



**SAN FRANCISCO FIRE DEPARTMENT**  
CITY AND COUNTY OF SAN FRANCISCO

**Title:** Departmental Climate Action Plan  
**Department:** San Francisco Fire Department  
Chief Joanne Hayes-White  
**Data Year:** Fiscal Year 2012-2013  
**Author:** Rhab Boughn, Compliance Officer  
**Date:** April 11, 2014

**Contents**

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<i>1. Introduction</i>	<i>2</i>
<i>2. Departmental Profile</i>	<i>3</i>
<i>3. Total Energy Consumption and Carbon Footprint</i>	<i>6</i>
<i>4. Efforts in Facilities Energy Reduction</i>	<i>14</i>
<i>5. Efforts in Water Use Reduction</i>	<i>21</i>
<i>6. Efforts in Vehicle Fuel Reduction</i>	<i>25</i>
<i>7. Other Sustainable Practices</i>	<i>33</i>
<i>8. Report Summary and Climate Action Goals</i>	<i>41</i>
<i>Appendices</i>	<i>44</i>

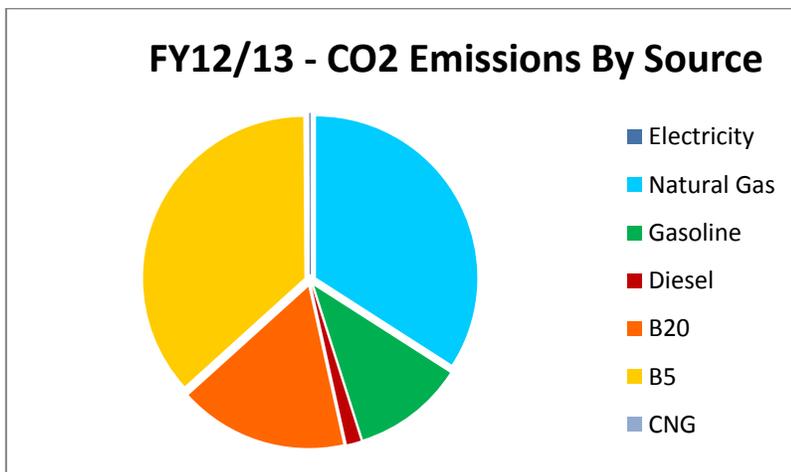
# 1. Introduction

In 2008 the City of San Francisco began to track its greenhouse gas (GHG) emissions and create climate action plans at the City department level per direction of the Board of Supervisors. It was the intent of the presiding Mayor and the Board of Supervisors to protect the health and welfare in a manner that complimented State and federal efforts to improve air quality by exercising a leadership role in mandating local actions to reduce global warming. It specifically calls upon City departments and the private sector to integrate emission reduction measures into their standard operating procedures in order that the City meets and exceeds the greenhouse gas emission reduction standards established in the Ordinance. It is the goal of the City and County of San Francisco to reduce the City's operational emissions by 20% from a 2005 baseline by 2012, 25% by 2017, 40% by 2025 and 80% by 2050. In addition to reducing the municipal footprint, the City is also committed to reducing the community's emissions through smart policies such as energy efficiency and the use of cleaner fuels, increasing various public transportation options, promoting the purchase of safer, green products, zero waste, public education, urban forest stewardship and community gardens. This work is captured in the City departments' Climate Action Plans.

## Carbon Footprint Summary

The Fire Department's carbon footprint is the calculation of carbon emissions produced from the consumption of energy at Fire Department facilities (electricity and natural gas), and mobile fuels delivered to the Fire Department's fuel tanks and/or supplied to Fire Department vehicles (gasoline, diesel, biodiesel and CNG).

In FY12/13, the Fire Department produced 4,099.52 metric tons of CO<sub>2</sub> emissions. By factoring in the amount of carbon sequestered by the trees on Fire Department property, the net carbon emissions produced in FY12/13 is 4,089.39 metric tons of CO<sub>2</sub> emissions.



The chart above shows the Fire Department's total emissions by source. Of the Fire Department's total carbon emissions, 2/3rds (66%) came from the consumption of mobile fuels. Also notable is the high amount of carbon emissions produced from the use of natural gas, whereas the emissions produced from the consumption of electricity, due to hydroelectric energy generation from the Hetch Hetchy Reservoir, was zero.

## **2. Departmental Profile**

### **2A. Fire Department Mission**

The mission of the Fire Department is to protect the lives and property of the people of San Francisco from fires, natural disasters, and hazardous materials incidents; to save lives by providing emergency medical services; to prevent fires through prevention and education programs; and to provide a work environment that values health, wellness and cultural diversity and is free of harassment and discrimination.

### **2B. Fire Department Budget**

Budget FY12/13 = \$327,044,525

The Fire Department has six divisions in its operating budget: Administration, Fire Investigation, Operations (including Fire Suppression and Emergency Medical Services), Fire Prevention, Support Services, and Training. The annual project budget also has allocations for personal protective equipment purchasing. The Department has two divisions funded by other sources: the Airport Division, supported by Airport funding, and the Fireboat, supported by the Port of San Francisco.

The Fire Department receives revenue from public safety State sales tax allocations, the provision of emergency medical services (EMS), and from fire prevention services and associated fees. Fire Department revenue accounts for over 25% of the Fire Department's total operating expenses; annual revenue for FY12/13 is calculated at \$85,741,204.

### **2C. Fire Department Personnel**

As of March 1, 2014, the Fire Department employs 1,512 persons, including both uniformed and non-uniformed personnel:

Number of full-time employees = 1,508  
Number of part-time employees = 4 (Fire Commissioners)

### **2D. Fire Department Facilities**

The Fire Department occupies 43 Fire Stations, 2 In-Service Training facilities, 1 facility housing EMS Ambulance Headquarters, the Bureau of Fire Investigation, and Equipment Storage, 1 Fleet Maintenance and Repair facility, 1 facility housing SFFD Headquarters, Administration and the Bureau of Fire Prevention, and 3 Fire Stations at the San Francisco International Airport. The Plan Check offices of the Bureau of Fire Prevention are located in the facility that houses the SF Department of Building Inspection. The Department also maintains 1 inactive Fire Station and the Historic Dennis T. Sullivan Memorial Chief's Residence. The inactive station is currently being used by the "Guardians of the City", the historical society for the Police, Fire, EMS and Sheriff's Departments within San Francisco, while the Historic Chief's Residence is currently unoccupied, but designated as the Department's secondary Department Operations Center.

Construction of a new Fire Station in the developing Mission Bay area began in September 2011. It remains under construction at this time, with completion and

occupancy projected by the end of 2014. The project site, entitled the Public Safety Building, will also include the new Police Headquarters and a new Police Station. The construction location was the previous site of an inactive Fire Station that was being used for the SF Firefighters Local 798 Toy Program and by the Sisters of Mercy to feed the homeless. The inactive Fire Station will be historically preserved and utilized as a community room within the Public Safety Building complex and to house the SFFD Bureau of Fire Investigation. The project is being financed through the SF Earthquake Safety and Emergency Response Bond (SF Proposition B, June 2010 Ballot).

A map of all active Fire Stations is available on-line at the following URL:  
<http://38.106.4.187/index.aspx?page=176>

The Fire Department owns and manages all facilities except for the following: SFFD Airport Division facilities (San Francisco International Airport); SFFD Training Facility and Fire Station 48 on Treasure Island (Treasure Island Development Authority); Fire Station 51 (Presidio Trust), and; SFFD Bureau of Fire Prevention, Plan Check - 1660 Mission Street (SFGSA, Real Estate Division).

All data for the facilities noted above are included in the Fire Department's Climate Action Plan except for: the SFFD Airport Division facilities, which are represented in the San Francisco International Airport's Climate Action Plan, and; Fire Station 51, located on U.S. National Park Property. The U.S. National Park System is not subject to the requirement of having to produce annual Climate Action Plans per the SF Ordinance.

## 2E. Fire Department Vehicles

The Fire Department owns and operates its fleet of fire suppression and EMS/rescue apparatus, which includes fire engines, fire trucks, ambulances, fire and rescue boats, and specialized rescue, support and command staff vehicles. Frontline vehicles are the vehicles used on a daily basis. When these vehicles break down or undergo service maintenance or repairs, Reserve vehicles take their place. This prevents any disruption in community fire suppression and emergency medical service responses.

The Fire Department's fleet of passenger vehicles and bicycles are used for Fire Prevention activities and other support functions. The Fire Department also maintains several historic fire suppression apparatus, which are included in the fleet.

A summary of the Fire Department's fleet as of February 2014 is listed below:

<b>FLEET SUMMARY</b>	<b>COUNT</b>
FIRE APPARATUS/HEAVY-DUTY VEHICLES/AMBULANCES	210
LIGHT-DUTY VEHICLES (TRUCKS, VANS, SUVS, CARS)	106
NON-HIGHWAY VEHICLES	5
WATER VESSELS (FIRE BOATS, RESCUE CRAFT)	12
BICYCLES	4
<b>TOTAL</b>	<b>337</b>

(Data provided by SFGSA Central Shops)

## 2F. Fire Department Contact Information

Implementation of the Fire Department's Climate Action Plan is overseen by Assistant Deputy Chief Ken Lombardi, Division of Support Services.

The author of the SFFD Climate Action Plan is the SFFD Climate Liaison: Compliance Officer, FF/PM Rhab Boughn.

For questions concerning the Fire Department's Climate Action Plan, please contact:

San Francisco Fire Department  
Department Headquarters  
698 Second Street  
San Francisco, CA 94107  
(415) 558-3200  
[www.sf-fire.org](http://www.sf-fire.org)

**2G. Other Sustainability or Environmental Plan**

The Fire Department does not have any other sustainability plans in addition to this Climate Action Plan.

### 3. Total Energy Consumption and Carbon Footprint

To determine the Fire Department’s carbon footprint, the following parameters were taken into account:

- o Electricity and natural gas usage at SFFD owned/occupied facilities
- o Mobile fuels purchased/dispensed into SFFD vehicles

Usage amounts were then converted into metric tons CO<sub>2</sub> emissions. Conversions for CH<sub>4</sub> and N<sub>2</sub>O emissions were excluded. The proceeding sections will describe each component in greater detail.

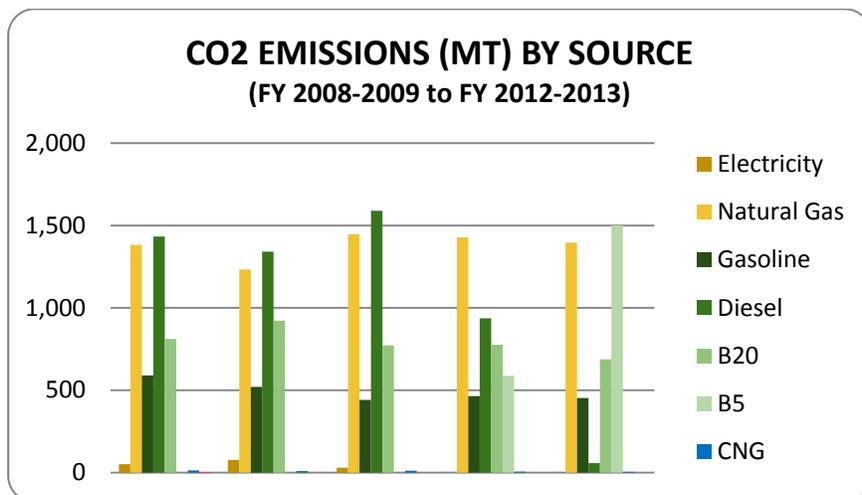
For facilities that are partially occupied by SFFD personnel, usage was determined by the percentage of building space occupied, or by the percentage of building occupants employed by SFFD.

In May 2010, the City and County of San Francisco Board of Supervisors and the Mayor approved the transfer of costs of operating, maintaining and improving the Auxiliary Water Supply System (AWSS) from the Fire Department to the SF Public Utilities Commission, SF Water Enterprise. This transfer included several facilities, equipment, vehicles and personnel. The transfer of all AWSS assets, as well as operations was completed in FY10/11. Energy and water usage data being provided will exclude any historical usage related to AWSS operations, unless otherwise noted.

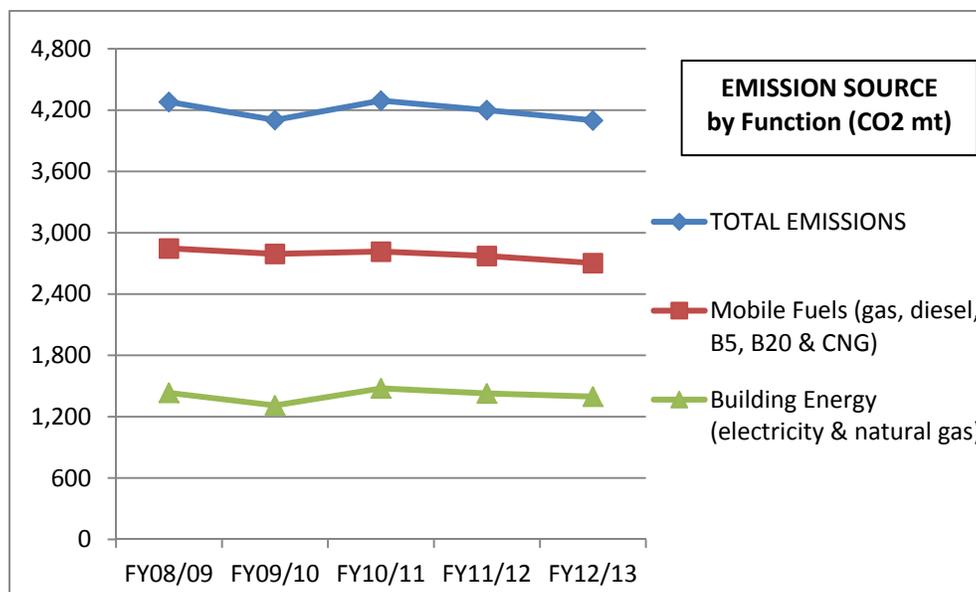
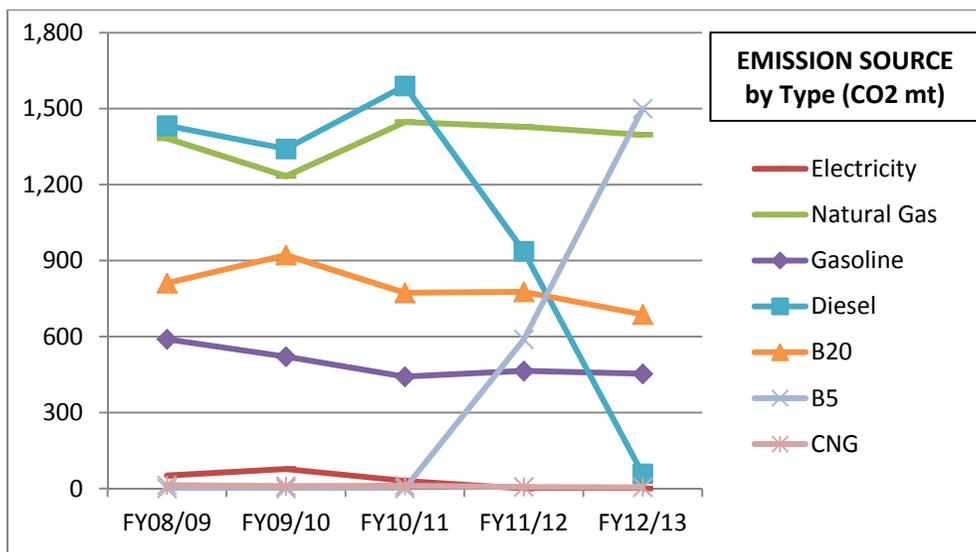
Mobile fuel quantities include fuel amounts delivered to the SFFD fueling stations, fuel truck and Fire Boats, and fuels dispensed at facilities monitored by the City’s Central Shops. Any fuel dispensed while on mutual aid responses has been excluded. Additionally, daily Fire Department operations at the SF International Airport are not represented in this report.

For Fiscal Year 2012-2013, the Fire Department’s total operational greenhouse gas (GHG) emissions were 4,099.52 metric tons of CO<sub>2</sub>. The five year summary of the Fire Department’s annual operational CO<sub>2</sub> emissions is summarized in the table and chart below. A five year historical analysis is provided in detail in the proceeding sections.

ANNUAL DEPARTMENTAL CO <sub>2</sub> EMISSIONS (MT)					
	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013
<b>Total CO<sub>2</sub> (mt)</b>	<b>4,280.26</b>	<b>4,103.36</b>	<b>4,292.38</b>	<b>4,199.92</b>	<b>4,099.52</b>



The Fire Department has achieved an overall reduction in CO<sub>2</sub> emissions of 4% since Fiscal Year 2008-2009. This is partially due to the zero emission electricity provided by SFPUC starting in 2011, but primarily due to the reductions in CO<sub>2</sub> emissions from vehicle fuel consumption. The emission level charts below demonstrate that emissions from mobile fuels have been gradually decreasing over the five year period, whereas emissions from building energy have fluctuated. The conversion of diesel to biofuels and the overall reduction in the quantity of mobile fuels consumed has effectively reduced overall CO<sub>2</sub> emissions. Efforts in facilities energy and vehicle fuel reduction are outlined in the sections that follow.



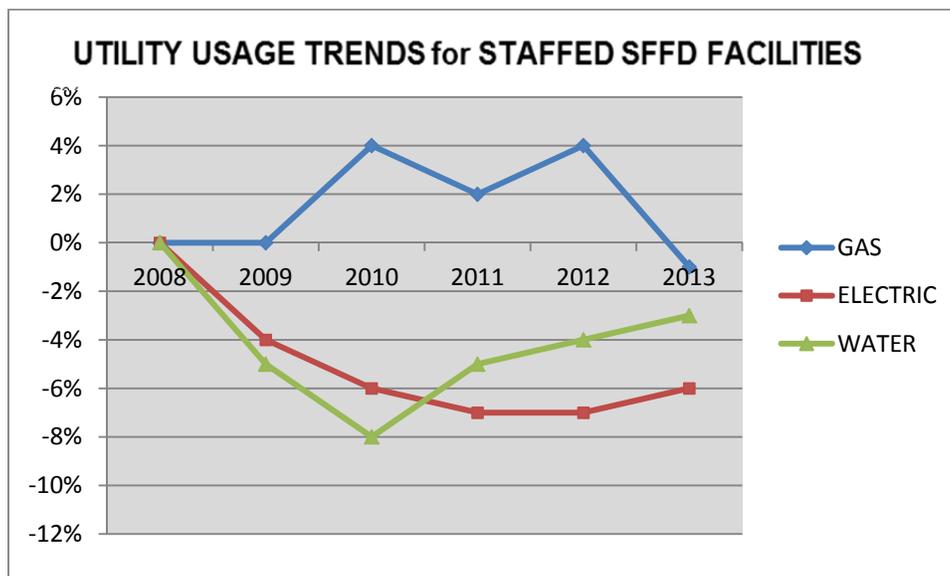
### SFFD Energy & Water Conservation Program

The SFFD Energy and Water Conservation Program, initiated per SFFD General Order 09 A-06 and superseded by SFFD General Order 14 A-12, established the Fire Department's goal to reduce electricity, gas and water usage by 10% from 2008 levels, as mandated by the Mayor and the Board of Supervisors. Through this program, water and energy usage are monitored at all Fire Department facilities and quarterly reports are provided to the Division of Support Services for analysis and distribution. The Energy and Water

Conservation Program has become a valuable tool for helping the Fire Department conserve water and energy, as well as for improving the management of financial resources.

## Analysis of SFFD Energy and Water Conservation Program Data

As part of the SFFD Energy and Water Conservation Program, the Fire Department tracks the utility usage on all Department-operated facilities. This occurs separately from the utility usage tracking which is performed by SF Environment. The Fire Department began its data collection in January 2008, with Calendar Year 2008 being used as the baseline year. All years thereafter have been compared to the CY2008 usage levels at each facility. In the following graph, utility consumption is expressed in terms of percent change compared to CY2008 consumption levels.



Facilities are separated into 2 groups: "Staffed" and "All". Whereas "Staffed" includes only active Fire Stations and occupied Administrative facilities; "All" additionally includes other facilities that are occasionally occupied, such as inactive Fire Stations and the historic Chief's Residence, as well as the Auxiliary Water Supply System (AWSS) facilities. Since 2008, several of the Fire Department's facilities were transferred or sold. Tracking utility usage at the Fire Department's "Staffed" facilities most accurately reflects actual usage trends.

The Fire Department has been successful in reducing electricity usage, and was close to meeting its water usage reduction goal in CY2010. However, recent usage trends have demonstrated decreased reductions with those utilities. Natural gas usage had initially increased, but by CY2013 has finally seen a decreasing trend. The Fire Department will be focusing on improving measures to further reduce the consumption of natural gas, and to improve reduction levels for electricity and water. To achieve these goals, the Fire Department will be identifying the individual facilities where utility usage has been above CY2008 levels, and develop customized facility-based conservation goal plans. SFFD General Order 14 A-12 was recently issued to reemphasize the Fire Department's commitment to energy and water conservation and to remind members of conservation best practices. SFFD General Order 14 A-12 is included as **Appendix A**.

### 3A. Facilities List Verification Statement

The list of facilities used by SF Environment to calculate the FY 2012-2013 Departmental carbon footprint has been verified by the San Francisco Fire Department to be accurate and complete.

On March 19, 2013, Fire Station 1 permanently relocated from 676 Howard Street to their new Fire Station located at 935 Folsom Street in San Francisco. This new facility, which was built so the San Francisco Museum of Modern Art could occupy the space at 676 Howard Street, is approximately the same square footage as the previous Station. Since it was designed to meet local and California State green building codes, the Fire Department has been anticipating an overall reduction in energy usage at the new facility.

### 3B. Fiscal Year 2012-2013 Facilities Energy Consumption and Carbon Emissions

Total Facilities Electricity in Fiscal Year 2012-2013: 4,224,600 kWh (0.00 mt CO<sub>2</sub>)  
 Total Facilities Natural Gas in Fiscal Year 2012-2013: 263,154 therms (1,396.57 mt CO<sub>2</sub>)

All electricity and natural gas usage from all owned/occupied facilities are included except for the facilities at San Francisco International Airport and Station 51 in the Presidio Trust. None of the Fire Department's facilities use steam.

### 3C. 5-Year Historical Analysis of Facilities Energy Consumption and Carbon Emissions

The tables below summarize the Fire Department's annual facilities energy consumption and associated GHG emission for the past five fiscal years.

ANNUAL DEPARTMENTAL CONSUMPTION					
Emission Source Detail:	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013
Electricity (kWh)	4,642,929	4,473,184	4,244,293	4,223,437	4,224,600
Natural Gas (th)	260,512	232,409	272,638	269,020	263,154
Steam (lbs)	0	0	0	0	0

ANNUAL DEPARTMENTAL CO <sub>2</sub> EMISSIONS (MT)					
Emission Source Detail (mt):	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013
Electricity	50.94	77.11	30.34	0.00	0.00
Natural Gas	1,382.55	1,233.40	1,446.90	1,427.70	1,396.57
Steam	0.00	0.00	0.00	0.00	0.00
<b>Total Building Energy CO<sub>2</sub> (mt)</b>	<b>1,433.49</b>	<b>1,310.51</b>	<b>1,477.24</b>	<b>1,427.70</b>	<b>1,396.57</b>

Total GHG emissions from building energy use have fluctuated over time, but are currently below Fiscal Year 2008-2009 levels. Part of the reduction is due to the zero emission electricity provided by SFPUC starting in 2011; however fluctuations in natural gas usage have had a more significant effect. Causes for the fluctuations in natural gas usage have not been isolated. Please refer to the "Efforts in Facilities Energy Reduction" section (4) for details on reduction measures made by the Fire Department.

### 3D. Vehicle List and Fuel Data Verification Statement

The list of vehicles and the Fire Department's fuel totals used by SF Environment to calculate the Fiscal Year 2012-2013 Departmental carbon footprint has been verified by the San Francisco Fire Department to be accurate and complete.

### 3E. Fiscal Year 2012-2013 Vehicle Fuel Consumption and Carbon Emissions

Gasoline Consumption in Fiscal Year 2012-2013:	51,424 gals (452.92 mt CO <sub>2</sub> )
Marine Diesel Consumption in Fiscal Year 2012-2013:	5,728 gals (58.12 mt CO <sub>2</sub> )
B5 Biodiesel Consumption in Fiscal Year 2012-2013:	155,614 gals (1,500.09 mt CO <sub>2</sub> )
B20 Biodiesel Consumption in Fiscal Year 2012-2013:	84,639 gals (687.08 mt CO <sub>2</sub> )
CGN Consumption in Fiscal Year 2012-2013:	779 gge (4.75 mt CO <sub>2</sub> )

All City departments that own and operate their own fleet vehicles are required to implement maintenance methods and educate their Department members on the best practices listed in Chapter 4 of the San Francisco Environment Code, Healthy Air and Smog Prevention Ordinance, unless an exemption by SF Environment has been granted.

### 3F. 5-Year Historical Analysis of Vehicle Fuel Consumption and Carbon Emissions

The tables below summarize the Fire Department’s annual fuel consumption and associated GHG emission for the past five years.

ANNUAL DEPARTMENTAL CONSUMPTION					
Emission Source Detail:	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013
Gasoline (gal)	66,936	59,120	50,142	52,710	51,424
Diesel (or equivalent) (gal)	141,230	132,151	156,660	92,335	5,728
B100 equivalent (gal)	0	0	0	0	0
B20 (gal)	99,885	113,560	95,191	95,669	84,639
B5 (gal)	0	0	0	61,043	155,614
CNG (GGE)	2,173	1,530	1,822	980	779
Propane (gal)	8	0	0	0	0

ANNUAL DEPARTMENTAL CO <sub>2</sub> EMISSIONS (MT)					
Emission Source Detail (mt):	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013
Gasoline	589.54	520.70	441.63	464.25	452.92
Diesel (or equivalent)	1,433.08	1,340.96	1,589.65	936.94	58.12
B100 equivalent	0.00	0.00	0.00	0.00	0.00
B20	810.84	921.85	772.73	776.61	687.08
B5	0.00	0.00	0.00	588.44	1,500.09
CNG	13.26	9.34	11.12	5.98	4.75
Propane	0.05	0.00	0.00	0.00	0.00
<b>Total Mobile Fuel CO<sub>2</sub> (mt)</b>	<b>2,846.77</b>	<b>2,792.85</b>	<b>2,815.14</b>	<b>2,772.22</b>	<b>2,702.95</b>

The amount of fuel consumed is based on the amount of fuel delivered to SFFD fuel tanks during each respective Fiscal Year. These values do not reflect the actual amount of fuel consumed, but provide a general estimate. The exception is red-dye diesel (marine diesel), which is dispensed directly into the SFFD Fire Boats when delivered, and CNG, which is dispensed at monitored City fueling sites. A small amount of gasoline (currently 1.5% of total) was also dispensed from monitored City fueling sites. Diesel, biodiesel (B-5) and gasoline are additionally used for other machinery, such as facility generators, and power tools and generators carried on the fire suppression apparatus.

Total carbon emissions from mobile fuel combustion have been decreasing since Fiscal Year 2008-2009. This is primarily due to the conversion to biodiesel fuels and the

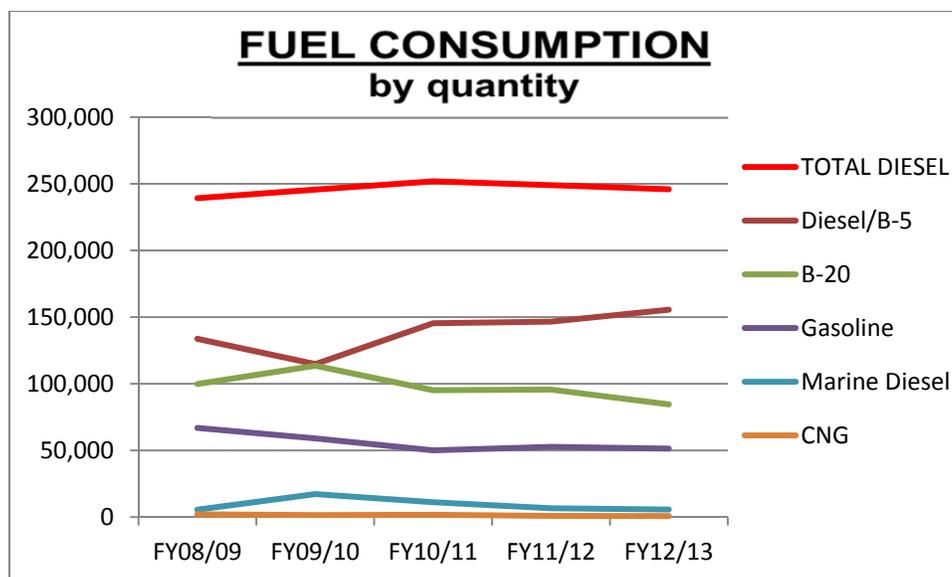
reduction in the overall consumption of mobile fuels. Actions taken to reduce the Fire Department's GHG emissions from vehicle fuels are detailed in the "Efforts in Vehicle Fuel Reduction" section (6).

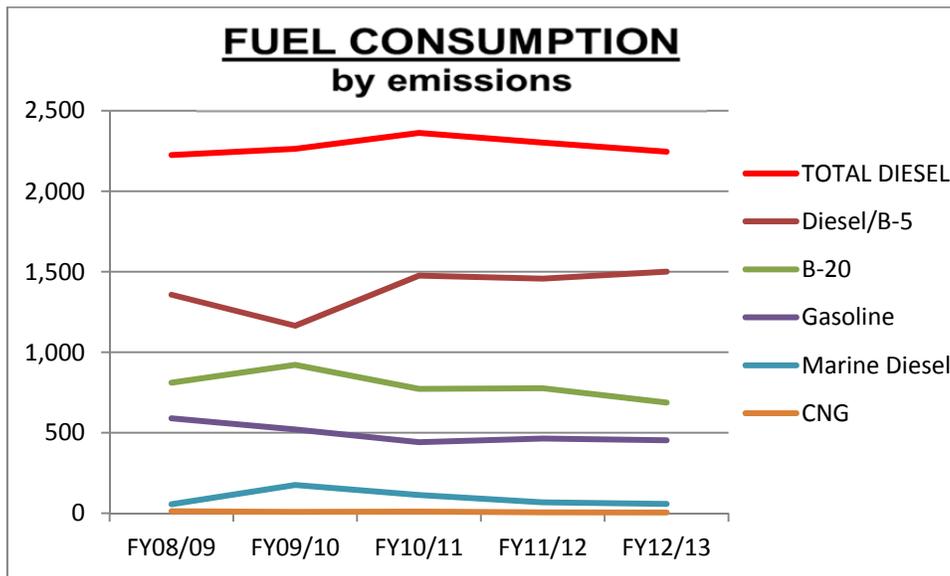
## Fuel Management System

In 2013, the Fire Department installed a fuel management system to facilitate tracking the amount of fuel delivered to and dispensed at each SFFD fueling station. The system electronically captures the vehicle ID, operator name, fuel amount and type, and odometer reading. This system will eliminate the need to calculate fuel consumption based on vendor delivery invoices and eliminate the labor needed to enter all fuel consumption data manually. We are anticipating that the accuracy of overall fuel consumption values will improve. The system also has a variety of fuel inventory and other fuel management tool reports that can be provided from central access points.

## Further Analysis of Mobile Fuel Usage Data and Fleet Profile

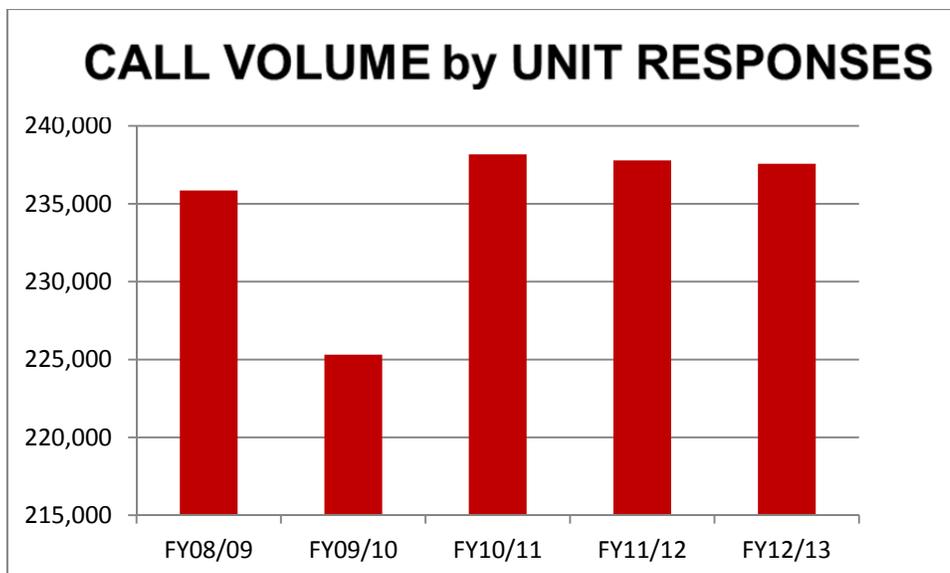
The Fire Department's currently available method for determining annual fuel usage provides a rough estimate of the actual amount of fuel consumed. The current trends of fuel usage by fuel type are shown in the charts below, by quantity consumed and by fuel emissions. The data for diesel and B-5 have been combined, since all diesel engine vehicles that have been using diesel are now using B-5 (except for the Fire Boats). B-20 is represented separately. The majority of B-20 fuel is used by Ambulances. In the years when SFFD was allowed to store B-20 in underground tanks, the only diesel engine vehicles that regularly used this type of fuel were those that were properly converted for B-20 use. The Fire Department's two Fire Boats, built in 1954, are designed to use to marine diesel only.





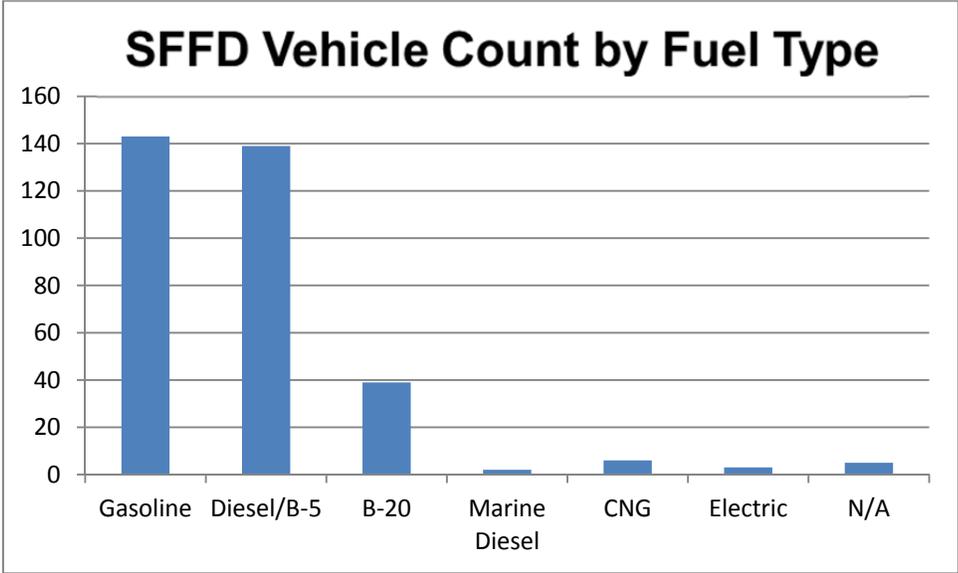
Although the trend over time in both charts appears somewhat similar, differences can be seen upon closer examination in the lower levels of emissions produced from B-20 as compared to Diesel/B-5.

The quantity of fuel Fire Department's vehicles consume and the resultant emissions vary depending on the number of Fire/EMS 911-calls received. More 911-calls require more emergency vehicle responses, which consumes more fuel. The supplemental chart below shows the number of vehicles being dispatched to 911-calls by Fiscal Year. Although there was a decrease in unit responses in FY09/10, the call volume has remained higher than FY08/09 levels. It would therefore be expected that the overall fuel consumption and emissions to have increased and remained higher than previous levels. This however is not the case. Despite higher call volumes, the Fire Department has been able to achieve a decrease in GHG emissions from the consumption of mobile fuels.



Although just over 50% of the Fire Department's entire fleet runs on some type of diesel fuel, diesel fuels (Diesel/B-5, B-20 and Marine Diesel) account for over 83% of all mobile fuels used (as demonstrated in the preceding fuel consumption charts). This is due to

the fact that most Frontline apparatus and Ambulances responding to Fire/EMS calls have diesel-powered engines and consume fuel not only to get to the scene of an incident, but also to pump water and power the aerial ladders. These are the vehicles that are responsible for performing the majority of the Department's work. The graph below shows the breakdown of the Fire Department fleet's by fuel type.



## 4. Efforts in Facilities Energy Reduction

When crews respond to 911 calls from the Fire Station, it is critical that they respond immediately. This often results in thermostats, lights and electrical equipment, such as televisions, being left on when the Station is vacated. To mitigate such energy use, the Fire Department aims to achieve continued improvements in energy efficiency and installation of energy-saving devices at all Fire Stations facilities.

### 4A. Energy Efficiency and Retrofit Projects

The Fire Department's energy efficiency projects are described below. Please see **Appendix B** showing detailed information on the scope and status of all energy efficiency and water conservation projects.

#### *Lighting Upgrades:*

After conducting an audit of all lighting fixtures at SFFD properties in FY08/09, SFPUC upgraded the lighting at 24 Fire Department facilities during FY09/10. The facilities selected were those expected to provide the best return on investment. Construction began in October 2009 and was completed in March 2010. SFPUC expected the savings to be 243,000 kilowatts per year which would save SFFD \$9,000 per year and SFPUC \$21,000 at the current rates. The drop in usage per location was expected to average 10%. In reality at 64% of the facilities, the drop averaged 15%. However, at the remaining 36% of the facilities, the rate increased by 15%. Several factors may have contributed to this increase. New generators were installed at 3 of the facilities with increased usage and a major construction project occurred at another one of the sites. Nevertheless, the project was an overall success.

#### *Window Repairs/Replacement:*

In FY 12/13, the following Fire Stations had window repaired and resealed utilizing ESER Bond funds: 2, 6, 10, 13, 17, 18, 26, 31, 32, 36, 40 and 44. In FY 13/14, Fire Station 15 will have all new windows installed using MUNI Loop Project funds. Fire Stations 2 and 18 will have a portion of their existing windows repaired and the remainder will be new installs utilizing ESER Bond funds. Fire Stations 28, 38, 41 and 42 had various windows resealed and hardware was replaced using DPW funds. In FY 11/12, windows were resealed at two Fire Stations utilizing ESER Bond funds; in FY 10/11, energy efficient windows were installed at two Fire Stations using SFPUC funds; and in FY 09/10, the same funding replaced windows at two additional Fire Stations. The Fire Department has seen savings at locations where the majority of windows were replaced.

#### *HVAC System Upgrades:*

In FY 09/10, SFPUC provided funding to install energy efficient boilers in several Fire Stations. In FY 10/11, a high-efficiency Boiler was installed at Fire Station 40 (2155 18<sup>th</sup> Avenue) as a test location to determine how well it performed in terms of mechanical issues and how well it stood up to the rigors of firehouse use. Since installing the new Boiler, natural gas usage at this firehouse has decreased by 20% due to the high efficiency of the Boiler. For FY 13/14 and FY 14/15, the Fire Department anticipates replacing Boilers at Fire Station's 5, 11, 12, 15, 21, 24, 25, 28, 29, 37, 38 and 43, if Department funding permits. By the end of FY 13/14, Fire Station 35's Boiler will undergo a retrofit utilizing PUC funds. Since the energy savings has been so significant, the Fire Department anticipates implementing an annual Boiler Replacement Program for

firehouses that are identified by Energy Use Intensity (EUI). Each Fiscal Year, funding for this Program will be included in the budget submission for the following Fiscal Year.

During FY 13/14, the following Fire Stations had or will have repairs made and maintenance services provided to their HVAC Systems: 2, 3, 6, 10, 13, 15, 17, 18, 26, 28, 31, 32, 36, 38, 40, 41, 42 and 44 utilizing ESER Bond funds.

## **ESER Bond Funded Renewals and Renovations**

The Earthquake Safety and Emergency Response (ESER) Bond funds facility repairs and addresses health and safety issues at neighborhood Fire Stations. It also is funding the construction of the new Mission Bay Fire Station, which is part of the Public Safety Building.

### ***New Construction and Seismic Upgrades:***

The Fire Department currently has one new building under construction that is funded by the ESER bond. This is the Mission Bay Fire Station that will be part of the new Public Safety Building complex, also containing SF Police Department Headquarters and a new Police Station. This building is designed to meet LEED Gold standards. It is currently under construction, with an expected completion date in the later part of 2014. The Fire Stations identified as requiring seismic upgrades are: Station 16 (2251 Greenwich Street), Station 5 (1301 Turk Street), Station 9 (2245 Jerrold Street) and Station 35/Fire Boat Station (Piers 22 ½ and 24). These buildings will not be upgraded under the current ESER Bond, as additional funding is required.

### ***Comprehensive Projects:***

Comprehensive projects will upgrade all water and energy related systems, including windows, HVAC systems and roofs, to LEED Silver standards. Each project site will also be reviewed for potential alternative energy modifications, such as the addition of solar thermal, bioswales, solar panels, and/or green roofs. Alternative energy modifications will only be adopted based on a positive-performance cost benefit analysis. Comprehensive renovations are being performed at Station 36 (109 Oak Street) and Station 44 (1298 Girard Street), and renovations beginning in the Fall of 2013.

### ***Focused Scope Projects:***

Focused scope projects will primarily involve roof, shower pan and window repairs or replacements and limited work on HVAC systems. All roofs will be at a minimum white-coated, any windows that will be replaced will meet SFPUC's energy efficiency standards, and all shower pan projects will incorporate water conservation plumbing upgrades. In addition, if funding permits, low-flow bathroom fixtures will also be installed. Sixteen (16) neighborhood focused scope Fire Stations include roof construction, repainting and refurbishing, mechanical and general facilities upgrades. Also, five (5) stations are scheduled to receive new back-up emergency generators.

## **4B. Energy Benchmarking and Compliance with the Energy Performance Ordinance**

In order to comply with the Existing Commercial Buildings Energy Performance Ordinance (Ord 17-11, SF Environmental Code, Chapter 20), the Fire Department assisted the SFPUC in producing the 2012 Energy Benchmarking Report for San Francisco Municipal Buildings by: verifying the Fire Department's list of facilities; verifying the existing facility data for each location, including year built, gross square

footage and building type, and; providing updated occupancy data specific to the primary EPA Energy Star building category, including weekly operating hours, number of worker on main shift, and additional information on the facility, subspaces, and parking areas, as applicable. The 2012 Energy Benchmarking Report is available at: <http://sfwater.org/modules/showdocument.aspx?documentid=4139>

The following 46 Fire Department facilities were benchmarked:

Facility Type	# of Facilities Benchmarked for SFFD per Facility Type	Page Number/s in SFPUC Benchmarking Report
Offices – General Office	1	23
Public Safety - Fire Station	43	24-25
Repair, Service and Storage - Other Shops	1	29
Buildings with Incomplete Meter Data	1	31

The Fire Department reviewed the list of its facilities, which are sorted in the report by building type and listed in order by Energy Use Intensity (EUI). In FY 13/14, the Fire Department investigated the following high EUI concern and has come to the following conclusions:

- The high EUI at “Station 35 (Fire Boat House)” is due partly to daily staffing increase from 3 members to 7 members after the Engine crew returned to quarters at the beginning of July 2012. In addition, both the Phoenix and the Guardian fireboats must remain plugged in and charged throughout the night in order to have emergency response capability.
- The high electricity use at the “Fire Fighting Training Center - Treasure Island” is due to that fact that there is no natural gas available at that facility, so all heating needs are met by using electrical appliances.
- The facility “Fire Station 28” is categorized as having incomplete meter data due to a broken electric meter that had not been replaced. The Fire Department has since rectified this matter, and contracted for the installation of a new electric meter. The installation was completed in January 2014.

The information provided in the Energy Benchmarking Report is supplemental to the Fire Department’s own comprehensive SFFD Energy & Water Conservation Program, which analyzes all utility usage at all facilities. The results in the Energy Benchmarking Report support and reinforce the Fire Department’s own independent findings.

#### **4C. Compliance with the Commercial Lighting Efficiency Ordinance**

Out of the 49 Fire Department facilities that are effected by the Commercial Lighting Efficiency Ordinance (SF Building Inspection Commission Code, Chapter 13D), 46 buildings are in compliance. One building, which is an inactive Fire Station used by the Guardians of the City Museum as a warehouse, was determined to not meet the requirements outlined in the Ordinance, and per SFPUC, does not need to be upgraded at this time. The two remaining buildings, both on Treasure Island, are leased from the Treasure Island Development Agency. Since these buildings are slated for eventually demolition, it was determined that upgrading lighting would not be an efficient use of resources.

## 4D. Information Technology

Energy consumption associated with desktop computers is the City's single largest use of energy for the City's Information Technology operations. Computers are critical to the productivity of City employees, and reliance on electronic data collection and processing is becoming more and more prevalent on all levels of City operations, including Fire Department operations. Energy consumption for IT purposes is therefore anticipated to increase.

Energy consumption associated with desktop computers however can be mitigated through the purchase of energy efficient computers, behavior modification, and the use of power management tools which limit energy consumption to times of actual use.

The Fire Department's policy on the purchase of new equipment ensures that all purchases of new computer and electronic equipment meet the Electronic Product Environmental Assessment Tool (EPEAT) Gold standard.

### *Virtual Servers*

It has been over five years since the Fire Department's servers were last upgraded. Rather than replacing the Fire Department's obsolete servers with more energy-efficient servers, the SF Department of Technology (DT) has been in the process of migrating critical physical servers to the DT virtual server environment. Most servers are at peak use only 5-15% of the time they are powered on, yet most hardware consumes 60-90% of the normal workload power even when idle. By consolidating multiple servers across a number of host servers, the Fire Department will significantly reduce energy consumption without sacrificing reliability or service levels.

Initiated in FY10/11, the virtualization project is currently about 90% complete. The Fire Department therefore still has servers at SFFD Headquarters (698 Second Street). The room where the servers are stored must be maintained at a cool temperature, utilizing much energy. Once the project is 100% complete, the full energy efficiencies will be realized.

### *Energy-Efficiency, Equipment and Systems Upgrades*

The Fire Department has been replacing CRT monitors with LCD flat screen monitors, thereby reducing energy consumption and eliminating exposure to harmful radiation. Additional measures include the removal and/or discontinued use of individual printers, and upgrading to printers with multifunctional capabilities, which also saves paper.

An on-going project includes the removal of older printers within Fire Stations. Fire Stations are required to have a minimum of 2 printers for operational purposes, located on the Communications Floor. These printers have been upgraded to more energy efficient models that use less toner and can print double-sided. Most Fire Stations also have additional printers located in the Officers' rooms - printers that were installed in 1999. These older printers use more energy, print only single-sided, and due to the age, are failing. As they fail, printing is redirected to the Communications Floor printers, and the old printer is permanently removed.

In FY10/11, the Fire Department's IT staff, in collaboration with the SF Department of Emergency Management, completed the consolidation of personal workstations and eliminated workstations dedicated to reporting and/or scheduling tasks only. Now,

most personnel at Fire Department Headquarters can access all work related applications from their single desktop workstation. This has eliminated approximately 90% of the instances where users needed two separate computers at their desks. By merging the two networks to run on only one computer, the Fire Department was also able to replace 25 older computers at Fire Stations with newer, more energy-efficient models that meet EPEAT Gold standards.

### ***Energy-Saving Modes and Best Practices***

Due to the nature of the Fire Department's Mission, enabling energy-saving modes on emergency response and patient care documentation computer systems is not always operationally feasible. However, energy-saving practices have been applied whenever possible, with non-emergency response computers configured with the following energy-saving settings:

Turn off monitor:	After 5 minutes
Turn off hard disks:	After 20 minutes
System standby:	After 20 minutes
Screen saver:	Default setting

An additional measure the Fire Department has implemented is providing energy conservation reminders on all non-emergency response computers, with special focus on electrical equipment at Fire Stations, including televisions. The Fire Department will also periodically distribute memos regarding energy-saving practices, including turning off personal items, such as personal laptop computers, when not in use. These reminders were included in the recently issued SFFD General Order 14 A-12, Energy and Water Conservation Best Practices.

### ***Conversion to Paperless System***

The Fire Department has been in the process of transitioning towards an all paperless system. This includes the conversion of daily forms and checklists, memos and General Orders, vehicle and fuel monitoring, supply orders, and on-line training. During FY11/12, conversion projects have been the primary focus of the Fire Department IT Staff. Although converting to a paperless system does not reduce computer energy consumption, it does reduce the consumption of other critical resources, while improving on the efficiency of Fire Department operations.

## **4E. Renewable Energy**

Like the SFPUC's Hetch Hetchy power system, renewable energy projects installed at municipal facilities provide clean power that is free of greenhouse gas emissions. Building local renewable projects in San Francisco reduces the need to transport energy over long distances by providing power at the point of use. These projects also free up Hetch Hetchy power for other uses, which has the effect of reducing greenhouse gas emissions on the wider electric grid. SFPUC implements solar photovoltaic and other renewable energy projects based on the technical feasibility of the project and available funding.

Solar energy collection systems may be designed to generate electricity through photovoltaic panels, or to heat water through solar-thermal collectors. The Fire Department has been interested in installing solar energy generation systems on building roofs at the time when roofs are being repaired. In preparation, an audit on condition and available space on all facility roofs was conducted in FY08/09.

By initial assessment, it appears that solar-thermal systems would be a more advantageous system to install, as it would reduce the overall amount of natural gas used for heating water. The use of natural gas is costly and produces high amounts of carbon emissions. Investments in the installation of solar-thermal systems for the larger Fire Stations and other facilities using high amounts of natural gas would be cost beneficial. In FY 11/12, two new Fire Stations were designed to include solar-thermal heating systems; one is the new Fire Station that is being built as part of the Public Safety Building in Mission Bay, and the second is the new facility for Fire Station 1, privately-funded by the entity that has acquired Fire Station 1's existing location (676 Howard). In March, 2013, the Department activated New Fire Station 1 making it the first new Station to be occupied by the Fire Department in over 30 years. Fire Station 1 is a state of the art facility utilizing solar panels to heat all domestic water throughout the facility. The Fire Department is currently taking further steps to make the facility a Certified LEED Building.

By the end of May, 2014, the Department anticipates returning Fire Station 44 to its original quarters (1298 Girard Street). Upgrades for Fire Station 44 include a new roof, new windows, new insulation (ceiling and walls) and a project that included repointing of mortar to reduce air leaks throughout the Fire Station. In November, 2014, Fire Station 36 will return to its original quarters (109 Oak Street). Fire Station 36 has been renovated with LEED Certified commercial interiors including a new roof, new windows, new insulation (ceiling and walls), a new generator and new HVAC mechanical equipment throughout the quarters.

In December, 2014, the Department is anticipating the opening of the new Public Safety Building/Fire Station 4 at Mission Bay. The Public Safety Building/Fire Station 4 meets LEED Gold level certification for new construction.

The Fire Department is interested in promoting more of these types of renewable energy projects. Since funds to upgrade facilities with solar-thermal are not currently available, upgrades are only possible for buildings undergoing funded reconstruction or renovation.

Acquiring funding for renewable energy projects is the biggest challenge encountered. Although the Fire Department has received bond funding for Fire Station renovation projects, solar energy for electricity generation does not currently qualify under the use of the current bond funds. In the past, SFPUC has approached the Fire Department with a potential solution for funding the installation of solar panels. The Fire Department continues to conduct a cost benefit analysis to see if this project will be feasible. The Department remains open to exploring this source, if funding can be identified.

The funding for solar panel installations in future bonds may be justifiable as a cleaner source of backup power. Currently each Fire Station has an emergency generator to run as the primary backup power source. These generators run on diesel fuel, which may additionally be in short supply in the event of a major disaster. Solar panels do not require fuel to operate and could fully power the Fire Stations during the day, with the generator taking over at night once the batteries are depleted. This would greatly reduce the amount of GHG emissions produced, allow fuel to be used for other critical needs, and provide greater Fire Department resiliency.

#### 4F. Green Building

Green building design is an important driver for both mitigation and adaptation to climate change. 33% of CO2 emissions worldwide and 39% nationally are due to the construction and operation of buildings. Advanced green buildings are now reducing energy use and carbon emissions from 20% to 50% below conventional building designs. Within the next 20 years, new buildings are expected to become net zero energy, carbon-neutral and better able to survive a changing climate. Green buildings also save water, protect habitat, provide healthy indoor environments, and promote public transit.

San Francisco’s municipal new construction and major renovation projects (5,000 ft<sup>2</sup> or larger) are required by Chapter 7 of the Environment Code to achieve LEED Gold certification. Additional green building requirements include Environment Code Chapter 5 Sec 509: non-PVC Plastics, and Environment Code Chapter 8: Tropical Hardwood and Virgin Redwood Ban. For projects smaller than 5,000 ft<sup>2</sup>, departments must consult with the Green Building Staff at SF Environment.

Having received over \$65 million in public funding through the Earthquake Safety and Emergency Response (ESER) bond for Fire Station repair and renovation, the SFFD has a few green building projects planned. Making energy efficiency and water systems upgrades is much easier and more cost effective when a building undergoes major renovation or reconstruction.

Leadership in Energy and Environmental Design (LEED) consists of a suite of rating systems for the design, construction and operation of high performance green buildings, homes and neighborhoods. Though the Fire Department does not have LEED-certified professionals, SF Department of Public Works, private architects and the engineers involved in these projects are LEED-certified. The primary challenges regarding LEED design include the costs associated with meeting LEED standards. Any new Fire Station will be designed to the highest current efficiency standards for buildings of this type and will include features such as: building systems (windows, HVAC, lighting, showers, toilets and faucets) which meet Energy Star-rated efficiency criteria; bioswale areas; white-coated and possibly “green” sections of roof; and solar thermal water, where feasible. Below is a list of the current Fire Department facility LEED projects:

LEED Project Name	Project Sponsor	LEED Goal	Sq. Feet	Project Budget	Notes
Public Safety Building at Mission Bay	SFPD/SFFD	LEED-BDC Gold	260,000	Privately funded	Project under construction; projected Opening Date December, 2014
Fire Station 1 (935 Folsom Street)	SFFD	Moving towards making building LEED Certified	15,000	Privately funded	Station opened March, 2013.
Fire Station 36 (109 Oak Street)	SFFD	LEED-BDC Gold	10,000	\$4.6 million	Project under construction; projected Opening Date November, 2014

For the Public Safety Building’s green building design details, please refer to the SF Department of Public Works’ Climate Action Plan. For details of the green building project at Fire Station 36, please refer to **Appendix B**. Details regarding Fire Station 1

can be obtained from Leddy Maytum Stacy Architects, who claim the project is designed to use 40% less energy than a typical firehouse:

<http://www.lmsarch.com/project.php?id=FH1>

## 5. Efforts in Water Use Reduction

Water consumption values include water used at all Fire Department facilities. Not included is water from City fire hydrants or other water supplies used during fire suppression activities (water used to extinguish fires) or during firefighting drills. Water used for firefighting drills conducted at SFFD Training Facilities, however, is included.

### 5A. Water Data Verification Statement

The list of water accounts used by SF Environment to calculate annual Departmental water use has been verified by the Fire Department to be accurate and complete, with the following exception: water meter usage for the new location of Fire Station 1 (935 Folsom); the water meter was never properly transferred to the Fire Department. The Fire Department continues to work with SFPUC to resolve this issue.

### 5B. Fiscal Year 2012-2013 Water Consumption and Wastewater Discharge

Total Water Consumption in Fiscal Year 2012-2013: 12,491,305 gallons

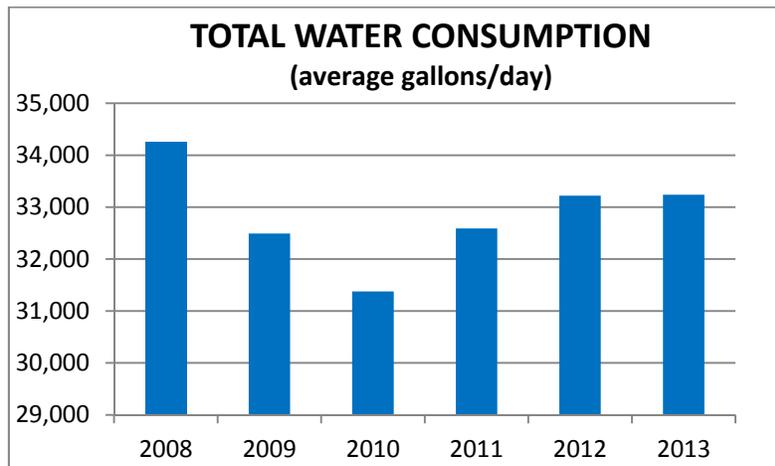
### 5C. 4-Year Historical Analysis of Water Consumption and Wastewater Discharge

The table below summarizes the Fire Department's annual water consumption for the past four years.

ANNUAL DEPARTMENTAL CONSUMPTION

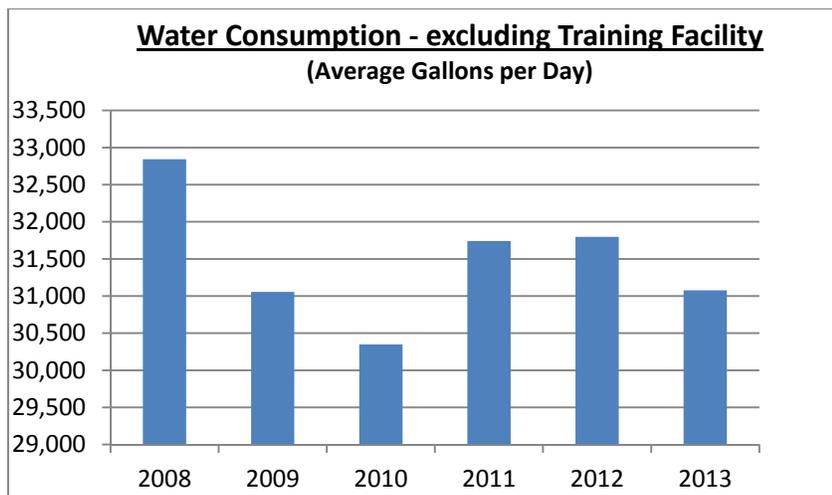
ANNUAL DEPARTMENTAL CONSUMPTION					
Source Detail:	FY 2008-2009	FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013
Water (gal)		192,940,193	11,850,557	12,389,364	12,491,305
Wastewater Discharge (gal)		10,866,177	10,596,438	10,935,162	10,821,123

Total water usage for the Fire Department has decreased since FY 2009-2010, with a 94% decrease by FY 2012-2013. However, these figures do not accurately reflect water usage patterns. As previously mentioned, in May 2010, the Auxiliary Water Supply System (AWSS) was transferred from the Fire Department to the SF Public Utilities Commission, SF Water Enterprise. Therefore FY 2009-2010 includes all water consumption associated with the AWSS, whereas the remaining years do not. Excluding the AWSS facilities yields different results. Through the SFFD Energy and Water Conservation Program, the Fire Department has been tracking water usage since CY2008. The results excluding the AWSS facilities are summarized by Calendar Year for all SFFD staffed facilities in the graph below.



Since 2008, the baseline year for the Fire Department’s Conservation Program, water consumption decreased by as much as 8% in 2010. However, since Calendar Year 2011, water consumption went back up. The reason for the increase has not yet been determined; however contributing factors may include ESER Bond renovation work.

To better understand trends in water consumption, data collected for the SFFD Energy and Water Conservation Program from SFPUC Water bills was further analyzed. By excluding the variable use of water for training exercises, a slightly different trend can be seen. By excluding the usage at the Training Facility on Treasure Island, a renewed decreasing trend in usage is evident, as demonstrated in the chart below.



## 5D. Water Conservation

It has been estimated that approximately 90% of the total water consumption is due to activities at the Fire Stations. These facilities are occupied 24/7 and serve as “homes” for the personnel assigned to them. Fire Stations have characteristics typical of residential homes, such as dishwashing, laundry and showers, as well as characteristics typical of office buildings, such as common and private restrooms. The Fire Department’s water conservation efforts are therefore focused on these activities. In addition to installing water-saving devices and appliances, the Fire Department has reinforced water conservation efforts by issuing SFFD General Order 14 A-12, Energy and Water Conservation Best Practices; see [Appendix A](#).

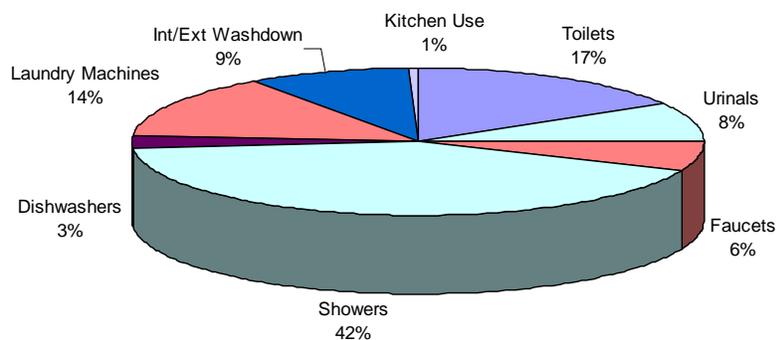
Moving forward, any and all new Fire Stations and major renovations that will be performed will be designed to meet or exceed SFPUC's water savings standards. In February 2014, upon the Mayor's Executive Order 14-01 directing that all City Departments reduce water usage by 10 percent, the Fire Department reinstated its Energy and Water Conservation Program that was first introduced in 2009. Each Fire Station's Captain serves as the designated Facility Conservation Liaison to oversee the enforcement of the conservation efforts made at their Fire Station in order to obtain a 10% reduction. Energy and Water Conservation Best Practices Tips were distributed to each Fire Station outlining simple ways to save on energy and water. The Fire Department's Division of Support Services shall publish quarterly usage and trend reports for each Fire Station's electric, gas and water usage.

The Fire Department is continuing with its assessment of all plumbing fixtures throughout its Fire Stations and Facilities to determine their flow rates (this includes toilets, urinals, faucets and showerheads) and will retrofit all inefficient plumbing fixtures with high efficiency models as needed. All major residential appliances (commercial and residential dishwashers, wash extractors for laundering of turnouts) that are purchased by the Fire Department are Energy Star rated. The Fire Department intends to continue this practice indefinitely.

Please refer to **Appendix B** for specific water conservation project information.

### SFPUC Water Conservation Assessment

In response to the City and County of San Francisco Executive Directive 08-05, requiring all municipal water accounts to participate in water use reduction, a water conservation assessment of Fire Department facilities was performed by the SFPUC in FY08/09. The assessment only addressed staffed Fire Department facilities. A report was then produced that included a comprehensive list of water conservation measures and opportunities, savings potential, costs and return on investment. The report also estimated water allocation for the audited sites, as illustrated below:



Ranked by costs savings and cost effectiveness, the water saving recommendations made by SFPUC are to perform the following:

1. Replace all lavatory faucet aerators with 0.5 gallons per minute (gpm) aerators.
2. Replace all showerheads with 1.5 gpm showerheads.
3. Replace all 1.0 and 2.0 gallon per flush (gpf) urinals with high efficiency urinals.
4. Install high-efficiency laundry machines.
5. Replace all 3.5 gpf toilets with 1.28 gpf high efficiency toilets.

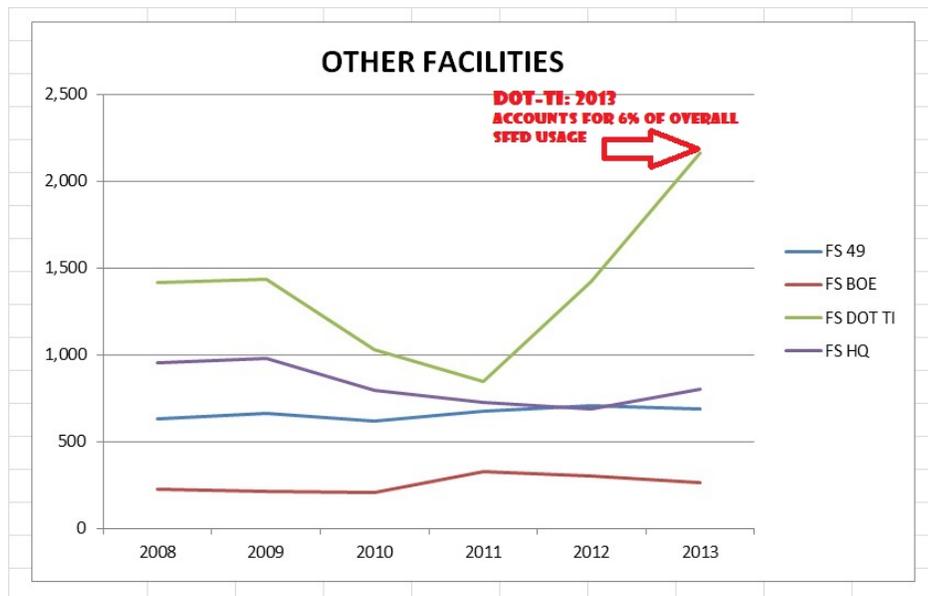
Implementation of the measures recommended by SFPUC is estimated to reduce the annual water use by about 4.5 million gallons, or 37%. The corresponding water and wastewater cost savings realized would be approximately \$70,400 per year (at 2008 rates), with the return on investment for implementation, including rebates and incentives, estimated at 2.9 years.

### **Response to California's Current Drought Conditions**

In February 2014, the City issued San Francisco Executive Directive 14-01 requesting all City departments to immediately: take steps to reduce their water consumption with a goal of achieving a 10% reduction; develop a Water Conservation Plan by August 1, 2014; educate on water conservation practices; explore the use of non-potable water, and; develop alternate sources of water supplies. In the initial response, the Fire Department conducted a preliminary water usage analysis and re-issued a General Order regarding the SFFD Energy and Water Conservation Program (General Order 14 A-12), which included information on being water-wise at work, and Energy and Water Conservation Best Practices specific to Fire Department operations. The preliminary analysis identified specific facilities experiencing increases in water usage, and concluded that the recent installation of twelve (12) wash/extractors for cleaning Firefighters' personal protective equipment has made a noticeable impact on usage increase

## Firefighting Drills

Firefighting drills - which are mandatory for maintaining critical firefighting knowledge, skills and abilities – are capable of consuming large amounts of water. The fluctuation in annual water usage trends at the Training Facility on Treasure Island is demonstrated in the chart below, as indicated by “DOT-TI”. Years when water usage has been high are when trainings for entry-level Firefighters were being held and/or when several “wet” drills have been scheduled. In addition, a water leak was discovered in 2013. In the November 2013 water bill, an increase in water usage was noted. The proper authorities were informed, and upon further investigation, a leak was discovered in the underground piping and promptly repaired.



It has been noted that this is one area in which an alternative source of water may be utilized, such as drafting San Francisco Bay water to conduct “wet” drills at the Treasure Island Training Facility. However, before that practice can begin, a feasibility assessment will need to be conducted to ensure that the brackish Bay water will not damage existing infrastructure, will result in a net reduction of fresh water usage, and the overall benefits will outweigh any additional costs.

## 6. Efforts in Vehicle Fuel Reduction

In San Francisco, the transportation sector accounts for 42% of greenhouse gases emitted into the atmosphere. With approximately 25,000 employees working for the City and County of San Francisco, the type of transportation that employees use to get to and from work, and while at work, has a significant impact on local air quality.

The Fire Department requires a fleet of fully-equipped and well-maintained specialty vehicles to effectively perform its Mission. The Fire Department owns and operates its own fleet, with additional maintenance and repairs performed by SFGSA Central Shops. The fire suppression and rescue apparatus purchased are specially designed for use in our unique City, with the ability to maneuver through narrow alley ways and on steep terrain. Fire suppression apparatus not only transport crews and their equipment to the scene of emergencies, but also perform important fire suppression functions after they arrive. Fire Engines pump water at regulated pressures to extinguish fires, and Fire Trucks raise aerial ladders to provide access to windows and roofs, saving lives; all these functions require the use of additional fuel.

The frequency with which these vehicles are used, and the amount of fuel consumed, is directly proportional to the number of emergencies occurring in the City, i.e. the number of Fire/EMS 911-calls received. Since the number of 911-calls has increased, emissions can only be reduced by obtaining newer, more fuel-efficient vehicles, and by altering the type of fuel consumed.

The SFFD Division of Support Services' Bureau of Equipment manages the Fire Department's fleet. The Bureau's responsibilities include: oversight of the maintenance, repair and procurement of all emergency vehicles, preparation of apparatus specifications, fuel management, and outlining improvements and changes planned in the next fiscal budget. In addition, all Fire Department uniformed members must adhere to the Department's established guidelines and Standard Operating Procedures as set forth by the SFFD Vehicle Operations Manual. This Manual includes procedures concerning Vehicle Maintenance and Inspection Procedures, and Driver Training and Safe Driving Practices. This satisfies the program implementation and education requirements established in Chapter 4 of the SF Environment Code, Healthy Air and Smog Prevention Ordinance.

### **SFFD Vehicle Replacement Program:**

All City Departments are guided by the SF Ordinance 278-10, Healthy Air and Clean Transportation Ordinance (HACTO) Program, which states that passenger vehicles and light-duty trucks in the municipal fleet which are 12 years old or older shall be removed from their fleet, beginning no later than July 1, 2015. Details regarding the HACTO Program are provided in the section below.

While there are no statutory requirements dictating minimum standards and useful life for firefighting/emergency response apparatus, the recommendations provided by the National Fire Protection Association (NFPA) are widely recognized as the industry standard. The NFPA recommendations are accepted to be the minimum standard requirements for vehicles and apparatus, often based on rural and suburban communities with relatively low call volume and less challenging terrain.

Due to the steep hills and narrow streets which characterize many areas of San Francisco, numerous carefully designed modifications must be specified and incorporated into the design of our Department's Fire Engines, Trucks, Ambulances and Rescue Vehicles, which would not necessarily be considered or required in other jurisdictions.

The SFFD Vehicle Replacement Program, which is guided by NFPA Standards for Fire Apparatus and Ambulances, establishes longevity standards for maintaining Frontline and Reserve emergency vehicles, as well as the proportions of Frontline to Reserve vehicles within the Fleet. These standards are as follows:

Frontline Fire Engines -	10 years	Reserve Fire Engines -	+5 years
Frontline Fire Trucks -	15 years	Reserve Fire Trucks -	+5 years
Frontline Ambulances -	4 years	Reserve Ambulances -	+3 years

The Program ratio of Reserve to Frontline Fire Engines and Trucks is 1:3; for Ambulances, the ratio is 1:2. After a vehicle's Reserve lifespan has expired, it is generally recommended the vehicle be salvaged.

Since the year 2000, as the result of decreasing budget allocations, the Fire Department has been greatly challenged in attempting to maintain these more stringent vehicle replacement standards. Nevertheless, the Department continues to utilize its available resources as judiciously as possible to ensure the safety and reliability of its fleet.

Supporting and maintaining a strong Vehicle Replacement Program has many benefits. As vehicle manufacturers introduce improvements in apparatus design, the newer vehicles yield greater fuel efficiency and cleaner running Fire Engines, while more reliable vehicles reduce overall vehicle maintenance costs and provide greater operating efficiency.

To maintain vehicle replacement standards, and to facilitate the reduction of vehicle emissions, the regular purchase and replacement of Fire Apparatus, Ambulances and other specialized emergency vehicles is a priority for the Department. Funds for the purchase of new vehicles should routinely be budgeted by the City.

## **6A. Compliance with the Healthy Air and Clean Transportation Ordinance**

The Healthy Air and Clean Transportation Ordinance (HACTO) is a mandate that all City employees and departments should use sustainable transportation such as public transit, walking, ridesharing or biking to minimize single-occupancy vehicle transportation as much as possible and, when it is not, to use green vehicles. To implement this ordinance, each department is required to develop a Transit First plan outlining how the department will implement the various sustainable options to reduce vehicle usage and a Transit First report on implementation. For departments that manage their own fleet of vehicles, fleet size must be reduced by 5% every year for a 4-year period, yielding a net reduction of 20%.

The Fire Department is compliant with this year's Healthy Air and Clean Transportation Ordinance requirements through a waiver submitted to SF Environment. The waiver was submitted to exempt the Fire Department's cars, vans, pickups and SUVs used for responding to emergencies. These exempted vehicles account for 65% of the vehicles

identified as being subject to HACTO. The "HACTO Submission Forms – FY1314" and "Waiver Request for FY1314" are attached as **Appendix C**.

In compliance with the Healthy Air and Clean Transportation Ordinance, the Fire Department reported on the successes of its Transit First programs and plans for improvement and growth. Highlighted in the plan are ways in which the Fire Department is able to reduce work-related trips by initiating on-line training, conversion of Fire Department vehicles to pool cars, and use of conference rooms for tele/video conferencing. It also highlights some of the limitations and challenges encountered due to the nature of the Fire Department's core mission.

## **6B. Transit First Campaign**

Last year department Climate Liaisons, in partnership with SF Environment, distributed the 2012 CCSF Transportation Survey. With a significant response rate from most, this provided important information about how City employees are commuting now, why they're making the choices they're making, and how the City can assist in making sustainable options a more realistic choice.

This year, each Climate Liaison was asked to review their department's Transportation Survey data and, reflecting on the culture of the department, choose a Transit First Campaign to implement. The menu of transit first campaign options is available at:

[http://www.sfenvironment.org/sites/default/files/fliers/files/sfe\\_tr\\_menu\\_of\\_campaign\\_options\\_1\\_13.pdf](http://www.sfenvironment.org/sites/default/files/fliers/files/sfe_tr_menu_of_campaign_options_1_13.pdf)

The following year, CCSF employees will be surveyed again to measure the success of the Transit First Plans and Campaign.

The Fire Department has chosen to implement a communication campaign option for the 2014 Transit First Campaign. Since it was noted in the results of the 2012 CCSF Transportation Survey that 80% of Fire Department respondents were unaware or unfamiliar with the Emergency Ride Home Program, and 25% were unfamiliar with Pre-Tax Commuter Benefits Program, it was felt that a communications campaign would be most appropriate. The Fire Department therefore chose the Poster and E-Communications Campaign, where employees participate in a 6-month PSA cycle highlighting six different programs: Rideshare; Emergency Ride Home; CityCycle; Travel Discounts to & from Work; Travel Discounts while at Work, and; 50% of Trips through Sustainable Modes. The goal is to increase recognition and use of all CommuteSmart programs.

## **6C. Biodiesel**

The San Francisco Executive Directive 06-02, Biodiesel for Municipal Fleets, mandates that "all diesel-using departments shall begin using a B-20 biodiesel blend as soon as practical in all diesel vehicles and other diesel equipment, with the following incremental goals in each department's use of B-20: Initiate and complete biodiesel pilot project by December 31, 2006; 25% by March 31, 2007; and 100% by December 31, 2007." As of March 1, 2014 the City's fleet has not reached 100% use of B-20 biodiesel.

The San Francisco Fire Department was the first City department to pilot a biodiesel program. The program was initiated in 2006, and by 2007, three (3) of our 17 diesel fueling stations were successfully converted to B-20 biodiesel. Two of the fueling stations have underground storage tanks, and one has an aboveground storage tank.

The three fueling stations that were converted are located in the Southeast quadrant of the City. This area was selected due to the high rates of childhood asthma found in the adjacent neighborhoods. Besides reducing carbon emissions, using B-20 reduces the health risks associated with exposure to diesel exhaust emissions by 20%; these health risks include exacerbation of existing asthma and allergy symptoms. As healthcare providers, the Fire Department fully acknowledges the health benefits of converting to biofuels, and strives to be an active partner in improving the overall health of our community, as well as the health of our Fire Department members.

Currently B-20 accounts for 35% of all diesel fuel delivered to SFFD fueling stations (see table below). B-20 use is mostly limited Ambulances, with the Fire Department having 12 to 24 Ambulances in service per day, but may also include any vehicle refueling from the aboveground tank at Station 49. The proportion of B-20 the Fire Department consumes used to be greater; however, over the years, the department encountered several challenges. The combination of State regulations regarding the storage of B-20 in underground tanks, and expensive upgrades required to bring underground tanks into compliance, for which the Department had no allocated budget, prohibited the Department's expansion of and ultimately reduced its Biodiesel Program. While awaiting funds to bring underground tanks into compliance with the new standards, the Department replaced the use of diesel with B-5, which is the highest grade of biofuel allowed in underground tanks.

**VEHICLE DIESEL FUEL USAGE: FY12/13**

<b>FUEL TYPE</b>	<b>CONSUMPTION (gallons)</b>	<b>PERCENTAGE</b>
DIESEL (excluding Marine Diesel)	0	0.00%
BIODIESEL (B-5)	155,614	64.8%
BIODIESEL (B-20)	84,639	35.2%
<b>TOTAL</b>	<b>240,253</b>	<b>100.0%</b>

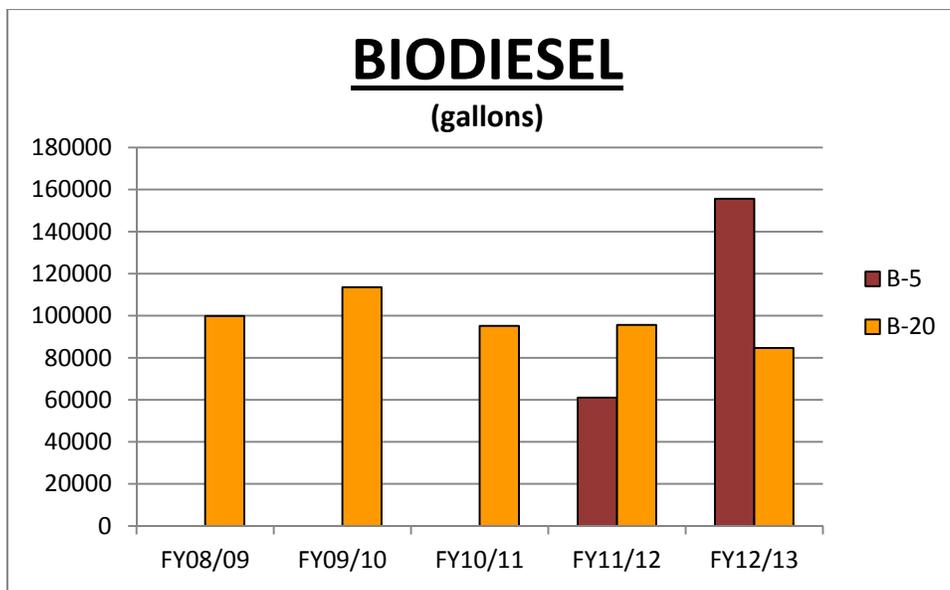
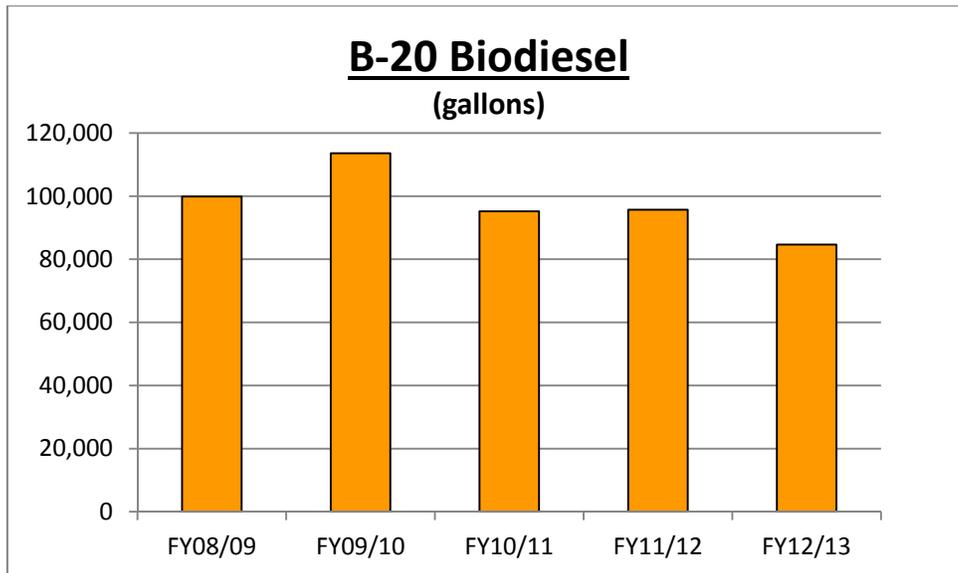
In 2008, SFFD had anticipated moving forward with additional conversions to biodiesel. However, recommendations from the SF Department of Public Health (SFDPH) advised postponing conversions, due to an impending State regulation prohibiting the storage of B-20 in underground tanks. At the time, SFFD followed SFDPH's request and postponed conversion.

In 2009, the proposed State regulation was given a waiver until June 30, 2012 and in early 2011 the San Francisco Mayor's Office requested that the Fire Department continue to move forward on the conversion to biodiesel. In consultation with the Mayor's Office and SF Environment, the Fire Department converted all diesel storage tanks to B-5 biodiesel, while continuing to use B-20 in the original three tanks until the waiver expired. State regulators allow for the storage of B-5 in underground tanks. The first delivery of B-5 was received in February 2012. Currently all diesel fuels being purchased, with the exception of marine diesel, are biodiesel; either B-5 or B-20.

The Fire Department currently has only one B-20 fueling station. In order for the underground tanks to receive B-20, the components associated with the tanks must be modified with approved materials that are compatible with biodiesel blends higher than B-5 and the tanks must be certified by an independent testing organization. The Fire Department is working with a vendor to receive quotes for the underground storage tank modifications. The resulting costs for the modifications vary greatly from tank to tank; from \$60,000 to \$150,000 each. The Fire Department is currently

researching the most beneficial and cost effective B-20 conversion plan for when funds become available.

The Fire Department has faced challenges in terms of biodiesel usage. During the initial conversion in 2007, B-20 caused the liners of the fuel tanks in the Ambulances to deteriorate. As a remedy, all of the fuel tanks had to be sent back to the manufacturer to be re-lined, incurring an additional expense of approximately \$100,000. To date, the new linings have proven to be compatible with the B-20 biodiesel fuel. However, in a separate incident in 2010, some of the Ambulances started experiencing problems. The fuel injectors were becoming clogged with fungus, presumed to be due to long-term storage of B-20. The City's Central Shops has since been addressing the problem by adding a cleaner to the Ambulance fuel system during their regularly scheduled maintenance.



Another concern related to the use of biofuels is with apparatus engine warranties. Many manufacturers invalidate warranties on their fueling systems if biofuels with a

concentration of B-20 or greater is used. Maintaining valid warranties on the Fire Department's extremely specialized and expensive fire apparatus is crucial to fleet operations, and cannot be jeopardized.

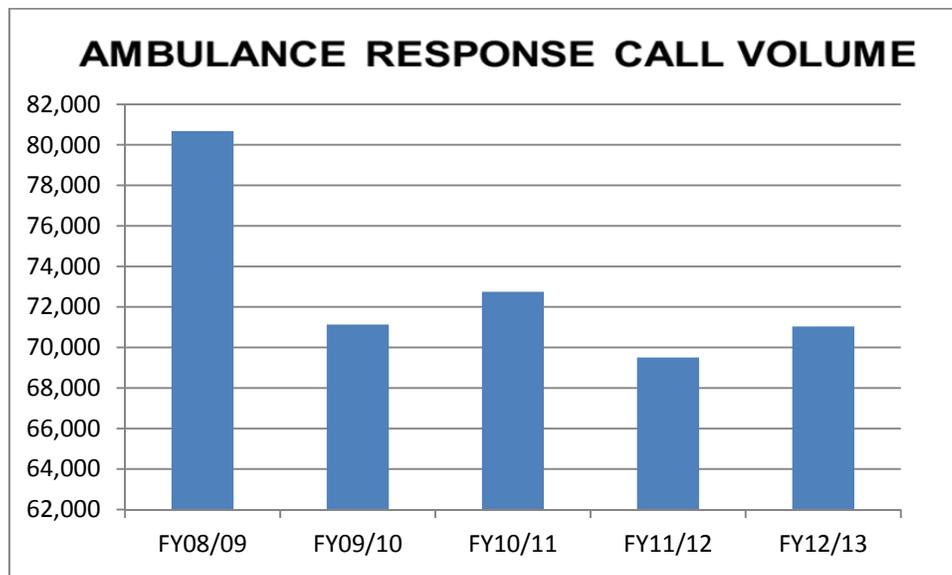
Fortunately, the same issues experienced with the Ambulances using B-20, have not been seen with the fire apparatus. It should be noted that the cleansing properties of biodiesel causes fuel filters to become clogged quicker than with regular diesel. Fuel filters need to be changed more frequently during the first year of B-20 use, and the older the vehicle, the greater the problem. In order to assure reliable vehicle operations, and due to the variety of makes, models and ages of the diesel motors within the fleet, the Fire Department considers it prudent to obtain biodiesel performance ratings from the manufacturers for each of the motors before vehicles are allowed to be fueled with biodiesel.

Fuel delivered to the SFFD Fire Boats, both which were built in 1954, will continue to be marine diesel, accounting for only about 2% of all diesel-based fuels consumed by the Department.

### ***B-20 Consumption Trends and the SFFD Ambulance Fleet***

The SFFD Ambulance Station (Station 49) is currently the only fueling station where B-20 is being delivered, and is where the Ambulances receive the majority of their fuel. Ambulances are also the vehicles that consume the largest amount of fuel, accumulating more miles per vehicle than Fire Apparatus.

In 2008, the CA State EMS Authority rescinded the Exclusive Operating Area (EOA) that San Francisco operated under since 1981. As a result, the ambulance service in San Francisco became unregulated and allowed additional private ambulance companies to respond to more of the EMS 911-calls. As private ambulance call volume went up, from about 2% to 30%, the Fire Department's Ambulance call volume went down, as demonstrated in the graph below. This also had an effect on the demand for B-20.



About the same time when the EOA was being rescinded, the Fire Department was resolving the Ambulance tank liner issues as mentioned above, which slightly increased the use of B-20. The results of these events are reflected in the reduction of B-20

consumption by FY10/11 and FY11/12, as seen in the previous charts regarding fuel consumption.

In 2012, the CA State EMS Authority formally allowed the Exclusive Operating Area in San Francisco to be reestablished. Once ambulance service is fully restored per the EOA Agreement, the Fire Department will experience an increase in our Ambulance responses, with more Ambulances on the streets, and potentially, more B-20 use.

However, the composition of the Ambulance fleet will be changing in the near future. The engines of the new Ambulances being ordered, to expand and replace the aging Ambulance fleet, will no longer be diesel; the new Ambulances will be fueled with gasoline.

### ***Additional Measures to Reduce Diesel Fuel Emissions***

In addition to continued conversion to B-20, the Fire Department will be adopting other measures that will reduce emissions related to the consumption of diesel fuel. The new Fire Apparatus being purchased are equipped with Diesel Particulate Filters (DPF), a new technology that reduces harmful diesel exhaust particulates using an additive derived from pig urine. Black carbon from diesel vehicles can be significantly reduced through this emission control technology, with up to 99% diesel particulate matter being eliminated.

Since the Diesel Particulate Filters can fill up over time by developing a layer of retained particles, the accumulated particles must be burned off or removed to regenerate the filter. During the regeneration process, captured carbon is oxidized to CO<sub>2</sub>; however filter regeneration still results in a net climate change benefit. On a gram-per-gram basis, the global warming potential of black carbon has been estimated as being up to 4,500 times higher than that of CO<sub>2</sub>.

To meet U.S. Environmental Protection Agency's 2007/2010 heavy-duty engine particulate matter and NO<sub>2</sub>/NO<sub>3</sub> emission standards, all new heavy-duty diesel engines are to be equipped with high-efficiency emission control systems. Fire/EMS Apparatus, however, has been exempt from initially complying with these standards. In August 2012, the U.S. EPA issued a revision to enable emergency vehicles to perform mission-critical life-saving work without risking decreased engine power, speed or torque cause by the new emission control systems. The revisions will allow manufacturers to request, and EPA to approve, modifications to emission control systems on emergency vehicles so they do not interfere with the vehicles' ability to perform. The Fire Department has been working with vendors to design DPF regeneration regimes that will not compromise our performance or ability to respond.

Another emission reduction measure that the Fire Department has been exploring is incorporating large battery banks in Fire Apparatus and Ambulances which will power the emergency lights and other electronic functions while at the scene of an incident. A considerable amount of time can be spent idling at fire and other emergencies, with engines left running to prevent the engine's cranking battery from being drained. Not including the use of Fire Engine pumps, the large battery bank will enable engines to be turned off, reducing the amount of fuel consumed and emissions produced.

For FY 13/14, the Fire Department is pleased to announce that its entire Ambulance fleet has the capability to run on battery power exclusively at incident scenes which avoids leaving the motor in idle. All future Ambulance purchases will also be outfitted

with the same capability. The Fire Department currently has five Fire Engines in service that are equipped with the DPF Regeneration Regime Design. Within the next two months, the Fire Department anticipates receiving ten additional Fire Engines that will be equipped with the same emission control features. After the new Fire Engines are placed in service, the Fire Department will transition the old Fire Engines to Relief pieces.

## 7. Other Sustainable Practices

To lower the Fire Department's carbon footprint and lessen our overall environmental impact, the Fire Department is involved in the following additional programs and projects:

- Recycling and Composting Program
- GreaseCycle Program
- Repurposing of Expired, Unused Medical Supplies
- SFApproved.org - Green Product Purchasing Program
- SF Urban Forest Program

Methods for reducing the Fire Department's overall carbon footprint include recycling, composting, and repurposing, purchasing green products, and adopting other sustainable practices.

The Fire Department's carbon footprint has further been offset by calculating the annual carbon sequestration rate of the trees on Fire Department property. The trees were inventoried by type, size and number, and sequestration rates were calculated. The initial tree inventory was conducted in FY09/10.

This section of the Fire Department's Climate Action Plan contains the following subsections:

- Zero Waste
- Green Purchasing
- Carbon Sequestration

Details for these subsections are described below.

### 7A. Zero Waste

Today, San Francisco recovers 80% of the materials it discards, bringing the City ever closer to the goal of zero waste by 2020. Unfortunately, we still send 429,000 tons of material each year to the landfill generating unnecessary climate change gas emissions.

This year the Zero Waste Team at SF Environment asked the City department's Zero Waste Coordinators to complete the following actions: schedule a 10 minute zero waste refresher training for fellow employees; ensure compliance with Chapter 5, Section 506 of the Resource Conservation Ordinance ("Purchase and Use of Printing and Writing Paper Products"); identify the person or contractor who is in charge of creating any printed material for distribution to the public; verify and ensure that materials are printed on 100% recycled content paper, and; ensure that the following is included on all printed materials for public distribution:

 **Printed on 100% post-consumer recycled paper**

SFFD was the first Fire Department in the United States to begin a composting and recycling program. All Fire Department facilities have had an on-site recycling and composting program since April 2003.

The Fire Department is currently working on the following items that will help the City reach its zero waste goals:

- Acquire appropriately-sized recycling and composting bins to fit the SFFD Ambulances
- Enable SF Environment to conduct a trash container audit at four (4) Fire Stations which have less than 50% diversion rate; purpose of audit is to get a better understanding of the opportunities for improvement with the City's recycling and composting programs
- Receive Waste Assessment Surveys from all SFFD facility managers/Station Captains

### **Waste Assessment Survey**

The senior Captain at each Fire Station, or the Captain's designee, serves as the Zero Waste Coordinator for that facility. In March 2014, the Zero Waste Coordinators were asked to complete a Waste Assessment Questionnaire, evaluating their involvement in current waste prevention programs. The results of the 2014 Waste Assessment Surveys are attached as **Appendix D**.

### **Medical Waste Management**

By providing emergency medical care, the Fire Department generates medical waste. The items that are placed in the medical waste stream include equipment used for resuscitations, bandages soiled with blood or bodily fluids, and sharps containers. These items must be separated from the regular waste streams (landfill, compost, recycle), and are placed in red biohazard bins for incineration. The disposal of medical waste is conducted by a company contracted by the City that specialized in medical waste disposal.

The processing involved with the disposal of medical waste is costly. Many items that may end up in the red biohazard bins are not necessarily biohazards; cardboard boxes from medications can be recycled, and clean plastic wrappers do not need to be incinerated as medical waste. One of the Fire Department's goals is to review Emergency Medical Service operations in order to assess whether personnel responding to medical calls can improve the sorting of disposable items, with only true medical waste going into the red biohazard bins. To assist with this effort, recycling and composting bins are being put on the Ambulances.

### **Medical Supply Repurposing (SFFD Yellow Bins)**

The Fire Department has a yellow bin program for the collection of unused medical supplies that have become expired, broken, or damaged. These items include: medications, endotracheal tubes, IV catheter supplies, sterile pads and airway adjuncts. Rather than discarding or recycling these items, the Department repurposes them. They are collected by SFFD Training Instructors from the central yellow bin repository site and used for EMS skills training sessions. They are also collected by EMT and Paramedic Programs instructors at San Francisco City College, UCSF Department of Emergency Management, and other local vocational training schools and used for training purposes.

### **Hazardous Waste Management**

The Fire Department contracts with the SF Department of Public Health to collect hazardous waste products, such as batteries and fluorescent bulbs, for proper disposal.

Automotive product waste, paint and chemical waste are collected at the Fire Stations and delivered to the City's Central Shops by the Fire Department's Bureau of Equipment for recycling or proper disposal.

## **GreaseCycle**

The SF Public Utilities Commission oversees a cooking oil recycling program, GreaseCycle, which recycles used cooking oil into biodiesel for City vehicles. Not only does the program create a cleaner-burning renewable fuel, it also reduces damage and costs to repair sewer infrastructure. Used cooking oil is often disposed of down the drain where it can clog sewers, resulting in backups, overflows into the street, foul-smelling odors, and potential health hazards.

Currently, about 50% of all Fire Stations participate in the GreaseCycle Program. Fire Stations are occupied 24/7, and all are equipped with kitchens where full meals are prepared for lunch and dinner. Clogs and backups caused by grease have been common problems. The Fire Department continues to promote and expand the GreaseCycle program, helping to decrease costs associated with plumbing repairs and maintenance.

## **Electronic Documents and "Read-Only" Versions**

The Fire Department has been in the process of transitioning toward a "paperless" system for distributing forms, memos, trainings and General Orders. In FY10/11 all General Orders, memos and most forms became paperless, with the majority being "read-only", with no option to print. Since FY11/12, the Fire Department has been transferring all regular reports online, with the daily and monthly reports being recorded, reviewed and approved electronically.

In October 2013, the Fire Department successfully deployed an online program that allows Fire Station Officers to submit facility maintenance and repair requests electronically. Previously, requests for services were faxed to vendors, and tracking of service calls was time-consuming and cumbersome. The new program automatically generates electronic notifications for service calls to vendors, saving time, money and resources.

## **7B. Carbon Sequestration / Urban Forest**

There are approximately 670,000 trees in San Francisco. The most recent major report, the San Francisco Bay Area State of the Urban Forest, estimates the benefits provided by our urban forest to be worth \$103,475,877. Hydrological benefits alone are worth an estimated \$4,444,309. While San Francisco's estimated 106,000 street trees are on par with the Statewide street tree average, there are many opportunities to increase and support better management of our urban forest.

The Fire Department acknowledges the importance of the City's Urban Forest and the many benefits it provides - from reducing atmospheric carbon dioxide to increasing aesthetic value - and supports the preservation and enhancement of this valuable resource. The Fire Department understands that the act of inventorying, measuring, labeling and monitoring each individual tree creates an intimate relationship between the "resource manager" and the "resource", fostering an improved sense of urban forest stewardship.

In FY09/10, the Fire Department conducted an audit of the trees growing on the property surrounding Fire Department facilities. The audit included the calculation of the carbon sequestration rate for each individual tree. The audit also provided an opportunity to identify areas where additional trees could be planted.

The audit included 49 properties that all have unique forestry considerations and a considerable amount of work was done cataloguing data on our forestry resources. Each tree was identified by species or type and measured for diameter (DBH). The data was entered into the US Forest Service Climate Change Resource Center, Center for Urban Forest Research's (CUFR) Tree Carbon Calculator. Results were recorded for carbon sequestration rate and amount stored.

The results from the Tree Audit conducted in FY09/10 are as follows:

<b>SITES AUDITED</b>	49
<b>TOTAL TREE COUNT</b>	530
<b>TOTAL CO2 STORED (lbs)</b>	395,82
<b>CO2 STORED/YEAR (lbs/yr)</b>	22,278
<b>CO2 STORED/YEAR (metric tons/yr)</b>	10.13

While attempting to calculate carbon sequestration rates, personnel working on the audit identified limitations with the Tree Carbon Calculator. Since the CUFR Tree Carbon Calculator offered a limited number of tree species to choose from, the Fire Department developed a system to account for tree species not presented in the Carbon Calculator program. The system was devised so that persons not familiar with tree species would be able to conduct the audit. If exact tree species were not able to be identified, trees could be identified by type (deciduous, conifer or palm) and further by basic leaf shape (simple, palmate or compound). Fruit-bearing deciduous trees with simple leaves were given its own category.

The Fire Department remains interested in exploring new ways to better manage and highlight SFFD's contribution to San Francisco's urban forest. The Fire Department plans to conduct the Tree Audit every 5 years; the next audit is to be conducted in FY14/15.

## **7C. Community Wide Impact**

As providers of infrastructure, open spaces, and essential health, safety and other public services, City agencies have important roles to play in reducing not only their own GHG emissions, but those from the community-at-large as well.

For many City departments that cannot directly reduce emissions at the community level there still exists opportunities for education and outreach on climate change in particular and sustainable practices in general. This can mean anything from signs above compost and recycling bins to actively messaging the effects of climate change on our world and our City.

When responding to emergency 911 calls, Fire Department personnel are focused on the task-at-hand, suppressing fires or providing emergency medical care. This is also when the Fire Department is most visible to the public. It may seem that this would not be the most opportune time to be educating the public about climate change and sustainable practices. However, there are opportunities when the Fire Department is

providing other public services in non-emergency situations, where the Fire Department's role can have an influence on sustainable practices community-wide.

Another way the Fire Department's role can impact the community-at-large is by demonstrating that a traditional Department can successfully fulfill its Mission, and at the same time, incorporate advancements in technology and infrastructure that support a more sustainable future.

Below are examples of the efforts the Fire Department has been making to become a more sustainable City department, to preserve our natural area resources, and to reduce our overall environmental impact. Many of these efforts occur behind the scene.

### **Educate at Public Events & Trainings**

Fire Department members can encourage recycling and composting, use of alternative transportation, efficient energy and water use practices, and other conservation measures during publicly held training classes and presentations. These include:

- Neighborhood Emergency Response Team (NERT) Training, which teaches personal preparedness for emergencies and natural disasters.
- SF Firefighters in Safety Education (SFFISE), which provides fire safety and outreach to children in SF schools.
- School Visits, where Engine and Truck Companies visit SF elementary schools.
- Fire Station Visits, where school and youth groups tour Fire Stations.
- Community Affairs; at street fairs, safety fair events and Fire Station open house days.

In adult training situations, instructors can make introductory class announcements to remind participants of recycling and compost bin locations and to encourage carpooling or taking public transportation to the next training sessions. At elementary schools, volunteers and on-duty crews can incorporate recycling and conservation reminders into their presentations. Visitors to Fire Stations will see the recycling stations set up throughout the Station, and members can point out the Fire Department's conservation measures to visitors. SF Environment may assist in providing educational materials and/or presentation methods appropriate for the presentation and training audience. For these measures to be successful, a coordinated effort and allocation of resources will be required.

### **Educate at Public Meetings**

The official public meetings held by the Fire Department are those of the Fire Commission. Fire Commissioners and Fire Department members can potentially promote conservation measures through Fire Commission activities.

The following measures were recommended by the Fire Commission Secretary to demonstrate the Fire Commission's support of the Fire Department's environmental commitment:

- Post a copy of the Fire Department's Climate Action Plan on the home page of the Fire Commission website.

## **Respond to Environmental Hazards**

In January 2009, the Fire Department was awarded funds from the CA Department of Fish and Game to purchase oil spill response equipment which provides the ability to deal with the immediate needs of an oil spill and to assist in a unified spill containment response to protect local resources.

The acquisition was prompted by an oil spill incident in November 2007, when the container ship, Cosco Busan, collided with the Bay Bridge. The collision caused the release of 54,000 gallons of bunker fuel oil into the Bay, killing more than 20,000 birds and resulting in clean-up costs in excess of \$61 million.

In response, an Oil Spill Task Force was created and Oil Spill Containment classes have been held, training local Fire Station crews in the event of a similar incident. One such incident occurred in October 2009, when the SFFD Fire Boat was deployed to assist in the containment of the Dubai Star oil spill, and successfully protected the Treasure Isle Marina at Clipper Cove.

## **Protect Endangered Species on Twin Peaks: Mission Blue Butterfly**

Twin Peaks is home to the endangered Mission Blue Butterfly. The area on the northeastern slope of Twin Peaks, which is under the jurisdiction of the Fire Department, has been one of the sites identified as prime habitat for Silver Lupine, host plant to the Mission Blue. Preserving the Silver Lupine habitat is critical to the survival of the Mission Blue Butterfly.

The Fire Department has transferred stewardship of the portion of its Twin Peaks property to SF Recreation and Parks Department, so it will be managed in a manner consistent with San Francisco's Natural Areas Program. Habitat restoration efforts include eradication of exotic species, introduction of Silver Lupine plants, and protection of breeding and restoration areas from humans and their dogs. The Fire Department still retains access to this area for emergency operations.

Adjacent to the property being restored, signs have been posted to inform and educate the public of the restoration efforts taking place, and to identify the City departments and community organizations involved.

## **Assist in Habitat & Historic Trail Stewardship**

The Fire Department recognizes the value in preserving our City's open space areas. The Fire Department's Twin Peaks property, which lies between Twin Peaks and Mount Sutro, provides a continuous urban green belt. The historic trail that winds through Mount Sutro Forest can be linked to the open space area on Twin Peaks, to become part of the Bay Area Ridge Trail. The Sutro Stewards, a local non-profit organization, began an ambitious program of trail restoration, maintenance and realignment, to create a continuous trail through the open space areas. Working now in partnership with SF Parks Alliance, the Sutro Stewards has been coordinating with various agencies and organizations to improve the neglected portions of the trail, with the goal of conserving open space, promoting recreation and building community. The Fire Department is one of those agencies involved.

The area of the trail that traverses Fire Department property, currently being managed by SFPUC and SF Recreation and Parks Department, is heavily overgrown with poison oak and brambles. Portions of the trail are steep and poorly maintained. In coordination with the Bay Area Ridge Trail Project and SFR&P's Natural Areas Program, restoration work is being planned to improve this portion of the continuous natural pathway by realigning the trail route so that it will lessen trail grade and decrease erosion, and by clearing adjacent vegetation by widening the path. The Fire Department supports the efforts being made to preserve, restore, and enhance this portion of the City's natural areas, and to develop and support its community-based site stewardship.

## **7D. Resiliency and Adaptation**

Resilience is our ability to recover from adversity. Adaptation is our ability to adjust to change. The City and County of San Francisco can be better prepared for changes to our environmental and social habitat, such as global warming or economic downturns, by integrating both resiliency and adaptation strategies into our infrastructure, and by providing social equity within our communities. Applying these strategies will lead to a more sustainable San Francisco.

The Fire Department supports the City-wide development of more resilient and sustainable urban infrastructure to ensure a viable future for San Francisco. The concept of sustainable urban infrastructure goes beyond individual projects, and considers entire infrastructural systems, such as water delivery, electrical grids, telecommunication networks, waste streams, biodiversity and the preservation of natural areas. To achieve sustainability goals, every project must begin at the planning stages, and receive political and financial support on all levels.

Currently the City requires all new City buildings to meet LEED Gold standards. High efficiency buildings are a start, but developing sites to have low impact on their surroundings that protect water resources, maintain sustainable habitats, and to connect green spaces and wildlife corridors, will require looking beyond the building envelope. Without a similar government policy mandating the integration of resilient and sustainable infrastructure in the design and construction of major projects, sustainability will be difficult to achieve. There is still much more that can be done.

The Fire Department's ability to provide emergency services to the citizens and visitors of San Francisco routinely depends upon a wide range of traditional infrastructure support services - transportation, energy, water, environmental protection, and communications - in order to provide and deploy human resources, goods, and information. This is true whether it's during day-to-day operations, or during a major disaster. Ensuring that the infrastructural systems required to provide emergency services are available in times of need is paramount. The Fire Department acknowledges the importance of the development of sustainable urban infrastructure to meet the needs of the present without compromising the ability to meet future needs of the coming generations. Careful consideration and planning is therefore required when developing new systems, or deciding whether to retain or how to upgrade traditional ones.

City-wide sustainability goal that may be achieved is reducing our reliance on fossil fuels. A biofuel production and delivery system can be developed to improve the security of fuel resources for municipal use. Although still in the beginning stages, with the further development of GreaseCycle and similar programs, the City has the ability

to produce its own biofuel, and to provide a local delivery system to fuel busses, emergency vehicles and other critical infrastructure systems. Another example of municipal energy development is to harness the energy of the gravity-fed Hetch Hetchy water supply and AWSS system by establishing micro-hydro turbines to generate electricity. Both biofuel and micro-hydro projects could be realized with the City's SFPUC engineers. Expanding the installation of solar panels and solar thermal units, and introducing wind turbines can also help the City move closer towards resiliency and sustainability. City support of programs such as CleanPowerSF would be the step in the right direction.

Planning for a sustainable future can lead to the development of sustainable communities. The Fire Department is eager and willing to be part of that change and to make resilience and sustainability a reality for our City. With the continued dedication of our City's leaders, this investment in our future will improve the City's infrastructure for the collective benefit of all its citizens.

## 8. Report Summary and Departmental Climate Action Goals

In its efforts to reduce GHG emissions, the Fire Department has achieved many successes, encountered several obstacles, and has faced a few setbacks. Nevertheless, the Fire Department continues to strive towards its goals, with patience and fortitude.

To further reduce emissions, the Fire Department shall be focusing efforts on: Fire Station facility upgrades; modernizing the Fleet by acquiring efficient replacement vehicles; converting to lower emission fuels, and; modifying employee behavior.

Below is a more detailed summary of the Fire Department's emission reduction goals:

Decrease natural gas usage with conservation efforts and facility improvements:

- Promote implementation of energy-efficient upgrades at facilities undergoing renovation
- Install solar-thermal units when possible
- Install high-efficiency boilers when replacing unit or upgrading facility
- Distribute periodic energy conservation best practices reminders
- Encourage facility supervisors to take an active role in energy usage monitoring

Reduce emissions from mobile fuel consumption:

- Continue with SFFD Fleet Management Program goals; remove older vehicles from Frontline use and replace with cleaner, more fuel-efficient models
- Obtain funding to upgrade underground fuel storage tanks for compatibility with B-20 biodiesel; expand biodiesel program
- Encourage and promote SFE's CommuteSmart programs

Increase waste diversion rate:

- Distribute periodic recycling/composting reminders and conduct zero-waste refresher trainings
- Create recycling and composting training video with SF Environment
- Optimize blue, green and black bin size by reassessing waste audits
- Continue to promote participation in the GreaseCycle program
- Review the contents of medical waste steam with ambulance crews to find additional recycling opportunities

Decrease electricity usage with conservation efforts and facility improvements:

- Promote implementation of energy-efficient upgrades in facilities undergoing construction renovation
- Complete migration of critical physical servers to virtual servers
- Place energy conservation reminders on computers and electrical equipment at Fire Stations, especially televisions
- Distribute periodic energy conservation best practices reminders
- Encourage facility supervisors to take an active role in energy usage monitoring

Decrease water usage through the following efforts:

- Promote implementation of water conservation upgrades in facilities undergoing construction renovation
- Implement measures recommended by SFPUC to reduce the water use at Fire Stations pending award of grant funding:

- Replace all lavatory faucet aerators with 0.5 gpm aerators
- Replace all showerheads with 1.5 gpm showerheads
- Replace all 1.0 and 2.0 gallon per flush (gpf) urinals with high efficiency urinals
- Install high-efficiency laundry machines
- Replace all 3.5 gpf toilets with 1.28 gpf high efficiency toilets

## Appendices

- Appendix A SFFD General Order 14 A-12: Energy & Water Conservation Program
- Appendix B SFFD Energy Efficiency & Water Conservation Projects: FY12/13
- Appendix C HACTO Submission Form, Waiver Request and HACTO Fleet Inventory for FY13/14
- Appendix D 2014 Waste Assessment Survey Results

# **APPENDIX C**

HACTO Submission Form, Waiver  
Request and HACTO Fleet Inventory  
for FY13/14

# HACTO Submission Forms - FY13/14

## (Implementation Plan, Waiver Request & Base Fleet Spreadsheet)

### HACTO Submission Forms 2013

#42

<b>Department *</b>	San Francisco Fire Department
<b>Name of Person Preparing Report *</b>	Rhab Boughn
<b>Title of Person Preparing Report *</b>	Compliance Officer
<b>Email of Person Preparing Report *</b>	<a href="mailto:rhab.boughn@sfgov.org">rhab.boughn@sfgov.org</a>
<b>Name of Department Director *</b>	Chief Joanne Hayes-White
<b>Acknowledgement *</b>	I acknowledge that the information provided is accurate.
<b>Does your department promote or plan to promote employees to use public transit for work-related travel? *</b>	Yes
<b>What resources will your department offer? * • Other</b>	
<b>Other: *</b>	Public Safety Officers
<b>From looking at last year's HACTO Plan, please describe the successes and challenges of promoting transit for work-related travel: *</b>	Members may use public transit for work-related trips when practical - this is promoted through periodic announcements related to the promotion of commuter benefits programs. All members are encouraged to enroll in the City's Pre-Tax Commuter Benefits program (Clipper Card) which can be used for work-related trips, in addition to being used for commuting to/from work. Use of public transit is only practical in limited work-related trip situations.
<b><u>If No:</u> What are the reasons for not encouraging or planning to encourage employees to use public transit for work-related travel? *</b>	
<b>Does your department offer employees access to bicycles for work-related travels? *</b>	Yes
<b>Are they part of the CityCycle program? *</b>	No
<b>How many bicycles are available? *</b>	10
<b>How many locations have CityCycle bikes? *</b>	0

**From looking at last year's HACTO Plan, please describe the successes and challenges of promoting bicycles for work-related travel:**

The Department has 10 bicycles at 4 different locations: 2 at SFFD Headquarters; 1 at the Bureau of Equipment – 25th Street; 2 at the Division of Training – Folsom Street and now 5 at the Division of Training – Treasure Island. Use of bicycles is practical for limited and specific purposes only, with a limited number of individuals who would actually be able to use them.

When weather conditions are suitable, members are encouraged to use the Pool Bikes as a means of transportation going to meetings, conducting errands, and exercise during lunch time. Reflective vests and helmets are provided for safety and are required to be worn any time a bicycle is used. Additionally, bicycle locks are supplied and are to be used any time the bicycle is left unattended. There is currently a sign-out sheet for the bicycles at SFFD Headquarters, but not at the other Department facility locations. These bicycles are not part of the CityCycle program.

The Department plans to continue to promote the use of its bicycle fleet, and to expand the bicycle usage tracking system to all locations.

Five (5) bicycles were acquired in FY13/14 for use at the Division of Training Facility - Treasure Island. These were bikes that were originally donated to the SFFD membership's Toy Program that could not be given away to children because they were old, previously-used bikes. The primary uses for these bicycles are to quickly get from facility to facility on the Training Site Campus, to pick up food during lunch break, and to exercise. The staff members have expressed the need for having baskets installed on the bikes for them to be more useful.

Challenges for promoting additional bike use include identifying routine tasks and job assignments that can be conducted if commuting on a bicycle. It would be more practical if bikes had saddlebags or baskets installed for carrying work-related materials to job sites.

**If No: What are the reasons for not encouraging or planning to encourage employees to use bicycles for work-related travel? \***

**Does your department belong or have a plan to belong to a City vehicle pool or car-sharing program for work-related travels? \*** Yes

**If No: What are the reasons for not encouraging or planning to encourage employees to use car-sharing for work-related travel? \***

**From looking at last year's HACTO Plan, please describe the successes and challenges of promoting car-sharing for work-related travel: \***

The Department has a few unassigned Pool Car vehicles which may be checked-out by any SFFD Headquarters staff member to conduct official Department business. These vehicles may also serve as relief vehicles when other emergency/administrative staff vehicles are out-of-service or being repaired at Central Shops. Challenges include vehicle availability and vehicle maintenance issues, whereas these pool care vehicles are often the oldest in the Fleet.

**Is your department able or have plans to host a tele-conference call? \*** Yes

**Is your department able or have plans be able to host a video-conference call? \*** Yes

**If No: What are the reasons for not encouraging or planning to encourage employees to use tele-conferencing or video-conferencing? \***

**Please use this space to describe in greater detail all of your department's Transit-First programs related to at work travel: \***

Due to the nature of the Fire Department's Mission, the Department's Transit-First programs related to at work travel are unique. The majority of Fire Suppression employees work on emergency response vehicles: Fire Engines; Fire Trucks; Ambulances; Chief and Rescue Captain Vehicles; etc. Use of these vehicles is essential for the provision of emergency services. For other work-related trips, emphasis is placed on vehicle pool and car-sharing programs, more so than bicycle or public transit, as they provide a greater ability for members to respond to emergency situations, when required. To reduce the number of trips taken, the Department has developed on-line training, which has reduced the need for emergency response crews to travel to the Division of Training facilities to receive required training. The Department also has a few large rooms at SFFD Headquarters that are useful for meetings, tele and video conference calls. Use of these rooms is encouraged, eliminating the need for members to travel to conduct and/or attend meetings elsewhere.

For other emergency and administrative duties, other specialty vehicles are used. Many of these vehicles require the ability to respond to an emergency at any time, even though they may not be actively responding to emergencies on a daily basis. Although assigned to a specific daily administrative function, they may serve multiple purposes, including emergency response or emergency transport. An example is the passenger vehicles assigned to the Bureau of Fire Prevention, equipped for emergency response, which are primarily used for conducting inspections. These vehicles may be assigned to a specific Fire Inspector; however, when these vehicles are not in use, they are shared (checked-out) by any SFFD Headquarters staff member to conduct official Department business. These vehicles additionally carry EMT bags, so Fire Inspectors are able to provide emergency medical care when a medical emergency is encountered. During major disasters or other emergencies, Fire Inspector vehicles are mobilized for emergency response. An example is during the 9/11/01 disaster, when Fire Inspectors were ordered to immediately cancel all inspection duties and report to special detail assignments, to be ready for emergency deployment in case a similar attack occurred in San Francisco. The same would occur in the event of a major earthquake.

**Does your department promote or have plans to promote the use of public transit for commuting to/from work? \*** Yes

**How will you promote public transit? \*** • Encourage participation in the Pre-Tax Commuter Benefits program

**Other:**

**If No: What are the reasons for not encouraging or planning to encourage employees to use public transit for travel to/from work? \***

**If No: From looking at last year's HACTO Plan, please describe the successes and challenges of promoting public transit for commuting to/from work: \***

**Does your department promote or plan to promote the use of bicycles for commuting to/from work? \*** Yes

**How will you promote bicycle commuting? \*** • Provide indoor/safe bike storage  
• Offer on-site showers and/or lockers

**Other:**

**These bicycle-friendly resources are available at:** \* All locations

**If No: From looking at last year's HACTO Plan, please describe the successes and challenges of promoting bicycling for commuting to/from work:** \*

**If No: What are the reasons for not encouraging or planning to encourage employees to use bicycles for travel to/from work?** \*

**Does your department plan to promote the use of ridesharing for commuting to/from work?** \* Yes

**How will you promote ridesharing?** \* • Encourage registration in the 511-matching program

**Other:**

**The reserved space(s) are available at:** \* Some locations

**From looking at last year's HACTO Plan, please describe the successes and challenges of promoting ridesharing for commuting to/from work:** \*

The Fire Department encourages all employees to use alternative methods of transportation whenever possible. However, given the variety and variability of employee work schedules and work assignments, the Department faces challenges in promoting alternative transportation options for commuting to/from work.

The majority of Fire Department employees (about 72% of all SFFD employees) work 24 hour shifts at Fire Stations, beginning at 8:00am. Most have a regular assignment at a designated Fire Station. However, once arriving at work, any employee may be reassigned to another Fire Station without prior notice. Those who are reassigned must pack up their equipment, personal protective gear and belongings, and commute across town to another Fire Station. As there can be no delay in arriving to their new assignment, most Fire Department employees drive their personal vehicle to work. Since these employees are also subject to working unplanned mandatory overtime, carpools and vanpools are often not reasonable commuter options. Airport Division employees working at the San Francisco International Airport (approximately 6% of all SFFD employees) have similar considerations, but are less likely to be detailed to another Fire Station in the City.

Employees assigned to Ambulances (approximately 10% of all SFFD employees) work 10 or 12 hour shifts and report for duty at the Ambulance Station (1415 Evans). Since shift schedules are designed based on call volume patterns, shifts can start and end at any time of day or night. Most shift schedules do not conform to customary commuter patterns, and can coincide with the hours when public transportation is not available or when services are limited. Since shift start and end times are all different, carpools and vanpools are also not practical.

Fire Department employees who work a regular business hour schedule are fewer by comparison. The majority of these employees are administrative staff (5%) and Fire Inspectors (4%) working at SFFD Headquarters. Although several of these members need to be available for emergency response in assigned emergency response vehicles, it is with these groups of employees that the Fire Department has the most opportunity to promote transportation options. The remaining 3% of employees work at the Division of Training facilities – Folsom and Treasure Island, and the Bureau of Equipment – 25th Street. Bicycle use has been promoted mainly at these facilities.

PLEASE NOTE: I did not check "Reserved parking carpool and vanpool vehicles" on this form; however, I was still required to check one of the choices under "The reserved spaces(s) are available at:" I chose "Some locations" even though "None" would be the most appropriate answer. Therefore there is a problem with this on-line form. Thank You

**If No: What are the reasons for not encouraging or planning to encourage employees to use ridesharing for travel to/from work? \***

**Does your department offer or plan to offer tele-commuting? \*** No

**From looking at last year's HACTO Plan, please describe the successes and challenges of promoting tele-commuting: \***

Telecommuting was not promoted last year either.

SFFD employees must maintain a physical presence at work in order for the Department to fulfill its Mission of serving the Public. It would be rare for even administrative staff members to have any telecommuting opportunities, when they would not need to be actively meeting and working in collaboration with others.

**What are the reasons for not encouraging or planning to encourage employees to use tele-commuting? \***

SFFD employees must maintain a physical presence at work in order for the Department to fulfill its Mission of serving the Public. It would be rare for even administrative staff members to have any telecommuting opportunities, when they would not need to

**Please use this space to describe in greater detail all of your department's Transit-First programs related to commuting to/from work: \***

The Department's Transit-First program related to commuting to/from work includes:

- Distributing periodic e-mail memos from the Chief's Office to all Department members, encouraging participation in the Pre-Tax Commuter Benefits programs
- Distributing periodic e-mail memos from the Chief's Office to all Headquarters staff, encouraging use of public transit, carpool/vanpool, bicycle, and describing current procedures for bike and pool car check-out.
- Posting approved notices at SFFD Headquarters and other key facilities

**Campaign Options \***

2. Poster & e-communications campaign

**Other**

**How many vehicles is your department planning to remove from service in FY13-14 (July 1, 2013-June 30, 2014)? \*** 2

**How many vehicles is your department planning to change the status of vehicles turned in for credit toward your vehicle reduction requirement in FY13-14 (July 1, 2013-June 30, 2014)? \*** 0

**The number of vehicles your department plans to remove is: \*** Fewer than the number needed to be compliant.

Your department is not in compliance with the HACTO reduction requirement. Please contact the Clean Vehicle team at [HACTO@sfgov.org](mailto:HACTO@sfgov.org) for assistance with the waiver process. \*

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You have completed this section of HACTO. Thank You.

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Please contact Dan Coleman, GSA Fleet Analyst, at [dan.coleman@sfgov.org](mailto:dan.coleman@sfgov.org) to resolve any discrepancies in the fleet information presented to you by Dec. 9, 2013. Please visit the site after this date to resume reporting your HACTO annual and implementation plans.

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Created

**16 Jan 2014**

3:32:41 PM

**PUBLIC**

Updated

**11 Feb 2014**

4:31:54 PM

**Clean Air**

## HACTO Waiver Form - FY 2013-14

<b>Department *</b>	Fire Department
<b>Name of Person Preparing Report *</b>	Jessica Kennedy
<b>Title of Person Preparing Report *</b>	Administrative Analyst
<b>Email of Person Preparing Report *</b>	<a href="mailto:jessica.kennedy@sfgov.org">jessica.kennedy@sfgov.org</a>
<b>Name of Department Head *</b>	Joanne Hayes-White
<b>Email of Department Head *</b>	<a href="mailto:joanne.hayes-white@sfgov.org">joanne.hayes-white@sfgov.org</a>
<b>The number of fleet sections for which you are requesting waivers: *</b>	2
<b>Fleet Section Name *</b>	Historical
<b>Number of vehicles included in the waiver. *</b>	1
<b>Describe what operational requirements or work will not be met if these vehicles are removed from your department's fleet, and why Transit First options cannot meet these requirements. *</b>	<p>This vehicle is a 1952 historical SFFD apparatus which is used to deliver and pick-up toys for the San Francisco Firefighters Toy Program. Besides the vehicle's historical &amp; cultural value, the Toy Program distributes over 200,000 toys to more than 40,000 disadvantaged children year-around. Bars, restaurants and other businesses in San Francisco collect toys for the program, and business owners often request that their toys be picked up using the Historical Toy Program Vehicle. The vehicle is historically and symbolically valuable, and thus it's operational value cannot be replicated using Transit First Tools.</p>
<b>Does this fleet section have any underutilized vehicles?</b>	Yes
<b>Describe what operational requirements or work will not be met if these vehicles are removed from your department's fleet.</b>	The vehicle is mainly used during the Holiday season. The vehicle is a symbol that inspires the community to donate toys to under-served children.
<b>Would you like to request a waiver for another fleet section? *</b>	Yes
<b>Fleet Section Name *</b>	Emergency Vehicles
<b>Number of vehicles included in the waiver. *</b>	65
<b>Describe what operational requirements or work will not be met if these vehicles are removed from your department's fleet and why Transit First options</b>	<p>The vehicles listed above are Emergency Vehicles (EV). Emergency Vehicle (EV) means any vehicle publicly owned and operated that is used by a public safety officer for law enforcement purposes, fighting fires or responding to emergency fire calls, or</p>

<p><b>cannot meet these requirements. Please be specific by vehicle type. *</b></p>	<p>used by emergency medical technicians or paramedics for official purposes.</p> <p>The San Francisco Fire Department's public safety mission could not be met if EV's were removed from the department's fleet.</p> <p>The Fire Department cannot respond to major emergencies using Transit First Tools.</p>
<p><b>Does this fleet section have any underutilized vehicles?</b></p>	<p>Yes</p>
<p><b>Describe what operational requirements or work will not be met if these vehicles are removed from your department's fleet.</b></p>	<p>The low-mileage EV's listed above are SFFD relief EV's.</p> <p>Removal of relief EV's from the fleet inventory would unduly interfere with the department's public safety mission, as these relief pieces become front-line pieces anytime a front-line ERV is being serviced or repaired.</p>
<p><b>Would you like to request a waiver for another fleet section? *</b></p>	<p>No</p>
<p><b>How many vehicles would be subject to HACTO if the waiver(s) are approved? *</b></p>	<p>34</p>
<p><b>What is 15% of the number above? *</b></p>	<p>5</p>
<p><b>How many vehicles does you department plan to remove? *</b></p>	<p>6</p>
<p><b>The number of vehicles planned for removal is: *</b></p>	<p><b>More than or equal to</b> the number of vehicles needed to be compliant</p>
<p><b>Please attach the completed HACTO Base Fleet spreadsheet below: *</b></p>	<p> <a href="#">fire_department_fleet_1_22_14.xlsx</a> 159.01 kB · xlsx</p>

# **APPENDIX D**

## 2014 Waste Assessment Survey Results

Facility Location		Zero Waste Coordinator Workshops		Waste Prevention Measures		2013 Goal Last year you were asked to commit to eliminating one recyclable or compostable item from the trash						Compliance with the Resource Conservation Ordinance The Resource Conservation Ordinance, Chapter 5 of the Environment Code, REQUIRES that every publication exhibit, form and letter produced by a City department, including all materials distributed to the public shall be on printing and writing paper products that contain: 100% post-consumer content.; It also REQUIRES that all pre-printed materials intended for distribution that are purchased or produced in quantities greater than 50 sheets must include a recycled content logo and the percentage of post-consumer material in the paper.		Actions to be completed 1. Identify the person or contractor in your office who is in charge of creating any printed material for distribution to the public. 2. Verify and ensure that materials are printed on 100% recycled content paper. 3. Ensure that the following language is included on all printed materials for public distribution: image Printed on 100% post-consumer recycled paper
Department/Station/Unit	Address	Have you attended an annual workshop before? (these are either held at the end of January or beginning of February)	If YES, how many times have you attended?	Have you promoted signing up for paperless paystubs at your office or facility?	Does your office/facility use the Virtual Warehouse Program to see what items are available before purchasing new ones AND does your office/facility use the Virtual Warehouse Program to turn in City owned surplus items?	How did you follow through on the commitment to eliminate it from the landfill and what were the challenges?	Date	Time:	Date	Time:	Date	Time:	Does your department distribute memorandums, handouts, flyers, brochures, etc	I confirm that I will work to complete the above actions
SFFD/Division of Training	2310 Folsom Street	No		Yes	Yes	All members are committed to eliminating recyclable/compostable items from trash. We have special receptacles for each.	2014-03-24	0800 hours	2014-03-25	0800 hours	2014-03-26	0800 hours	Yes	I agree
SFFD/Headquarters/BFP	689 02nd Street, Rm. 109	No		Yes	Yes	We remind employees to use the recycling bins and sometimes check the bins to ensure they are being use appropriately and that suggestions are being followed.	2014-03-26	0800 hrs	2014-04-02	0800 hrs	2014-04-16	0800 hrs	Yes	I agree
SFFD/Station 02	1340 Powell Street	No		Yes	I do not know about the Virtual Warehouse Program.	We are using our green garbage for compost and our recycling bins for plastic and paper.	2014-03-31	10:00	2014-04-01	10:00	2014-04-02	10:00	Yes	I agree
SFFD/Station 03	1067 Post Street	No		Yes	Yes	All food and paper products committed to the compost bin.	2014-03-16	10:00 hrs	2014-03-20	10:00 hrs	2014-03-21	10:00 hrs	No	I agree
SFFD/Station 05	1301 Turk St	Yes	1	Yes	No	We use containers to separate items from regular trash daily. We have had good success from that.	2014-03-31	1000	2014-03-24	1000	2014-03-25	1000	No	I agree
SFFD/Station 09	2245 Jerrald St	No		Yes	No	We use compost and recycling bins and separate it from our trash. We have 3 bins: green for compost, blue for recyclables and black for trash.	2014-03-25	10:00	2014-03-26	10:00	2014-03-27	10:00	Yes	I agree
SFFD/Station 12	1145 Sianyan Street	No		Yes	Yes	We compost, recycle, reuse everyday	2014-03-18	1300	2014-03-19	1300	2014-03-20	1300	Yes	I agree
SFFD/Station 13	530 Sansome	No		No	No	Increased recycling and composting.	2014-03-31	09:30	2014-04-09	09:30	2014-05-01	09:30	Yes	I agree
SFFD/Station 14	551 26th Avenue	No		Yes	Yes	Station 14 actively participates in sorting all items that are being thrown away into three categories, trash, recyclable, and compostable.	2014-04-04	09:00	2014-04-11	09:00	2014-04-18	09:00	Yes	I agree
SFFD/Station 17	1295 Shafter Ave	Yes	one	No	I do not know about the Virtual Warehouse Program.	We are continuously vigilant about sorting recyclable or compostable items from the trash.	2014-04-22	10:00 AM	2014-04-23	10:00 AM	2014-04-24	10:00 AM	Yes	I agree
SFFD/Station 18	1935 32nd Avenue	No		Yes	I do not know about the Virtual Warehouse Program.	We recycle and compost in our respective bins.	2014-04-07	0930	2014-04-08	0930	2014-04-09	0930	Yes	I agree
SFFD/Station 19	390 Buckingham Way	No		Yes	I do not know about the Virtual Warehouse Program.	Station 19 make use of all three bins. The challenges are getting individuals to put things in the correct bin.	2014-03-31	0930	2014-04-01	0930	2014-04-03	0930	Yes	I agree
SFFD/Station 20	285 Olympia Way	No		No	I do not know about the Virtual Warehouse Program.	Did a better job of sorting waste. No specific challenges were encountered. We have continued to reuse paper after it has been printed on by simply turning it over and reinserting it in the printers.	2014-03-28	11:00	2014-03-27	11:00	2014-03-31	11:00	Yes	I agree
SFFD/Station 21	1443 Grove Street	No		No	Yes	Making sure the personnel was clear on what belongs in recycle vs trash. For example SF does not recycle plastic bags or styrofoam and occasionally this ends up in the recycle bin rather than trash. Most members are conscientious in regards to compost items. The Department currently uses all recycled paper.	2014-04-08	13:00	2014-04-09	13:00	2014-04-10	13:00	Yes	I agree
SFFD/Station 22	1290 16th Ave	No		No	Yes	Monthly reminders were given to staff.	2014-03-17	13:00	2014-03-18	13:00	2014-03-19	13:00	Yes	I agree
SFFD/Station 23	1348 45th Ave	No	0	No	I do not know about the Virtual Warehouse Program.	Signs were posted and members were asked to comply.	2014-03-20	08:00	2014-03-20	08:00	2014-03-20	08:00	No	I agree
SFFD/Station 24	100 Hoffman St	No		Yes	I do not know about the Virtual Warehouse Program.	we committed to removing nasal tissue from the trash and have ensured that each member now after he or she blows his or her nose composts the tissue.	2014-03-17	0900	2014-03-18	0900	2014-03-09	0900	Yes	I agree
SFFD/Station 25	3305 3rd Street	No		Yes	I do not know about the Virtual Warehouse Program.	by having 3 type of garbage cans available-blue, green, and black	2014-03-18	10:30	2014-03-19	10:30	2014-03-20	10:30	Yes	I agree
SFFD/Station 26	80 Digby St.	No		Yes	Yes	Medical gloves were being thrown into recycle bin. We have been educating employees that this is not a recyclable item and needs to go into trash, to prevent contaminating recycle trash.	2014-04-15	0930	2014-04-16	0930	2014-04-17	0930	Yes	I agree
SFFD/Station 28	1814 Stckton street	No		Yes	I do not know about the Virtual Warehouse Program.	We use the provided recycle bins.	2014-03-25	9:00am	2014-03-26	9:00am	2014-03-27	9:00am	Yes	I agree
SFFD/Station 29	299 Vermont St	Yes	once	Yes	Yes	We are working on making sure that all paper towels end up in the green bin. The challenge is sometimes people think these are recyclable.	2014-03-21	08:00	2014-03-19	08:00	2014-04-02	08:00	Yes	I agree
SFFD/Station 31	441 12th Ave.	Yes	1	Yes	Yes	I was not assigned to this facility last year.	2014-04-02	0900	2014-04-03	0900	2014-04-04	0900	Yes	I agree
SFFD/Station 32	194 Park	No		No	Yes	Reminded firefighters to recycle used paper towels and to continue to use appropriate recycling and composting bins.	2014-03-12	10:00	2014-03-13	10:00	2014-03-14	10:00	Yes	I agree
SFFD/Station 33	8 Capitol	No		Yes	Yes	All waste is sorted at the fire house.	2014-03-26	0900	2014-03-27	0900	2014-03-28	0900	Yes	I agree
SFFD/Station 34	499 41st ave	No		Yes	No	signage and separate containers for items	2014-03-31	1000	2014-04-01	1000	2014-04-02	1000	Yes	I agree
SFFD/Station 35	Pier 22 1/2	No		Yes	I do not know about the Virtual Warehouse Program.	We ensured that all recyclable materials were put in proper bins and that equipment was used until the end of it's serviceable life.	2014-04-02	1000	2014-04-09	1100	2014-04-16	1100	Yes	I agree

Facility Location		Zero Waste Coordinator Workshops		Waste Prevention Measures		2013 Goal Last year you were asked to commit to eliminating one recyclable or compostable item from the trash						Compliance with the Resource Conservation Ordinance The Resource Conservation Ordinance, Chapter 5 of the Environment Code, REQUIRES that every publication exhibit, form and letter produced by a City department, including all materials distributed to the public shall be on printing and writing paper products that contain: 100% post-consumer content.; It also REQUIRES that all pre-printed materials intended for distribution that are purchased or produced in quantities greater than 50 sheets must include a recycled content logo and the percentage of post-consumer material in the paper.		Actions to be completed 1. Identify the person or contractor in your office who is in charge of creating any printed material for distribution to the public. 2. Verify and ensure that materials are printed on 100% recycled content paper. 3. Ensure that the following language is included on all printed materials for public distribution: image Printed on 100% post-consumer recycled paper
Department/Station/Unit	Address	Have you attended an annual workshop before? (these are either held at the end of January or beginning of February)	If YES, how many times have you attended?	Have you promoted signing up for paperless paystubs at your office or facility?	Does your office/facility use the Virtual Warehouse Program to see what items are available before purchasing new ones AND does your office/facility use the Virtual Warehouse Program to turn in City owned surplus items?	How did you follow through on the commitment to eliminate it from the landfill and what were the challenges?	Date	Time:	Date	Time:	Date	Time:	Does your department distribute memorandums, handouts, flyers, brochures, etc	I confirm that I will work to complete the above actions
SFFD/Station 37	798 Wisconsin Street	No		Yes	Yes	I monitored the recycling bins and compostable bins to ensure that no land fill waste was improperly placed in either bins. This had been a problem in the past. When improper waste was discovered all personnel were alerted to the improper placement of trash and corrections were made.	2014-03-13	10:00 am	2014-03-19	10:00 am	2014-03-26	10:00 am	Yes	I agree
SFFD/Station 38	2150 California Street	No		Yes	Yes	Instead of putting leaves in the black bin we put it in the green bin. Also by not using any products that come in containers when buying groceries and also using our own bags we have cut back on blue bin trash.	2014-05-26	08:00	2014-04-07	08:00	2014-04-10	08:00	Yes	I agree
SFFD/Station 39	1091 Portola	No		Yes	Yes	Promoted awareness.	2014-03-24	13:00	2014-03-25	13:00	2014-03-26	13:00	Yes	I agree
SFFD/Station 40	2155 - 18th Ave	No		Yes	I do not know about the Virtual Warehouse Program.	Used green and blue bins at the fire station. Used green compostable bags. Challenges were that the green compostable bags would tear easily.	2013-04-22	0830	2014-04-16	0830	2014-04-12	0830	Yes	I agree
SFFD/Station 42	2430 San Bruno Ave	No		Yes	Yes	We have separate recyclable and compostable trash bins. There were no challenges. Everyone is with the program.	2014-03-25	0930	2014-04-14	0930	2014-04-28	0930	Yes	I agree
SFFD/Station 48	600 Avenue M street	No		Yes	Yes	Plastics always seem to be a problem.	2014-03-27	0900 hrs.	2014-03-28	0900 hrs.	2014-03-29	0900 hrs.	Yes	I agree
SFFD/Station 49/BFI	1415 Evans Ave	No		Yes	I do not know about the Virtual Warehouse Program.	N/A	2014-03-19	11:45 A.M.	2014-03-26	11:45 A.M.	2014-04-02	11:45 A.M.	Yes	I agree
SFFD/Station 49/EMS	1415 Evans Ave	No		Yes	No	We have all the appropriate bins, however the homeless population in this area makes a terrible mess of our recyclables and we no longer can put it out to the curb, recology cannot access our yard	2014-03-17	0900	2014-03-24	0900	2014-03-31	0900	Yes	I agree
SFFD/Station 51	218 Lincoln Blvd - Presidio	No		Yes	No	Employees are using appropriate bins.	2014-03-17	0930	2014-03-18	0930	2014-03-20	0930	Yes	I agree
SFFD/II Training Facility	600 Avenue M	No		Yes	Yes	Moved any recyclable items in the trash to the recycle bins.	2014-03-26	8:30AM	2014-03-27	8:30AM	2014-03-31	8:30AM	Yes	I agree