



SAN FRANCISCO FIRE DEPARTMENT

CITY AND COUNTY OF SAN FRANCISCO

Title: Departmental Climate Action Plan
Department: San Francisco Fire Department
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Data Year: Fiscal Year 2011-2012
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Date: **April 30, 2013**

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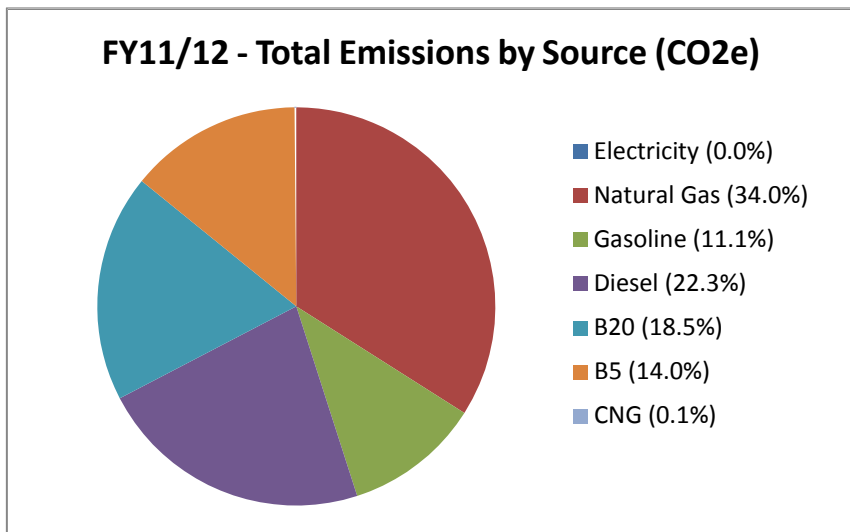
1. Introduction

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, and, in particular, to call 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 FY11/12, the Fire Department produced 4,199.92 metric tons of CO₂ emissions. By factoring in the amount of carbon sequestered by the trees on Fire Department property, the net carbon emissions produced in FY11/12 is 4,189.79 metric tons of CO₂ 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 was zero.

Emission Reduction Goals

To reduce emissions, the Fire Department shall focus efforts on the following:

- Upgrade Fire Station facilities
- Modify employee behavior
- Modernize Fleet by acquiring efficient replacement vehicles
- Convert to lower emission fuels

2. Departmental Profile

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.

Fire Department Budget

Budget FY11/12 = \$299,535,509

The Fire Department has six divisions in its operating budget: Administration, Fire Investigation, Operations, 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 nearly 25% of the Fire Department's total operating expenses; annual revenue for FY11/12 is calculated at \$69,811,907.

Fire Department Personnel

As of March 1, 2013, the Fire Department employs 1,464 persons, including both uniformed and non-uniformed personnel:

Number of full-time employees =	1,460
Number of part-time employees =	4
Number computer workstations =	120

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.

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

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 properties: 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 with the exception of: the SFFD Airport Division facilities, which are represented in the San Francisco International Airport's Climate Action Plan; the Fire Station located in the Presidio on U.S. National Park Property, and; the two facilities located on Treasure Island.

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 repairs or service, relief apparatus are placed in service. This prevents any disruption in community fire suppression and emergency medical service responses.

The Fire Department's fleet of passenger vehicles is used for Fire Prevention activities and other support functions. The Fire Department also maintains several historic fire suppression apparatus.

A summary of the Fire Department's fleet as of September 2012 is listed below:

FLEET SUMMARY	COUNT
FIRE APPARATUS/HEAVY-DUTY VEHICLES	206
LIGHT-DUTY VEHICLES (TRUCKS, VANS, SUVs, CARS)	92
NON-HIGHWAY VEHICLES	3
WATER VESSELS (FIRE BOATS, RESCUE CRAFT)	6
TOTAL	307

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.

Authors of the SFFD Climate Action Plan are the SFFD Climate Liaisons: Compliance Officer, FF/PM Rhab Boughn, and Senior Administrative Analyst, Tania Fokin.

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

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3. 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 CO₂ emissions. Conversions for CH₄ and N₂O emissions were excluded. The proceeding sections will describe each component in detail. Details regarding the Fire Department's water consumption are also included in this section.

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. The 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, Fire Department operations at the SF International Airport are not represented in this report.

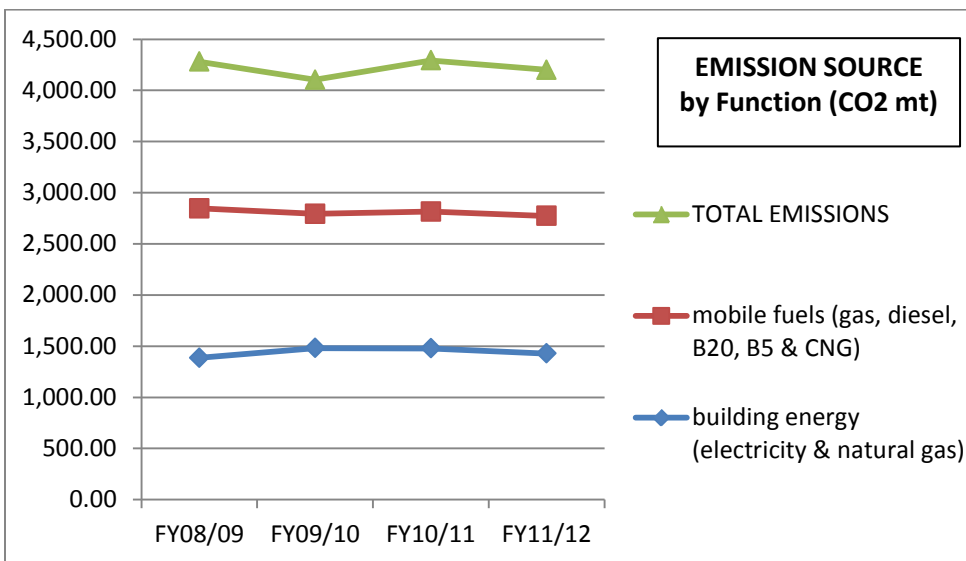
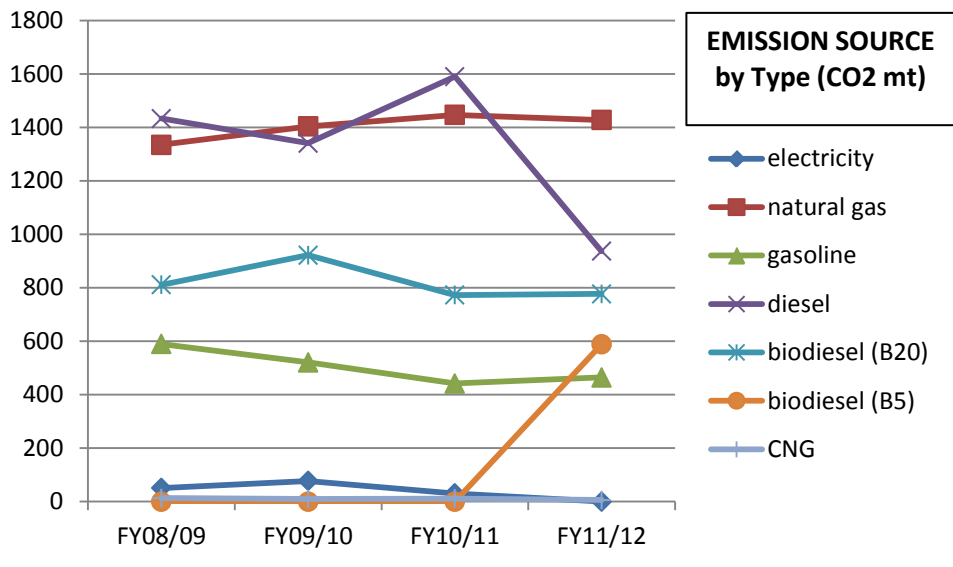
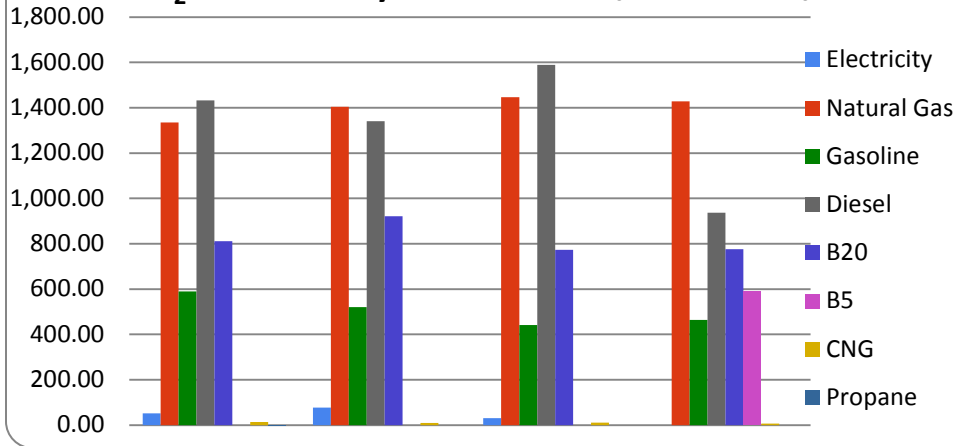
Historical Analysis

Historical comparison of facility energy and water usage, fleet fuel consumption, and associated carbon emissions has been made for the years FY08/09 through FY11/12. Comparisons have been made to identify trends in usage and to understand what the greatest contributors are to the Fire Department's total carbon footprint. By knowing what is producing the most carbon emissions, the Fire Department can focus conservation efforts on those areas, with the objective of gaining the greatest reduction potential.

The first two charts below, "CO₂ Emissions by Source" and "Emission Source by Type", demonstrates that natural gas and diesel fuel are consistently the greatest contributors of carbon emissions. During FY11/12, to help reduce emissions from diesel fuel, the Fire Department began purchasing the biodiesel blend B-5 in place of diesel.

The last chart, "Emission Source by Function", groups the emission sources into emission related to building energy and mobile fuels. This chart demonstrates mild fluctuations observed in emissions for both categories. From FY08/09 to FY11/12, there was a 3.1% net increase in building energy emissions, due to increased natural gas use, and a 2.6% net decrease in emissions caused by mobile fuels. The overall change in the combined emissions for the 4-year period yielded a net decreased of 1.9%.

CO₂ Emissions by Source - FY 08/09 to FY 11/12

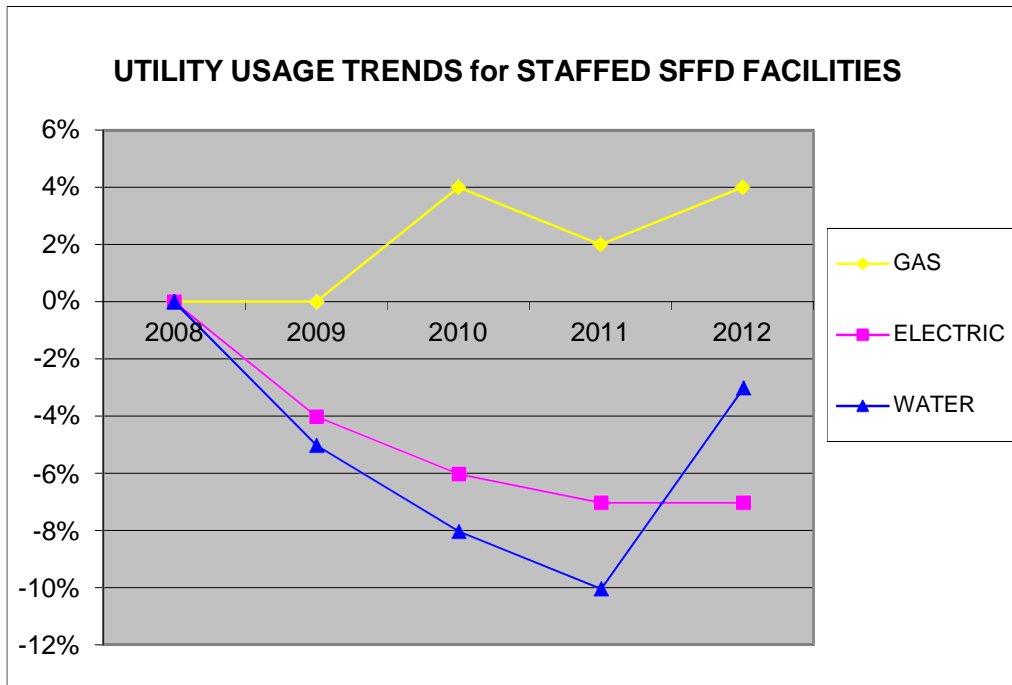


SFFD Energy & Water Conservation Program

The SFFD Energy and Water Conservation Program, per SFFD General Order 09 A-06, establishes 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. 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 individual facility. In the following graph, utility consumption is expressed in terms of percent change compared to CY2008 utility consumption levels.



Facilities have been separated into 2 groups: "Staffed" and "All". Whereas "Staffed" includes only Fire Stations and 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 have been transferred or sold. These include all AWSS facilities (utilities fully transferred to SF Public Utilities Commission by the end of 2010), 2 previously leased properties (utilities fully transferred in 2009) and one inactive Fire Station (sold and utilities fully transferred in 2011). Another inactive Fire Station is currently undergoing reconstruction, to become part of the Public Safety Building complex.

As a result of these property transfers, the number of facilities represented by “Staffed” decreased from 48 in 2008 to 47 by 2011, and the number of facilities represented by “All” was decreased from 57 to 50. Results that most accurately reflect the Fire Department’s utility usage trends are for the “Staffed” facilities, as represented in the graph above.

The Fire Department has been successful in reducing electricity usage, has met its water usage reduction goals, though recently has seen an increase. The Fire Department will be focusing on improving measures to reduce the consumption of natural gas, and to maintain or improve reduction levels for electricity and water. To achieve these goals, the Fire Department will need to identify the individual facilities where utility usage has been high, and develop customized facility-based conservation goal plans.

3a. Building Energy

Facilities Verification

The list of facilities used by SF Environment to calculate the FY11/12 Departmental carbon footprint has been verified by the Fire Department’s Climate Liaisons to be accurate and complete.

FY11/12 Carbon Footprint from Consumption of Electricity and Natural Gas

UTILITY	QUANTITY	GHG EMISSIONS
Electricity	4,223,437 kWh	0.00 CO2 (mt)
Natural Gas	269,020 therms	1,427.70 CO2 (mt)

According to SF Environment data, the Fire Department’s consumption of electricity has been reduced by 9% since 2008. This is due to the introduction of energy-saving measures and facility improvements such as upgrading lighting fixtures, the details of which are included in the following “Energy Efficiency” section.

The San Francisco Public Utilities Commission (SFPUC) is the electricity provider for City and County of San Francisco municipal facilities and other retail customers. The SFPUC’s generation portfolio includes hydroelectric power from the Hetch Hetchy Power System as well as in-City solar and biogas generation.

In Calendar Year 2011 (the most recent year reported), electricity supplied to SFPUC municipal and retail customers had a greenhouse gas (GHG) emissions factor of zero. The SFPUC’s GHG-free, renewable power supplies for 2011 are detailed on SFPUC’s Power Content Label, submitted annually to the California Energy Commission (http://www.energy.ca.gov/sb1305/labels/2011_labels/SFPUC_PCL.pdf). The California Renewable Energy Resources Act of 2011 established updated rules related to the State’s Renewables Portfolio Standard (RPS). In accordance with those RPS rules (in particular Public Utilities Code Section 399.30), SFPUC now procures renewable resources to meet any electricity demand unsatisfied by its hydroelectric generation in any given year.

SFPUC has not yet reported its Power Content Label for Calendar Year 2012. However, the GHG emissions associated with SFPUC-supplied electricity in 2012 are currently expected to be zero. Nevertheless, the Fire Department still strives to reduce its overall electricity usage.

Natural gas consumption has increased by 3% since 2008. Greenhouse gas emission from the use of natural gas is high; it accounts for 34% of the Fire Department’s total overall greenhouse gas emissions. At the majority of Fire Department facilities, natural gas is used for the purposes of heating water, heating living space, and cooking. The Fire Department is exploring various ways to reduce the use of natural gas, through the conservation efforts and by finding alternative methods for heating water and living spaces.

3a1. Energy Efficiency

The Fire Department's energy efficiency projects, funded by the SF Public Utilities Commission (SFPUC), are described below. Please see **Appendix A** showing detailed information on the status and scope of all energy and water efficiency and conservation projects. Additional energy conservation measures are identified in the Green Building Programs Section, 3a3.

Energy Efficiency Retrofit Projects

The Fire Department would like to achieve continued improvement on energy efficiency in the Fire Stations. When crews respond to 911 calls from the Fire Station, it is critical for them to respond immediately. This often results in thermostats, lights and electrical equipment, such as televisions, being left on when the Station is vacant.

SFPUC Funded 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.

SFPUC Funded Window Repairs/Replacement:

In FY11/12 windows were resealed at two Fire Stations utilizing ESER Bond funds, in FY10/11 energy efficient windows were installed at two Fire Stations using SFPUC funds, and in FY09/10 the same funding replaced windows at two additional Fire Stations. The Department has seen some savings at locations where the majority of windows were replaced. Four additional Fire Stations are slated for window repairs in FY 12/13.

SFPUC Funded HVAC System Upgrades:

In FY09/10, SFPUC provided funding to install energy efficient boilers in several Fire Stations. In FY10/11 a high-efficiency boiler was installed at Fire Station 40 (2155 18th Avenue) as a test location to determine both how well it performed in terms of mechanical issues, and how well it stood up to the rigors of firehouse use. Since the time the new boiler has been installed, natural gas usage at that location has decreased by 20%, most of which is directly attributed to the new boiler. In FY 12/13, the Department intends to replace one additional Fire Station boiler. In addition, since the energy savings has been so significant, the Department intends to begin a program of annual boiler replacements in the Stations. Funding for this program has been included in the budget submitted that was for next Fiscal Year.

Existing Commercial Building Energy Performance Ordinance Compliance

In order to comply with the Existing Commercial Building Energy Performance Ordinance (Ord 17-11, SF Environmental Code Chapter 20), the Fire Department assisted the SFPUC in producing the 2011 Energy Benchmarking Report for San Francisco Municipal Buildings by: verifying the Fire Department’s list of facilities; verifying the existing data for each facility (such as street address, year built, gross square footage, and building type), and; providing data specific to the primary EPA ENERGY STAR building category (such as weekly operating hours, number of workers on main shift, and if applicable, additional information on the facility, subspaces, and parking areas).

The 2011 Energy Benchmarking Report is available for public viewing at:
<http://www.sfwater.org/modules/showdocument.aspx?documentid=2938>

The Fire Department has reviewed the list of facilities, which are sorted in the report by facility type and listed in order of Energy Use Intensity (EUI)—the total annual energy use of the facility (in BTUs) divided by square feet of building area. The following 44 Fire Department facilities were benchmarked in the report:

Facility Type	Number of Facilities Benchmarked	Page Number in Report
Office	1	page 19
Public Safety/Fire Station	41	page 21
Service, Repair & Storage/Other Shops	1	page 26
Buildings with Incomplete Meter Data	1	page 27

Based on the results of the report, the Fire Department is investigating the Fire Stations and other facilities with high EUI ratings, and facilities with increased energy usage. Strategies for reducing energy usage would then be focused on the energy-intensive facilities, rather than attempting to applying limited resources for facility upgrades to all facilities.

The report is supplemental to the reports generated through the SFFD Energy and Water Conservation Program as referenced previously, confirming the energy-intensive facilities that require upgrades.

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), 48 buildings are in compliance and 1 building, an inactive Fire Station, used as a site for the Guardians of the City Museum warehouse, does not yet meet the requirements outlined in the Ordinance. A temporary waiver was requested for two buildings not owned by SFFD, both on Treasure Island. The Fire Department intends to defer the lighting upgrade of these facilities for two years. The inactive Fire Station does not need to be upgraded at this time per SFPUC.

Information Technology Practices

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 energy-efficient servers, the SF Department of Technology (DT) is 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 remains a work in progress.

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.

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.

3a2. Renewable Energy

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 some of the 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 FY 12/13, the three Fire Stations that are being upgraded will be designed with solar-thermal, those Fire Stations are 5, 16 and 36. The Department is interested in promoting more of these types of renewable energy projects. However, given the Fire Department's fiscal constraints, funds are not currently available to upgrade facilities with solar-thermal, unless those Fire Stations are undergoing major 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 does not currently qualify under the use of the current bond funds. At the end of FY 11/12, SFPUC approached the Fire Department with a potential solution for funding the installation of solar panels. The Department is in the process of conducting a cost benefit analysis to see if this project is feasible.

The funding of solar panels in future bonds may be justifiable as a cleaner source of backup power. Currently each Fire Station has an emergency generator to run as a backup power source. These generators run on diesel fuel, which may not be readily obtained in the event of a disaster. Solar panels do not require fuel to operate and could fully power the Fire Stations during the day. If the panels do not come with battery backup, the generator could take over after dark, resulting in the emission of half the amount of greenhouse gases into the atmosphere and allowing the stored fuel to last much longer.

3a3. 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 ft² 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 ft², departments must consult with the Green Building Staff at the SF Department of Environment.

Having received over \$65 million in public funding through the Earthquake Safety and Emergency Response (ESER) bond for Fire Station repair and renovation, as well as, privately sponsored funds for the replacement an existing Fire Station, the SFFD has several 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	SFPD/SFFD	LEED-BDC Gold	260,000	\$243,000,000	Project under construction
Firehouse #5	SFFD	LEED-BDC Gold	To be determined	\$15,998,630	Project in design
Firehouse #16	SFFD	LEED-BDC Gold	To be determined	\$10,392,158	Project in design
Firehouse #36	SFFD	LEED-BDC Gold	10,000	\$10,000,000	Project in planning or design

ESER Bond Funded Renewals and Renovations

The ESER Bond addresses facility repairs and health and safety issues at neighborhood Fire Stations, and will fund construction of the new Mission Bay Fire Station, which is part of the Public Safety Building. Both are described in greater detail below.

New Construction and Seismic Upgrades:

The Fire Department has three new buildings funded by the ESER bond that are in design or construction phases. One is a new Fire Station for Mission Bay and the other two will be replacement Fire Stations. The Mission Bay Fire Station will be part of the new Public Safety Building complex, which will also contain 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 of June 2014. The two existing Fire Stations to be rebuilt are currently in design phase.

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.

Focused Scope Projects:

Focused Scope projects will occur at nearly half the Fire Stations.. These projects 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 efficiency plumbing upgrades. In addition, if funding permits, toilets will be upgraded at the same time.

Privately-Funded Fire Station Construction

The San Francisco Museum of Modern Art generously privately funded a 15,000 ft² Fire Station on Folsom Street near 5th Street (935 Folsom) in exchange for the Fire Department's property at 676 Howard Street, the current location of Fire Station 1. The new Fire Station was designed to meet local and state green building codes, implementing a variety of strategies to reduce resource consumption and provide healthy working and living spaces. These include low energy building systems, daylight harvesting and enhanced indoor air quality. The exterior walls are clad with a rain screen system, designed to provide energy efficiency and durability. Additionally, a rain garden/bioswale on the Falmouth frontage, designed to receive the storm water runoff from the roof, detains and filters the runoff water before flowing into the sewer system. The Fire Department will continue to strive to meet LEED Gold Standards on future projects.

Future of Green Building Projects

Green building design and the construction of high performance buildings are relatively new industries. As these industries progress, new technologies will emerge that will further advance building design and will incorporate sustainable improvements to achieve net zero energy, be carbon-neutral and better able to survive a changing climate. The Fire Department is a dedicated participant in making this change towards sustainability a reality.

3b. Water

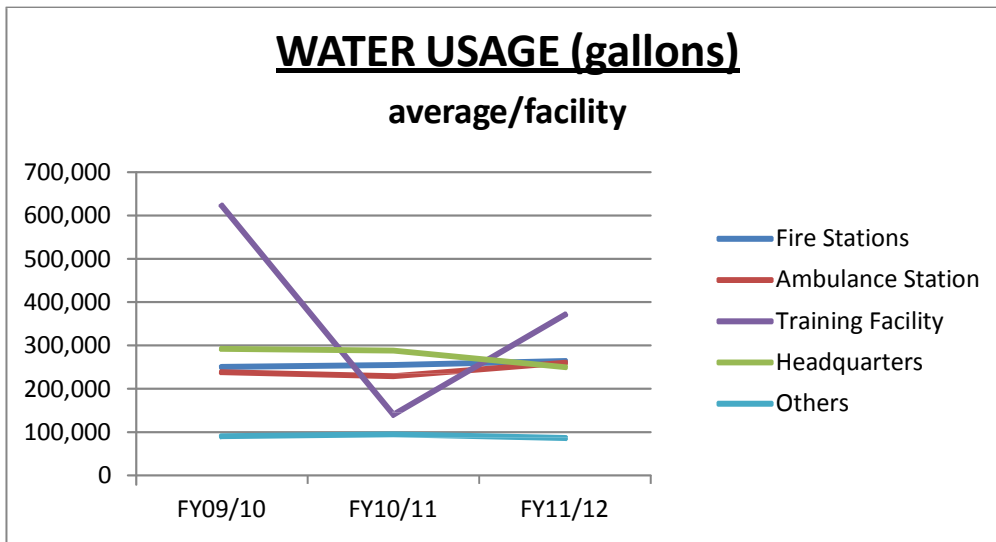
Water consumption values include water used at all Fire Department facilities. Not included is water from fire hydrants or other water supplies used during fire suppression activities (water used to extinguish fires) or during firefighting drills not conducted at the SFFD Training Facilities.

FY11/12 Water Consumption

The amount of water used by the Fire Department, as tabulated from monthly billing data provided to SFE by SFPUC Water for municipal facilities in the City of San Francisco, is summarized in the table below. Facilities have been separated by type based on similar usage patterns.

FACILITIES	WATER CONSUMPTION (gallons)
FIRE STATIONS (42 facilities)	11,078,092
AMBULANCE STATION FACILITY	260,304
TRAINING (Treasure Island facility)	371,000
SFFD HEADQUARTERS	249,832
ALL OTHER FACILITIES (5 facilities)	430,136
TOTAL	12,389,364

The graph below demonstrates water usage trends by facility type over the last three (3) years. Usage amounts depicted are averages per each facility type. Fluctuations in water usage at the Training Facility at Treasure Island are due to training academies being held, draining of drafting pools, and the variability of training exercises being performed during the year; the more series of “wet” drills conducted, the greater the amount of water consumed.

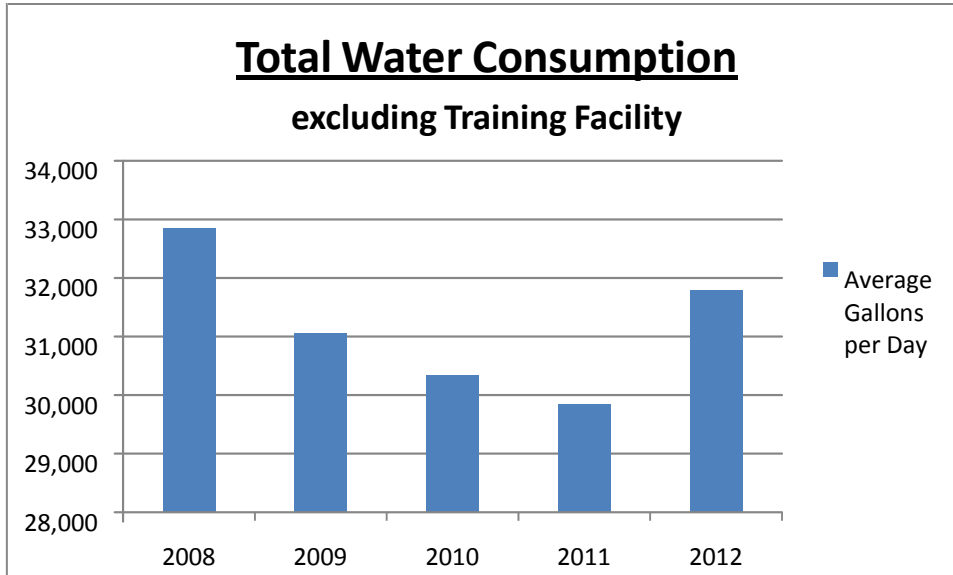


It has been estimated that approximately 90% of the total water consumption is due to activities at the Fire Stations. These facilities are occupied 24/7 and serve as “homes” for the personnel assigned to them. Fire Stations have characteristics typical of residential homes, such as dishwashing, laundry and showers, as well as characteristics

typical of office buildings, such as common and private restrooms. Water resources are also used for the irrigation of any landscaping on facility property. The Fire Department's water conservation efforts are therefore focused on these activities.

Water Efficiency & Conservation

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 different trend can be seen. Since 2008, the baseline year for the Fire Department's Conservation Program, water consumption decreased up to 9% by 2011. However, in Calendar Year 2012, water consumption increased; it is still 3% less than the baseline year 2008.



The reason for the increase has not yet been determined. Contributing factors may include ESER Bond renovation work and the installation of heavy duty wash/extractors used to clean members' personal protective equipment (PPE).

To maintain an effective conservation program, the Fire Department intends to reinforce water conservation best practices reminders.

Installation of Wash/Extractors:

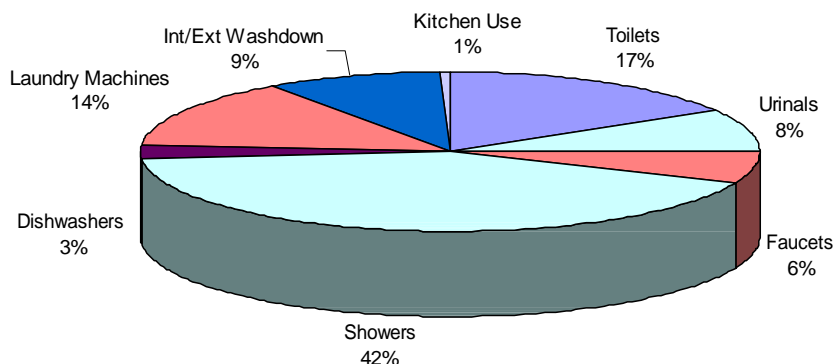
Wash/extractor machines have recently been installed at Fire Station facilities. The wash/extractor machines remove the harmful toxins that are absorbed into members' personal protective equipment (PPE) when working at fire scenes. The machines require specialized electrical infrastructure to operate and specialized plumbing to safely dispose of the contaminated water. Currently wash/extractors have been installed at 6 locations (Fire Station 1, 6, 13, 38, 42, and 51) with 6 more wash/extractors being installed by the end of 2013. The Department is seeking funding to purchase enough wash/extractors to have one located at each Fire Station, relieving members the need to drive to a location with a machine in order to clean their PPE.

Prior to the installation of wash/extractors, PPE was regularly being sent to a private vendor in Sacramento. Cleaning and inspecting PPE requires specific certifications, and the closest vendor is quite far. By the installation of additional wash/extractors,

the Fire Department is anticipating an increase in future water consumption, as well as an increase in future electricity use; though an increase in consumption, a measure that will result in the overall health and safety of the Fire Department's members.

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.

In December 2012, SFPUC applied for a grant to fund supplies and parts for the water conservation measures listed above. A requirement of the grant will be for the Departments to match the funds by covering labor costs. It is expected that the grant award will be announced in the latter part of 2013. Please refer to **Appendix A** for specific water conservation project information.

Any and all new Fire Stations and major renovations will be designed to meet or exceed SFPUC's water savings standards.

3c. Transportation and Fuel

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 CCSF 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 are powered by the apparatus engines.

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. As the number of 911-calls is on the rise, emissions can only be reduced by obtaining newer, more fuel-efficient apparatus and support vehicles, and by altering the type of fuel consumed.

The SFFD Bureau of Equipment, Division of Support Services, 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.

Fuel and Vehicle Verification

The list of vehicles and the Fire Department's fuel totals used by SF Environment to calculate the FY11/12 Departmental carbon footprint has been verified by the Fire Department's Climate Liaisons to be accurate and complete.

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 engines, trucks, ambulances and rescue vehicles, which would not necessarily be considered required in other jurisdictions.

The Fire Department's 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.

During FY11/12, the Fire Department made the following adjustments to its fleet:

VEHICLE TYPE	VEHICLES TURNED IN		VEHICLES RECEIVED	
	for CREDIT	REMOVED from FLEET	REPLACEMENT	NEW
Passenger Car	6	2	6	
SUV	2		7	
Light-Duty Truck	1			
Heavy-Duty Truck	3		1	
Utility Tractor				2

TOTAL VEHICLES TURNED-IN: 14

TOTAL VEHICLES RECEIVED: 16

During this fiscal period, the Fire Department was able to replace several of its aging passenger cars and SUVs used for emergency response, and turn in those that were 12 years or older. With funds from a federal FEMA UASI grant, the

Department acquired two utility tractors, for use as EMS/Rescue vehicles during large, crowded City events with limited vehicular access.

Although two Ambulances were turned in, no new replacement Ambulances, Fire Engines or Fire Trucks were acquired during this fiscal period.

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 and is therefore budgeted on a routine basis.

FY11/12 Carbon Footprint from Mobile Combustion of Fuel

The amount of fuel consumed by the Fire Department and the resultant emissions is summarized by fuel type in the table below. The amount of fuel consumed is based on the amount of fuel delivered to SFFD fuel tanks during FY11/12. These values do not reflect the actual amount of fuel consumed, but provides a general estimate. The exception is red-dye 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 (2% of total gasoline) was also dispensed from monitored City fueling sites. Diesel, biodiesel (B-5) and gasoline are additionally used for other machinery, such as generators and power tools.

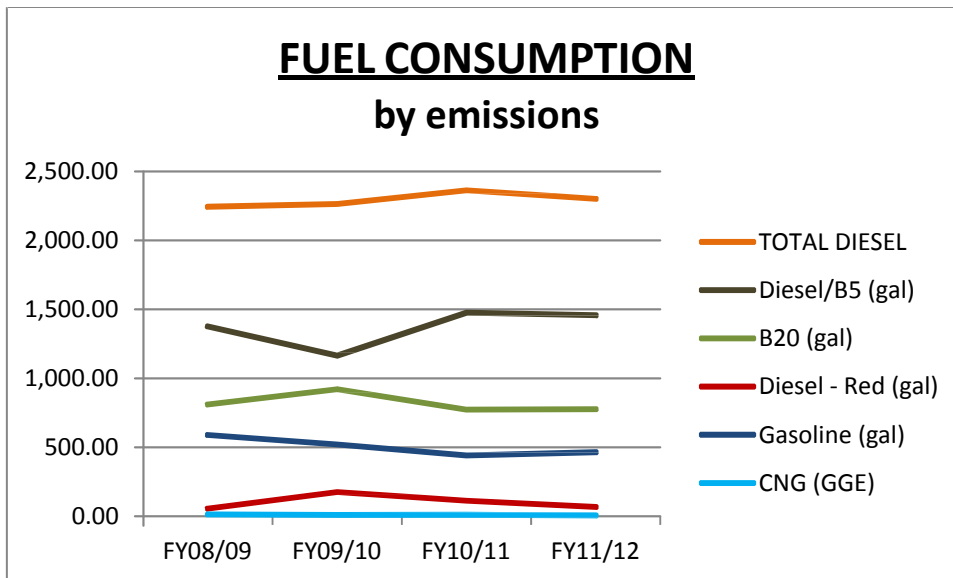
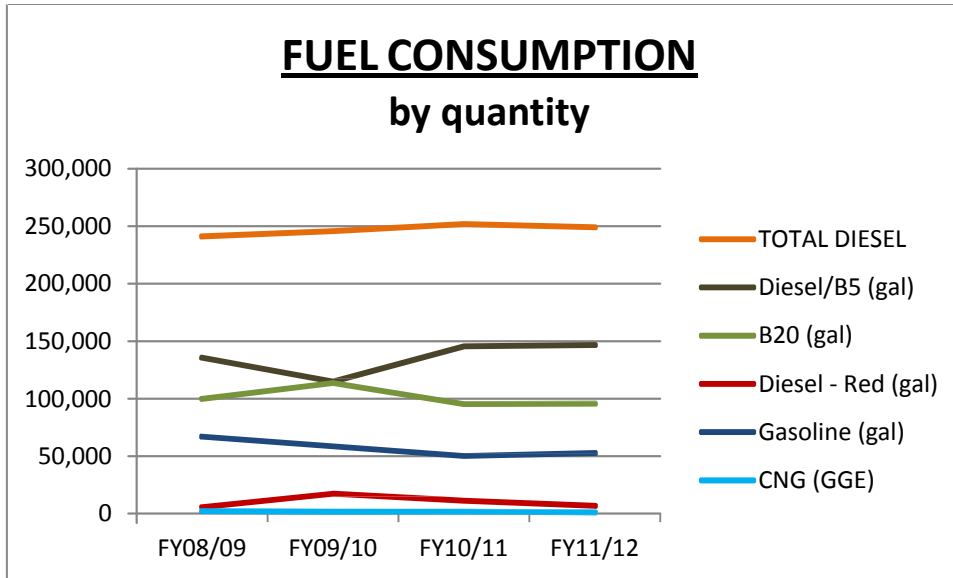
FUEL TYPE	CONSUMPTION (gallons)	CO2e EMISSIONS (metric tons)
GASOLINE	52,710	464.25
DIESEL	85,607	868.67
RED-DYE DIESEL (MARINE)	6,728	68.27
BIODIESEL (B-5)	61,043	588.44
BIODIESEL (B-20)	95,669	776.61
CNG	980	5.98
TOTAL		2,777.36

Fuel Management System

The Fire Department is currently installing a fuel management system which will facilitate tracking the amount of fuel delivered to and dispensed at each SFFD fueling station. The system will electronically capture: 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 for data having to be entered manually. As a result, fuel consumption by individual vehicle will be possible, and the accuracy of overall fuel consumption values will improve. A variety of fuel inventory and other fuel management tool reports will be provided from central access points. The system will be fully operational by May 2013.

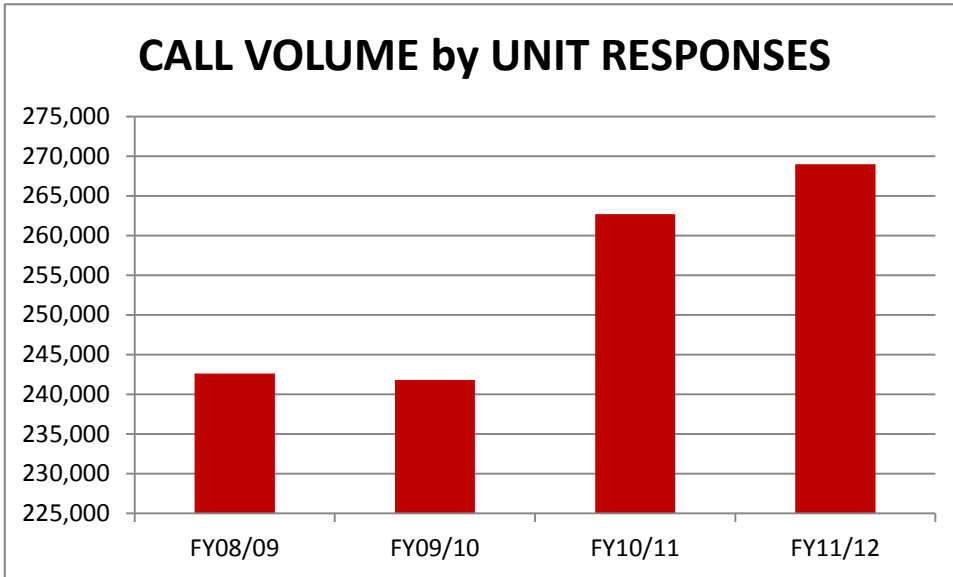
Analysis of Mobile Fuel Usage Data

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 may use either blend. B-20 is represented separately, since only diesel engine vehicles that have been properly converted for B-20 regularly use this type of fuel, the majority of which are Ambulances. Similarly, only Fire Boats may be fueled with red-dye diesel.

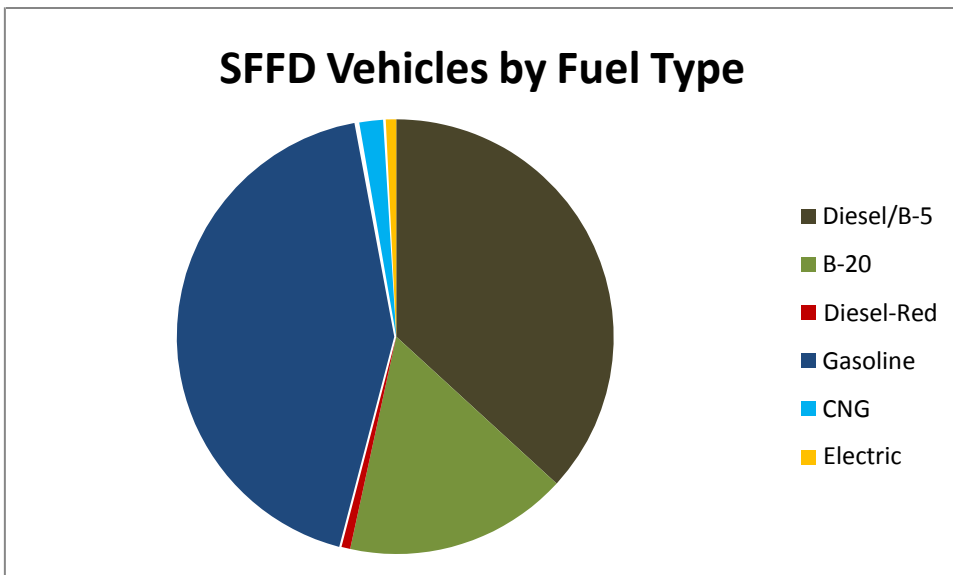


Although the trend over time in both charts appears similar, differences can be seen in the lower levels of emissions produced from B-20 compared to Diesel/B-5.

As previously stated, fuel consumption levels and the resultant emissions vary depending on the number of Fire/EMS 911-calls received. More dispatches to emergency calls require more fuel. The supplemental chart below shows the number of vehicles being dispatched to 911-call incidents by fiscal year. Although there was a slight decrease in unit responses from FY08/09 to FY09/10, the call volume has been increasing. It therefore would naturally be expected for overall fuel consumption and emissions to have increased as well.



Although just over half of the Fire Department's entire fleet runs on diesel, diesel fuels (Diesel/B-5, B-20 and Marine Diesel) account for over 80% of all mobile fuels used (as demonstrated in the proceeding fuel consumption charts). This is due to the fact that the majority of the Front Line apparatus and Ambulances responding to Fire/EMS calls have diesel-powered engines; these are the vehicles that are responsible for primarily responding to the majority of the Department's calls. The graph below shows the breakdown of the Fire Department fleet's by fuel type.



Biodiesel Fuel

The Mayor's 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.

The San Francisco Fire Department was the first City agency 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 40% of all diesel fuel delivered to SFFD fueling stations (see table below). Vehicles using B-20 account for 36% of the Fire Department's frontline fleet, which includes all Ambulances (12 to 24 ambulances per day), 6 of the 43 Fire Engines, and 2 of the 20 Fire Trucks.

FUEL TYPE	CONSUMPTION (gallons)	PERCENTAGE
DIESEL (excluding Marine Diesel)	85,607	35.3%
BIODIESEL (B-5)	61,043	25.2%
BIODIESEL (B-20)	95,669	39.5%
TOTAL	242,319	100.0%

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.

As of July 1, 2012, the State waiver for storing B-20 in underground tanks expired. As a result of the State regulations, the Fire Department is no longer able to store B-20 at two of the three B-20 fueling stations. In order for the underground storage 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 strategizing 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 with the fuel injectors becoming clogged with fungus, presumed to be due to long-term storage of B-20. The City's Central Shops has 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.

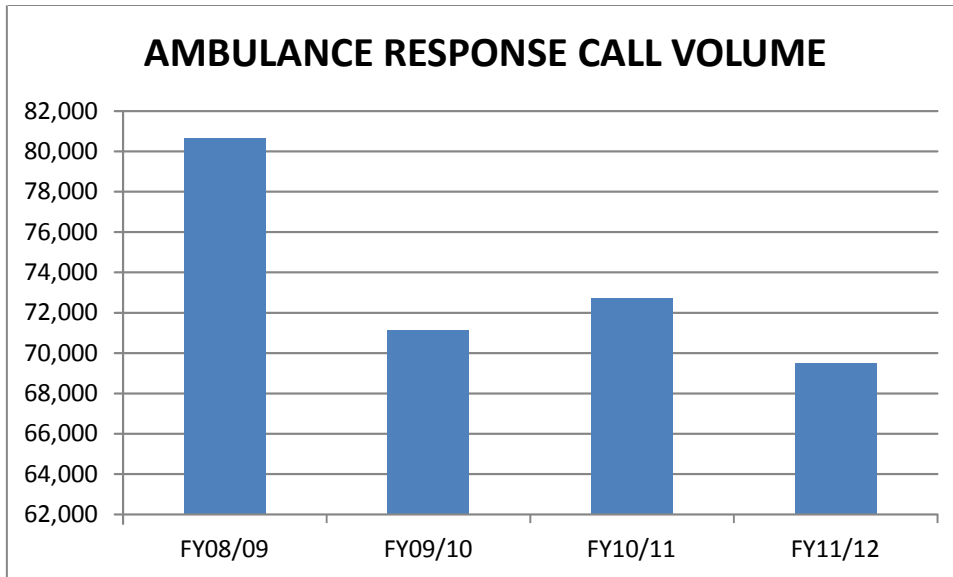
Fortunately, the same issues experienced with the Ambulances using B-20, have not been seen with the fire apparatus. Although it should be noted, the cleansing properties of biodiesel causes fuel filters to become clogged quicker than with regular diesel. Fuel filters need to be changed more frequently during the first year of B-20 use, and the older the vehicle, the greater the problem. In order to assure reliable vehicle operation, 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 will continue to be marine diesel, which accounts for approximately 3% of all diesel-based fuels consumed by the Department.

B-20 Consumption Trends and the SFFD Ambulance Fleet

The SFFD Ambulance Station is one of the fueling stations where B-20 is delivered, and is where the Ambulances receive the majority of their fuel. Ambulances are also the vehicles that consume the largest quantity of fuel, accumulating more miles per vehicle than Fire Apparatus. This site is also the fueling station that is still allowed to receive B-20 fuel per State regulations, since it is the fueling station that has the aboveground storage tank.

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 consumption of 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, and increasing 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 restored per the EOA Agreement, the Fire Department will be experiencing a greater Ambulance call volume, and consequently, more B-20 use.

The composition of the Ambulance fleet will once again be changing in the near future. The engines of the new Ambulances being ordered, to replace the aging Ambulance fleet, will no longer be diesel; the new Ambulances will use 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 will be 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 reduced.

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 CO₂; however filter regeneration still results in a net climate change benefit. Global warming potential of black carbon has been estimated to be as high as 4,500 times higher than that of CO₂ on a per gram emission basis.

To meet U.S. Environmental Protection Agency's 2007/2010 heavy-duty engine particulate matter and NO₂/NO₃ 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' missions. 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 being explored 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 or Fire Truck aerials, the large battery bank will enable engines to be turned off, reducing the amount of fuel consumed and emissions produced.

3c1. HACTO

The Healthy Air and Clean Transportation Ordinance (HACTO) (Ord. 278-10, SF Environmental Code §400, et al.) mandates that all City departments and employees use sustainable transportation such as public transit, ridesharing or biking to minimize single-occupancy vehicle transportation and, when not, to use “green” vehicles. To implement this Ordinance, each City department is required to develop a HACTO/Transit-First Plan, outlining how the various sustainable options to reduce vehicle usage will be implemented, and a HACTO/Transit-First Report, on the progress of Plan implementation.

Section 403 of HACTO requires City departments that manage their own fleet to reduce the number of passenger vehicles and light duty trucks by 5% per year through 2015 (20% overall), and to remove from service all vehicles that are 12 years and older by 2015. When purchasing new or replacement vehicles, Section 404 of the Ordinance requires that departments buy only alternative fuel vehicles or approved “green” vehicles. Exempt from HACTO are specialized vehicles used for emergency response.

In compliance with the requirements as set forth by the Ordinance, the Fire Department submitted to SF Environment a HACTO/Transit-First Report for FY11/12 and a HACTO/Transit-First Plan for FY12/13. The FY11/12 Report is included as **Appendix B**. The FY12/13 Plan is included as **Appendix C**.

Transit-First

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.

The majority of Fire Department 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, employees 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.

Employees assigned to Ambulances work 10 or 12 hour shifts and report for duty at the Ambulance Station. 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.

Fire Department employees who work a regular business hour schedule are fewer by comparison. The majority of these employees are administrative staff and Fire Inspectors working at SFFD Headquarters. It is with these employees that the Fire Department has the most opportunity to promote transportation options and will be focusing its efforts.

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

San Francisco Commuter Programs

The Fire Department's Transit-First Plan encourages the use of alternative methods of transportation by its members whenever possible. This includes promotion of the following City programs:

- Commuter Benefits Program
- City Hall Bike Room
- City Bicycle Fleet
- Rideshare Matching Assistance
- Emergency Ride Home Program

The Fire Department regularly forwards all e-mails received from SF Environment's Clean Air and Transportation Program throughout the Department. It is ensured that all e-mails additionally include general Commuter Programs information and any related attachments. Although the Fire Department acknowledges that most Commuter Programs options do not meet the transportation needs of the majority of our employees, Commuter Programs notices are distributed to all.

Work-Related Trips Programs

Excluding the use of vehicles for emergency response, the types of work-related trips required by Fire Department employees include trips for in-service training classes, official meetings, and for conducting official business related to Fire Prevention activities.

The Fire Department has a few large rooms at SFFD Headquarters that are useful for meetings and conference calls. Use of these rooms is encouraged, eliminating the need for members to travel to conduct and/or attend meetings elsewhere.

On-Line Training:

To reduce the number of trips taken to attend in-service training classes, and to reduce the number of emergency response vehicles taken out-of-service, the Fire Department has instituted on-line training. Utilizing the Fire Department's existing internal computer network system, training classes are posted on-line for use by Fire Department personnel at their Fire Station or computer workstation. Conducting live fire drills and providing hands-on training is still critical for emergency response skill development and retention. However, there are certain cases where providing training on-line is appropriate. On-line training continues to be developed and expanded whenever practical.

The Fire Department is currently in the process of expanding its on-line training curriculum, and will be installing new EPEAT computers at each Fire Station. These computers will be designated for the purposes of on-line training for all Fire Station members.

The Fire Department's policies for providing on-line training have most likely had the greatest effect on reducing work-related trips. The main focus has been converting the monthly EMS-based courses and testing from the classroom to the computer screen. Since all suppression members must maintain an EMT or Paramedic license, and CEU's are awarded for the completion of these courses, attendance is crucial. Previously, each Fire Company would have to travel to the Training Facility on Treasure Island to attend EMS-trainings. Members who were absent that day would have to attend another session on their own, often commuting alone in their personal vehicle. Not only has the establishment of this policy reduced single-occupancy motor vehicle use for work-related trips, it also has eliminated the use of emergency vehicles going out-of-service to attend these trainings.

Pool Cars & Shared Fire Prevention Vehicles:

The Fire Department maintains a few unassigned pool cars which may be utilized by personnel at SFFD Headquarters in addition to the vehicles assigned to the Bureau of Fire Prevention for conducting fire inspection duties. Employees are encouraged to carpool to meetings or required training sessions using pool cars, thereby reducing the number of overall trips. Having pool cars available to employees is also a supportive measure, encouraging employees to use alternative transportation options when commuting to work.

Most Bureau of Fire Prevention vehicles have 2 or 3 inspectors assigned to them in order to coordinate shared use. These vehicles are additionally designated as emergency response vehicles, specially equipped to respond during major disasters or other critical emergencies.

The Fire Department's policies on pool cars and shared Fire Prevention vehicles are well established and continue to successfully support the intended function.

Bicycle Fleet:

The Fire Department has received 5 grant-funded bicycles to be used as an alternative means of transportation, and to promote employee health & wellness. Two of the bicycles are pool bikes at SFFD Headquarters, used similarly to the pool cars. Two bikes are assigned to the SFFD Bureau of Equipment (2501 25th Street), and one is at the SFFD Division of Training (2310 Folsom). Use of bicycles is practical for limited and specific purposes, 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 designated for use as San Francisco CityCycle bicycles.

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

Fleet Reduction

The majority of the Fire Department's fleet consists of heavy duty and/or emergency response vehicles, which are exempt from the HACTO fleet reduction requirements. Management of the emergency response vehicles has been described in the previous section regarding the SFFD Vehicle Replacement Program.

The Fire Department manages several passenger vehicles that are not used for emergency response. Based on the fleet inventory as of June 30, 2010, the Fire Department had 31 vehicles that were subject to HACTO. To meet the 5% per year reduction requirement, the Fire Department needs to remove a total of 6 vehicles from the fleet. Two vehicles were removed in FY10/11, and two were removed in FY11/12. The Fire Department is planning to remove two more in FY12/13, before the 2015 fleet reduction due date.

A summary of the Fire Department's HACTO vehicles as of January 2013 is as follows:

VEHICLE TYPE	FUEL TYPE	COUNT	> 12 YEARS (older than 2001)	PERCENT > 12 YEARS
Passenger Car	Gasoline	17	3	18%
Passenger Car	Hybrid/Gas	7	0	
Passenger Car	CNG	3	3	100%
	TOTAL	27	6	22%

Further reductions in the HACTO fleet will include removal of two of the older vehicles, and replacement of four, preferably with zero or low emission vehicles.

Electric Vehicles

About 10 years ago, the Fire Department was assigned a few electric carts, from the SF Department to Building Inspection, to be used during special events. These electric carts, similar to golf carts, were neither effective nor practical for Fire Department Operations. The carts have since been reassigned.

The Fire Department is still interested in participating in an Electric Vehicle Program which would be more applicable to the administrative component of Fire Department Operations. Electric Vehicles may be designated for use at SFFD Headquarters for conducting inspections or other administrative duties. If an Electric Vehicle Program existed within the Department, a possible location of a charging location would be to retrofit and install one in the basement garage at SFFD Headquarters. Electric Vehicles may be an option to replace some of the Fire Department's older model gasoline passenger vehicles.

3c2. Transportation Survey

In order to better understand how the City can make sustainable transportation more accessible, the SF Environment CommuteSmart Team first needed to understand how City employees are moving around, why they're making the transportation choices they're making, and how the City can provide sustainable transportation options that employees will realistically choose. The following information was gathered through the 2012 CCSF Transportation Survey that was administered by SF Environment through the outreach of Climate Liaisons.

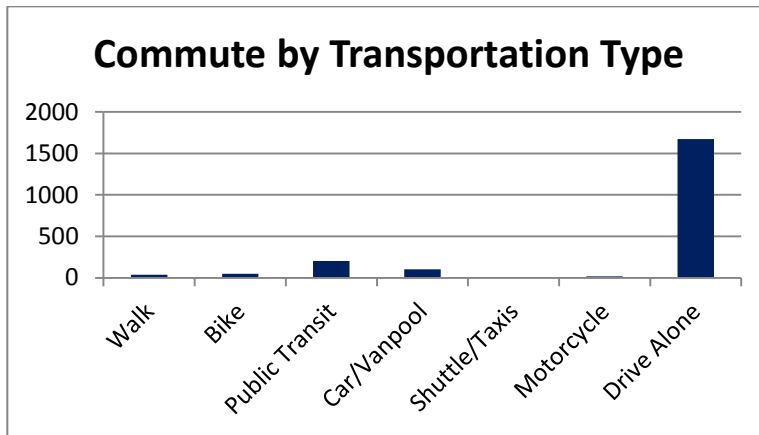
The Fire Department participated in the CCSF Transportation Survey, conducted over a 20-day period, from December 28, 2012 through January 13, 2013. To complete the Survey, employees needed to have access to the internet. Since not all employees are provided internet access while at work, the Survey was additionally recreated by Fire Department IT staff and made accessible via the Fire Department's internal computer network. A memo from the SFFD Headquarters Chief's Office was distributed department-wide, with several reminder notices distributed.

The combined results of the Surveys are as follows:

Total Number of Employees	Total Number of Survey Participants	Survey Participation
1248	218	17.5%

Observations

The majority of respondents (80%) commute to/from work by driving alone.



The main reasons chosen by the respondents for driving alone were many. The most common responses, in order of frequency, are:

- Driving alone is more convenient, flexible, and/or less stressful.
- Public transit does not match my route/schedule.
- I need to make stops to and/or from work (e.g. errands, pick up/drop off)
- It's difficult to find people to carpool/vanpool with.
- I use my vehicle for work.

The most common incentives to discourage driving alone chosen by respondents, in order of frequency, are:

- More comfortable, convenient, or reliable transit options.
- Nothing would discourage me from driving alone.
- Having an alternate work schedule, or being able to work from home.

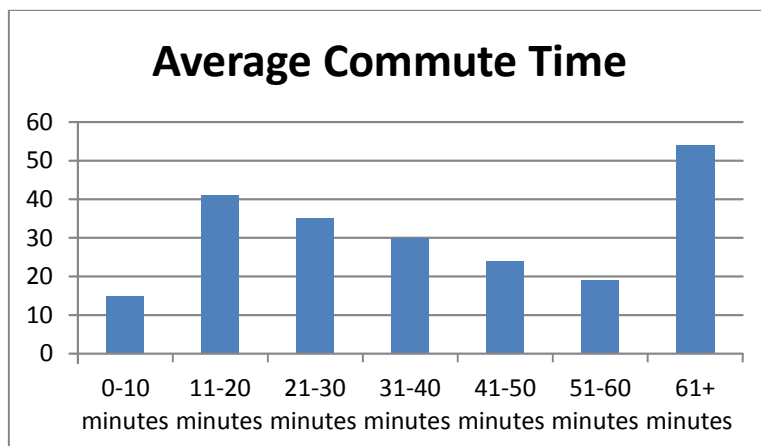
Only 7.5% of the survey participants are enrolled in the pre-tax commuter benefits program. The main reason for those not being enrolled is that the majority do not use public transit, carpool or vanpool.

For trips made while at work, the main forms of transportation used, in order of frequency, are:

- Motorized vehicle
- Walk
- Public Transit

Based on the responses, motorized vehicles were predominantly used for longer distance trips, and therefore accumulated the most estimated mileage. Motorized vehicle trips were evenly split between Department-owned vehicles and personal vehicles.

Only 1 respondent used a CityCycle bicycle.



In the graphs above, commute time trends demonstrate many employees with commute times greater than 60 minutes. It would be interesting to further examine average commute time trends by transportation type, and/or distance from worksite (miles) by transportation type. A one hour commute using public transportation may only get someone 1/10th of the distance compared to someone driving a motorized vehicle. There can also be a big difference in commuter options depending upon where someone lives, rather than comparing how long it takes them to get to work. In order to address practical outreach strategies, it may be additionally helpful for the Fire Department to know how many employees are choosing to drive alone because they live a great distance away, in places without reasonable access to commuter options.

4. 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
- Energy-Efficiency Upgrades and Best Practices
- SF Urban Forest Program

Methods for reducing the Fire Department's overall carbon footprint include recycling, composting, and repurposing, purchasing green products, and establishing best practices for the conservation of energy and water, and encouraging alternative forms of transportation for employees.

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.

4a. Zero Waste

Zero Waste goals can be accomplished by effectively diverting trash from the landfill to recycling/composting programs, reducing the amount of waste produced by using less, and by purchasing items that, after being used, may be recycled, composted, or repurposed. Today, San Francisco recovers 80% of the materials it discards, bringing the City ever closer to our goal of zero waste by 2020. Unfortunately, we still send 429,000 tons of material each year to the landfill.

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

Trash Diversion Rate

The Fire Department's trash diversion rate for FY11/12 remained at 80%. With periodic reminders and refresher trainings, SFFD's diversion rate could be increased, since materials that are either recyclable or compostable still find their way into the trash.

Waste Assessment Questionnaire

The senior Captain at each Fire Station, or the Captain's designee, serves as the Zero Waste Coordinator for that facility. The Zero Waste Coordinators completed a Waste Assessment Questionnaire, evaluating their involvement in current waste prevention programs. They were requested to name the item most found in the landfill bins that did not belong there and to propose a way to eliminate that item from the black bin. Additionally, they were requested to commit to one item to promote waste reduction in this year.

The results from the SFFD Waste Assessment Questionnaires have been compiled into a spreadsheet and are included as **Appendix D**. The table below lists the actions that our Zero Waste Coordinators have committed to that will help Fire Department personnel at each facility properly recycle, compost, and/or reduce waste.

Table of Zero Waste Commitments

FACILITY	COMMITMENT
All SFFD Sites	Refresher training and update recycling & compost bins with signage and proper placement.

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 end up in the red biohazard bins are not necessarily all 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 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.

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 for use in EMT and Paramedic Programs by instructors at San Francisco City College, UCSF Department of Emergency Management, and other local vocational training schools.

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, potential health hazards, and foul-smelling odors.

In FY 11/12 an additional 13 Stations signed up for Greasecycle, bringing SFFD participation to 45%. Fire Stations are occupied 24/7, and all are equipped with kitchens where full meals are prepared several times a day. Clogs and backups caused by grease are a common problem. The Fire Department will continue to promote and expand the GreaseCycle program, helping to decrease costs associated with plumbing repairs and maintenance.

ePayroll

As of August 2011, all City employees were able to enroll in ePayroll, a service for City employees to view their pay stub information online and eliminate paper paystubs, saving paper, printing and distribution costs. In April 2012, two trainings were held at SFFD's Headquarters to promote the use of ePayroll. The Department also sent out online ePayroll training to all personnel encouraging the ePayroll program. As of December 2011, 15% of SFFD members were enrolled in ePayroll.

The calculation of pay for the majority of Fire Department employees is rather complicated, and ePayroll has yet to fully address all issues concerning proper pay calculations. For this reason, most employees prefer to receive the hard-copy pay stub. Once these issues are resolved, the Department may again encourage more personnel to sign up for ePayroll.

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. So far in FY11/12, approximately 25 regular reports have been transferred online, with the daily and monthly reports being recorded, reviewed and approved electronically.

The Fire Department’s goal is to complete the deployment of an online program that allows Fire Station Officers to submit facility maintenance and repair requests electronically. Currently requests for services are faxed to many of our vendors. The program being deployed will automatically generate electronic notifications for service calls to vendors, saving time, money and resources.

4b. Green Purchasing

San Francisco Environment Code Chapter 2 requires all City departments to buy green products listed on SF Approved at <http://www.sfapproved.org>

The Fire Department's Green Purchaser has reminded all staff involved with purchasing about the City's green purchasing requirements, through reminder email messages, and by revising all requisition forms to include the following message:

"City staff must purchase only approved green, less-toxic products to comply with City ordinances (Env. Code, Chapt. 2). Visit SFApproved.org/citystaff for products tested by City staff in City term contracts."

Additionally, the Green Purchaser has ordered 'Buy Green Pledges' at <http://bit.ly/buy-green-recycle> and will be posting them in staff workspaces and in other strategic locations (e.g., lunchroom) to remind staff of the green purchasing requirements.

A few Fire Department members have rated green products on SFApproved.org. The products that were rated, however, were not any of the products that SF Environment requested be reviewed and rated. This is mainly because the Department has not received any assurance from the SF Environment that these products will meet the Fire Department's performance standards. The Department is not willing to take any chances with these new products without thorough testing for reliability, compatibility and efficacy. The green products requested for review and rating include: cleaning products; automotive products (brake cleaners, parts washers, refillable can sprayers, shop towel laundering service); hand dryers; lubricants/oils (building/vehicle repair), and; moving services/ boxes.

In Calendar Year 2011, the Fire Department had the following purchasing record:

Percent of Green Products purchased:

ITEM TYPE	PERCENT	NOTES
Batteries:	N/A	All small batteries (AAA, AA, A, C, D) were purchased from the approved contract vendor
Cleaners:	N/A	No data from vendors
Computers/servers:	N/A	100% EPEAT Gold
Light bulbs:	8%	757 incorrect T8 tubes and a much smaller quantity of various limited use fluorescent tubes and CFLs

Green Product Research

In FY12/13 the Fire Department will continue exploring the use of green cleaning products. As part of workers safety legislation, OSHA requires that work surfaces be cleaned with an appropriate disinfectant as determined by the EPA (U.S. Environmental Protection Agency), which oversees the registration of anti-microbial products. Appropriate disinfectants are EPA-registered antimicrobial products that are effective against viruses, bacteria, fungi and associated communicable diseases. To

be approved for use by SFFD, the green cleaning product must meet the required disinfectant standards and not be cost prohibitive.

The Fire Department currently uses a bleach dilution and a quaternary ammonium chloride compound product as the primary disinfectants. Any new green cleaning product that the Department purchases must be proven to be effective against infectious diseases, such as MRSA, HIV, Hepatitis B/C and Tuberculosis, and be as effective as, if not more effective than, bleach. Not using an appropriate or approved disinfectant would increase the potential of exposures to infectious materials for both SFFD personnel, and our patients. If a new green disinfectant product is ultimately chosen, it must be proven effective by industry standards and incorporated into the Fire Department's Infection Control Policy as a Department-approved product.

4c. 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:

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

5. 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 greenhouse gas emissions, but those from the community-at-large as well.

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:

- o Neighborhood Emergency Response Team (NERT) Training, which teaches personal preparedness for emergencies and natural disasters.
- o SF Firefighters in Safety Education (SFFISE), which provides fire safety and outreach to children in SF schools.
- o School Visits, where Engine and Truck Companies visit SF elementary schools.
- o Fire Station Visits, where school and youth groups tour Fire Stations.
- o 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:

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

Promote the Use of Cleaner Fuel & Lower Emissions Vehicles

To raise awareness and demonstrate to the community its commitment to the use of cleaner fuels, the Fire Department intends to attach labels to B-20 biodiesel and CNG vehicles that will be clearly visible from the street. This would currently include all Ambulances and all CNG passenger vehicles.

Other City Departments also have vehicles using cleaner fuels. SFFD would like to suggest that rather than having each individual City department develop their own green-vehicle labeling system, a City-wide labeling system be implemented for use on all City vehicles using cleaner fuels. This would demonstrate the City's unified commitment to emissions reductions.

Raise Awareness of Green Building Features at Renovated Fire Stations

The Fire Stations that have been undergoing seismic and comprehensive remodels as part of the ESER Bond will be LEED-certified. LEED-certified buildings are designed to lower operating costs and increase asset value, reduce waste sent to landfills, conserve energy and water, be healthier and safer for occupants, reduce harmful greenhouse gas emissions, and provide other environmental benefits.

Upon completion of the remodels, the Fire Department suggests the building designer/contractor place plaques on the LEED-certified buildings informing the public of the green building features incorporated into the building's design, and related information be posted on the SFFD website. This would help inform the public of the measures the City is taking towards creating more sustainable infrastructure and raising awareness of the technology that is considered green.

An example of a feature that could be highlighted is the creation of bioswales. Bioswales are storm water runoff conveyance systems that provide an alternative to storm sewers, and can be enhanced with native plants. Whereas the Fire Department is responsible for the care and maintenance of its facilities, including the property surrounding the facility, the importance of creating a bioswale area could be established. In addition, the inclusion of climate-appropriate species within the bioswale area as part of water conservation Best Practices could also be highlighted.

Design, construction and placement of the plaques will need to be coordinated with the SF Department of Public Works, who will be overseeing the ESER Bond remodel projects, and the SFFD Division of Support Services.

Respond to Environmental Hazard

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, critical host plant to the Mission Blue. Preserving the Silver Lupine habitat is key 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 identify the City departments and community organizations involved.

Assist in Habitat & Historic Trail Stewardship with Non-Profit: Sutro Stewards

The Fire Department recognizes the value in preserving our City's natural 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. 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. The Sutro Stewards has been working with the Fire Department and other agencies to improve the neglected portions of the trail, with the goal of conserving open space, promoting recreation and building community.

The area of the trail that traverses Fire Department property is heavily overgrown with poison oak and brambles. Before restoration work begins, the Fire Department and the City want to assure the safety of volunteers doing restoration work, and the safety of visitors using the trail and traversing the property. The Fire Department is dedicated to finding a solution to these issues and supporting the work of the Sutro Stewards to restore the historic Mount Sutro trail.

Promote Urban Agriculture

Growing food locally by establishing urban gardens reduces the greenhouse gases caused by transporting food from remote agricultural locations.

As part of the 2009 Healthy and Sustainable Food for San Francisco Directive, the Fire Department participated in a land audit to identify potential City-owned properties that could be used to grow food. Several plots have been identified, including under-managed areas, which could be better served by becoming community gardens rather than becoming potential sites of urban blight. The Fire Department, with the assistance of SF Environment, is exploring solutions for the management of these areas as urban gardens, in a manner that is consistent with City policy.

Plan for Resilience and Sustainability

The Fire Department supports the City-wide development of 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 infrastructure 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 from the top.

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 with energy-efficient landscaping, for example, to 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 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, including 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 infrastructure 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.

An example of a City-wide sustainability goal that may be achieved is reducing the 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.

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. All that is needed is the continued dedication of our City's leaders to invest in the future, and to improve the City's infrastructure for the collective benefit of all its citizens.

6. Summary and 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
- Install high-efficiency boilers
- Distribute periodic energy conservation best practices reminders
- Encourage facility supervisors to take an active role in energy usage monitoring

Reduce emissions from mobile fuel usage:

- 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
- Explore possibility of obtaining a fleet of electric vehicles
- Encourage and promote use of Bicycle Fleet Program at SFFD Headquarters

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
- Deploy the online program that allows Fire Station officers to submit facility maintenance and repair requests electronically
- Review the contents of medical waste stream 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
- Migrate 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

Continue to promote green building LEED-certified features in all remodels and upgrades to SFFD facilities.

Continue to design for infrastructure sustainability and resilience.

Promote the purchasing of green products by achieving the following goals:

- Approve for Fire Department use green cleaning/disinfectant products that are effective against infectious diseases
- Purchase only green light bulbs
- Use green movers; purchase green moving boxes
- Research less toxic options for antifreeze, brake and automatic transmission fluid
- Train SFFD Accounting Staff to log all purchases in the ADPICS program at the item-level commodity code so that reports accurately reflect our green purchases

Appendices

Appendix A SFFD Energy Efficiency Projects

Appendix B HACTO/Transit-First Report for FY11/12

Appendix C HACTO/Transit-First Plan for FY12/13

Appendix D SFFD Waste Assessment Questionnaires

Energy and Water Efficiency and Conservation Projects

¹ kWh/year, therms/year, steam lbs/year

² PUC will review new construction projects on case-by-case basis to provide additional funding for efficiency improvements that do not qualify for bond funding, such as solar panels.

Type of Project	Facility Name (FS=fire station)	Address	Ownership Status	Project Description	Estimated Savings ¹	Participation of Other Departments	Project Status					Challenges & Successes
							Audit Complete	Funding Secured	Design Started	Constr. Started	Constr. Completed & Calendar Year	
New Construction Major Remodel (All systems)	FS 1	957 Folsom	SFFD	Privately funded - new fire station	20% overall	MOMA/PUC	Y	Y	Y	Y	Y - 2013	LEED Gold. Full description in section 3a3 of CAP.
	PSB / FS 4	1300-4th Street	DRE	ESER Bond - new construction	20% overall	DPW	Y	Y	y	Y	N	Incorporating energy efficient design within limited budget.
	FS 5	1301 Turk St	SFFD	ESER Bond - new construction	20% overall	DPW / PUC ²	Y	Y	Y	N	N	Incorporating energy efficient design within limited budget.
	FS 16	2251 Greenwich St	SFFD	ESER Bond - new construction	20% overall	DPW / PUC ²	Y	Y	Y	N	N	Incorporating energy efficient design within limited budget.
	FS 35	Pier 22 1/2	SFFD/PORT	new construction	20% overall	DPW / PUC ²	Y	Y	Y	N	N	Incorporating energy efficient design within limited budget.
	BOE- 25th St	2501-25th St	SFFD	new construction	20% overall	DPW / PUC ²	Y	N	N	N	N	Incorporating energy efficient design within limited budget.
	EMS & ELC	1415 Evans St	SFFD	new construction	20% overall	DPW / PUC2	Y	N	N	N	N	Incorporating energy efficient design within limited budget.
Roofs	FS 2, 6, 10, 13, 28, 38, 41 & 42	various locations	SFFD	ESER bond - white roof - new or repair	7% therms	DPW	Y	Y	Y	Y	Y - 2012	We wanted to install solar panels, but did not have the funding.
	FS 15, 17, 18, 26, 31, 32 & 40	various locations	SFFD	ESER bond - white roof - new or repair	7% therms	DPW	Y	Y	y	N	N	Are meeting with PUC to see if solar will be a possibility for the rest of these projects.
Boilers/HVAC	FS 40	2155-18th Ave	SFFD	new boiler	20%	PUC	Y	Y	Y	Y	Y - 2011	Significant drop in natural gas usage. Definitely a successful test case.
	FS 28, 31, 36	various locations	SFFD	hvac repairs	5%	DPW	y	Y	n/a	N	N	Currently portable heaters used because hvac does not work.
Generators	FS 6, 17 & 15	various locations	SFFD	generator replacement	10% kWh	DPW	Y	Y	Y	N	N	New generators significantly more efficient than existing ones which are 20 years old and will meet new EPA & BAAQMD requirements for emissions.
Lighting Upgrades	FS 1, 3, 5, 6, 7, 9, 11, 12, 13, 21, 44, 33, 40, 32, 42, 38, 28, 35, 17, 43, 49 & DOT Chief's Res.	various locations various locations	SFFD	lighting upgrades	8-20%	PUC	Y	Y	Y	Y	Y - 2010	Significant drop in energy use ranging from 8-20% at most locations with lighting upgrades.
Windows	FS 7	2300 Folsom St	SFFD	window replacement	8% therms	PUC	Y	Y	n/a	Y	Y - 2011	
	FS 34	499-41st Ave	SFFD	window replacement on south façade	min	PUC	Y	Y	n/a	Y	Y - 2012	
	FS 23	1348-45th Ave	SFFD	window replacement on west frontage	min	PUC	Y	Y	n/a	Y	Y - 2012	
	FS 28	1814 Stockton St	SFFD	various window replacement	min	PUC	Y	Y	n/a	Y	Y - 2012	
	FS 28, 38, 41 & 42	various locations	SFFD	reseal windows & replace hardware	min	DPW	Y	Y	n/a	Y	N	Currently windows at these locations do not close and leak air. Though min savings is expected, it will be interesting to see actual results.
Water Upgrades	FS 16	2251 Greenwich St	SFFD	Install low flow toilets	38,000 gal/yr	PUC/DPW	Y	Y	n/a	Y	Y - 2012	done to install low flow toilets.
	All SFFD Facilities	various locations	SFFD	Replace all lavatory faucet aerators with 0.5 gallons/min (gpm) aerators	557,400 gal/yr	PUC/DPW	Y	N	N	N	N	PUC has applied for grant for partial funding. If received, SFFD will match and improvements will be completed in full.
	All SFFD Facilities	various locations	SFFD	Replace all showerheads with 1.5 gpm showerheads.	1,893,000 gal/yr	PUC/DPW	Y	N	N	N	N	PUC has applied for grant for partial funding. If received, SFFD will match and improvements will be completed in full.
	All SFFD Facilities	various locations	SFFD	Replace all 1.0 & 2.0 per flush (gpf) urinals w/high efficiency urinals.	847,900 gal/yr	PUC/DPW	Y	N	N	N	N	PUC has applied for grant for partial funding. If received, SFFD will match and improvements will be completed in full.
	All SFFD Facilities	various locations	SFFD	Replace all 3.5 gpf toilets w/1.28 high efficiency toilets.	732,200 gal/yr	PUC/DPW	Y	N	N	N	N	PUC has applied for grant for partial funding. If received, SFFD will match and improvements will be completed in full.

Elcott, Liore

From: Wufoo [no-reply@wufoo.com]
Sent: Friday, November 02, 2012 3:27 PM
To: Elcott, Liore
Subject: HACTO Annual Implementation Report FY:'11-'12 [#37]

Department FIRE

*

Name of Rhab Boughn

Person

Preparing

Report *

Title of Compliance Officer, Climate Team Liaison

Person

Preparing

Report *

Email of rhab.boughn@sfgov.org

Person

Preparing

Report

*

Name of Chief Joanne Hayes-White

Department

Head *

Email of secretary.firechief@sfgov.org

Department

Head *

Referring back to the HACTO or DepCAP plan submitted for FY 2011-12, please include your Transit-First Plan and policies below: *

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.

The majority of Fire Department 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.

Employees assigned to Ambulances work 4, 10 and 12 hour shifts and report for duty at the Ambulance Station. 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.

Fire Department employees who work a regular business hour schedule are fewer by comparison. The majority of these employees are administrative staff and Fire Inspectors working at SFFD Headquarters. It is with these employees that the Fire Department has the most opportunity to promote transportation options and will be focusing its efforts.

SAN FRANCISCO COMMUTER PROGRAMS:

The Fire Department's Transit-First Plan encourages the use of alternative methods of transportation by its members whenever possible. This includes promotion of the following City programs:

Commuter Benefits Program

City Hall Bike Room

City Bicycle Fleet

Rideshare Matching Assistance

Emergency Ride Home Program

The Fire Department regularly forwards all e-mails received from SF Environment's Clean Air and Transportation Program throughout the Department. It is ensured that all e-mails additionally include general Commuter Programs information and any related attachments. Although the Fire Department acknowledges that most Commuter Programs options do not meet the transportation needs of the majority of our employees, Commuter Programs notices are distributed to all.

WORK-RELATED TRIPS PROGRAMS:

Excluding the use of vehicles for emergency response, the types of work-related trips required by Fire Department employees include trips for in-service training classes, official meetings, and for conducting official business related to fire

prevention activities.

On-Line Training:

To reduce the number of trips taken to attend in-service training classes, and to reduce the number of emergency response vehicles taken out-of-service, the Fire Department has instituted on-line training. Utilizing the Fire Department's existing internal computer network system, training classes are posted on-line for use by Fire Department personnel at their Fire Station or computer workstation. Conducting live drills and providing hands-on training is still critical for emergency response skill development and retention. However, there are certain cases where providing training on-line is appropriate. On-line training shall continue to be developed and expanded whenever practical.

Pool Cars & Shared Fire Prevention Vehicles:

The Fire Department currently maintains 5 pool cars which may be utilized by personnel at SFFD Headquarters. Employees will often use pool cars to carpool to meetings, thereby reducing the number of overall trips. At least 2 pool cars per day are checked out for use. Having pool cars available is also a supportive measure for encouraging employees to use alternative transportation options for commuting to work.

Fire Inspectors use vehicles assigned to the Bureau of Fire Prevention to conduct their fire inspection duties. Most Bureau of Fire Prevention vehicles have 2 or 3 inspectors assigned to them in order to coordinate shared use. These vehicles are additionally designated as emergency response vehicles, specially equipped to respond during major disasters or other critical emergencies.

Bicycle Fleet:

The Fire Department has received 5 grant funded bicycles to be used as an alternative means of transportation, and to promote employee health & wellness. Two of the bikes are pool bikes at SFFD Headquarters, and are used similarly to the pool cars. Two bikes are assigned to the SFFD Bureau of Equipment (2501 25th Street), and one is at the SFFD Division of Training (2310 Folsom).

To promote the use of the bicycle fleet, SFFD Headquarters has developed a bike check-out system that includes the issue of a helmet, reflective vest, bike lock, and map of bike routes. Employees checking out the bike are responsible for reading the bicycle manual, inspecting the bike for safety and cleanliness, and must wear the proper safety attire.

Below, please report on the success of the abovementioned policies in reducing single-occupancy motor vehicle use for work-related trips: *

The Fire Department's policies for providing on-line training have most likely had the greatest effect on reducing work-related trips. The main focus has been converting the monthly EMS-based courses and testing from the classroom to the computer screen. Since all suppression members must maintain an EMT or Paramedic license, and CEU's are awarded for

the completion of these courses, attendance is crucial. Previously, each Fire Company would have to travel to the Training Facility on Treasure Island to attend EMS–trainings. Members who were absent that day would have to attend another session on their own, often commuting alone in their personal vehicle. Not only has the establishment of this policy reduced single–occupancy motor vehicle use for work–related trips, it also has eliminated the use of emergency vehicles going out–of–service to attend these trainings. Trips for monthly EMS In–Service Training has been reduced to zero.

The Fire Department’s policies on pool cars and shared Fire Prevention vehicles were established several years ago and continue to work well supporting the intended function.

The policies regarding the bicycle fleet are limited, although those that exist are well developed. By providing the necessary safety equipment, the bike check out system makes it much easier for employees who commute to work by other means to use the bicycle fleet for work–related trips.

Does your department manage any of its own vehicles? * Yes

As reported 60 in your 2011 HACTO report, how many vehicles were subject to HACTO? *

As reported 3 in your 2011 HACTO report, how many

vehicles
were
planned to
be removed
from
service? *

As of June 4
30, 2012,
how many
vehicles
have
actually
been
removed
from
service? *

Please
attach a
copy of the
Vehicle
Turn-In
Request of
each vehicle

taken out of
service. If
there is
more than
one –
please scan
all reports
as one
document.



Right-click here to download pictures. To help protect your privacy, Outlook prevented automatic download of this picture from the Internet.

[sffd_hacto_implementation_report_vehicles_removed_from_fleet_as_of_06.30.12.pdf](#) 5.70 KB · PDF

Based on The number of vehicles actually removed from the fleet exceeded the planned number
the above
information,

which is true? *

Please provide an explanation of the difference. *

It was decided that 1 additional vehicle that was previously turned in for replacement was to be removed from the fleet instead.

* Please Note: Vehicle Turn-In Request Forms were not available at the time of this submittal. A table identifying the vehicles has been provided in the interim. Please refer to attached file.

Each department is required to reduce 5% of their light-duty truck and passenger vehicle fleet. Based on the above data, was your department in compliance? *

Yes

Please explain why your department was not able to comply. *

N/A

Did your department purchase

No

new
vehicles
that were
justified by
an increase
in
workload? *

Department *	San Francisco Fire Department
Name of Person Preparing Report *	Rhab Boughn
Title of Person Preparing Report *	Compliance Officer; Climate Team Liaison
Email of Person Preparing Report *	rhab.boughn@sfgov.org
Name of Department Head *	Chief Joanne Hayes-White
Does your department promote or plan to promote employees to use public transit for work-related travel? *	Yes
What resources will your department offer? *	<ul style="list-style-type: none"> Other
Other: *	none at this time
What forms of communications will you use to promote employees to use TRANSIT for work-related travel? *	<ul style="list-style-type: none"> E-mail Blast Poster / Flyers
Other: *	
If applicable, please use this space to describe in greater detail your department's PUBLIC TRANSIT program for work-related travel:	Fire Department members may use public transit for work-related trips when practical – this shall be 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.
Does your department offer or plan to offer employees access to a bicycle for work-related travels? *	Yes
Is it / will it be a CityCycle bike? *	No
How many bicycles will be available? *	5
Would your department like to make a request for more bikes? *	No
What forms of communications will you use to promote employees to use BICYCLES for work-related trips? *	<ul style="list-style-type: none"> E-mail Blast Posters / Flyers

Other: *

If applicable, please use this space to describe in greater detail your department's BICYCLE program for work-related travels:

The Fire Department has 5 bicycles at 3 different locations: 2 at SFFD Headquarters; 2 at the Bureau of Equipment; 1 at the Division of Training. Use of bicycles is practical for limited and specific purposes, 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 CityCycle.

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

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

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

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

In the 2012-13 HACTO Report, you will have to provide metrics for these programs. How will you track the implementation of these programs? *

If applicable, 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. 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. The Department also has a few large rooms at SFFD Headquarters that are useful for meetings and 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 may be shared or 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 Department also 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 additionally serve as relief vehicles when other emergency/administrative staff vehicles are out-of-service or being repaired at Central Shops.

The Department's current tracking systems, by transportation type, include:

- Public Transit – Commuter Benefits program enrollment (tracked through SFE)
- Bicycle Fleet – sign-out sheet (HQ only)
- Vehicle Pool/Car-Sharing – sign-out sheet (HQ only)
- Conference Rooms at HQ – (sign-out sheet to reserve room)

A. 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: *

What forms of communications will you use to promote employees to use TRANSIT when commuting to/from work? *

- E-mail Blast
- Posters / Flyers

Other: *

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

Yes

How will you promote bike-commuting? *

- Provide indoor/safe bike storage
- Offer on-site showers and/or lockers

Other: *

What forms of communications will you use to promote employees to BICYCLE when commuting to/from work? *

- E-mail Blast
- Posters / Flyers

Other: *

C. Does your department promote or plan to promote the use of carpooling for commuting to/from work? * Yes

How will you promote Carpool and/or Vanpool? *

- Encourage registration in the 511-matching program

Other: *

What forms of communications will you use to promote employees to CARPOOL or VANPOOL when commuting to/from work? *

- E-mail Blast
- Posters / Flyers

Other: *

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

If applicable, please use this space to describe in greater detail all of your department's Transit-First programs related to 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 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.

Employees assigned to Ambulances 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.

Fire Department employees who work a regular business hour schedule are fewer by comparison. The majority of these employees are administrative staff and Fire Inspectors working at SFFD Headquarters. It is with these employees that the Fire Department has the most opportunity to promote transportation options and will be focusing its efforts.

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
-

Bonus: How will you promote the Great Race for Clean Air?

- E-mail blast
- Posters/Flyers

Other: *

Does your department manage any of its own vehicles? * Yes

Measurement for fleet reduction will be based on fleet inventory as of June 30, 2010. On June 30, 2010 how many vehicles from your department's fleet were subject to HACTO? This number is your "Baseline." *

31

Your 5% fleet reduction is calculated from the Baseline fleet size you supplied in the answer above. What is 5% of the Baseline fleet?
Note: this is the average number that must be removed annually through July 1, 2015. *

1.5

How many vehicles did your department remove from service during FY 11-12 (July 1, 2011-June 30, 2012)? *

2

In FY12-13 (July 1, 2012-June 30, 2013), how many vehicles must be removed from service to be compliant with HACTO's reduction mandate? *

2

How many vehicles is your department planning to remove from service in FY12-13 (July 1, 2012-June 30, 2013)? *

2

The number of vehicles your department plans to remove is: *

Equal to the number needed to be compliant.

If your department feels it cannot comply with the fleet reduction requirement, you will be able to apply for a waiver (HACTO Section 403(c) details waiver qualifications). To apply, a waiver request must be sent from your department director to the director of SF Environment. As part of the justification, this request must include a description of your Transit First programs for reducing reliance on department vehicles, and an explanation of why these programs are not sufficient to enable your fleet to be reduced as required by the Ordinance. Additional information about the process for submission and

evaluation of waiver requests, and about alternative steps for reducing Greenhouse Gas emissions that may be required, will be available after the first of the New Year.* *

The CommuteSmart Team and Clean Vehicle staff have a wide assortment of resources available to you. Please check all of the resources that you would like and we will do our best to accommodate: *

- CommuteSmart brochures specific to CCSF employees
- Pre-Tax Commuter Benefits flyers & guides

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SFFD WASTE ASSESSMENT QUESTIONNAIRE 2013

Facility Name	Facility Address	Station Manager Name and Rank	Recycling Liaison	Attended Zero Waste Coordinator Workshop	If yes, How many have they attended?	Recycling & Compost Compliance	What Steps Does Dept take to implement Reduce & Reuse	Use Virtual Warehouse to acquire items?	Use Virtual Warehouse to turn in items?	Promoting Paperless Paystubs?	One action to commit to for promoting Waste Reduction:	#1 item in trash that can be recycled or composted.	How will commit to eliminating that item from trash this year?
FS01	676 HOWARD ST	Cpt. Jim Kircher Cpt. Nicol Juratovac		N	0		FS 1 members are trying to reduce use of paper products & reuse paper for other purposes - like scratch paper.	Y	Y	Y	have everyone utilize paperless pay stubs. However currently, it's not user friendly, so the paper version will be preferred.	none	n/a
FS02	1340 POWELL ST	Lt. John Rocco		N	0	Y		N	N	N	Recycle all water bottles.	greasy paper bags	mention to all members
FS03	1067 POST ST	Cpt. Ken Cordero		N	0	Y	separate containers for recycling, compost & trash	N	N	Y	We will forward info about what's currently recyclable & compostable.	random items end up in wrong bin none more prevalent than any other	educating employees on what goes where.
FS05	1301 TURK ST	Lt. Brent Stuckert		N	0	Y	recycling dispatch slips	Y	Y	Y	separation of bathroom garbage: use washable dish towels rather than paper towels	used aluminum foil	place list above each receptacle describing what items go to each bin
FS06	135 SANCHEZ ST	Cpt. Joe Driscoll		N	0	Y		Y	Y	Y	not answered	used aluminum foil	place list above each receptacle describing what items go to each bin
FS07	2300 FOLSOM ST	John Del Bino		N	0	Y	recycle batteries	Y	N	Y	metal cans	metal cans	education: being vigilant to what's in the bins
FS08	36 BLUXOME ST	Cpt. Scott Darmstadt		N	0	Y	recycles all reusable waste; compost when available & try to reduce waste by reusing & limiting resources all garbage cans are clearly marked & members are educated in procedures	Y	N	Y	by encouraging recycling at home, we will help reduce waste & help the environment	paper towels	members were instructed to put paper towels into blue bin (ah!!!)
FS09	2245 JERROLD AVE	Johnathon Lo		N	0	Y		Y	Y	N	promote paperless paystubs	paper towels & food	remind members to comply with policies
FS10	655 PRESIDIO AVE	Glen Kojimoto	Todd Prakin	N	0	Y	educate members to conserve with use of supplies and items because of limited resources. A conscious effort is made by many members of the house to enforce proper disposal of recyclable & compost items.	N	N	Y	not answered	packaging which does not look recyclable	educating members on how to identify not-so-obvious recyclable items
FS11	3880 26TH ST	James O'Connell		N	0	Y	most reports are paperless & we've increased recycling & composting	Y	Y	Y	make sure day watch person limits # of reports & projections printed to avoid repetition	soiled hand towels	educate crews and make sure compost bins are clearly available in bathroom locations
FS12	1145 STANWAN ST	Cpt. Paul Crawford Cpt. Sam Romero		N	0	Y	re-use for purpose all containers & purchased reusable bags for groceries	N	N	Y	reuse grocery bags	occasionally we'll have paper in the black bin	review recycling policy w/all members & id items that are recyclable & compostable
FS13	550 SANSOME ST	Lt. Matthew Lee		N	0	Y		Y	Y	Y	not answered	used aluminium foil	place list above each receptacle describing what items go to each bin
FS14	551 26TH AVE	Ed Campbell Lt. Jiro Yamamoto		N	0	Y	we require paper & newspaper recycling; greasecycle. We exhort people to sort their discards into eh appropriate bin.	Y	Y	Y	Have an educational moment to edify members as to appropriate bin for odd & unusual items: especially film plastic, aluminum foil & milk cartons. Encourage people not to buy canned drinks, but to get a co2 seltzer water dispenser.	paer towels	place composting bins in each bathroom & educate crews on importance of waste reduction
FS15	1000 OCEAN AVE	Jeff Columbini		N	0	Y	constant monitoring & education	Y	Y	Y	constant awareness of importance of waste reduction at our station	bottles	better education of members
FS16	2251 GREENWICH ST	Cpt. Britton Smith Cpt. Darryl Hunter		N	0	Y	review procedures monthly	N	N	N	Paper items	paper	review procedures monthly with employees
FS17	1295 SHAFTER AVE	Pierre Francois		N	0	Y		Y	N	Y	not answered	foil	place in recycle
FS18	1935 32ND AVE	Cpt. Mike Maloney		N	0	Y	reusing paper for notes	N	N	N	reuse paper	plastic	try to use less non-recyclable products
FS19	390 BUCKINGHAM WAY	Kerby Lau	Lt. Patricia Lui	N	0	Y	use reusable water bottles; turn lights off and keep windows closed to keep heat in	N	N	Y	reduce amount of food wasted at fire station consider increasing recycling during Triaminals when tons is thrown away - rags, furniture, clothing, bedding	paper towels & plastic containers from bathrooms - toothbrushes, shampoo bottles	order additional green bins to label paper towels only
FS20	285 OLYMPIA WAY	Cpt. Pablo Siguenza Lt. Dwayne Newton		N	0	N	following guidelines	Y	Y	Y		rags	have a separate bin
FS21	1443 GROVE ST	Nikki Griffey		N	0	Y	issuance of green & blue bins	N	N	N	recycling of dispatch papers	none - we're really good about putting things in the correct bin	we'll continue what we're doing
FS22	1290 16TH AVE	Cpt. Erika Hoo Sam Lai		N	0	Y	employee awareness	N	N	N	increase employee awareness	none	n/a
FS23	1348 45TH AVE	Kevin Pardini	Aram Maravillas	N	0	Y	members at 23 are making an effort to sort waste products	Y	Y	Y	members are mindful to not overuse supplies that in turn generate extra waste	paper towels	members have been instructed to take care in sorting waste
FS24	100 HOFFMAN AVE	Chris Madsen		Y	1	Y	following measures taught in zero waste workshop	Y	Y	Y	not answered	used aluminum foil	place list above each receptacle describing what items go to each bin
FS25	3305 3RD ST	Cpt. Tom Kiernan		N	0	Y		Y	Y	Y	not answered	used aluminum foil	place list above each receptacle describing what items go to each bin
FS26	80 DIGBY ST	Cpt. Chase Wilson		N	0	Y	Participating in composting & recycling. Use reusable cloth bags when grocery shopping. Battery & fluorescent tube recycling program.	Y	Y	Y	get members to reuse rags & wash instead of throwing in trash	Paper items that should be recycled.	more education on what to compost and recycle
FS28	1814 STOCKTON ST	Dean Crispen		N	0	Y	signage & training for all members	Y	Y	Y	train members again	paper bags	training & signage
FS29	299 VERMONT ST	Patrick Sullivan Lt. Heather Piper		N	0	Y	proper, color coded containers are placed in various locations of the station for separation of recyclables, compostable & trash.	N	N	Y	Officers can encourage/enforce proper separation of recyclables, compostables & trash.	plastic produce bags	encourage employees to set plastic bags aside to return to grocery store for recycling.
FS31	441 12TH AVE	Rudy Castellanos		N	0	Y	awareness	Y	N				remind members to place used paper
FS32	194 PARK ST	Chase Wilson		N	0	Y	use recycling containers & printing on both sides of paper when possible	Y	N	N	containers	paper towels	towels in the correct container.
FS33	8 CAPITOL AVE	Edward Roland		N	0	Y		Y	Y	Y	not answered	used aluminum foil	place list above each receptacle describing what items go to each bin
FS34	499 41ST AVE	Cpt. Mike Castagnola		N	0	Y	reusable shopping & plastic bags, greasecycle, sort all recyclable & trash produced	Y	Y	Y	all above mentioned items	nothing	place list above each receptacle describing what items go to each bin
FS35	PIER 22 1/2, THE EMBARCADERO	Greg Wyruch Lt. James Draper		Y	0	Y	don't use plastic water bottles; run printer paper thru twice by turning it over	Y	Y	Y	committed to turning off lights & tv's in station when leaving for any reason	food items	we feed it to the seagulls
FS36	109 OAK ST	Cpt. Clyde Cristobal		N	0	Y	not answered	Y	Y	N	paperless paystubs	used aluminum foil & paper bags	place list above each receptacle describing what items go to each bin
FS37	798 WISCONSIN ST	William Storti		N	0	Y	We recycles all reusable waste & compost. & make a concerted effort to use supplies sparingly. rain water gathering, solar panels, roof gardening, using fluorescent bulbs, styrofoam ban	Y	Y	Y	Reuse paper dispatches for notes.	Paper towels	New signs have been posted in restrooms & members instructed in proper paper towel disposal.
FS38	2150 CALIFORNIA ST	Glen Kircher		Y	1	Y		Y	Y	Y	expansion of roof top garden	tree bark, leaves and branches	compost those particular items

FS39	1091 PORTOLA DR	Greg Jones Cpt. Ken Yee		N	0	Y	recycle batteries; using timers for bathroom lights & fans	Y	Y	Y			
FS40	2155 18TH AVE	Lt. Eric Kwan		Y	1	Y		Y	Y	Y	recycle all computer printouts; promote paperless stubs	used paper towels	place list above each receptacle describing what items go to each bin
FS41	1325 LEAVENWORTH ST	Ron Pruyn	FF Kashima	N	0	Y		Y	Y	Y			
FS42	2430 SAN BRUNO AVE	Lt Brie Mathews Rudy Guajardo		N	0	Y	reuse canvas shopping bags; recycle & compost daily	Y	N	Y	committed to turning off lights & tv's in station when leaving for any reason	egg cartons	informing members & keeping an eye on what ends up in black bin
FS43	720 MOSCOW ST	Lt. Michael A Fucciolo		N	0	Y	doesn't know	N	N	Y	printer paper & paper towels will continue to remind people to sort their trash into the appropriate bin	food paper products	be more cognizant of what is being placed in landfill bin. will continue to remind people to place into appropriate bin
FS44	1298 GIRARD ST	Ethan Banford		N	0	Y	breakdown cardboard boxes	N	N	N			
FS48	BLDG 157, AVENUE D, TREASURE ISLAND	Cpt. Michael DeLane Lt. Cathy Austin Jeff Myers		Y	1	Y	reuse printer paper & use recycling & composting bins	Y	Y	N	not answered	not answered	not answered
FS49	1415 EVANS AVE	RC 4 Robert Styles		Y	1	Y	not answered	Y	Y	Y	review recycle bin use with employees	milk cartons	employee training and also
FS 51 FS-BOE	218 Lincoln Blvd - Presidio 2501 25TH ST	Cpt. Shattuck Michael Walsh		Y	1	Y	not answered	Y	Y	Y	review recycle bin use with employees	milk cartons	employee training and also
FS-DOT-Folsom	2310 FOLSOM ST BLDG 600, AVENUE M, TREASURE ISLAND	Jose Velo	Ed Moy	N	0	N	remind all members of recycling program	Y	Y	Y	remind members that program can work they remember how to do it correctly	coffee cups	remind all members with recycling info on website & flyers
FS-DOT-TI	TREASURE ISLAND	Melany Brandon	Fernando DeAlba	N	0	Y	not answered	Y	Y	Y	not answered	soda cans	put up a sign to remind people where to dump soda cans.
FS-HQ.1st FI	698-2ND ST, BFP, 1st FI	Lt. Michie Wong	Tania Fokin	Y	1	Y	Bureau has been advised to use reusable cups & to turn off electronics when leaving work.	Y	N	Y	reuse cups	coffee cups	advocate reusing cups
											ensure green & blue bins in conf rms; distribute more		ensure green bins are near desks or in central area;
FS-HQ.2nd FI	698-2ND ST, BFP, 2nd FI	Rhab Boughn	Tania Fokin	Y	4	Y	print on back of paper whenever possible & appropriate, in addition to dept wide measures going paperless on many forms & reports; using virtual warehouse; going to paperless pay stubs; promoting commuter benefits; creating scratch pads out of paper in blue bins	Y	Y	Y	green bins in central locations; work w/Janitorial staff to ensure they do not change configuration	soiled paper/food wrappers, tissues & after mtgs any and all things end up in black bins	provide education for members; work w/Janitorial staff to ensure green & blue bins remain where placed.
FS-HQ.3rd FI	698-2ND ST, BFP, 3rd FI	Tania Fokin	Tania Fokin	Y	6	Y		Y	Y	Y	provide compost bins at desks and straighten out all bin stations - some are missing signs and bins; coordinate recycling refresher course for field staff	coffee cups	put up signs and conduct refresher class; send reminder emails