthly billing cycles. The funds collected would be used for waste reduction and recycling educational

programs in the city of San Francisco. Program measurement in order to determine success, would take place every 5 years though the Waste Characterization Study. Proposed fee amount is $100 per metric ton. Business customers would be charged based on actual tonnage, while residential customers would pay a set amount. The offset fee can be re-evaluated and adjusted based on reduction in tonnage of CO2 in subsequent years.

The option to increase the frequency of the Waste Characterization Study, would allow for an adjustment of the fee that would more closely reflect actual reduction in waste going to landfill due to increased recycling and reuse. This would provide a closer tracking of San Francisco's trajectory towards a Zero Waste goal.

SF Environment makes it easy for everyone in San Francisco to take care of their environment, and ultimately, the planet.

Appendix

Detailed Waste Characterization Tables

Recyclable materials are indicated in blue, compostable materials are indicated in green, and composites are in orange. For the purposes of this report, recyclable paper, plastic, glass, and some metal containers are defined as materials that are accepted by the Fantastic 3 Program, and other recyclable metals and C&D wastes are those that are known to be commonly recycled in San Francisco.

Figure 1: Compiled Categories of the SF Waste Characterization and EPA WARM Model

2005 Waste Characterization	Tons	EPA WARM Category	Compiled Categories
Metals (4.2%, 21,910 Tons)	*21910*		
Aluminum Cans	858	Aluminum Cans	
Aluminum Foil/Containers	872	Aluminum Cans	
Other Aluminum	266	Aluminum Cans	Aluminum Cans
Other Nonferrous*	345	Mixed Metals	
Tin/Steel Cans	3121	Steel Cans	
Empty Paint & Aerosol Cans**	258	Steel Cans	
Empty Propane and Other Tanks	8	Steel Cans	NOT RECYCLABLE - propane
Other Ferrous	10111	Steel Cans	Steel Cans
Composite/Other Metals	6070	Mixed Metals	Mixed Metals
Paper (24.3%, 125,177 Tons)	*125177*		
Newspaper	19287	Newspaper	Newspaper
Plain OCC/Kraft Paper	16675	Corrugated Cardboard	
Waxed OCC/Kraft Paper	4458	Corrugated Cardboard	Corrugated Cardboard
High Grade Paper	8660	Mixed Paper (primarily from offices)	Mixed Paper (primarily from offices)
Mixed Low Grade Paper	37360	Mixed Paper (primarily residential)	Mixed Paper (primarily residential)
Polycoated Paper	4326	Mixed Organics	
Compostable/Soiled Paper	28312	Mixed Organics	Mixed Organics Paper
Composite/Other Paper	6098	mixed paper general not recyclable	
CDL Wastes (12.2%, 62,776 Tons)	*62776*		
Clean Wood	8085	Dimensional Lumber	
Pallets & Crates	2882	Dimensional Lumber	Recyclable Dimensional Lumber
Stumps & Logs	85	Dimensional Lumber	Compostable Dimensional Lumber
Composite/Other Wood	3314	Dimensional Lumber	NOT RECYCLABLE - dimen lumber
Clean Gypsum	1359		
Painted Gypsum	1120		NOT RECYCLABLE - fiberglass
Sand/Soil/Dirt/Grit/Fines	10974	(mixed organics)	

Composite/Other Construction Debris	2608	70% Concrete, 30% Wood	NOT RECYCLABLE - composite const
Organics	170305		
Grass	871	Grass	Grass
Prunnings	8997	Yard waste	Yard waste
Food	138242	Food Waste	Food Waste
Compostable/Other Organics	3852	Mixed Organics	
Other Materials	*49015*		
Furniture	3138	40% Dimensional lumber, 40% Mixed Plastic, 20% Mixed Metals	
Mattresses	506	20% Steel; 50% Mixed Plastics; 30% Lumber	
Appliances	1188	90% Steel, 10% Mixed Metals	
Composite/Other Products	14477	33% Mixed Metals, 33% Dimensional Lumber, 34% Mixed Plastic	
Glass	*17142*		
Glass Beverage Bottles	9181	Glass	
Container glass	1331	Glass	
Plate glass	4992	Glass	Glass
Composite / Other glass	1638	Glass	

Figure 2: 1990 Compiled Categories

1990 Waste Characterization Category	Tons Res	Tons Com	Total	Combined	EPA WARM Category
Metals (26,911Tons)					
Aluminum	712	1164	1876		Aluminum Cans
Non Ferrous	4088	1127	5215	7091	Aluminum Cans
Ferrous	0	8791	8791	12262.3	Steel Cans
Bimetal	25	0	25	410.7	Mixed Metals
White goods	0	3857	3857		90% Steel, 10% Mixed Metals
Paper (151,390 Tons)					
Newspaper	10096	22104	32200		Newspaper
Corrugated	2080	27112	29192		Corrugated Cardboard
High Grade Paper	1035	20490	21525		Mixed Paper (primarily from offices)
Mixed Paper	17978	42396	60374		Mixed Paper (primarily residential)
Other Waste (96,283 Tons)					
Wood (from organics)	1226	6920	8146		Dimensional Lumber
Organics (51,011)					
Yard Waste	10566	8657	19223		Yard waste
Food	58798	59985	118783		Food Waste
Manure	16	0	16		Mixed Organics
Glass (29,363 tons)					
Refillable	2272	837	3109		Glass
CA Redemption	3251	8316	11567		Glass
Other recyclable	6638	9430	16068	30744	Glass
Plastic (690 tons)					
PET	152	331	483		PET

HDPE	108	774	882		HDPE
Other	80	11965	12045		Mixed Plastics
Total			*357,703*		

Figure 3: 2005 Waste Characterization Study Table A-1

Table A-1: Characterization of San Francisco Waste Disposed through Norcal

Material	Est. Pct.	+/-	Est. Tons
Paper	**24.3%**		**125,177**
Newspaper	3.7%	0.7%	19,287
Plain OCC/Kraft Paper	3.2%	0.4%	16,675
Waxed OCC/Kraft Paper	0.9%	0.6%	4,458
High Grade Paper	1.7%	0.3%	8,660
Mixed Low Grade Paper	7.2%	0.7%	37,360
Polycoated Paper	0.8%	0.1%	4,326
Compostable/Soiled Paper	5.5%	0.6%	28,312
Composite/Other Paper	1.2%	0.2%	6,098
Plastic	**10.5%**		**54,316**
PET Bottles	0.5%	0.1%	2,759
HDPE Natural Bottles	0.2%	0.0%	969
HDPE Colored Bottles	0.2%	0.0%	854
Other Plastic Bottles	0.0%	0.0%	136
#2, 4, & 5 Tubs, Cups, and Lids	0.4%	0.1%	1,860
#1, 3, 6, & 7 Tubs, Cups, and Lids	0.6%	0.1%	2,973
Non-Food Expanded Polystyrene	0.2%	0.1%	1,221
Other Food Service Plastics	0.7%	0.1%	3,761
Other Rigid Packaging	0.7%	0.3%	3,667
Clean Shopping/Dry Cleaner Bags	0.2%	0.0%	1,018
Other Clean Polyethylene Film	0.5%	0.2%	2,762
Other Film	4.5%	0.5%	23,156
Plastic Products	1.0%	0.2%	5,282
Composite/Other Plastic	0.8%	0.2%	3,878
Glass	**3.3%**		**17,142**
Glass Beverage Bottles	1.8%	0.3%	9,181
Container Glass	0.3%	0.1%	1,331
Plate Glass	1.0%	1.0%	4,992
Composite/Other Glass	0.3%	0.2%	1,638
Metals	**4.2%**		**21,910**
Aluminum Cans	0.2%	0.0%	858
Aluminum Foil/Containers	0.2%	0.0%	872
Other Aluminum	0.1%	0.0%	266
Other Nonferrous	0.1%	0.0%	345
Tin/Steel Cans	0.6%	0.1%	3,121
Empty Paint & Aerosol Cans	0.1%	0.0%	258
Empty Propane and Other Tanks	0.0%	0.0%	8
Other Ferrous	2.0%	0.7%	10,111
Composite/Other Metals	1.2%	0.3%	6,070
Number of samples:	291		

Material	Est. Pct.	+/-	Est. Tons
Organics	**33.0%**		**170,305**
Grass	0.2%	0.1%	871
Prunings	1.7%	0.6%	8,997
Food	26.8%	1.9%	138,242
Disposable Diapers	2.1%	0.4%	10,965
Animal By-Products	1.4%	0.5%	7,378
Composite/Other Organic	0.7%	0.5%	3,852
Other Materials	**9.5%**		**49,015**
Tires	0.0%	0.0%	224
Rubber	0.3%	0.1%	1,570
Textiles	3.4%	0.6%	17,753
Carpet/Upholstery	1.6%	0.5%	8,040
Apparel	0.4%	0.1%	2,120
Furniture	0.6%	0.4%	3,138
Mattresses	0.1%	0.0%	506
Appliances	0.2%	0.2%	1,188
Composite/Other Products	2.8%	0.1%	14,477
CDL Wastes	**12.2%**		**62,776**
Clean Wood	1.6%	0.5%	8,085
Pallets & Crates	0.6%	0.3%	2,882
Stumps & Logs	0.0%	0.0%	85
Composite/Other Wood	0.6%	0.3%	3,314
Clean Gypsum	0.3%	0.2%	1,359
Painted Gypsum	0.2%	0.2%	1,120
Fiberglass Insulation	0.0%	0.0%	64
Rock/Concrete/Bricks	2.3%	1.0%	11,996
Asphaltic Roofing	3.6%	0.6%	18,585
Ceramics	0.3%	0.2%	1,706
Sand/Soil/Dirt/Grit/Fines	2.1%	1.1%	10,974
Composite/Other Construction Debris	0.5%	0.3%	2,608
Hazardous Wastes	**2.9%**		**15,022**
Hazardous Waste	2.9%	0.9%	15,022
Total	100.0%		515,664

Figure 4: 1990 WARM Summary

WARM Summary – 1990 Emmisions (Norcal)

GHG Emissions from Baseline Waste Management ($MTCO_2E$): 201,054

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	7,091	-	NA	314
Steel Cans	-	12,262	-	NA	543
Glass	-	30,744	-	NA	1,363
HDPE	-	882	-	NA	39
PET	-	483	-	NA	21
Corrugated Cardboard	-	29,192	-	NA	28,144
Magazines/third-class mail	-	4,326	-	NA	(288)
Newspaper	-	32,200	-	NA	(20,997)
Dimensional Lumber	-	8,146	-	NA	(1,588)
Food Scraps	NA	118,783	-	-	129,661
Yard Trimmings	NA	19,223	-	-	(4,329)
Mixed Paper, Resid.	-	60,374	-	NA	46,114
Mixed Paper, Office	-	21,525	-	NA	21,498
Mixed Metals	-	411	-	NA	18
Mixed Plastics	-	12,045	-	NA	534
Mixed Organics	NA	16	-	-	6

WARM Summary – 1990 Alternative Waste Management (Norcal)

GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$): **(676,317)**

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	7,091	-	-	NA	(96,223)
Steel Cans	-	12,262	-	-	NA	(21,998)
Glass	-	30,744	-	-	NA	(8,543)
HDPE	-	882	-	-	NA	(1,228)
PET	-	483	-	-	NA	(743)
Corrugated Cardboard	-	29,192	-	-	NA	(90,824)
Magazines/third-class mail	-	4,326	-	-	NA	(13,283)
Newspaper	-	32,200	-	-	NA	(89,888)
Dimensional Lumber	-	8,146	-	-	NA	(20,006)
Food Scraps	NA	NA	-	-	118,783	(22,669)
Yard Trimmings	NA	NA	-	-	19,223	(3,669)
Mixed Paper, Resid.	NA	60,374	-	-	NA	(213,539)
Mixed Paper, Office	NA	21,525	-	-	NA	(73,545)
Mixed Metals	NA	411	-	-	NA	(2,161)
Mixed Plastics	NA	12,045	-	-	NA	(17,997)
Mixed Organics	NA	NA	-	-	16	(3)

Total Change in GHG Emissions (1990): **(877,370)** **$MTCO_2E$**

Figure 5: 2005 WARM Summary

WARM Summary – 2005 Emmisions (Norcal)

GHG Emissions from Baseline Waste Management ($MTCO_2E$): 204,103

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	1,996	-	NA	88
Steel Cans	-	14,661	-	NA	650
Glass	-	15,504	-	NA	687
HDPE	-	1,843	-	NA	82
PET	-	2,759	-	NA	122
Corrugated Cardboard	-	16,675	-	NA	16,076
Magazines/third-class mail	-	4,326	-	NA	(288)
Newspaper	-	19,287	-	NA	(12,577)
Dimensional Lumber	-	10,967	-	NA	(2,138)
Food Scraps	NA	138,242	-	-	150,902
Yard Trimmings	NA	8,997	-	-	(2,026)
Grass	NA	871	-	-	100
Branches	NA	237	-	-	(46)
Mixed Paper, Resid.	-	37,360	-	NA	28,536
Mixed Paper, Office	-	8,660	-	NA	8,649
Mixed Metals	-	6,415	-	NA	284
Mixed Plastics	-	2,249	-	NA	100
Mixed Organics	NA	38,455	-	-	14,370
Concrete	-	11,996	NA	NA	532

WARM Summary – 2005 Alternative Waste Management (Norcal)

GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$): (445,000)

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	1,996	-	-	NA	(27,085)
Steel Cans	-	14,661	-	-	NA	(26,302)
Glass	-	15,504	-	-	NA	(4,308)
HDPE	-	1,843	-	-	NA	(2,566)
PET	-	2,759	-	-	NA	(4,243)
Corrugated Cardboard	-	16,675	-	-	NA	(51,880)
Magazines/third-class mail	-	4,326	-	-	NA	(13,283)
Newspaper	-	19,287	-	-	NA	(53,840)
Dimensional Lumber	-	10,967	-	-	NA	(26,934)
Food Scraps	NA	NA	-	-	138,242	(26,382)
Yard Trimmings	NA	NA	-	-	8,997	(1,717)
Grass	NA	NA	-	-	871	(166)
Branches	NA	NA	-	-	237	(45)
Mixed Paper, Resid.	NA	37,360	-	-	NA	(132,140)
Mixed Paper, Office	NA	8,660	-	-	NA	(29,589)
Mixed Metals	NA	6,415	-	-	NA	(33,727)
Mixed Plastics	NA	2,249	-	-	NA	(3,360)
Mixed Organics	NA	NA	-	-	38,455	(7,339)
Concrete	NA	11,996	-	NA	NA	(93)

Total Change in GHG Emissions (2005): (649,103) $MTCO_2E$

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Pamela Snyder designs and implements national and international solutions in marketing communications. Ten years of strategic management in interactive and multi-media, tempered by four years of leadership in the non-profit sector, well prepare her to succeed: Presently, Pamela leads and inspires national and international organizations to successfully leverage marketing, PR, interactive media to advance worthy causes for social and ecological sustainability. In the past, Pamela excelled as Managing Director of California Art Council's most highly funded nonprofit of 2004; led the producer team of the 3rd top creative interactive agency in the world, Red Sky Interactive; launched an online-media design company while residing 4 years in Venezuela and simultaneously producing/directing a participatory video project with a remote village accessible only by boat; and established fluency in Spanish and proficiency in breaking down cultural, class and linguistic barriers. She is a graduate of the Environmental Forum of Marin and has a B.A., cum laude, in Film Studies from San Francisco State University's award winning cinema program. Pamela Snyder is a 2008 MBA candidate at Presidio School of Sustainable Management.

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Shripal Shah has worked in Corporate Finance, Treasury and Internal Operations for the past 8 years since graduating with a Bachelor of Science, Economics degree from University of California at Berkeley. He developed a keen understanding of overall manufacturing operations processes from raw materials purchases to Sarbanes-Oxley compliance during his work as an Operations Analyst at Kelly Moore Paint Company. He has experience in designing & implementing procedures, which help train employees to eliminate fraud, shortages and waste in order to improve profitability. Shripal has held various Treasury and Corporate Finance roles, and built cash flow models with both solvent and heavily leveraged corporations. In addition to his work experience, Shripal brings passion and curiosity of physical sciences and business as they relate to Sustainability. Shripal Shah is a 2008 MBA candidate at Presidio School of Sustainable Management.

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Greg Long has worked in Product Engineering at Dolby Laboratories in San Francisco for the past 14 years. He has contributed to a corporate RoHS/WEEE compliance program, initiated a sustainability group, and contributed to several industry wide engineering projects (two projects received an Academy award for technical achievement). Prior to joining Dolby Laboratories, Greg was a CAD consultant and group leader with United Defense Industries (now part of BEA

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Janine Kubert has worked in Operations Management and Strategic Marketing and Communications for the past 17 years. Prior to enrolling as a full-time MBA student at Presidio School of Management she was the Vice President of United Way HELPLINK, an social service information hot-line and community data center. During her tenure there, she was instrumental in the launch and expansion of the first-ever 2-1-1 telephone number in Northern California which is projected to serve over 100,000 callers annually in the 7-county Bay Area. Janine has also led marketing and product development efforts at United Way and at many software and internet companies, identifying key customer segments, managing the design and production of technology, and overseeing marketing campaigns. She is a graduate of Leadership San Francisco, a Chamber of Commerce program that develops future community leaders for the city of San Francisco and Emerge, a political leadership training program for women in the Bay Area. She also holds a B.A., cum laude, in Comparative Literature from Boston University. Janine Kubert is a 2008 MBA candidate at Presidio School of Sustainable Management.

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Lina Constantinovici has developed and managed corporate events on a global scale for the past 14 years, supporting clients in their branding efforts, growing their market share and employee retention through internal events such as sales kickoff meetings & incentive trips, educating customers regarding products through user conferences & product-specific meetings, facilitating industry specific networking and collaborative events. She has also delivered solutions within the non-profit sector in producing high quality programs within the constrainst and parameters of a not for profit enterprise. Complex operational logistics, as well as management of dynamic teams and training are areas where she has excelled, both as a Consultant for 5 years, and as an Account Executive. Lina has developed sucessful training programs to facilitate effective integration within varous sectors of the event industry. She is a graduate of University of South Florida with B.A.s in Linguistics and Theater. Lina Constantinovici is a 2008 MBA candidate at Presidio School of Sustainable Management.