

San Francisco Municipal Progress Report

Climate and Sustainability



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco

November 2018

Table of Contents

Background	3
Municipal Operations Carbon Footprint.....	5
Climate Action Through the 0-80-100-Roots Framework.....	11
Zero Waste	11
Sustainable Trips	14
Green Building	17
Roots – Biodiversity & Urban Forestry	20
Green Purchasing and Toxics Reduction.....	23
Ways You Can Help	26
Appendix A: Total Emissions by Department.....	26
Appendix B: Municipal Ordinances	28
Contacts.....	36

Background

San Francisco's municipal departments have been leading the way towards a low carbon economy for over a decade. In 2008, the San Francisco Board of Supervisors passed Ordinance 81-08, Environment Code Chapter 9, mandating that all City departments work to reduce municipal sector greenhouse gases (GHG). Since then, City departments have implemented measures and initiatives to reduce their energy use and emissions.

To assist them with this challenge, the San Francisco Department of the Environment (SF Environment) created the Departmental Climate Action Program. DepCAP, as it was formerly known, helped City departments measure GHG emissions generated in their operations and track initiatives developed through the 0-80-100-Roots sustainability goals. The 0-80-100-Roots framework summarizes the City's sustainability goals: zero waste, 80% sustainable trips by 2030, 100% renewable energy by 2030, and Roots, which focuses on capturing carbon through trees and green spaces within the City.

Working together, City agencies and departments reduced emissions from municipal operations by 27% from 2010 to 2016. Building on this success, SF Environment updated the program and relaunched it as the Municipal Climate and Sustainability program (MCSP). The program focuses on advancing the City's ambitious actions to reach net zero emissions by 2050.

DepCap Refresh

While Municipal emissions account for a relatively small portion of the City's total emissions, the DepCAP program was built on the idea that City departments should lead by example. It set a solid foundation for departmental climate work by providing education on environmental policies, and annual information on GHG emissions, vehicle fuel and building energy use. Each department developed an annual Climate Action Plan to showcase their efforts to reduce greenhouse gases in their facilities and operations.

Since 96% of San Francisco emissions are generated by other sectors, SF Environment decided to refocus the program on community-wide emissions. Beginning in 2017, the new program has focused on building partnerships to align and leverage climate, resilience and sustainability efforts across all City departments. The new MCSP focuses on four core program activities:

- Municipal progress report: an annual summary of efforts by City departments related to 0-80-100-Roots.
- Annual emissions inventory: annual municipal emissions inventory with a breakdown by City facilities and fleet.
- Networking platform: a recognition and networking platform for peer-to-peer knowledge exchange, where City departments showcase best practices several times per year.
- Technical support and services: assistance to City departments to increase data and understanding of climate, sustainability, health, and equity benefits of planned and developing projects.

SF Environment works closely with City departments to identify cross-cutting issues in the community that can be addressed through department collaboration. By leveraging departments' unique capabilities, the City will be most effective in reducing community-wide emissions.

Climate and Equity

People of color within San Francisco fare worse than their white counterparts in nearly every area, including: housing, employment, education, health, criminal justice, public infrastructure, and environment, regardless of intent.

The City is prioritizing equity in its climate program to ensure the 0-80-100-Roots initiatives result in an equitable distribution of the benefits to all San Francisco residents and, at the same time, eliminate the unequal burdens and health disparities created by climate change. To do so, the City must engage people of color and low-income communities, and examine how longstanding systems, programs, policies, and practices may unintentionally perpetuate racial inequities.

To that end, nearly two dozen City departments, led by the San Francisco Human Rights Commission (SF HRC), have joined the Government Alliance on Race and Equity (GARE), a national network of government agencies working to achieve racial equity and advance opportunities for all. SF HRC works closely with more than 50 City employees representing housing, transit, law enforcement, youth services, health, environment and other service areas, enrolling them in the GARE curriculum and creating a peer-based collaborative to institutionalize racial equity within their departments and address potential racial inequities created, perpetuated or ignored by department decisions, resource allocations, and policies. SF Environment will apply this racial equity “lens” when considering various programs, policies, or strategies related to the City’s climate mitigation and adaptation efforts.

Municipal Operations Carbon Footprint

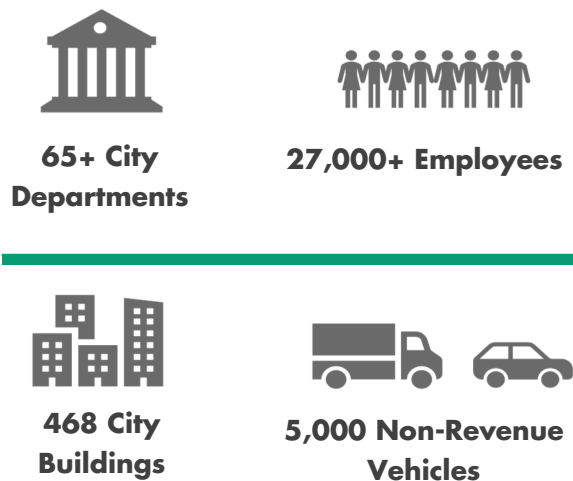
Reduction Targets

San Francisco's GHG emissions reduction goal of 25% below 1990 levels by 2017 has already been exceeded - the 2016 GHG emissions inventory showed a 30% reduction from 1990 levels. This was accomplished while the economy and population have continuously grown. This success proves that reducing emissions 40% by 2025 is attainable. Nonetheless, reaching the City's net zero emissions target by 2050 will require a solid commitment from both local authorities and San Francisco residents. City departments must work together to provide actionable strategies to further reduce the City's emissions.

City Departments Overview

The City provides its services through 65+ City departments that vary in size and scope.

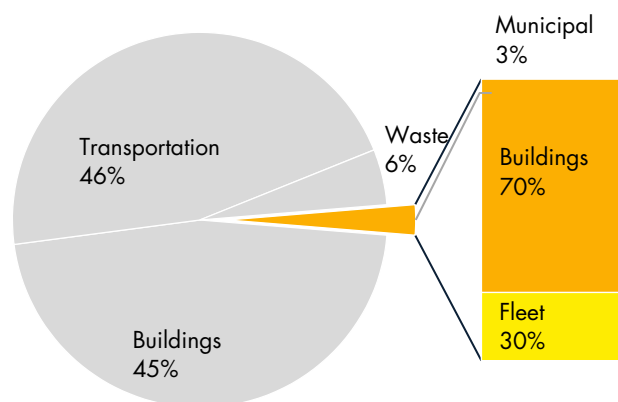
Approximately 27,000 people are employed by the City, making it the largest employer in the area. Thus, the City's effect on reducing GHG emissions relies not only on policy development, but also on employee engagement and influence in the greater community.



Emissions from Municipal Operations

In the 2016 emissions inventory, bottom-up data was used to build and integrate the municipal sector into the community-wide inventory for calendar year 2016.¹ Municipal GHG emissions for the 2016 calendar year totaled 117,394 mtCO₂e, representing less than 3% of total emissions in San Francisco, as shown in Figure 1. Emissions were generated from energy use in City buildings and petroleum-based fuels in the non-revenue City fleet during Fiscal Year (FY) 2015 - 2016.²

Figure 1: San Francisco's 2016 GHG Emissions



¹ Community-wide inventory estimates are based on the 2016 calendar year, while the municipal emissions inventory breakdown numbers are for fiscal year 2015-2016.

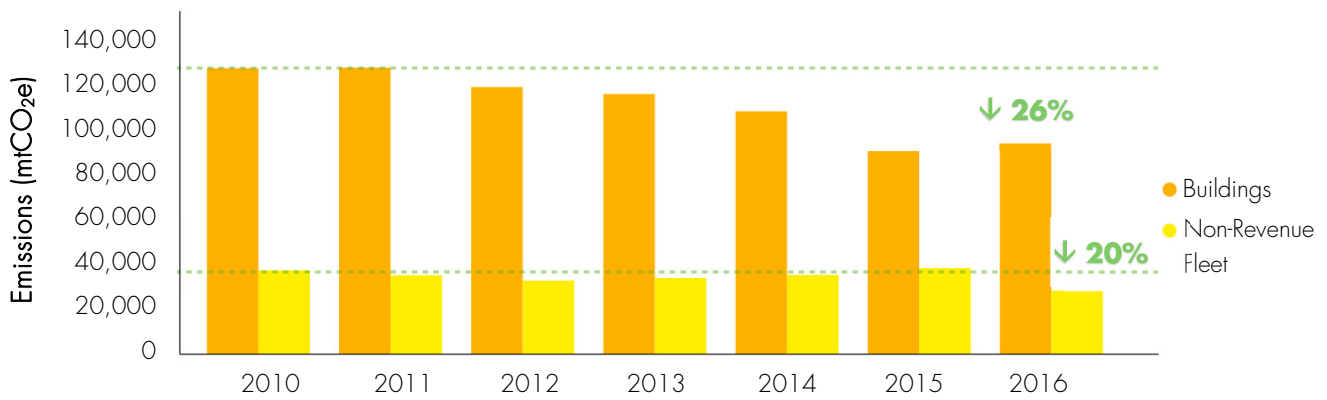
² Non-revenue fleet excludes public transportation such as BART and MUNI. Emissions from BART and MUNI are accounted for in the City's Transportation sector.

Challenges

Despite the small percentage that Municipal emissions represent, the continuous efforts of City departments are still critical. From the **operations perspective**, the two main challenges to further reduce emissions are: (1) reducing natural gas and electricity consumption in City buildings; (2) making the City's vehicle fleet more sustainable by cutting fossil fuel use and switching to electric vehicles and lower carbon fuel alternatives. From the **behavior perspective**, the challenges are to engage City employees and provide them with a pathway that encourages more sustainable choices and provides an example to all San Francisco residents.

Figure 2 shows municipal emissions by sub-sector for the last 5 years. When comparing 2010 to 2016, emissions generated by City buildings decreased 26%, while emissions from the City's non-revenue fleet reduced 20% during the same period.³

Figure 2: San Francisco Municipal Emissions by Sub-Sector



³ City-owned non-revenue fleet vehicles have been tracked since 2008 but have historically been treated as an on-road transportation source, and thus included as part of the Transportation sector. In 2015, city-owned fleet was allocated to the Municipal sector dating back to inventory year 2010. Moving forward, city-owned fleet emissions will continue to be categorized and tracked within the Municipal sector.

Facilities

While emissions⁴ from City buildings have reduced over the last two decades, buildings still generate the largest portion of Municipal GHG emissions.

Natural gas use in City buildings is the largest GHG emissions contributor. Between 2010 and 2016, natural gas use (therms) decreased around 15%, whereas electricity use (kWh) increased by 19%. Figure 4, however, shows how emissions from electricity dropped significantly in 2010 when the City fully sourced GHG-free electricity⁵ from the San Francisco Public Utilities Commission's (SFPUC) Hetch-Hetchy system.

Many municipal energy efficiency projects, programs, and energy code improvements have helped reduce building emissions since 1990. There is still an opportunity to reduce emissions further by substituting natural gas with GHG-free electricity.

Change in City Buildings Energy Consumption from 2010 - 2016

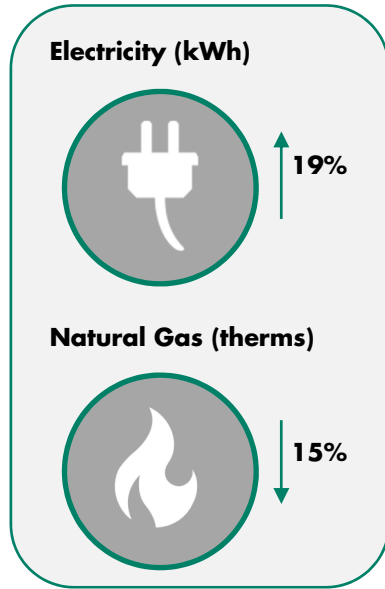
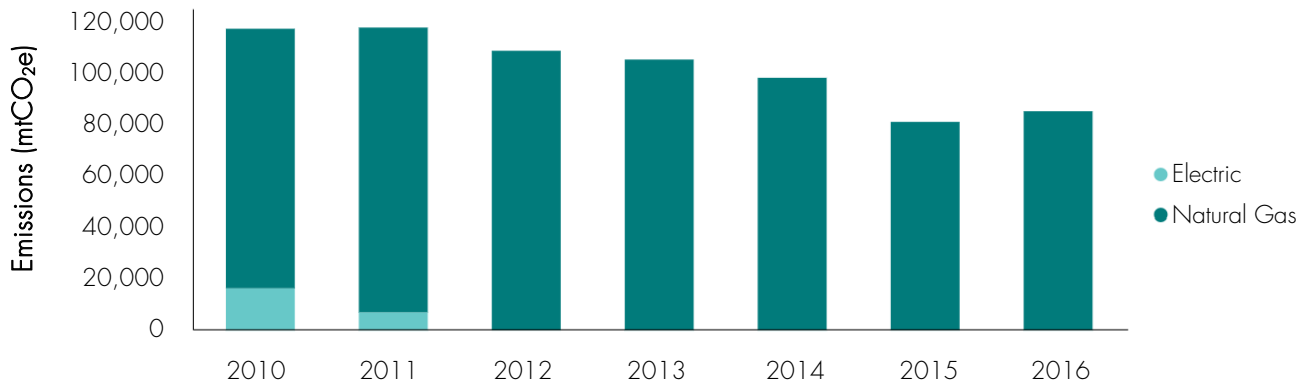


Figure 3: GHG Emissions in City Buildings by Source⁶



⁴ Municipal GHG emissions coming from the use of steam are not reflected in the Municipal sector. The steam loop is powered by natural gas use and serves only commercial and municipal customers in the downtown core. These emissions are accounted for in the commercial sector under the community-wide inventory.

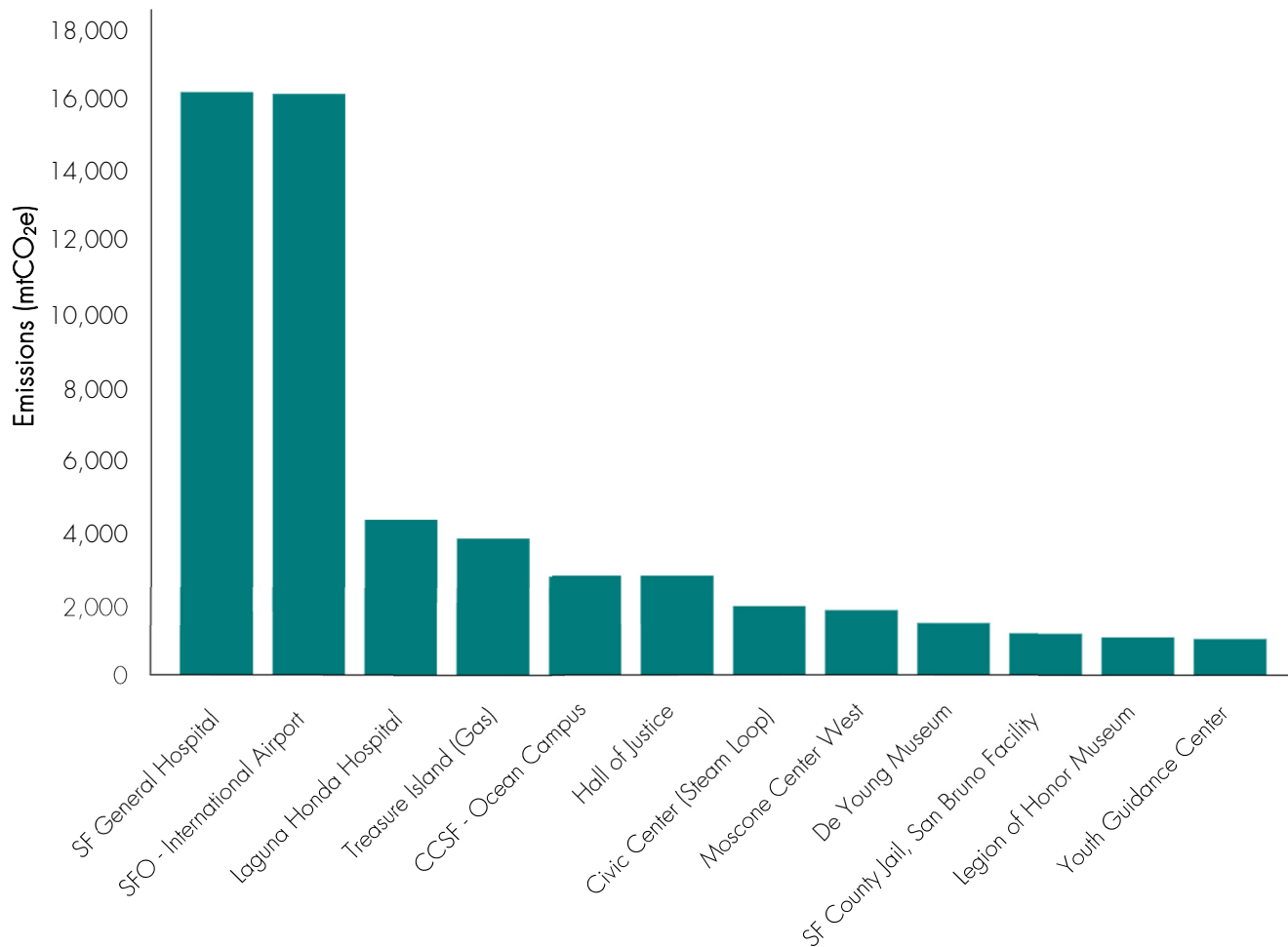
⁵ City owned buildings have been using hydro power since the 1970's with very little generation coming from carbon intense sources. Starting fiscal year 2011, the SFPUC began providing power content labels to the CPUC in which all hydro power since has been verified 100% GHG-free electric power.

⁶ The City has collected municipal activity data since 2008, per Ordinance 81-08. Data was estimated retroactively to 1990 to comply with Kyoto Protocols.

The SFPUC's "2016 Energy Benchmark for San Francisco Municipal Buildings",⁷ evaluates Energy Use Intensity (EUI) for over 468 facilities, including data for 130 San Francisco Unified School District facilities and 10 City College of San Francisco facilities⁸. While the results show that City buildings have improved their energy performance by 15.6% since 2009, further reductions are still possible. Today the City has 52 LEED buildings, certified from 2004 to 2016 and continues to work on energy efficiency and decarbonizing measures.

SF Environment collaborates with the SFPUC to align the Energy Benchmark with the Municipal GHG Inventory. Figure 5 shows the facilities with the largest carbon footprints.⁹ Larger facilities (which in many cases house multiple departments), have a higher energy use and thereby generate more emissions. (See Appendix A for full department list).

Figure 4: City Facilities with highest carbon footprints from natural gas use and steam
 Source: SFPUC 2016 Benchmark Report



⁷ 2016 Energy Benchmark Report. *San Francisco Public Utilities Commission*, 2016.
<http://sfwater.org/modules/showdocument.aspx?documentid=10201>

⁸ While City College and SFUSD are not official City departments, they are key partners in achieving the City's climate and sustainability goals and receive their electricity from SFPUC.

⁹ Facility footprints presented in Table 2, include emissions from natural gas, and steam used in buildings.

Fleet

According to the 2017 Municipal Fleet Inventory tracked by Central Shops, the City fleet¹⁰ is made up of 5,267 non-revenue vehicles¹¹. Non-revenue fleet refers to vehicles used for City operations, and excludes revenue fleet such as MUNI, light rail and bus. Table 1 shows a breakdown of the fleet by fuel technology and Figure 6 the fuel use percentage by type.



Table 1. Number of City non-revenue fleet by fuel type

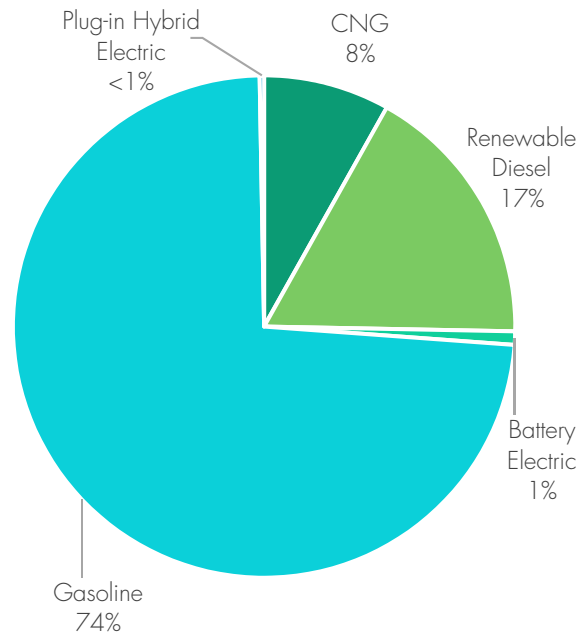
Fuel Type	Number of Vehicles
Gasoline	3,874
Renewable Diesel	905
CNG	428
Battery Electric	45
Plug-in Hybrid Electric	15
Total	5267

Approximately 18% of the City fleet uses low or zero emission technologies, including electric and renewable diesel vehicles. While gasoline vehicles still make up most of the fleet, they are gradually being replaced with cleaner options that are environmentally and human health friendly.

As part of the efforts to green the fleet the City has implemented the following policies:

- [City Fleet Zero Emissions Vehicle Ordinance.](#) The ordinance mandates the electrification of the City’s light duty passenger sedan fleet by 2022.
- [EV Readiness Ordinance.](#) New buildings must have enough electrical capacity to charge electric vehicles at 100% of parking spaces.
- [Zero Emission Vehicle Municipal Fleet Ordinance.](#) Requires the reduction of passenger vehicles and light-duty trucks in the Municipal non-revenue fleet, and new purchases or leases of passenger vehicles and light-duty trucks to be the cleanest and most efficient vehicles available on the market.
- A car sharing service for work related commute that maximizes and the City’s electric vehicle use.

Figure 5. Percent of city non-revenue fleet by fuel type

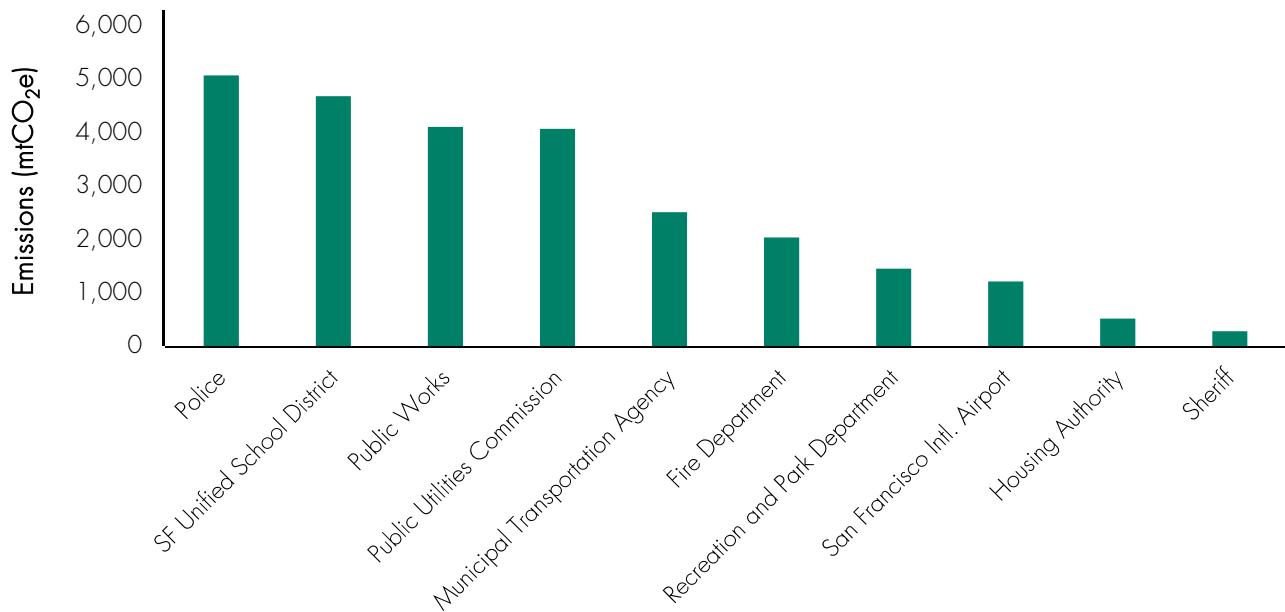


¹⁰ City fleet refers to non-revenue fleet vehicles used for City operations. It excludes revenue fleet such as MUNI, light rail and bus.

¹¹ Non-revenue fleet excludes MUNI transit buses, light rail and trolleys. The number of non-revenue vehicles also excludes carts, heavy equipment, small off roads and trailers and miscellaneous.

Figure 7 shows a breakdown of non-revenue fleet emissions from City departments with the highest number of vehicles used for operations.

Figure 6. 2016 City departments and agencies with highest non-revenue fleet emissions¹²



In addition to exploring different technologies to reduce fossil fuel use, the City has also implemented the use of cleaner fuels as a transitory measure to reduce GHG emissions in the near-term. In 2009 the City introduced the use of B5 and B20, which resulted in a small emissions reduction. However, the growth in the number of fleet vehicles and an overall increase in demand for fuel made this reduction barely perceivable. In 2015 the City took a more ambitious approach, and shifted to renewable diesel. Renewable diesel produced from tallow, used cooking oils and ethanol byproducts has a much lower carbon intensity, thus reducing GHG emissions considerably. SF Environment collaborates closely with Central Shops and California Air Resources Board (CARB) to ensure that feedstocks are fully traceable and verified, guaranteeing a low carbon intensity in the renewable diesel purchased.

Figure 7. Non-revenue fleet emissions by fuel type

By replacing diesel, B5 and B20 with renewable diesel, municipal non-revenue fleet emissions were reduced by 24% from 2015 to 2016.

¹² For a full list of non-revenue fleet emissions by departments please refer to Appendix A.

Climate Action Through the 0-80-100-Roots Framework



The 0-80-100-Roots framework summarizes the City’s sustainability goals: zero waste, 80% sustainable trips by 2030, 100% renewable energy by 2030, and Roots, which focuses on capturing carbon through trees and green spaces within the City. The framework was designed to lead people to action. In the Municipal Sector, it has led to action within Departmental operations, with City staff, and in influencing the greater community. Each sustainability goal has a direct connection to achieving the City’s ambitious climate goal of net zero emissions by 2050.

Zero Waste

San Francisco is world-renowned for its ambitious and cutting-edge waste prevention, recycling, and composting efforts. San Francisco is striving to reduce refuse generation and to reduce the amount of material that ends up in landfills and incinerators. Recycling reduces GHGs because it requires more energy and resources to make products from virgin materials than it does from recycled materials. Composting prevents compostable material, such as food scraps, from ending up in the landfill where they decompose anaerobically (without oxygen), and in the process create methane, a potent greenhouse gas. Methane remains in the atmosphere for up to 12 years and can trap 28x more heat during a 100-year period than carbon dioxide. If analyzed in a 20-year period, methane can trap close 85x more heat.

Having a recovery program for recyclables and compostables leads to GHG emissions reductions and a series of broader benefits for the entire community.

Table 2. Zero Waste Benefits

	Environmental Benefits	Health Benefits	Economic Benefits
Recycling	<ul style="list-style-type: none"> ✓ Reduces use of natural resources ✓ Reduces energy to extract raw materials ✓ Reduces water use and mining waste ✓ Promotes renewable energy ✓ Prevents loss of biodiversity ✓ Reduces GHGs 	<ul style="list-style-type: none"> ✓ Reduces the need for landfills and incinerators ✓ Improves regional air quality and reduces water pollution 	<ul style="list-style-type: none"> ✓ Creates 10 times more jobs than landfilling or incineration¹³ ✓ Employs people within the community
Composting	<ul style="list-style-type: none"> ✓ Reduces the need for chemical fertilizers ✓ Reduces methane emissions ✓ Increases crop production ✓ Helps regenerate habitat ✓ Improves soil quality ✓ Increases water retention in soils ✓ Sequesters carbon 	<ul style="list-style-type: none"> ✓ Reduces spread of disease vectors ✓ Helps remediate soils polluted by hazardous waste 	<ul style="list-style-type: none"> ✓ Can provide savings over conventional soil, water and air pollution remediation technologies ✓ Saves money spent on chemical fertilizers

¹³ <https://ilsr.org/recycling-means-business/>

What Are City Departments Doing?

City departments work actively to comply with the following Ordinances to reach zero waste.¹⁴

- [Resource Conservation Ordinance](#): Establishes a goal for each City department to (i) maximize purchases of recycled products and (ii) recover as much as possible through reuse, recycling and composting, and appoint at least one person responsible for compliance.
- [Mandatory Recycling and Composting Ordinance](#): Requires employees to properly separate recyclables, compostable, and landfill bound trash into the correct containers.
- [Surplus Disposal Ordinance](#): Establishes policies for reuse and redistribution of excess City commodities (furniture, fleet, supplies, electronics, etc.)

SF Environment has built a network of over 200 Zero Waste Coordinators. Coordinators are supported by SF Environment with outreach materials, staff trainings, on site assessments, and technical advice as needed. Zero Waste Coordinators serve as champions within each of their facilities and help ensure the program's success. The following page provides a summary of the work and accomplishments of City departments on Zero Waste.

Municipal Zero Waste Summary

- Over 1,200 City employees attended a Zero Waste presentation
- 44 Zero Waste Coordinators toured the upgraded Pier 96 Recology recycling facility
- Over 200 Zero Waste coordinators work across 65 City departments
- 99.8% of City facilities were outfitted with color-coded (blue/green) recycling and composting containers
- 20,500 items were reused and redistributed through the Virtual Warehouse surplus materials exchange program

Zero Waste Highlights

- [San Francisco Municipal Transportation Agency](#)
SF Environment has collaborated with SFMTA for over a decade to improve recycling and composting at some of the City's largest refuse generating facilities, the SFMTA maintenance yards. Most SFMTA yards have seen significant improvement but some have struggled. In 2016, SF Environment worked with SFMTA to hire one of the burgeoning zero waste facilitation companies in San Francisco. These companies provide recycling and composting education, post-consumer sorting and consolidation services. In collaboration with SFMTA, an RFP and subsequent contract was issued to one of these companies, Green Streets, to test their services at two maintenance yards. While there is still some work to do and time under the contract, there has already seen some improvement, especially regarding less contamination in the recycling and education of SFMTA staff.



¹⁴ A more comprehensive list and detailed description on Ordinances City departments are required to comply with can be found in Appendix B.

- San Francisco Recreation and Parks
SF Environment worked with RPD upper management to present the results of the 2015 refuse audits findings which collected data on the composition of the trash, recycling and composting bins to Park Service Managers, custodial supervisors, and recreation managers. The joint efforts resulted in the issuance of a directive outlining proper Zero Waste procedures for Recreation Centers. Site visits were conducted alongside RPD operations staff at 19 Recreation Centers. The goals were to improve proper bin placement, posting appropriate signage, training on Zero Waste, and right-sizing service containers to save money on collection costs. As a result, RPD saved over \$10k per year on disposal costs and reduced landfill disposal at each of the 19 Recreation Centers.



Challenges to Overcome

- **Material discards:** Operationally complex facilities with a wide variety of material discards - including toxic and biohazardous materials - continue to struggle to get programs to run smoothly.
- **Sorting procedures:** Facilities that host one-time visitors have difficulty teaching proper sorting procedures.

What Actions Can City Departments Take



Reduces GHG emissions



Helps advance equity



Encourages behavior change

- **Encourage zero waste beyond work**
Zero Waste impacts building operations at a department level, but can also positively influence employee behavior, which also leads to zero waste practices at home.
- **Continue to raise awareness**
Some City departments are more public facing than others. This means they could showcase the City's zero waste practices during their daily operations and scheduled events. Strategically located bins with proper signage will share the City's commitments on Zero Waste, while raising awareness among visitors.
- **Prevent food waste**
Encourage employees to reduce food waste at office activities by ensuring accurate guest counts through ongoing communication, and having a food recovery strategy in place. An example would be for office events with food surplus to have a plan to donate the unused food to organizations that feed hungry people.

In addition to the above actions, City departments could also:

- Decrease % contamination in recycling, composting, and landfill bins
- Grow Recology recovery rate by City facility
- Track # of locations where refuse to landfill was reduced
- Measure tons of office supplies, equipment, and furniture redistributed across City departments
- Expand # of people trained on waste prevention, recycling, and composting
- Increase number of Zero Waste Coordinators trained each year.

Sustainable Trips

City departments are focusing their efforts towards more sustainable transportation, not only by pursuing cleaner technologies and fuels for their fleets, but also by encouraging City employees to choose sustainable modes of transportation during, to/from and off work. By choosing sustainable modes of transportation, there is a decrease in gasoline and diesel use, resulting in less GHG emissions generated by City employees.

In addition, using public transportation and non-motorized modes such as biking and walking, along with carpooling, has a broad range of benefits. Table 3 has a summary of these benefits.

Table 3. Sustainable Trips Benefits

Environmental Benefits	Health Benefits	Economic Benefits
<ul style="list-style-type: none"> ✓ Reduce use of fossil fuels ✓ Decrease in GHG emissions ✓ Reduce air pollutants ✓ Reduce traffic congestion 	<ul style="list-style-type: none"> ✓ Reduce health disparities associated with air, noise and water pollution from transport ✓ Reduce exposure to poor air quality along transportation corridors ✓ Increased physical activity ✓ Decrease in stress levels from driving ✓ Fewer vehicle collisions 	<ul style="list-style-type: none"> ✓ Save money and time ✓ Provide quick and flexible transport ✓ More efficient access to jobs ✓ Encourage people to consume local ✓ Create jobs around mass transit, energy efficient vehicles, design, construction, etc.

What are City Departments Doing?

City departments are required to comply with the following Ordinances that promote sustainable trips.¹⁵

- [Healthy Air and Clean Transportation - Transit First Policy](#): All departments that require transportation to fulfill their official duties must maximize the use of public transit; travel by bicycle, or foot; and minimize the use of single-occupancy motor vehicles.
- [Zero Emission Vehicle Municipal Fleet Ordinance](#): Requires all municipally owned light-duty passenger vehicles to be zero emission vehicles by December 31, 2022; also encourages the City to acquire zero-emission vehicles where possible in other vehicle classes.
- [Commuter Benefits Ordinance](#): The City encourages its employees to commute on public transportation by providing employees access to a pre-tax commuter benefits program for transit and vanpool expenses.
- [Bicycle Parking for City-Owned and Leased Properties](#): Requires that all City employees have safe and secure bicycle parking facilities at their work place.

In addition to the Ordinances mentioned above, the City provides employees with additional benefits to encourage the use of sustainable modes of transportation. The Commuter Smart Team at SF Environment is constantly seeking new partnerships with external organizations to provide employees with more benefits. Below is a list of other benefits available to City employees:

- [CityCycle](#) - Free shared bike fleet available at departments throughout the City
- [Telecommuting](#) - Eligible employees can perform their regular work hours away from the office
- [Bike Sharing](#) - Discounts for Ford GoBike and Zipcar
- [Clipper Cards](#) - Free Clipper Cards to all new employees

¹⁵ A more detailed description on Ordinances City departments are required to comply with can be found in Appendix B.

Municipal Sustainable Trips Summary

- 5,484 CCSF employees are saving money as a result of the Commuter Benefits program
- 60,000 average annual trips on public transportation for work meetings
- 28% response rate to the 2015 CCSF Transportation Survey with representation from every City department
- 20% of CCSF employees reported having secure bike parking at work in 2017
- 50% of CCSF employees are somewhat familiar with the Emergency Ride Home program
- 17% CCSF employees said a more flexible start/end time would encourage sustainable commuting
- ~\$2,000,000 saved on public transit with commuter benefits to date
- 67% sustainable commute trips by CCSF staff to and from work in 2016

Sustainable Trips Highlights

- Department of Human Resources (DHR), Telecommuting
By supporting telecommuting and reducing City staff commutes, the City is reducing GHG emissions. In 2017, DHR underwent a critical review of their telecommuting policy. They simplified the process and made it more accessible, paving the way for increased access for City employees to work remotely. Supporting employees' access to telecommute increase employee satisfaction, productivity and frees up critical space on our roads and transit systems.



- SF International Airport, Parking Cash-Out
SFO went above and beyond the Healthy Air and Clean Transportation Ordinance (HACTO requirements) by rolling out a newly enhanced airport employee transit pilot program. The program named Eco (Employee Commute Options), pays employees \$200 per month for giving up their free parking privileges. The additional money can be used for commuting by other sustainable modes.



Challenges to Overcome

San Francisco has long been a Transit-First City. However, there are still some challenges getting people out of cars and onto transit or active transport

- **Bike parking availability:** The planning code requires that City employees who want to bike to work must have a safe and secure place to park. However, many employees do not have this space available to them. Additionally, many of those who do have access to secure bike parking are not aware that it exists.
- **CityCycle awareness and availability:** Some employees would like to use CityCycle for their daytime work trips, but do not have access to bikes in their building. Other employees remain unaware of the program.
- **Ensuring public transportation as first travel choice among CCSF employees:** The City's Transit First policy advocates the use of public transportation first. However, many employees prefer to use City vehicle fleet (which is available at no charge), rather than pay out of pocket for a Muni ride.

What Actions Can City Departments Take



Reduces GHG emissions



Helps advance equity



Encourages behavior change

- **Incentivize use of public transportation for CCSF employees**  


The Sustainable Trips program can have an impact on travel choices City employees make during and outside work. Providing benefits and incentives is an excellent way to encourage behavior change. Reducing the cost of public transportation for CCSF employees would lessen the financial incentive to use private vehicles and/or the City's vehicle fleet and encourage more sustainable trips like public transportation.

- **Increase partnerships with organizations that focus on sustainable trips** 

The City could increase the number of partnerships it has with bike and car sharing entities. Economic incentives such as discounts would encourage CCSF employees to reduce the use of privately owned vehicles outside of work and could potentially increase access to sustainable commuting modes.

- **Provide secure bike parking availability**  

Many employees are not aware that this benefit is available to them. City departments should consider bike parking space for their staff and share the availability and location of the secure parking. Encouraging bike use reduces fossil fuel consumption, helps traffic congestion, and has benefits for health and the environment.

- **Ensure their Department is served by CityCycle**  

Many employees are unaware of the [CityCycle program](#), which provides bicycles and related accessories to CCSF staff. City departments should ensure staff can access CityCycles easily and know how to use them.

In addition to the above actions, City departments could also:

- Ensure easy access to public transportation for work
- Keep record of work VMT miles driven in a City car for work
- Continue to track % of electric vehicles (light duty) in the non-revenue fleet (compared to conventional vehicles)

Green Building

Green building design and construction practices promote appropriate solutions that are optimized throughout a building’s entire lifecycle. This results in long-term environmental and human health benefits. By focusing efforts on energy efficiency, renewable energy, and other green building strategies, the City can significantly curb GHG emissions. For example, energy efficient technologies and mindful building operations reduce energy consumption. Reliance on renewable energy sources like solar, wind, small hydro and geothermal helps eliminate emissions from fossil fuels. The table below summarizes benefits derived from measures associated with green building.

Table 4. Green Building Benefits

Environmental Benefits	Health Benefits	Economic Benefits
<ul style="list-style-type: none"> ✓ Conserves energy, water, and material resources ✓ Optimizes the use of passive natural resources, such as light, air, etc. ✓ Shifts demand away from fossil fuel use ✓ Decreases GHG emissions ✓ Reduces air pollutants ✓ Minimizes waste and diverts material discards from landfills ✓ Enhances communities and protects biodiversity 	<ul style="list-style-type: none"> ✓ Ensures proper lighting and indoor air quality, which correlates to increased comfort, brain function, and productivity ✓ Improves aesthetic and acoustic conditions ✓ Reduces or eliminates the use of materials that can be harmful to human health ✓ Helps displace natural gas and coal power plants that produce harmful emissions ✓ Decreases heat island effects using living roofs 	<ul style="list-style-type: none"> ✓ Leads to operational savings and lower utility costs due to energy and water efficient measures ✓ Reduces maintenance and equipment replacement costs ✓ Creates new markets for products and services ✓ Generates job opportunities for locals in the more labor-intensive field of renewable energy ✓ Commands an increased asset value over their conventional counterparts

What Are City Departments Doing?

City departments are required to comply with the following Ordinances to advance green building.¹⁶

- [Construction and Demolition Debris](#): All City-owned facilities and City leaseholds must prepare a Construction and Demolition Debris Management Plan that demonstrates how a minimum of 75% of the material will be diverted from the landfill (Environment Code Chapter 7, Section 706 and 708).
- [Green Building Requirements for City Buildings](#): All municipal new construction and major alteration projects over 10,000 square feet must achieve at a minimum LEED® v4 Gold certification (Environment Code Chapter 7, Section 705).
- [Collection, Storage and Loading of Recyclable and Compostable Materials](#): All City departments must have adequate, accessible, and convenient recycling, composting and trash areas (interior and exterior) that are integrated into the design and provided within City-owned facilities and leaseholds (Environment Code Chapter 7, Section 707).
- [Better Roof Requirements](#): All City departments must comply with the new ordinance, amending the Planning Code and Green Building Code, to establish requirements for most new construction projects to include either photovoltaics or living roofs. (Planning Code Section 149, SF Green Building Code Chapter 5, Division 5.2).

¹⁶ A more detailed description on Ordinances City departments are required to comply with can be found in Appendix B.

- [Electric Vehicle Ready Ordinance](#): Requires all new residential and commercial buildings to configure 10% of parking spaces to be “turnkey ready” for EV charger installation, and an additional 10% to be “EV flexible” for potential charging and upgrades; remaining 80% of parking spaces will be “EV capable.”

Municipal Green Building Summary

- 6.57 million square feet of LEED certified projects to date
- 52 LEED certified projects to date
- 16 City departments and divisions represented on the Municipal Green Building Task Force
- 139 CCSF LEED Accredited Professionals
- 15% reduction in natural gas use in City buildings since 2010
- 15.6% overall EUI reduction from 2009 - 2016

Green Building Highlights

- [North Beach Branch Library](#)
A new construction project and the last in the Citywide library renewal program, this building earned LEED Gold certification. Among its green features are daylighting and an onsite renewable energy installation.



North Beach Branch Library (Image: LMS Architects)

- [One South Van Ness](#)
This fully renovated City office building achieved LEED for Existing Buildings Gold certification. Heating, ventilation, and air conditioning were upgraded to maximize energy efficiency and indoor air quality. A 10,000 square foot living roof was installed, helping to reduce energy use, manage storm water, and increase urban green space.



Living Roof at 1 South Van Ness

- [Sunset and Palega Recreation Centers](#)
These major renovation and addition projects earned LEED Gold certification. Representative green building features include improved and efficient lighting, onsite renewable energy installations, and new irrigation systems and rain garden to capture stormwater runoff.



Palega Recreation Center (Image: SF Recreation and Park) 18

Challenges to Overcome

- **Assigning priorities:** Because every aspect of new development or building rehabilitation has the potential to influence a range of environmental issues, it can be difficult to assign priorities or fully address 'hidden' tradeoffs among design choices.
- **Quantifying green building benefits:** Many benefits of green building can be difficult to quantify, such as occupant health and productivity or sense of place and community connectivity. And yet, it is important to include these considerations during the design, construction, and operations phases. Making time early in the process to establish green building goals will have a lasting impact.

What Actions Can City Departments Take






Reduces GHG emissions







Helps advance equity



Encourages behavior change

- **Consider a building's lifecycle**   

Design and construction practices determine the potential for a building to reduce (or eliminate) negative up and downstream impacts related to operational and embodied carbon. SF Environment is exploring ways to mitigate illegal dumping and construction and demolition debris by applying circular economy principles. City departments are engaged through the Green Building Task Force on this issue to optimize construction material recovery, reuse and proper disposal.
- **Plan for continuous improvement**  

From equipment upgrades to major building renovations, increased operating efficiency and zero-carbon energy sources over time are key for reducing GHG emissions. City departments can continue to evaluate how future climate conditions may affect the built environment to identify interventions for increased resilience, in particular for the City's most vulnerable populations.
- **Quantify green building benefits and opportunities at different scales**  

While some green building measures to reduce GHG emissions are implemented at a building level, there may also be opportunities to create or connect to existing solutions designed to accommodate a block or neighborhood. There can be an economy of scale, like systems that allow for capture, treatment, and reuse of nonpotable water or microgrids that support flexible and reliable energy delivery.

In addition to the actions above, the following actions could also be implemented in the future:

- Increase number of buildings with installed onsite renewable energy
- Increase number of buildings that meet Architecture 2030 efficiency thresholds
- Promote and measure % of responsibly-produced and regionally-sourced products used (including salvaged/repurposed materials)
- Track % reduction of potable water use
- Increase number of certified projects using LEED® or other applicable certification programs

Roots – Biodiversity & Urban Forestry

While Zero Waste, Transportation and Energy focus on climate change mitigation, the Roots component of the 0-80-100 framework focuses on healing the planet through greening the City and restoring the local natural environment. Healthy green spaces help address impacts from climate change. For example, increases in mean temperatures can lead to heat island effects, loss of biodiversity, and drought. Roots focuses on creating green spaces for local communities to mitigate these effects. Table 5 has a summary of benefits associated with Roots.

Table 5. Roots Benefits¹⁷

Environmental Benefits	Health Benefits	Economic Benefits
✓ Sequesters carbon	✓ Reduces human exposure to air pollutants	✓ Reduces energy needs by regulating temperatures when planted near buildings.
✓ Preserves and protects biodiversity	✓ Reduces heat island effect	✓ Reduces urban heat island effect.
✓ Helps lower ambient air temperatures	✓ Enhances physical activity such as recreational walking	✓ Lengthens the useful life of asphalt. Promotes eco-tourism
✓ Helps reduce erosion of soils into waterways	✓ Reduces stress levels and has positive impact on mental health	✓ Decreases travel time and distance to enjoy parks and connect people to nature
✓ Street trees provide natural shade for everyone	✓ Help reduce urban noise	
✓ Improves storm water drainage	✓ Connect people to nature where they live	

What Are City Departments Doing?

City departments are required to comply with the following ordinances on biodiversity and urban forestry.¹⁸

- [Street Tree Planting](#): Public Works Code, Article 16, Section 806(d) requires projects that include new construction, significant alterations, new curb cuts, a new garage, or new dwelling units to plant a 24-inch box tree for every 20 feet along the property street frontage.
- [Living Roofs](#): Better Roofs Ordinance requires new building construction to provide 30 percent of roof square footage for living vegetation or 15 percent for solar panels, or a combination of both.
- [Permeable landscapes](#): Front Setbacks Ordinance requires that 50 percent of surfaces in front yards are permeable using landscaping or permeable materials. (Planning Code, Article 1.2, Section 132).
- [Stormwater Management Ordinance](#): Requires new and redevelopment projects to manage stormwater using green infrastructure and to maintain that green infrastructure for the lifetime of the project.
- [San Francisco Biodiversity Policy](#): Board of Supervisors Resolution 107-18 establishing local biodiversity as a citywide priority, with a framework for interagency collaboration for nature-based initiatives.

City departments collaborate with SF Environment to implement the Biodiversity Resolution, which will help preserve and restore nature in the City. This effort is of great importance since it connects residents with the local natural environment.

Below are some of the City department initiatives that promote biodiversity and urban forestry in San Francisco:

- Carbon Fund – SF Environment
- Green Infrastructure – SFPUC
- Natural Areas Management – Recreation and Parks

¹⁷ World Health Organization. Urban green spaces and health.2016.

http://www.euro.who.int/__data/assets/pdf_file/0005/321971/Urban-green-spaces-and-health-review-evidence.pdf?ua=1

¹⁸ A full list with more detailed descriptions on Ordinances City departments are required to comply with can be found in Appendix B.

- Endangered Species Restoration – Recreation and Parks, SFPUC and SFO
- Shoreline habitat restoration and stewardship – SF Port
- Land Use and Environmental Justice – SFPUC
- Pollinators program – SF Environment
- Street Parks – SF Public Works
- Yerba Buena Island Natural Resources Stewardship program – TIDA

Biodiversity and Urban Forestry Summary

- 124,795 street trees in San Francisco as of inventory completion in 2017
- 8,400 mtCO₂ are sequestered annually by San Francisco urban green spaces
- Dedicated funding for SF Public Works to take over the care and maintenance of all street trees
- 15 City departments participating in implementing the Biodiversity Resolution

Biodiversity and Urban Forestry Highlights

- Passing of Proposition E: “Street Tree SF”
The passing of Proposition E in 2016 provided a much-needed dedicated funding source for the maintenance of street trees, sidewalks, and trees on SFUSD school campuses. This funding allowed SF Public Works to take over the maintenance responsibilities for all street trees, which had prior been the responsibility of the adjacent homeowner. The establishment of a consistent and routine pruning cycle will improve the health of SF’s urban forest.



- San Francisco Urban Forest Plan
SF Public Works in collaboration with SF Planning and Friends of the Urban Forest, released the *San Francisco Urban Forest Plan: Phase I – Street Trees*. The Plan released in late 2014 provides a series of strategies and policies to promote, maintain and grow the City’s street tree population.



- SF Street Tree Inventory
The City completed the first Street Tree Inventory. This inventory identified 124,795 trees by species, location, health, and size. Additionally, 39,783 street locations were identified where new trees can be planted. The report found that San Francisco’s street trees store an estimated 79,000 metric tons of carbon and annually sequester an estimated 8,400 metric tons of carbon.



- Recreation and Parks’ Natural Resources Management Plan
The Natural Resources Management Plan was passed by the Recreation and Park Commission in 2016. The “Natural Areas Plan” provides a framework and guidance for conservation, restoration, and stewardship of the natural lands managed by the Recreation and Parks Department, which are the large reservoir of native biodiversity among lands held by the City.
- The San Francisco Plant Finder
The SF [Plant Finder](#) is a resource for gardeners, designers, and others interested in greening neighborhoods, enhancing our urban ecology and surviving the drought. The Plant Finder recommends appropriate plants adapted to San Francisco's unique environment and climate.

Significant Natural Resource Areas
MANAGEMENT PLAN



Challenges to Overcome?

- **Allocating funding:** Funding is still needed to complete the *San Francisco Urban Forest Plan: Phase II – Parks and Open Space*, and for tree planting.
- **Optimizing resources:** Resources are required to manage natural lands and provide necessary maintenance to trees within the City. Drought-related damage to trees, including stress, pests, and diseases, have caused decline or death in many trees, requiring more money and labor to remove or care for these trees. Maintenance of landscapes in the built environment are likewise under-resourced and thus neglected.
- **Addressing invasive plants:** Invasive plants and lack of resources are still the major challenge to the management of natural areas and biodiversity in the City.

What Actions Can City Departments Take?



Reduces GHG emissions



Helps advance equity



Encourages behavior change

- **Meet goals set in Phase I of the SF Urban Forest Plan** Meeting the goals includes planting 6,500 trees each year. Planting tree species suitable for a changing climate will be key to long-term success. In addition, Phases II (Parks & Open Space) and III (Buildings & Private Property) of the San Francisco Urban Forest Plan should also be completed.
- **Establish a City canopy coverage goal** Setting an equitable canopy coverage goal and methods to reach it (canopy currently at 13.7%) will help reduce the City’s urban heat island effect as well as reduce stormwater runoff. At the same time, increasing the tree canopy will have a proportional effect on the amount of carbon being sequestered.
- **Expand living roofs in the City** Living roofs can also help reduce heat island effects and serve as a refuge for local bees and other pollinators.

In addition to the actions above, the City could also take action to:

- Track # Bay Friendly certified sites
- Increase # of CCSF employees trained in resilience and adaptation to climate change and biodiversity
- Increase number/sq. ft. of pollinator gardens in the City
- Increase % of open spaces restored in the City.

Green Purchasing and Toxics Reduction

Green Purchasing focuses on driving the purchase of safer, more environmentally friendly products by City departments. SF Environment works closely with the Office of Contracts Administration (OCA) and with product users at many other City departments. These partnerships enable City departments to identify green products that not only have minimum impact on human and environmental health, but also meet the highest performance requirements and are available at competitive prices.

SF Environment provides City departments with purchasing requirements addressing chemical hazards, recycled content, design for end of life, energy efficiency and other factors for a broad range of products that can be found at SFApproved.org.¹⁹ City departments also receive training and guidance on making their purchasing efforts compliant with the Environmentally Preferable Purchasing Ordinance, and on finding greener alternatives.

Green Purchasing interconnects with the 0-80-100-Roots goals. For example, the purchase of recyclable products is directly related to Zero Waste, and the use of certain construction materials is linked to Green Building. Safer products reduce potential water, air and land pollutants, which benefit the Roots component of 0-80-100-Roots. Green products can be less energy intensive, meaning they generate fewer GHG emissions throughout their production. Table 6 shows a summary of Green Purchasing benefits.

Table 6. Green Purchasing Benefits

Environmental Benefits	Health Benefits	Economic Benefits
<ul style="list-style-type: none"> ✓ Reduces environmental hazards associated with toxic waste ✓ Reduces amount of waste going to the landfill ✓ Improves environmental health through elimination of toxic ingredients ✓ Reduces use of energy intense raw materials by promoting recycled content products ✓ Decreases GHG emissions generated during the production and use of an item 	<ul style="list-style-type: none"> ✓ Reduces worker and public health problems by eliminating toxic ingredients from products ✓ Improves worker and public health by reducing exposures to certain toxic products 	<ul style="list-style-type: none"> ✓ Avoids health related costs linked to toxic products ✓ Saves money by promoting energy efficient products ✓ Save money on hazardous waste disposal ✓ Send market messages to manufacturers promoting cleaner products and practices

What Are City Departments Doing?

City departments are required to comply with the following green purchasing and toxics reduction Ordinances.²⁰

- [Integrated Pest Management Ordinance](#): Requires the City, in carrying out its operations, shall assume pesticides are potentially hazardous to human and environmental health. City departments shall give preference to reasonably available non pesticide alternatives when considering the use of pesticides on City property.
- [Environmentally Preferable Purchasing Ordinance](#): For targeted product categories, the ordinance mandates that City departments purchase only products listed on the Director's Approved Alternatives List, maintained by SF Environment at SFApproved.org. The items on the SF Approved website meet the most rigorous standards for

¹⁹ SF Environment maintains a public list of the resulting product requirements, compliant products, and recommended suppliers at SFApproved.org.

²⁰ A more detailed description on Ordinances City departments are required to comply with can be found in Appendix B.

protecting our health and environment. The ordinance applies to all commodity purchases, including purchases made under departmental purchasing authority (Prop Q). Adherence to the SFAApproved.org product requirements is mandatory for product categories listed as "required."

- [Resource Conservation Ordinance](#): This ordinance establishes a goal to maximize purchases of recycled products and establishes a preference for non-PVC plastics in City purchasing.
- [Tropical Hardwood and Virgin Redwood Ban](#): The ordinance prohibits City departments from procuring or engaging in contracts that would use certain tropical hardwoods and virgin redwood.
- [Arsenic-Treated Wood Ordinance](#): Prohibits City departments from using arsenic-treated wood for most applications.
- [Green Building Ordinance](#): Requires City departments to make purchases of furniture and carpet that meet certain environmental and health criteria. Depending on the credits pursued, this may also include restrictions on certain cleaning products, office equipment, and other products.

Green Purchasing and Toxics Reduction Summary

- 80 product categories have required or suggested purchasing specifications
- 80% of janitorial cleaners and papers bought by the City in 2016 were less-toxic
- 83% of computers and servers purchased in 2017 met the City's stringent environmental requirements
- 91% of copy paper purchased in 2017 were 100% postconsumer waste recycled content
- 550 CCSF staff and purchasers around the world received training on Green Purchasing in 2017

Green Purchasing and Toxic Reduction Highlights

- Awards: On May 9, 2017, San Francisco received a Sustainable Purchasing Leadership Council Leadership Award for an "outstanding case study" for Charging Ahead: How to Find Powerful Rechargeable Batteries that Go On...and On. This 2016 report identified the highest-performing consumer rechargeable batteries, as well as providing an update on new technologies available for these products.
- Carpet and furniture specifications: Historically, Green Purchasing efforts did not focus on building products, which are generally covered under the City's Green Building Requirements for City Buildings. This changed with the revision of the Green Building ordinance in 2017, which allows for specific City requirements on interior products. Under this new mandate, SF Environment developed its first environmental purchasing requirements for carpet, and is now doing the same for furniture.

Challenges to Overcome

- **Identifying green products:** Significant staff time is required to identify products manufacturers claim to comply with City environmental requirements, and to verify those products actually comply. For this reason, SF Environment seeks out independent, third-party certifications on environmental performance whenever available.
- **Gathering sales data:** Based on vendor reporting data, the City spent \$1,049,363 on green janitorial cleaners and papers contracts in 2016; however, at least \$144,236 was spent on non-green products. In addition, it is very likely that the City spent far more outside of citywide contracts, using departmental purchasing authority. It has not been feasible to track departmental purchases, because these data are not centralized or in a form that allows separation of green from non-green products. Each department has its own system of recording these purchases, and many are paper based.
- **Communicating program requirements:** The wide range of products purchased by the City, and the great diversity of City product users, make communication a challenge. In addition, there are few mechanisms to hold City departments accountable for their purchases.

What Actions Can City Departments Take





Reduces GHG emissions





Helps advance equity




Encourages behavior change

- **Fully incorporate green purchasing into the Financial Systems Project (F\$P)**  

While [SFApproved.org](https://www.sfgov.org/finance/procurement/SFApproved.org) lists green product names and vendors, the website does not allow direct purchases and is not linked to the City's finance system. San Francisco's new finance/accounting/e-procurement F\$P effort offers potential for integrating these functions. The new F\$P PeopleSoft e-procurement module will help City departments by:

 1. Clearly denoting green products and steering City staff to buy them
 2. Displaying required green specifications so that City staff can create green contracts
 3. Not allowing prohibited products
 4. Making full use of F\$P's Business Intelligence unit to provide more complete metrics on green product purchasing trends
- **Further automate identification, verification and purchase of green products**  

Some City contracts involve online shopping platforms that can be customized to remove prohibited items from product offerings. SF Environment continues to explore the potential for using online stores in new product categories. In addition, new data tools are in development nationally that can streamline the identification and verification of green products. Once implemented, these tools will save many hours of staff time, while making it easier for departments to purchase green products.
- **Improve outreach to City departments** 

City departments receive trainings on green purchasing goals and work with other departments through "green teams" organized for specific product users. Still, more needs to be done to increase the level of municipal green purchasing. To this end, SF Environment has hired a consultant to conduct a full policy and programmatic review in 2018, which will inform improvements to program structure and outreach strategies.

In addition to the above actions, City departments could also:

- Track percentage of green products (by dollar value) in "required" product categories purchased by City departments
- Increase number of City staff reached by Green Purchasing trainings and consultations
- Increase and promote the number of "required" product categories listed in [SFApproved.org](https://www.sfgov.org/finance/procurement/SFApproved.org)

Ways You Can Help

Zero Waste

- Send nothing to landfill and incineration
- Buy only what you need
- Share with neighbors and family
- Consider borrowing or renting before buying
- Repair what's broken
- Reuse what you can
- Refuse single-use items i.e. plastic utensils, straws, and cups
- Bring a reusable travel mug or bottle
- Carry a reusable shopping bag
- Recycle and compost



Sustainable Trips

- Get out of your car and start walking, biking or taking public transit
- Share a ride with others
- Work from home or a remote location one or more days per week.
- Learn more about the City's [Commuter Benefits](#)



Energy Use at Home

- Reduce your use of diesel, gasoline and natural gas and choose renewable energy
- Power your home and car with [100% Renewable Energy](#) by signing up for [CleanPowerSF](#)
- Opt for LED lights at home
- Implement weatherization measures at home
- Take shorter showers



Roots – Biodiversity and Urban Forestry

- Heal the soil by enhancing biodiversity and sustaining a healthy ecosystem
- Spread compost to improve soil health and pull CO₂ out of the atmosphere
- Protect local pollinators
- Start a food garden or join a community garden near you



Green Purchasing and Toxics Reduction

- Reduce your exposure to harmful chemicals in cleaning and personal care products, pesticides and plastic
- Safely dispose products with toxic chemicals, such as fluorescent lights, batteries, and paint.
- Learn more about healthy home tips: <https://sfenvironment.org/tips-for-healthy-homes>



Appendix A: Total Emissions by Department

The following table provides a comparison of GHG emissions for 2014 and 2016 by City department. Emissions are broken down by buildings and non-revenue fleet for both years.

EMISSIONS SOURCE	EMISSIONS (mtCO ₂ e)						
	Buildings		Non-Revenue Fleet		Total		Status
	2014	2016	2014	2016	2014	2016	
Public Health	25,726	21,057	372	271	26,098	21,329	↓
San Francisco International Airport (SFO)	19,462	19,465	5,308	1,226	24,769	20,691	↓
Public Utilities Commission	8,423	11,165	5,405	4,085	13,828	15,251	↑
SF Unified School District	11,702	8,762	1,681	4,695	13,383	13,457	↑
Police	1,006	893	5,065	5,085	6,071	5,978	↓
Real Estate Division (RED)*	5,596	5,797	59	41	5,655	5,838	↑
Recreation and Park Department	4,476	3,887	2,020	1,466	6,496	5,353	↓
Housing Authority	10,454	4,442	586	532	11,039	4,974	↓
Public Works	158	114	5,515	4,121	5,673	4,235	↓
Municipal Transportation Agency	1,749	1,399	2,775	2,523	4,524	3,922	↓
Community College District	4,186	3,556	**	**	4,186	3,556	↓
Fire Department	1,307	1,207	3,144	2,052	4,451	3,259	↓
Convention Facilities Department	3,133	2,602	2	1	3,135	2,603	↓
Fine Arts Museums of SF	2,355	2,455	8	7	2,363	2,462	↑
Sheriff	1,482	1,277	352	296	1,834	1,574	↓
War Memorial	1,099	1,380	**	**	1,099	1,380	↑
Human Services Agency	1,027	915	224	255	1,251	1,170	↓
Juvenile Probation Department	1,114	1,066	61	73	1,175	1,139	↓
Port	737	593	358	286	1,094	879	↓
Library	875	771	99	87	975	859	↓
California Academy of Sciences	1,047	751	**	**	1,047	751	↓
Asian Art Museum	732	465	0.2		732	465	↓
Central Shops	144	418	42	36	186	454	↑
Emergency Management	258	281	18	12	276	293	↑
Animal Care and Control	225	194	58	59	283	252	↓
Department of Technology*	9	0	225	222	234	222	↓
Treasure Island Development Authority	331	180	5	5	336	185	↓
District Attorney*	0	0	107	152	107	152	↑
Environment	131	121	**	**	131	121	↓
Others ²¹	61	90	289	300	350	391	↑
Total Emissions	103,407	89,507	33,777	27,888	137,184	117,394	↓

* Building emissions from departments located in Real Estate buildings are accounted for in the Real Estate total.

** These departments use non-revenue fleet vehicles reported by Central Shops.

²¹ "Others" includes the carbon footprint of smaller departments such as: Building Inspection, Arts Commission, Adult Probation Department, General Services Agency, Public Defender, County of SF Superior Court (Trial Courts), Chief Medical Examiner, Office of the City Attorney, Elections, Office of Community Investment and Infrastructure (former Redevelopment Agency), Office of Contract Administration and Purchasing, Office of Health Service System, Child Support Services, Office of Citizen Complaints, Mayors Office on Disability, Mayor's Office of Housing, Treasurer and Tax Collector, Planning, Human Resources

Appendix B: Municipal Ordinances

	Code	How to comply?	Brief Description	Year	SFE Programs ²²
Zero Waste	SF Administrative Code, Chapter 21	Surplus Disposal Ordinance	Establishes a reuse and recycling hierarchy for redistributing excess City commodities.	Approved: 1998 Last amended: N/A	Zero Waste
	SF Environment Code, Chapter 5 & SF Administrative Code, Section 6.4	Resource Conservation Ordinance / Professional Services Contracting	Requires City departments to prevent waste, maximize recycling, purchase products with recycled content and appoint a Zero Waste Coordinator to assist in leading these efforts. Requires the use of recycled content material in public works projects to the maximum extent feasible and gives preference to local manufacturers and industry.	Approved: 2000 Last amended: 2003/2007	Zero Waste Green Purchasing
	SF Environment Code, Chapter 16	Food Service and Packaging Waste Reduction Ordinance	Prohibits the use of Styrofoam or polystyrene foam food service ware and requires the use of foodware that is recyclable or compostable.	Approved: 2006 Last Amended: 2016	Zero Waste Green Purchasing
	SF Environment Code, Chapter 19	Mandatory Recycling and Composting Ordinance	Requires everyone in San Francisco to properly separate out their recyclables, compostables and landfill bound trash into the correct containers.	Approved: 2009 Last amended: N/A	Zero Waste
	SF Environment Code, Section 2405	Bottled and Package Free Water Ordinance	Restricts the sale or distribution on City property of drinking water in plastic bottles of 21 ounces or less, set City policy to increase the availability of drinking water in public areas, and barred the use of City funds to purchase bottled water. Amended in 2016 to restrict the sale of packaged water which is defined as drinking water in a sealed, box, bag, can, glass bottle, rigid plastic bottle or other container and having a capacity of 1-liter or less.	Approved: 2014 Last Amended: 2017	Zero Waste

²² "SFE Programs" refers to other programs run by the Department of the Environment.

Code	How to comply?	Brief Description	Year	SFE Programs
SF Environment Code, Section 403(a)	Healthy Air and Clean Transportation: Transit First Policy	Requires all City officers, boards, commissions and department heads responsible for departments that require transportation to fulfill their official duties to reduce the Municipal Fleet by implementing Transit First policies by: (A) maximizing the use of public transit, including taxis, vanpools, and car-sharing; (B) facilitating travel by bicycle, or on foot; and, (C) minimizing the use of single-occupancy motor vehicles, for travel required in the performance of public duties.	Approved: 2010 Last amended: 2015	Sustainable Trips
SF Environment Code, Section 427(b)	Commuter Benefits Ordinance	City employees can choose to sign up for pre-tax commuter benefits for transit and vanpool expenses, allowing them to save money on their commute to work.	Approved: 2010 Last amended: 2014	Sustainable Trips
SF Environment Code, Section 427(d)	Emergency Ride Home Program	All City employees are automatically enrolled in the San Francisco Emergency Ride Home program. When San Francisco commuters use a sustainable mode to travel to work and experience a personal or family emergency while at work, the City will reimburse the cost of the taxi or public transit ride home.	Approved: 2010 Last amended: 2014	Sustainable Trips
SF Environment Code, Section 403(b)	Healthy Air and Clean Transportation : Purchase of Clean Fleet	Requires the reduction of the number of passenger vehicles and light-duty trucks in the Municipal Fleet. In addition, requires new purchases or leases of passenger vehicles and light-duty trucks to be the cleanest and most efficient vehicles available on the market. Also aligns the greenhouse gas reduction goals with the Federal Executive Order – Planning for Federal Sustainability in the Next Decade, dated March 19, 2015 – reducing average per-mile greenhouse gas emissions from general purpose, light-duty fleet vehicles, relative to a baseline of emissions in fiscal year 2014, to achieve the following percentage reductions: (A) not less than 4 percent by the end of fiscal year 2017; and (B) not less than 15 percent by the end of fiscal year 2021.	Approved: 2010 Last amended: 2015	Sustainable Trips Green Purchasing

Sustainable Trips

	Code	How to comply?	Brief Description	Year	SFE Programs
Sustainable Trips	SF Planning Code, Sections 155.1-155.3 & CalGreen, Section 5.106.4	Bicycle Parking for City-Owned and Leased Properties	Requires short- and long-term bicycle facilities for City-Owned and Leased Properties. Refer to Section 155.2 for requirements by use. Requires short- and long-term bicycle facilities for new and expanded buildings, new dwelling units, change of occupancy, increase of use intensity, and added parking capacity/area.	Approved: 2013 Last amended: 2013	Sustainable Trips Green Building
	SF Planning Code, Section 155.4	Showers and Lockers	Requires showers and clothes lockers for short-term use for tenants or employees of the building in new and expanded buildings, change of occupancy, or increase of use intensity. Number of showers based on size and use of building - see Section 155.4(c).	Approved: 2013 Last amended: 2013	Sustainable Trips Green Building
Green Building	SF Health Code, Article 30	Regulation of Diesel Backup Generators	Establishes requirements for diesel generators, including performance, use restrictions, and registration with the Department of Public Health.	Approved: 2002 Last amended: N/A	Green Building
	SF Building Code, Chapter 31, Section 3111.3	Wood Burning Fireplace Ordinance	Bans the installation of nonapproved woodburning fireplaces and similar devices in new and remodeled buildings. Prohibits the use of certain fuels in woodburning appliances.	Approved: 2002 Last amended: N/A	Green Building Green Purchasing
	SF Environment Code, Sections 706(e), 708 & Chapter 14	Construction and Demolition Debris	Requires construction and demolition projects to prepare a Construction and Demolition Debris Management Plan that demonstrates how material will be diverted from the landfill. The Plan must be approved prior to commencement of the project. Monthly project summaries as well as a final report are required. Refer to Section 708 for specific contractor requirements. Refer to Chapter 14 for transporter and facility requirements.	Approved: 2004/2006 Last Amended: 2011	Green Building Zero Waste
	SF Environment Code, Sections 705 & 706	Green Building Requirements for City Buildings	Establishes LEED certification and design progress reporting requirements, as well as specific locally required green building measures that must be achieved.	Approved: 2004 Last amended: 2011	Green Building

Code	How to comply?	Brief Description	Year	SFE Programs
SF Environment Code, Section 711	Indoor Air Quality	Establishes requirements for tracking and addressing problems associated with Indoor Environmental Quality (IEQ) such as indoor air pollution and material contaminants, fumes, odors, thermal comfort, acoustics, moisture, and mold.	Approved: 2004 Last amended: 2011	Green Building
SF Environment Code, Section 707 & Chapter 19	Collection, Storage and Loading of Recyclable and Compostable Materials	Establishes requirements for adequate, accessible, and convenient recycling, composting, and trash areas (building interior and exterior) to allow the collection, storage, and loading of 100% of the facility's recyclable, compostable and waste materials. Recycling and composting must be equally convenient as trash.	Approved: 2009 Last amended: 2011	Zero Waste
SF Environment Code, Section 2006	Existing Commercial Buildings Energy Performance Ordinance	Establishes requirements for energy efficiency audits, and the annual measurement and reporting of energy performance. Primarily implemented by SFPUC, municipal departments consult on the development of a compliance plan. If a compliance plan is not developed and implemented by SFPUC, the department is responsible for compliance.	Approved: 2011 Last amended: N/A	Green Building
SF Building Code, Chapter 13D	Commercial Lighting Efficiency Ordinance	Establishes limits for mercury content and energy efficiency requirements for 4-foot or 8-foot fluorescent lamps.	Approved: 2011 Last amended: 2011	Green Building
SF Environment Code, Section 706(c)	Energy Performance	Establishes requirements for conducting and reporting preliminary energy calculations, as well as reductions in building energy use and the installation of photovoltaic, solar thermal, and/or living roof systems.	Approved: 2011 Last amended: 2016	Green Building
SF Environment Code, Chapter 25 (Sections 2505 & 2506)	Clean Construction Ordinance	Establishes equipment emission and idling standards for all work performed on a Major Construction Project. Requires the creation and submittal of a Construction Emissions Minimization Plan to the Department Head for review and approval, as well as quarterly reports documenting compliance.	Approved: 2015 Last amended: N/A	Green Building

Green Building

Code	How to comply?	Brief Description	Year	SFE Programs
SF Environment Code, Chapter 26	Better Roof Requirements	Establishes requirements for the installation of photovoltaics or living roofs on most new construction projects to increase the utility of rooftops.	Approved: 2016 Last amended: N/A	Green Building Biodiversity
Environmentally Preferable Purchasing/Precautionary Purchasing Ordinance No. 115-05 and Green Building Requirements for Municipal Buildings Ordinance No. 52-17	Approved Alternative Products for Sustainable Carpet for City Departments	Defines characteristics of carpet allowed to be purchased and installed, i.e. commercial, hard-backed carpet tiles that contribute to a circular economy and do not contain particular materials and chemicals that are toxic to environmental and human health. Includes a list of required 2nd and 3rd party support documentation. Compliant options are indexed at SFapproved.org.	Approved: 2018 Last amended: N/A	Green Building Green Purchasing Zero Waste
SF Environment Code Section 706(b); CALGreen 5.303.3	Indoor Water Use Reduction	Establishes maximum flush/flow rates for fixtures, as well as overall building water use reduction requirements.	Approved: 2004 Last amended: 2011	Green Building Green Purchasing
SF Public Works Code Sections 147-147.6 (Ordinance #64-16)	Storm Water Management Ordinance	Projects disturbing 5,000 sq.ft. or greater in combined or separate sewer areas, or replacing 2,500 sq.ft. or greater in separate sewer area, must implement a Storm Water Control Plan meeting SFPUC Stormwater Design Guidelines.	Approved: 2011 Last amended: 2016	Green Building Urban Forestry
SF Administrative Code, Chapter 63	Water Efficient Irrigation Ordinance	Establishes requirements for increased ground surface permeability, responsible water consumption with "climate appropriate" plantings, and improved screening using ornamental fencing.	Approved: 2012 Last amended: 2016	Green Building Biodiversity
SF Health Code, Article 12C	Alternate Water Sources for Non-Potable Applications	New buildings 40,000 sq.ft. or greater must calculate a water budget. New buildings greater than 250,000 sq.ft. must use available alternate water sources for toilet flushing and irrigation.	Approved: 2012 Last amended: 2015	Green Building

Code	How to comply?	Brief Description	Year	SFE Programs
SF Public Works Code Sections 146-146.11 (Ordinance #260-13)	Construction Site Runoff Pollution Prevention for New Construction	Requires all construction sites to implement best management practices (based on size, occupancy, and locations served) to prevent illicit discharge into the sewer system. Most projects must submit to SFPUC and receive approval of an Erosion and Sediment Control Plan prior to commencing any construction-related activities.	Approved: 2013 Last amended: 2013	Green Building
SF Public Works Code, Section 806	Street Tree Planting Requirements	Property owners are responsible for: Public Works Code, Section 806(d) requires projects that include new construction, significant alterations, new curb cuts, a new garage, or new dwelling units to plant a 24-inch box tree for every 20 feet along the property street frontage.	Approved: 1995 Last amended: 2015	Urban Forestry Green Building
SF Public Works Code, Section 805	Street tree maintenance requirements	As of July 1, 2017, adjacent property owners are no longer responsible for the care and maintenance of San Francisco's street trees. All street trees are now maintained and cared for by San Francisco Public Works, Bureau of Urban Forestry.	Approved: 2018 Last amended: N/A	Urban Forestry
SF Public Works Code, Section 803; SF Environment Code, Section 12	Urban Forestry Council	Purpose of the Council is to guide the stewardship of San Francisco's trees by promoting a healthy and sustainable urban forest that benefits all San Franciscans while ensuring public health and safety. This includes reviewing any projects or plans that plant trees or affect existing trees in San Francisco. The Council makes recommendations to the Mayor and BOS on tree-related issues.	Approved: 2016 Last amended: N/A	Urban Forestry
SF Public Works Code, Sections 810 and 810A	Landmark & Significant Trees	Public Works Code, Article 16, Section 810 provides the criteria for the designation of Landmark Trees and identifies their legal protections from removal or harm.	Approved: 2006 Last amended: 2006	Urban Forestry
SF Environment Code, Chapter 26	Living Roofs	These standards require that 15% of the roof space on most new construction is solar or 30% of the roof space as a Living Roof (i.e. green or vegetated roof), or a combination of both. This will provide flexibility to maximize benefits based on location and building program.	Approved: 2016 Last amended: N/A	Biodiversity Green Building
Resolution 180161	San Francisco Biodiversity Resolution	The resolution adopts citywide biodiversity goals and articulates the role of SF Environment in protecting San Francisco's natural heritage.	Approved: 2018 Last amended: N/A	Biodiversity

	Code	How to comply?	Brief Description	Year	SFE Programs
Green Purchasing and Toxics Reduction	Planning Code Sections 132, 142, 138.1, 156, 223 Public Works Code Section 802.1 Administrative Code Ch. 63	Green Landscaping Ordinance	The Green Landscaping Ordinance amends the Planning Code and Public Works Code to enhance new development and significant alterations. It seeks to achieve the following environmental and aesthetic goals: - Healthier and more plentiful plantings - Increased permeability - Responsible use of water - Improved screening	Approved: 2010 Last amended: N/A	Biodiversity
	SF Environment Code, Chapter 3	Integrated Pest Management Ordinance	The City, in carrying out its operations, shall assume pesticides are potentially hazardous to human and environmental health. City departments shall give preference to reasonably available non pesticide alternatives when considering the use of pesticides on City property. For all pest problems on City property, City departments shall follow the integrated pest management (IPM). This applies to all City properties, including leased properties with leases newer than 1996. "City Department" does not include any other local agency or any federal or State agency, including but not limited to the San Francisco Unified School District, the San Francisco Community College District, the San Francisco Redevelopment Agency and the San Francisco Housing Authority.	Approved: 1996 Last amended: 2011	Green Purchasing Zero Waste
	SF Environment Code, Chapter 2	Environmentally Preferable Purchasing Ordinance	For certain common product categories, the ordinance mandates that City departments purchase only products listed on the Director's Approved Alternatives List, maintained by SF Environment. The items on the SF Approved website meet the most rigorous standards for protecting our health and environment.	Approved: 1999 Last amended: 2005	Green Purchasing
	SF Environment Code, Section 509	Resource Conservation Ordinance	Requires the purchase products with recycled content and non-PVC plastics to be specified in City purchasing.	Approved: 2000 Last amended: 2003	Green Purchasing Green Building Zero Waste

	Code	How to comply?	Brief Description	Year	SFE Programs
Green Purchasing	SF Environment Code, Chapter 8	Tropical Hardwood and Virgin Redwood Ban	Prohibits City departments from procuring, or engaging in contracts that would use the ordinance-listed tropical hardwoods and virgin redwood.	Approved: 2001 Last amended: 2003	Green Purchasing
	SF Environment Code, Chapter 13	Arsenic-Treated Wood Ordinance	Prohibits the use of arsenic-treated wood for most applications, with the exception of saltwater immersion. Details can be found at SFApproved.org/wood	Approved: 2003 Last amended: N/A	Green Purchasing
	COIT/SF Environmentally Preferable Purchasing	Environmentally Preferable Purchasing Requirements for Personal Computers and Servers	City departments are required to: Adopt environmental requirements for the procurement of (1) personal computers - including central units, monitors and laptops; (2) servers and (3) desktop laser printers. These requirements will inform the Dept. of Environment's "San Francisco Approved List" for specified categories of equipment.	Approved: 2007 Last amended: N/A	Green Purchasing Zero Waste

Contacts

If you have any questions about this report, would like to be involved in the Municipal Climate Action program, or would like to quantify emissions reductions and other co-benefits for a municipal project, please contact:

- **Climate Team**

Silvia Pac - silvia.pacyurrita@sfgov.org

For questions about the Municipal or Community-wide Emissions Inventory, please contact:

- **Climate Team**

Brian Reyes - brian.reyes@sfgov.org

For questions on specific programs at SF Environment, please contact the following people:

- **Municipal Zero Waste**

Soko Made - soko.made@sfgov.org

- **Municipal Green Buildings**

Eden Brukman - eden.brukman@sfgov.org

- **Sustainable Trips and Commuter Benefits**

Nancy Hernandez - nancy.hernandez@sfgov.org

- **Zero Emissions Transportation**

Suzanne Loosen - suzanne.loosen@sfgov.org

- **Biodiversity and Urban Forestry**

Peter Brastow - peter.brastow@sfgov.org

- **Green Purchasing and Toxics**

Chris Geiger - chris.geiger@sfgov.org