MEMO

TO: Charlie Catlett, Matt Gee

CC: Mike Webster, Kate McGee

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RE: Draft Eco-District Framework Data Dictionary

The San Francisco Eco-District Data Dictionary provides a summary of the existing datasets being utilized by the Eco-District Framework to perform a baseline assessment of the potential for Eco-Districts across the city. The San Francisco Eco-District Framework outlines four, interrelated focus areas of Eco-District plan development:

1. *Principles:* Provide the fundamental guidelines for Eco-District development in San Francisco and provides key strategies for the implement of projects that pertain to the district performance areas, objectives, and measures of success;
2. *Performance Areas:* Define areas for the interrelated issues that must be addressed by all Eco-Districts. The 8 Performance Areas in the SF Eco-District program: Community Identity, Equitable Development, Energy, Water, Materials Management, Habitat and Ecosystem Function, Access and Mobility, and Health and Well-being;
3. *Objectives:* The indicators for each Performance Area; and,
4. *Measures of Success:* The metrics by which the Principles, Performance Areas and Objectives will be evaluated.

The SF Eco-District Data Dictionary focuses on the Framework’s Measures of Success. The Measures of Success align with the 8 Eco-District Performance Areas and their objectives, and are drawn from existing datasets that city agencies and departments, as well as outside entities such as utilities, are tracking and updating on a regular basis. The Data Dictionary is organized by Performance Area and their corresponding measures of success, and each one-page summary of a dataset contains:

* Corresponding Performance Area objective
* Location of dataset (web URL or link to download via DataSF)
* Managing city agency or department
* Whether data is publically accessible
* Geography of the dataset (i.e. zip code, planning neighborhood, census tract, etc)
* Baseline year
* Description of dataset and methodology for data visualization

In conjunction with the development of the data dictionary, the existing datasets have been aggregated into a zipped file and sorted by their ‘Measure of Success’ title (i.e. ED.a.1.). Currently, the datasets are split between shapefiles and Excel spreadsheets, but additional work can be done to convert Excel sheets into shapefiles.

There are a few gaps in the datasets when compared with the overall San Francisco Eco-District Framework and the work that was done by the working group that developed the current list of indicators and metrics. Currently, we are still waiting on receiving the majority of data for the ‘Waste’ Performance Area. While we know this data exists and have requested the data from both SF Environment and the hauler, Recology, we are still waiting on receiving the information.

Additionally, the working group that developed our list of indicators and metrics outlined in this data dictionary also provided certain metrics that are not currently being tracked by the City. In the development of this version of the data dictionary, we have labeled these datasets under a ‘wish list’ and omitted them from the document, these include:

* Access to incentive programs (i.e. energy efficiency retrofits, etc)
* Map of Community Benefit Districts
* Community and cultural events
* Green job creation
* Sufficient management of natural resources and open space
* Stewardship coverage of open space/natural areas
* Wildlife habitat
* Integrated Pest Management by design (# of implementation projects)

There are also various Energy datasets that working group members have identified as being useful to better understanding this Performance Area, but for which we do not have the data (or have very limited data). Attached is the spreadsheet listing all the ‘desired’ energy metrics outlined by the working group highlighting the ones that are included in the data dictionary.

***DATA DICTIONARY OUTLINE***

|  |  |  |
| --- | --- | --- |
| PERFORMANCE AREA | OBJECTIVE (INDICATOR) | MEASURES OF SUCCESS (METRICS) |
| Equitable Development | ED.1. To ensure that neighborhood investments provide direct community benefit  ED.2. To provide quality local job opportunities  ED.3. To promote businesses and investments that protect and enhance the natural environment and grow the green economy | *ED.1.a. Access to incentive program\**  ED.1.b. Excessive rent burden  ED.1.c. Affordable rental housing stock  ED.2.a. Employment rate  ED.2.b. Worker residents  ED.3.a. Green businesses  *ED.3.b. Green job creation\** |
| Community Identity | CI.1. To support placemaking through physical form and infrastructure  CI.2. To foster resilient communities through  social cohesion and partnerships  CI.3. To ensure safe neighborhoods, free of crime and violence, for all | CI.1.a. Community center access  CI.1.b. Neighborhood commercial zoning  CI.1.c. Public art works  *CI.2.a. Community and cultural events\**  *CI.2.b. Community Benefits Districts\**  CI.2.c. Likelihood of leaving San Francisco  CI.2.d. Block Parties  CI.3.a. Violent crimes  CI.3.b. Property crimes  CI.3.c. Perceived safety |
| Habitat and Ecosystem Function | HEF.1. To preserve and manage existing open space for habitat and biodiversity  HEF.2. To increase open space and the urban forest to enhance ecosystem services  HEF.3. To create habitat connectivity within and beyond the district | HEF.1.a. Natural area acres  *HEF.1.b. Sufficient management\**  *HEF.1.c. Stewardship coverage\**  HEF.2.a. Open space (total)  HEF.2.b. Tree canopy  HEF.2.c. Neighborhood open space  *HEF.3.a. Wildlife habitat\**  HEF.3.b. Impervious surface |
| Water, wastewater and stormwater | WA.1. To reduce potable water use and increase non-potable water use  WA.2. To increase water efficiency | WA.1.a. and WA.2.a. Residential  potable water consumption per capita  per day |
| Energy | EN.1. To achieve a GHG-free and renewable energy system  EN.2. To capture all cost-effective energy efficiency for buildings  EN.3. To increase renewable energy generation and procurement | EN.1.a. Energy consumption  *EN.1.b. Electricity supply emissions factor*  *EN.2.a. Energy use intensity*  **EN.2.b. Commercial/multi-family energy retrofits**  EN.2.c. Residential energy retrofits  **EN.2.d. Green buildings**  EN.3.a. Solar installations  EN.3.b. Local renewable energy generation |
| Materials Management (Waste) | ZW.1. To achieve zero waste  ZW.2. To improve community environmental  health by reducing exposure to contaminants | **ZW.1.a. Solid waste diversion**  **ZW.1.b. Waste composted**  **ZW.1.c. Waste recycled**  **ZW.1.d. Total waste collected**  ZW.2.a. Brownfield sites  ZW.2.b. Leaking underground storage tanks |
| Health and Well-Being | HWB.1. To provide access to safe and functional local recreation, parks, and natural areas  HWB.2. To provide access to healthy, local and affordable foods  HWB.3. To reduce exposure to indoor and outdoor environmental hazards | HWB.1.a. Recreation facility access  HWB.1.b. Public recreation access score  HWB.2.a. Farmers’ market access  HWB.2.b. Community garden access  HWB.2.c. Food market score  HWB.3.a. Air Quality  HWB.3.b. Housing health and safety violations  *HWB.3.c. Integrated Pest Management by Design\** |
| Access and mobility | AM.1. To provide healthy, clean and affordable transportation options  AM.2. To reduce vehicle miles traveled and  achieve a reduction in single-vehicle occupancy trips  AM.3. To ensure streets are accessible, walkable, and safe for pedestrians and non-auto modes of transportation | AM.1.a. Time spent walking/biking  AM.1.b. Transit commute time  AM.1.c. Public transit score  AM.1.d. Bicycle network  AM.1.e. GHG emissions from transportation  AM.2.a. Motor vehicle access  AM.2.b. Trips by non-auto mode  AM.2.c. Distance (miles) traveled in private auto  AM.3.a. Severe/fatal traffic injuries  AM.3.b. Speed limit compliance  AM.3.c. Traffic density |

*\*Dataset unavailable/not currently being tracked (added to ‘wish list’)*

**BOLD:** Dataset exists, but has not yet been obtained by Eco-District Data Dictionary Team

CI.1.a. **Community Center Access**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To support place-making through physical form and infrastructure

**Indicator:** CI.1.a. **Community Center Access**

**Metric:** Proportion of population within ½ mile of a community center

**Location of data:** SFDPH SCI (<http://www.sustainablecommunitiesindex.org/indicators/view/235>); Data SF (<https://data.sfgov.org/Public-Health/Community-Centers-San-Francisco-CA/cm8y-f3v7>)

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH

**Geography:** Point

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** Dec 2012

**Description:**

This data set has been taken from the SF Department of Public Health’s Sustainable Communities Index (SCI) and uses their data methodology as a basis for approaching the mapping of the metric (<http://www.sustainablecommunitiesindex.org/indicators/view/235>) which creates buffer zones of ½-mile around each point and then correlates the population.

Within the Eco-District Framework and sets of indicators, the metric of community center access provides an idea of the physical location of built infrastructure that could potentially be a platform for enhancing community identity, capacity and resiliency. Community centers can foster the development of social networks and social integration by providing places where neighborhood residents can interact with each other. The programs and services that take place at community centers can also provide valuable information and skills to residents. However, it is also recognized that geographical proximity to a community center does not guarantee access, and that there may be outside issues or obstacles that prevent populations from reaching these centers. Therefore, while Eco-Districts views community center access as a potential way to strengthen community identity, it is just one of many factors that will enhance capacity and resiliency of a neighborhood.

As community centers are point data, it is possible to correlate their proximity to populations at various geographic levels - -by census tract, planning neighborhood or zipcode.

CI.1.b. **Neighborhood Commercial Zoning**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To support place-making through physical form and infrastructure

**Indicator:** CI.1.b. Neighborhood Commercial zoning

**Metric:** Proportion of land zoned for neighborhood commercial

**Location of data:** SF Planning; DataSF: <https://data.sfgov.org/Geography/Zoning-Districts/mici-sct2>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Planning

**Geography:** By parcel

**Updating frequency:** Annual(?)

**Baseline Year (for Data Dictionary):** Dec 2012

**Description:**

A mix of commercial and residential at the neighborhood-scale provides a stronger and more active public realm. If residents and visitors to a neighborhood can access services and businesses within their community it is possible that they will feel a stronger sense of place and hold a larger stake in their neighborhood. Eco-Districts look to a strengthened public realm to enhance a community’s identity, and provide a space for residents, workers and visitors to an area to come together. Through a diverse mix of land uses this potential for an active and engaging public realm is enhanced even further.

The fine-grained nature of the data set will likely allow for higher levels of manipulation, and could work well within the Eco-District model.

CI.1.c. **Public Art Works**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To support place-making through physical form and infrastructure

**Indicator:** CI.1.c. Public Art Works

**Metric:** Number of places with public art and murals per square mile

**Location of data:** San Francisco Arts Commission; SF Mural Arts; DataSF: <https://data.sfgov.org/Arts-Culture-and-Recreation-/SF-Civic-Art-Collection/zfw6-95su>; SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/36>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Arts Commission; SF Mural Arts; SF DPH

**Geography:** Points

**Updating frequency:** Annual(?)

**Baseline Year (for Data Dictionary):** DataSF (2012); SFDPH 2011

**Description:**

Outdoor public art can enhance the visual appeal of pedestrian environments and encourage walking. Communities and neighborhoods could use public art works to highlights aspects of an Eco-District or a specific project within the area. Linking public art with community-based projects, can continue to help build the identity of Eco-District, and create a stronger public realm.

Public art and mural locations are collected from local agencies that curate public arts and murals. In order to illustrate that there are often a number of art pieces at the same address, public art location points are sized to indicate the number of pieces at the location. Population density is mapped by dividing census tract population by the number of square miles. The number of pieces and locations are summarized by neighborhood for the table. (<http://www.sustainablecommunitiesindex.org/indicators/view/97>)

CI.2.c. **Likelihood of leaving San Francisco**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To foster resilient communities through social cohesion and local partnerships

**Indicator:** CI.2.c. Likelihood of leaving San Francisco

**Metric:** Proportion of households likely to move away from San Francisco in the next 3 years

**Location of data:** City Controller’s Office/DataSF: Data SF (<https://data.sfgov.org/Statistics/1996-2011-City-Survey-Database/583k-63vu>); official link: <http://sfcontroller.org/Modules/ShowDocument.aspx?documentid=4287> ; SFDPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/92>

**Data publically accessible:** YES

**Managing Department/Agency:** City Controller

**Geography:** Zip code

**Updating frequency:** Biannual

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Residents' plans to stay in their communities may reflect social networks and feelings of belonging among community members. Neighborhoods that experience less residential mobility are more likely to develop lasting, supportive social networks among residents than neighborhoods with high residential mobility.

A total of 3979 respondents answered this question. The table shows the percent of respondents in each zipcode who gave each answer. The map shows the percent of respondents in each zipcode who answered that they were either "very likely" or "somewhat likely" to move out of San Francisco in the next three years.

Since each zip code may contain one or more neighborhoods, it is not possible compare the answers given by people living in different neighborhoods within the zip code. It is also important to remember that different respondents may have given the same answers, but for different reasons: for example, some residents may plan to stay in the same community because they are happy there, while others may feel they lack the resources to move. This indicator does not give any information about residents' plans to move within the city of San Francisco.

Neighborhood social cohesion is not a time-static concept; movement of residents, organizations, and businesses into and out of a neighborhood can impact the social dynamics among neighbors and other components of social cohesion. While this indicator provides a snapshot of one aspect of social cohesion, it does not provide any information about long-term trends. Residents' plans to stay in their communities represent one among many possible indicators of social cohesion within a neighborhood.

CI.2.d. **Block Parties**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To foster resilient communities through social cohesion and local partnerships

**Indicator:** CI.2.d. Block Parties

**Metric:** Neighborhood block party permits

**Location of data:** SFMTA; DataSF: <https://data.sfgov.org/Public-Health/Block-Parties-San-Francisco-CA/sq9q-per9>

**Data publically accessible:** YES

**Managing Department/Agency:** SFMTA; DataSF

**Geography:** Point

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Neighborhood block parties provide an opportunity for residents to spend time together and build social ties. Social networks and social integration are beneficial to health: Healthy People 2010 asserts that the social environment—including interactions with family, friends, coworkers, and others in the community—has a "profound effect on individual health."

Neighborhood block parties provide an opportunity for residents to spend time together and build social ties. This indicator represents permits issued by the Interdepartmental Staff Committee on Traffic and Transportation (ISCOTT) for neighborhood block parties during 2010. The permit allows for the closure of a section of a street to traffic during a neighborhood block party, which ISCOTT defines as a one-block closure with no intersection closures. The closure must be "sponsored by a neighborhood organization or an individual who lives on the block to be closed. There is a fee for the permit, but it is lower than the fees for other types of street closures.

Larger street fairs, which require a different permit for street closure, are not included in this indicator. Because the permits are required only for street closures, any neighborhood parties that took place without street closures are also not included.

CI.3.a. **Violent Crimes**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To ensure safe neighborhoods, free of crime and violence, for all

**Indicator:** CI.3.a. Violent Crimes

**Metric:** Crimes per 1000 residents

**Location of data:** SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/27> (2010-2012, SFPD); DataSF: <https://data.sfgov.org/Public-Safety/SFPD-Reported-Incidents-2003-to-Present/dyj4-n68b> (2003-present)

**Data publically accessible:** YES

**Managing Department/Agency:** SFPD

**Geography:** Point; aggregated to Planning Neighborhood

**Updating frequency:** Daily (DataSF)

**Baseline Year (for Data Dictionary):** 2010-2012

**Description:**

Physical assaults, homicides and rapes/sexual assaults are direct and adverse health outcomes for a community. Witnessing and experiencing community violence causes longer term behavioral and emotional problems in youth. Finally, community violence also impacts the perceived safety of a neighborhood, inhibiting social interactions and adversely impacting on social cohesion.   Parental concerns about neighborhood crime strongly influence their willingness to allow their children to actively commute (e.g. walk or bike) to school, influencing children’s levels of physical activity.

### Methods

The data for this indicator comes from police incident reports. The map shows those incidents with addresses it recognizes, or where the location was known to the victim. Violent crimes include assault, forcible sexual assault, and robbery. Homicides are excluded, because police departments rarely make crime report data for homicides publically available. Locations of homicides are however, available for many cities through [http://www.crimemapping.com](http://www.crimemapping.com/).

Crimes are aggregated by census tract to present on the maps. Rates per thousand residents are calculated by dividing the number of incidents by the number of people residing in each census tract.

CI.3.b. **Property Crimes**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To ensure safe neighborhoods, free of crime and violence, for all

**Indicator:** CI.3.b. Property crimes

**Metric:** Crimes per 1000 residents

**Location of data:** SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/97> (2010-2012 SFPD); Data SF: <https://data.sfgov.org/Public-Safety/SFPD-Reported-Incidents-2003-to-Present/dyj4-n68b> (2003-present)

**Data publically accessible:** YES

**Managing Department/Agency:** SFPD

**Geography:**

**Updating frequency:** Daily (DataSF)

**Baseline Year (for Data Dictionary):** 2010-2012

**Description:**

Crime impacts the perceived safety of a neighborhood, inhibiting social interactions and adversely affecting social cohesion.Residents' worries about safety in their neighborhoods can be a cause of chronic stress.Fear of crime and feelings of vulnerability to crime can decrease residents' sense of control over their lives and their life satisfaction.

### Methods

The data for this indicator comes from police incident reports written by the San Francisco Police Department for crimes reported from 2010 to 2012. The types of crimes included are:

• Burglaries and attempted burglaries

• Thefts and attempted thefts, not including pickpocketing

• Stolen vehicles and attempted stealing of vehicles

• Shoplifting and attempted shoplifting

• Arson and attempted arson

• Malicious mischief, including vandalism

CI.3.c. **Perceived Safety**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Community Identity

**Objective:** To ensure safe neighborhoods, free of crime and violence, for all

**Indicator:** CI.3.c. Perceived safety

**Metric:** Proportion of people who feel safe during the day vs night

**Location of data:** SF Office of the City Controller: <http://sfcontroller.org/Modules/ShowDocument.aspx?documentid=4287> ; SFDPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/93>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Office of the City Controller

**Geography:** District (Councilors)

**Updating frequency:** Biannual

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Community violence decreases the safety of a neighborhood, inhibiting social interactions and adversely affecting social cohesion.This can create a vicious circle, as social cohesion can be a valuable tool in decreasing crime. Studies have found a negative relationship between neighborhood residents' levels of mutual trust/willingness to take action and levels of violent crime. In addition, the level of safety perceived by residents of a neighborhood may differ from objective measures of the level of safety (e.g. crime rates), and may be influenced by the residents' feelings of integration into the social fabric of the neighborhood or by other aspects of social cohesion.

### Methods

The City Survey is conducted annually by the San Francisco Controller's Office in order to measure residents' opinions about the quality and level of City services.   For the 2011 City Survey, 1,000 residents were randomly selected from each supervisorial district and 3,979 mail, phone, and web surveys were completed for a response rate of 37% when accounting for undeliverable surveys.  The survey was available in English, Spanish, and Chinese.  The overall distribution of survey respondents’ demographics was determined to be similar to the most recent census estimates and so no additional sampling was conducted.

Data were mapped by zip code and represent the responses of only those residents who responded the survey, as the data were not adjusted to compensate for non-response bias.

ED.1.b. **Excessive rent burden**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Equitable Development

**Objective:** To ensure that neighborhood investments provide direct community benefit

**Indicator:** ED.1.b. Excessive rent burden

**Metric:** Proportion of households paying 50% or more of income in rent

**Location of data:** DataSF: <https://data.sfgov.org/Public-Health/Excessive-Rent-Burden-San-Francisco-CA/9wty-qwgq>; SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/47>

**Data publically accessible:** YES

**Managing Department/Agency:** SF DPH

**Geography:** Census Tract – can be aggregated for Planning Neighborhood/zip code/district

**Updating frequency:** 1-5 years (?)

**Baseline Year (for Data Dictionary):** 2012 (ACS 2005-2009)

**Description:**

High housing costs relative to the income of an individual or household result in one or more outcomes with adverse health consequences: spending a high proportion of income on housing, living in overcrowded conditions, accepting lower cost substandard housing, moving to an area where housing costs are lower, or becoming homeless. Spending a high proportion of income on rent or a mortgage means fewer resources for food, heating, transportation, health care, and child care. Overcrowded housing condition can increase the risks for infectious disease, noise, and fires. Lower cost housing is often substandard with exposure to waste and sewage, physical hazards, mold spores, poorly maintained paint, cockroach antigens, old carpeting, inadequate heating and ventilation, exposed heating sources and wiring, and broken windows. Moving away can result in the loss of job, increased transportation costs, difficult school transitions, and the loss of health protective social networks.

### Methods

Data on proportion of household income spend on gross rent was obtained from the 2005-2009 American Community Survey (ACS). Gross rent is calculated by summing the contract rent and the estimated average monthly cost of utilities and fuels. The number of renters who pay 50% or more of their income to gross rent was extracted and divided by the total number of renting households.

The American Community Survey (ACS) is a sample survey, and thus, data are estimates rather than counts. Estimates have accompanying margins of error that indicate the span of values that the true value could fall within. Margins of error should be subtracted from and added to the value to determine the range of possible values. If the margin of error is too big relative to the value, data are not shown because they are statistically unstable. A coefficient of variation of 30% was used to determine statistical instability.

ED.1.c. **Affordable Rental Housing Stock**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Equitable Development

**Objective:** To ensure that neighborhood investments provide direct community benefit

**Indicator:** ED.1.c. Affordable Rental Housing Stock

**Metric:** Proportion of San Francisco housing stock that is affordable

**Location of data:** DataSF: <https://data.sfgov.org/Public-Health/Proportion-of-Housing-Stock-that-is-Rent-Controlle/ypnu-v2zq>; SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/77>

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH

**Geography:** Census Tract – can be aggregated for Planning Neighborhood/zip code/district

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2010

**Description:**

Below market rate housing provides housing opportunities for a variety of income levels. High housing costs relative to the income of an individual or household result in one or more outcomes with adverse health consequences: spending a high proportion of income on housing, sharing housing with other individuals or families, accepting lower-cost substandard housing, moving to where housing costs are lower, or becoming homeless.

Data on the number of rent controlled units was obtained from the American Community Survey (ACS), but dividing the number of rental units built before 1980 by the total number of rental units. These figures are an overestimate of the exact number of units under rent control as the data includes all units built in San Francisco before 1980 and do not account for exemptions. For example, single family homes/condos where tenants moved in after 1996, or SRO units where tenants remain less than 28 consecutive days are exemptions to the rent stabilization ordinance and yet are included in our figures. Units built after June 1979 are exempt from rent control; however units built between June and December of 1979 are included in this data because the data did not allow for more refined separation.

The ACS is a sample survey, and thus, data are estimates rather than counts. Estimates have accompanying margins of error that indicate the span of values that the true value could fall within.  Margins of error should be subtracted from and added to the estimate to determine the range of possible values. If the margin of error is too big relative to the value, data are not shown because they are statistically unstable.  A coefficient of variation of 30% was used to determine statistical instability.

ED.2.a. **Employment rate**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Equitable Development

**Objective:** To provide quality local job opportunities

**Indicator:** ED.2.a. Employment rate

**Metric:** Employment rate

**Location of data:** DataSF: <https://data.sfgov.org/Public-Health/Employment-Rate-San-Francisco-CA/2pwu-v9j6>; SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/60>

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH

**Geography:** Census Tract – can be aggregated for Planning Neighborhood/zip code/district

**Updating frequency:** 1-5 years

**Baseline Year (for Data Dictionary):** 2012 (ACS 2005-2009)

**Description:**

**Methods**

***Employment rate***

For this indicator, the employment rate, rather than the unemployment rate, was calculated because figures for unemployment were statistically unreliable. This is because a relatively small number of people are unemployed versus employed, and it is generally difficult to generate reliable estimates for small populations from sample surveys like the American Community Survey (ACS).

According to the ACS, civilians 16 years old and over are classified as employed if they are either (1) "at work," that is, they did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as an unpaid worker on a family farm or in a family business; or (2) were "with a job but not at work", that is, they did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons. Excluded from the employed are people whose only activity consisted of work around the house or unpaid volunteer work for religious, charitable, and similar organizations; also excluded are all institutionalized people and people on active duty in the United States Armed Forces.

The equation used to calculate the employment rate is therefore: (persons 16+ years old in the civilian labor force and employed) / (persons 16+ years old in the civilian labor force).

ED.2.b. **Worker Residents**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Equitable Development

**Objective:** To provide quality local job opportunities

**Indicator:** ED.2.b. Worker residents

**Metric:** Proportion of residents who live and work in San Francisco

**Location of data:** SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/52>

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH

**Geography:** Planning neighborhood (aggregated from census tract)

**Updating frequency:** 1-5 yrs

**Baseline Year (for Data Dictionary):** 2012 (ACS 2005-2009)

**Description:**

Residence in the city of employment creates benefits through reducing commuting times and through the use of public transit and more "active" commutes.  Shorter commuting times allow for increased time for physical activity, family interactions, community engagement, and leisure/rest. Active commutes, via walking or bicycling, help promote physical activity, and reduce the environmental consequences of driving.

### Methods

To calculate the percent of San Francisco residents that work in San Francisco, the number of employed San Franciscans who report that they carry out their occupational duties in San Francisco was divided by the total number of workers who live in San Francisco. Civilian and members of the Armed Forces, 16 years of age and older, are included.

ED.3.a. **Green Businesses**

**Eco-District Principle:** Prosperous

**Eco-District Performance Area:** Equitable Development

**Objective:** To promote businesses and investments that protect and enhance the natural environment and grow the green economy

**Indicator:** ED.2.a. Green Businesses

**Metric:** Distribution of green businesses

**Location of data:** DataSF: <https://data.sfgov.org/Public-Health/Green-Businesses-San-Francisco-CA/vgz9-isc8>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Environment

**Geography:** Point

**Updating frequency:** Monthly

**Baseline Year (for Data Dictionary):** 2012

**Description:**

The underlying goal of environmental laws and regulations, especially those targeting air quality, wastewater discharge, storm water management, chemical storage and handling, and hazardous waste management is to prevent human exposure to substances known to harm health.

HWB.1.a. **Recreation facility access**

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Health and Well-Being

**Objective:** To provide access to safe and functional local recreation and natural areas

**Indicator:** HWB.1.a. Recreation Facility access

**Metric:** Proportion of the population within ¼ mile of a recreational facility

**Location of data:** SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/35>; List of facilities: <http://sfrecpark.org/recreation-community-services/rec-facilities/>

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH

**Geography:** Point

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2010

**Description:**

Access to community recreational facilities also provides a space for social engagement, which may promote the development of social networks and social cohesion in a place.

Methods

The percentage of population within 1/4 mile of a community recreational facility is calculated by dividing the total population within 1/4 mile of a community recreational facility in a specific neighborhood by the total population in that neighborhood.

Facility buffers are visualized using shading to indicate the type of facility. Because there may be multiple types of facilities at one address, not all facility types at a single location may be visible on the map due to buffers overlapping.

Recreation facilities can generally be broken down into six different types of facilities, described below:

* Activity Centers - centers used for specific types of activities, such as arts, or for specific populations, such as seniors, with lesser emphasis on a broad range of exercise related activities.
* Clubhouses - facilities located in parks that generally contain restrooms and a small space for events and communities meetings, and may host afterschool programming.
* Community pools - aquatic facilities that offer both recreational swimming and classes.
* Day camps - multi day youth camp programming.
* Fieldhouses - facilities that support the uses outdoor spaces, such as playing fields.
* Recreation centers - full service activity centers that provide gyms, classrooms, and programming.

HWB.1.b. **Public Recreation access score**

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Health and Well-Being

**Objective:** To provide access to safe and functional local recreation and natural areas

**Indicator:** HWB.1.b. Public Recreation access score

**Metric:** A relative measure of the number of acres of public recreation space within two miles, weighted by distance

**Location of data:** SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/34>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Planning

**Geography:** Planning neighborhood

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2011

**Description:**

To calculate the Recreational Area Scores, the distance from each residential intersection (intersections within 100 meters of residential lots) to recreation spaces (park, natural area, or recreation center) within 2 miles of the intersection is calculated. A distance of < 0.5 miles is given a score of 1, while distances between 0.5-0.1 miles are given a score of 0.75 and distances >1 mile are given a score of 0.5.

In order to make sure that large parks in the city do not overly skew the distribution of relative access to recreation spaces, a formula for diminishing returns is applied to each park’s acreage. The assumption is, that as a park’s acreage becomes increasingly large, additional acres add less and less value. Thus, the formula used is:

Diminishing Return Adjusted Acreage = (actual acreage x acreage cap)/(actual acreage + acreage cap)

An acreage cap of 250 acres was chosen because parks of 250 acres or more are in the largest park category of regionally serving parks, as specified by the National Recreation and Parks Association. Thus, additional acres could not advance a park of 250 acres or more into a higher category and would not add significantly more value.

Distance weights are then multiplied by the diminishing returns adjusted acreage for each recreation space within the 2 mile search radius. These products are then summed for each intersection, for a sum of “distance weighted acres.” The distance weighted acres for each intersection are then normalized to a scale of 0-100 to create a Public Recreation Access Score.

Public Recreation Access Scores for all of the residential intersections in the city are interpolated onto a continuous surface in ArcGIS using an inverse distance weighting (IDW) technique, with an output cell size of 30 and a variable search radius that samples the 12 nearest points. Neighborhood averages are calculating by using the “zonal statistics by table” tool in ArcGIS to calculate the averages for neighborhood boundaries.

HWB.2.a. **Farmers’ market access**

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Health and Well-Being

**Objective:** To provide access to healthy, local and affordable foods

**Indicator:** HWB.2.a Farmers’ market access

**Metric:** Proportion of households within ½ mile of a farmers’ market

**Location of data:** DataSF: <https://data.sfgov.org/Public-Health/Farmers-Markets-San-Francisco-CA/p2n6-q8bk> ; SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/12>

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH

**Geography:** Point data; Planning neighborhood

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Studies of individuals who have received farmers’ market coupons show that when individuals shop at farmers’ markets, they have increased fruit and vegetable consumption. In addition to being a healthy food resource, farmers’ markets also serve as a place for social interaction and have positive economic impacts for surrounding businesses. Farmers’ markets have been called “keystones” for rebuilding local food systems, by educating consumers about seasonal limits of local foods and encouraging the production of a greater variety of food products that are needed for a local food system.

### Methods

A list of farmers’ markets can be obtained from the local farmers’ market licensing body. Markets are geocoded and ½ mile buffers are drawn around them. The percent of population falling within ½ mile of a market is calculated by dividing the neighborhood population falling within ½ mile of a market by the total population in the neighborhood.

HWB.2.b. **Community garden access**

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Health and Well-Being

**Objective:** To provide access to healthy, local and affordable foods

**Indicator:** HWB.2.b. Community garden access

**Metric:** Proportion of households within ¼ mile of a community garden

**Location of data:** DataSF: <https://data.sfgov.org/Public-Health/Community-Gardens-San-Francisco-CA/tkhq-qkum> ; SF DPH Sustainable Communities Index: <http://www.sustainablecommunitiesindex.org/city_indicators/view/106>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Garden Resource Organization; SF DPH

**Geography:** Planning neighborhood

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2012

**Description:**

Community gardens can provide a source of fresh fruits and vegetables for users, supporting the achievement of federal nutritional recommendations. Gardens may also provide a venue for social interaction, supporting the development or maintenance of social cohesion and social capital.

The Recreation and Open Space Element of the San Francisco General Plan, Policy 2.12 states community gardens are a valuable use of open space in dense urban areas. They improve the quality of life in the city by revitalizing neighborhoods, and stimulating social interaction and neighborhood cooperation. In addition they provide opportunities for recreation and exercise for those who work in the gardens, and provide visual interest to the general public. The City should also investigate opportunities to preserve existing gardens, in order to maximize the opportunity for San Franciscans to use, enjoy, and benefit from community gardens.

### Methods

Community gardens are mapped and ¼ mile buffers are drawn around them. The number of each neighborhood’s residents that fall within a buffer is summed and divided by the total population in the neighborhood to calculate the percent of residents with access to a community garden.

HWB.2.c. **Food market score**

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Health and Well-Being

**Objective:** To provide access to healthy, local and affordable foods

**Indicator:** HWB.2.c. Food market score

**Metric:** A relative measure of the number and variety of retail food resources within one-mile, weighted by food offerings and distance

**Location of data:** SF DPH Sustainable Communities Index (using Dun & Bradstreet, 2011): <http://www.sustainablecommunitiesindex.org/city_indicators/view/45>

**Data publically accessible:** YES

**Managing Department/Agency:** SF DPH; SF Planning

**Geography:** Planning neighborhood

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2011

**Description:**

To calculate the Food Market Scores, the distance from each residential intersection (intersections within 100 meters of residential lots) to each retail food store school within 1 mile of the intersection is calculated. A distance of < 0.25 miles is given a score of 1, while distances between 0.25-0.49 miles are given a score of 0.9 and distances between 0.5-1.0 miles are given a score of 0.75.

Each store is then given a score based on its type. To come up with scores for store types, a survey of store stock can be completed at a sample of stores from different neighborhoods in the city (contact for survey form). In San Francisco the Inner Richmond, Outer Sunset, Outer Mission, Downtown/Civic Center, Mission, and Marina neighborhoods were sampled. These neighborhoods were chosen because they represented a range of incomes and residential densities, and also because less food retail research had been previously conducted in them. The store survey looks at the variety of healthy, whole foods available in each surveyed store. The survey contains sections for produce, dairy, whole grains, and protein. The produce section represents 51% of the total possible points (59 points possible), while the dairy, whole grains, and protein sections account for 10%, 19%, and 20% of the points respectively. In San Francisco, the median final scores by store type were as follows: supermarket – 57, produce market – 51.5, other grocery – 41.5, meat/seafood market – 20, and convenience/liquor store – 14. It is worth noting that only independent supermarkets may be surveyed, because it can be assumed that a large chain would certainly receive all points. Farmers’ markets were given 29.5 points based on the assumption that they would get the full produce credit, but points for other sections were not given to account for the fact that farmers’ markets have limited hours. Large pharmacies can also be included, if they accept federal nutrition program benefits. The median score for drug stores in San Francisco was 24.2. To arrive at the final store type scores, the median score for each store type should be divided by the median supermarket score. In San Francisco the final scores are as follows: supermarket – 1, produce market – 0.9, other grocery – 0.72, farmers’ market – 0.51, pharmacy – 0.41, meat/seafood market – 0.35, and convenience/liquor store – 0.25.

For each intersection the distance scores are then multiplied by the store type scores for each food retail store within 1 mile of the intersection. In the case of convenience and liquor stores, only stores within ¼ mile are considered because it was judged that residents would not travel further than that to go to a convenience store. The products of the distance score and the store type score were then summed for each intersection by store type. To account for the overabundance of some store types skewing the results, a score cap is applied to each store type. After applying the caps, an intersection will receive no more points than the equivalent of 3 stores within ¼ mile – 3 points for supermarkets, 2.7 points for produce stores, and 2.16 points for other grocery stores. For meat and seafood markets, pharmacies, and convenience and liquor stores, the top number of points an intersection can receive from each store type is 0.7, 0.82, and 0.5 respectively – the equivalent of 2 stores within ¼ mile. There was is score cap for farmers’ markets.

Each intersection’s capped scores by store type are then summed to come up with the food market score. The intersection food market scores were then normalized onto a scale of 0 to 100 and then interpolated across the surface of San Francisco using inverse distance weighting. Neighborhood average scores are calculated using zonal statistics on the resulting raster file.

HWB.3.a. **Air Quality**

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Health and Well-Being

**Objective:** To reduce exposure to indoor and outdoor environmental hazards

**Indicator:** HWB.3.a. Air Quality

**Metric:** % of households living in an article 38 action area *(need to source dataset)*

**Location of data:** DataSF, Total Cancer Risk (cases/million), SF: <https://data.sfgov.org/Public-Health/Total-Cancer-Risk-Cases-per-Million-San-Francisco-/dbm9-puxk>; Avg Annual Particulate Matter concentration: <https://data.sfgov.org/Public-Health/Average-Annual-Fine-Particulate-Matter-Concentrati/wa7x-rarf>

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH

**Geography:** Planning neighborhood

**Updating frequency:** Annual

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Motor vehicle emissions, power plants, and refineries are the predominant sources of fine particulate air pollution (PM2.5). Several large-scale studies demonstrate that increased exposure to PM2.5 is associated with detrimental cardiovascular outcomes, including increased risk of death from ischemic heart disease, higher blood pressure, and coronary artery calcification.

Motor vehicles and other forms of fossil fuel combustion emit several toxic air contaminants that are either known or probable human carcinogens, including benzene, formaldehyde, acetaldehyde, and 1,3-butadiene. The U.S. Environmental Protection Agency (EPA) estimates that “mobile sources of air toxics account for as much as half of all cancers attributed to outdoor sources of air toxics.”

**Methods**

Models were created by SFDPH in conjunction with the Bay Area Air Quality Management District to quantify total PM 2.5, TOG and DPM concentrations from all sources in the city.   Cancer risk was calculated based on the cumulative TOG and DPM exposures. Estimated PM 2.5 concentration and cancer risk were assigned to points on a 20 meter grid. PM 2.5 values were interpolated using spline interpolation. Population exposure estimates to PM 2.5 were created using the ArcGIS zonal statistics spatial analysis tool using residential lots as the “zones.” Lots with a maximum PM 2.5 concentration value of 10 ug/m3  or more were selected as falling within an air quality hazard zone. The population that was estimated to have a cancer risk of 100 or more in 1 million was determined by performing a “Select by Location” query on city residential lots that were within 20 meters of a location that was modeled to have a cancer risk of 100 or more per 1 million. The population that was estimated to be living in those lots was summed by neighborhood and divided by the total population in the neighborhood to calculate the percent of the population exposed.

HWB.3.b. Housing health and safety violations

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Health and Well-Being

**Objective:** To reduce exposure to indoor and outdoor environmental hazards

**Indicator:** HWB.3.b. Housing health and safety violations

**Metric:** Health and building code violations for housing safety and habitability

**Location of data:** DataSF: <https://data.sfgov.org/Public-Health/Housing-Code-Violations-San-Francisco-CA/739v-w6y3>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Department of Building Inspection; SF Department of Health, SF Fire Department

**Geography:** Point data

**Updating frequency:** Monthly (?)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Housing infrastructure and proper maintenance are important to protect the health and safety of residents in their homes. Unsafe housing and habitability conditions that affect health often exist in older and poorly maintained housing. Houses have inadequate heating or ventilation, which can lead to the growth of mold, and dust mites, leading to asthma and respiratory allergies.

### Methods

Housing code and residential health code violations were geocoded and mapped used ESRI ArcMap Version 10.0. Violation data from DBI and DPH were merged into one file and a spatial join analysis was performed to assess how many violations occurred in each San Francisco census tract and planning neighborhood. The total number of violations per census tract/neighborhood was then divided by three to attain the average annual number of violations in the three year period (2009-2011). Finally, the average annual number of violations was divided by the total population at each geographic spatial level (census tract/neighborhood) and multiplied by 1,000 to normalize by population density.

EN.2.a.1. Energy Use (electricity)

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Energy

**Objective:** To capture all cost-effective energy efficiency for buildings

**Indicator:** EN.2.a.1.

**Metric:** annual kBtu (electricity)

**Dataset:** Energy\_CO2\_Nonres\_Fy12-13; Energy\_CO2\_SFResidents\_byzip\_FY12-13

**Location of data:** Pacific Gas and Electric (PG&E), accessed by San Francisco Environment Department

**Data publically accessible:** NO

**Managing Department/Agency:** San Francisco Environment Department

**Geography:** Zip code

**Updating frequency:** Annual (though PG&E can likely provide monthly updates)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Energy use is key indicator not only of efficiency in the built environment, but also in regards to facilitating behavior change of those in the Eco-District in response to initiatives and education around energy efficiency.

The datasets are divided by residential and non-residential energy use and CO2 emissions, they do not include municipal emissions (need to confirm this detail). Currently , the approach to mapping this data set is to correlate energy use to a zip code’s population (aggregated from Census Tracts). While this method allows for better visualization, it may slightly skew the data based on the variability of population across the city.

EN.2.a.2 Energy Use (natural gas)

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Energy

**Objective:** To capture all cost-effective energy efficiency for buildings

**Indicator:** EN.2.a.2 Energy Use (natural gas)

**Metric:** annual kBtu (natural gas)

**Dataset:** Energy\_CO2\_Nonres\_Fy12-13; Energy\_CO2\_SFResidents\_byzip\_FY12-13

**Location of data:** Pacific Gas and Electric (PG&E), accessed by San Francisco Environment Department

**Data publically accessible:** NO

**Managing Department/Agency:** San Francisco Environment Department

**Geography:** Zip code

**Updating frequency:** Annual (though PG&E can likely provide monthly updates)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Energy use is key indicator not only of efficiency in the built environment, but also in regards to facilitating behavior change of those in the Eco-District in response to initiatives and education around energy efficiency.

The datasets are divided by residential and non-residential energy use and CO2 emissions, they do not include municipal emissions (need to confirm this detail). Currently , the approach to mapping this data set is to correlate energy use to a zip code’s population (aggregated from Census Tracts). While this method allows for better visualization, it may slightly skew the data based on the variability of population across the city.

EN.2.b.1 GHG emissions (electricity)

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Energy

**Objective:** To capture all cost-effective energy efficiency for buildings

**Indicator:** EN.2.b.1 GHG emissions (electricity)

**Metric:** annual lbs of CO2 annually (electricity)

**Dataset:** Energy\_CO2\_Nonres\_Fy12-13; Energy\_CO2\_SFResidents\_byzip\_FY12-13

**Location of data:** Pacific Gas and Electric (PG&E), accessed by San Francisco Environment Department

**Data publically accessible:** NO

**Managing Department/Agency:** San Francisco Environment Department

**Geography:** Zip code

**Updating frequency:** Annual (though PG&E can likely provide monthly updates)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Tracking CO2 emissions will provide a baseline understanding on how well the city, and Eco-Districts in particular, are progressing towards the city’s carbon reduction goals.

The datasets are divided by residential and non-residential energy use and CO2 emissions, they do not include municipal emissions (need to confirm this detail). Currently , the approach to mapping this data set is to correlate CO2 emissions to a zip code’s population (aggregated from Census Tracts). While this method allows for better visualization, it may slightly skew the data based on the variability of population across the city.

EN.2.b.2 GHG emissions (natural gas)

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Energy

**Objective:** To capture all cost-effective energy efficiency for buildings

**Indicator:** EN.2.b.2 GHG emissions (natural gas)

**Metric:** annual lbs of CO2 annually (natural gas)

**Dataset:** Energy\_CO2\_Nonres\_Fy12-13; Energy\_CO2\_SFResidents\_byzip\_FY12-13

**Location of data:** Pacific Gas and Electric (PG&E), accessed by San Francisco Environment Department

**Data publically accessible:** NO

**Managing Department/Agency:** San Francisco Environment Department

**Geography:** Zip code

**Updating frequency:** Annual (though PG&E can likely provide monthly updates)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Tracking CO2 emissions will provide a baseline understanding on how well the city, and Eco-Districts in particular, are progressing towards the city’s carbon reduction goals.

The datasets are divided by residential and non-residential energy use and CO2 emissions, they do not include municipal emissions (need to confirm this detail). Currently , the approach to mapping this data set is to correlate CO2 emissions to a zip code’s population (aggregated from Census Tracts). While this method allows for better visualization, it may slightly skew the data based on the variability of population across the city.

EN.2.d.4 Residential Energy Retrofits

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Energy

**Objective:** To capture all cost-effective energy efficiency for buildings

**Indicator:** EN.2.d.4 Residential Energy Retrofits

**Metric:** # of projects

**Dataset:** Residential\_EnergyEfficiencyprojects\_May2013totals

**Location of data:** San Francisco Environment Department (provided by Energy Efficiency retrofit companies)

**Data publically accessible:** NO

**Managing Department/Agency:** San Francisco Environment Department

**Geography:** Point (can be aggregated to zip code level)

**Updating frequency:** Annual (though updated monthly)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Energy efficiency retrofits provide an idea of how the existing built environment is becoming more energy efficient. The single-family residential energy efficiency retrofits represent a smaller portion of San Francisco’s housing stock and are very dependent on loan/rebate programs available.

Due to the small size of the data set, it could be mapped as points, or aggregated by zip code.

EN.3.a. Renewable energy installations

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Energy

**Objective:** To increase distributed renewable energy generation

**Indicator:** EN.3.a. Renewable energy installations

**Metric:** # of installations

**Dataset:** 2012\_ExistingSolarPVinstallations\_byaddress

**Location of data:** San Francisco Environment Department

**Data publically accessible:** YES (through point data on SF Solar Map) <http://sfenergymap.org/>

**Managing Department/Agency:** San Francisco Environment Department

**Geography:** Point (can be aggregated to zip code level)

**Updating frequency:** Monthly

**Baseline Year (for Data Dictionary):** 2012

**Description:**

Renewable energy installations provide a clear picture of local distribution capacity across the city, and can provide the groundwork for a larger district-scale energy system. While at this point San Francisco’s renewable energy installations are almost all solar PV, in the future technologies such as wind, digesters, or other renewable sources could be included.

The data set is currently all point level, but can be aggregated to the zip code level.

EN.3.b. Renewable energy generation

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Energy

**Objective:** To increase distributed renewable energy generation

**Indicator:** EN.3.b. Renewable energy generation

**Metric:** estimated annual kWh generated (separated by Residential and Non-residential)

**Dataset:** Mar13\_InstalledSolarPVcapacity\_NONRESIDENTIAL; Mar13\_InstalledSolarPVcapacity\_RESIDENTIAL

**Location of data:** San Francisco Environment Department (w/ data provided by solar installers)

**Data publically accessible:** YES (through point data on SF Solar Map) <http://sfenergymap.org/>

**Managing Department/Agency:** San Francisco Environment Department

**Geography:** Zip code

**Updating frequency:** Monthly

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Renewable energy installations provide a clear picture of local distribution capacity across the city, and can provide the groundwork for a larger district-scale energy system. While at this point San Francisco’s renewable energy installations are almost all solar PV, in the future technologies such as wind, digesters, or other renewable sources could be included.

There are two datasets available for renewable energy generation that separates projects by residential and non-residential. The non-residential generation is much larger, as they usually cover larger rooftop square footage. Municipal generation is also included in the non-residential dataset.

ZW.2.a. Brownfield Sites

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Waste

**Objective:** To improve community environmental health by reducing exposure to contaminants

**Indicator:** ZW.2.a. Brownfield sites

**Metric:** Sites per square mile

**Dataset:** Location of Brownfield Sites in SF (DataSF; SF DPH)

**Location of data:** <https://data.sfgov.org/Public-Health/Brownfield-Sites-San-Francisco-CA/xtqc-849g> (DataSF); SF DPH Sustainable Communities Index (<http://www.sustainablecommunitiesindex.org/city_indicators/view/13>)

**Data publically accessible:** YES

**Managing Department/Agency:** San Francisco Department of Public Health; CA Department of Toxic Substances Control; State Water Resources Control Board

**Geography:** Point

**Updating frequency:** As needed

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Brownfields are real property where the expansion, redevelopment, or reuse of the property may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.A key characteristic of a brownfield site is that it is targeted for redevelopment.

Brownfields with high concentrations of contaminated soil threaten the air we breathe and the water we drink.  Even sites falsely assumed to be contaminated pose a health threat because they can result in reduced property values or sprawled development patterns if left unchecked. Cleanup and reuse can improve quality of life by creating community benefits like parks or by stimulating jobs creation.  Indirect health benefits may include greater location efficiency than alternative greenfield sites; a local reduction in vehicle miles traveled; and, evidence shows, a reduction in crime.

ZW.2.b. Leaking Underground Storage Tanks

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Waste

**Objective:** To improve community environmental health by reducing exposure to contaminants

**Indicator:** ZW.2.b. Leaking underground storage tanks

**Metric:** Sites per square mile

**Dataset:** Location of leaking underground storage tanks in SF (DataSF)

**Location of data:** <https://data.sfgov.org/Public-Health/Leaking-Underground-Storage-Tanks-San-Francisco-CA/ui59-timw> (DataSF); SF DPH Sustainable Communities Index (<http://www.sustainablecommunitiesindex.org/city_indicators/view/13>)

**Data publically accessible:** YES

**Managing Department/Agency:** San Francisco Department of Public Health; CA Department of Toxic Substances Control; State Water Resources Control Board

**Geography:** Point

**Updating frequency:** As needed

**Baseline Year (for Data Dictionary):** 2011

**Description:**

An underground storage tank (UST) is a tank and any pipes connected to it that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground.  A leaking underground storage tank (LUST) falls under the category of a brownfield, but requires its own regulations because of the potentially significant threat to our drinking water.

ZW.2.c. Household Hazardous Waste Collected

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Waste

**Objective:** To improve community environmental health by reducing exposure to contaminants

**Indicator:** ZW.2.c. Household hazardous waste collected

**Metric:** Estimated gallons collected/zip code

**Dataset:** Household hazardous waste collected (excel spreadsheet from SFE Toxics and Health)

**Location of data:** SF Environment

**Data publically accessible:** NO

**Managing Department/Agency:** SF Environment

**Geography:** Point

**Updating frequency:** As needed

**Baseline Year (for Data Dictionary):** 2012

**Description:**

The Household Hazardous Waste collection service ensures that San Francisco residents have the capability to properly dispose of items labeled as household hazardous waste (<http://www.sfenvironment.org/article/toxic-products-disposal/toxics-product-disposal-for-residents>). This service works to ensure that these materials are not making their way into the community and into the ocean and the Bay.

The dataset tracks pick-up points by address, which can be aggregated to the census tract, planning neighborhood or zipcode level. By understanding what areas of the city are utilizing the service, it may be possible to better understand where additional outreach is needed or more centralized household hazardous waste drop-off sites could be located.

WA.1-2.a. Residential Potable water consumption per capita per day

**Eco-District Principle:** Efficient

**Eco-District Performance Area:** Water

**Objective:** Reduce potable water use and increase non-potable water use; Increase water efficiency

**Indicator:** WA.1-2.a. Residential potable water consumption per capita per day

**Metric:** Gallons per capita per day

**Dataset:** Residential potable water consumption per capita per day

**Location of data:** SF Public Utilities Commission

**Data publically accessible:** YES (?)

**Managing Department/Agency:** SFPUC

**Geography:** Citywide

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2012

**Description:**

Eco-Districts aim to increase water efficiency and reduce potable water consumption. District water management options will also support the city's Non-potable Water Program, Recycled Water Ordinance, Commercial Water Conservation Ordinance, the Residential Energy and Water Conservation Ordinance, and the Water Efficient Irrigation Ordinance. These programs seek to enhance the reliability, sustainability, quantity and quality of the city's water supplies through active and passive conservation, reduced potable water consumption, and increasing the use of non-potable water sources.

As this dataset is provided at the citywide level it will be necessary to identify strategies to make the information applicable at a smaller scale.

HEF.1.a. Natural Area Acres

**Eco-District Principle:** Biophilic

**Eco-District Performance Area:** Habitat and Ecosystem Function

**Objective:** To preserve and manage existing open space for habitat and biodiversity

**Indicator:** HEF.1.a. Natural Area Acres

**Metric:** Acres per planning neighborhood

**Dataset:** Natural Area Acres

**Location of data:** SF DPH Sustainable Communities Index (<http://www.sustainablecommunitiesindex.org/city_indicators/view/7>)

**Data publically accessible:** YES via SF DPH Sustainable Communities Index

**Managing Department/Agency:** SF Planning; SF Rec and Park

**Geography:** Planning Neighborhood

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2010

**Description:**

Parks and natural open space areas promote physical activity and social interaction. Areas with natural vegetation also have direct effects on physical and mental health. Trees and green space also improve the physical environment by removing air pollution from the air and mitigating the urban heat island effect produced by concrete and glass.

HEF.2.a. Open space (total)

**Eco-District Principle:** Biophilic

**Eco-District Performance Area:** Habitat and Ecosystem Function

**Objective:** To increase open space and the urban forest to enhance ecosystems

**Indicator:** HEF.2.a. Open space (total)

**Metric:** Total acres of open space

**Dataset:** Open space (total)

**Location of data:** Data SF <https://data.sfgov.org/Parks-and-Recreation/Open-Spaces-City-Planning/zsre-apvm>; SF DPH Sustainable Communities Index (<http://www.sustainablecommunitiesindex.org/city_indicators/view/7>)

**Data publically accessible:** YES

**Managing Department/Agency:** SF Planning

**Geography:** Planning Neighborhood

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2010

**Description:**

HEF.2.b. Tree canopy

**Eco-District Principle:** Biophilic

**Eco-District Performance Area:** Habitat and Ecosystem Function

**Objective:** To increase open space and the urban forest to enhance ecosystems

**Indicator:** HEF.2.b. Tree canopy

**Metric:** % tree coverage

**Dataset:** Tree canopy

**Location of data:** Data SF <https://data.sfgov.org/Environmental-and-Conservation/San-Francisco-Urban-Tree-Canopy/w9tk-3w8c>

**Data publically accessible:** YES

**Managing Department/Agency:** SF Planning

**Geography:** Planning Neighborhood (?)

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

In preparation for the San Francisco Urban Forest Plan (2013), the Planning Department performed an Urban Tree Canopy (UTC) Analysis using aerial imagery and additional data sets to determine a canopy estimate for the City & County of San Francisco. This analysis estimated San Francisco’s tree canopy at 13.7%. This number supersedes a 2007 canopy estimate of 11.9% (USDA Forest Service, 2007). Given the differing methodologies used to arrive at these two numbers it is difficult to draw conclusions regarding urban forest growth or decline based on a comparison. The current analysis establishes a baseline and methodology from which future canopy analyses can be conducted and compared over subsequent years to track San Francisco’s urban forest growth or decline over time.

HEF.3.b. Impervious Surface

**Eco-District Principle:** Biophilic

**Eco-District Performance Area:** Habitat and Ecosystem Function

**Objective:** To create habitat connectivity within and beyond the district

**Indicator:** HEF.3.b. Impervious surface

**Metric:** % of ground cover that is impervious

**Dataset:** Impervious surface

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Impervious-Surfaces-San-Francisco-CA/56s3-pmwy>; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/11>

**Data publically accessible:** YES

**Managing Department/Agency:** SF DPH

**Geography:** Planning Neighborhood (?)

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2006 (?)

**Description:**

Pervious surfaces allow natural ground absorption of rainfall, replenishing groundwater tables and reducing the amount of storm-water runoff.  Contaminant runoff into water bodies is reduced and therefore, residents swimming or fishing in the water may have reduced exposure to oils, lead, and other toxins. In addition, pervious surfaces reduce sewage system loads by assimilating large amounts of rainwater. This reduces the potential for untreated sewage to be discharged, creating unsanitary conditions in the ocean and on beaches.

AM.1.a.Time spent walking/biking

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To provide healthy, clean and affordable transportation options

**Indicator:** AM.1.a.Time spent walking/biking

**Metric:** Time spent per capita (daily)

**Dataset:** Time spent walking or biking (for utilitarian/non-leisure trips) per capita

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Minutes-Spent-Walking-or-Biking-San-Francisco-CA/vbnm-bxwq>; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/17>

**Data publically accessible:** YES

**Managing Department/Agency:** SF CTA; SF DPH

**Geography:** SF CTA Transportation District

**Updating frequency:** Annually

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Built environmental factors that are associated with active transportation via walking and cycling include increased resident and employment density, greater diversity of land use mix (e.g., residential land use near retail land uses), shorter distances destinations, and street design factors (e.g., grid street networks, the presence of sidewalks).

AM.1.b.Transit Commute Time

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To provide healthy, clean and affordable transportation options

**Indicator:** AM.1.b.Transit Commute Time

**Metric:** Avg commute time per transit trip

**Dataset:** Public transportation commute time in minutes by transportation district

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Public-Transit-Commute-Time-San-Francisco-CA/bgbq-kndw>; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/90>

**Data publically accessible:** YES

**Managing Department/Agency:** SF CTA; SF DPH

**Geography:** SF CTA Transportation District

**Updating frequency:** Annually

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Public transportation systems can provide affordable, safe and equitable access to work, home, education, food, health services, and social activities. In addition to providing a link between people and the services listed, public transportation usage, particularly as an alternative to driving, also provides health benefits such as increasing physical activity, reduced pollution and greenhouse gas emissions, reduced fatalities and injuries and greater social cohesion. Reducing time spent on public transit can help incentivize transit as an alternative to driving. Residents dependent on transit that live in areas that experience higher than average commute times have less time available for physical and leisure activities that promote health and social well-being.

AM.1.c. Public Transit Score

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To provide healthy, clean and affordable transportation options

**Indicator:** AM.1.c. Public Transit Score

**Metric:** A relative measure of the number of transit routes within one mile, weighted by frequency and distance

**Dataset:** Public Transit Score

**Location of data:** SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/24>

**Data publically accessible:** YES

**Managing Department/Agency:** SF CTA; SF DPH

**Geography:** Intersection (point) and street segment (method of analysis); SF Planning Neighborhood

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2011

**Description:**

Public transportation systems can provide affordable, safe and equitable access to work, home, education, food, health services, and social activities. In addition to providing a link between people and the services listed, public transportation usage, particularly as an alternative to driving, also provides health benefits such as increasing physical activity, reduced pollution and greenhouse gas emissions, reduced fatalities and injuries and greater social cohesion.

To calculate the Transit Resource Scores, the distance from each residential intersection (intersections within 100 meters of residential lots) to each transit route stop (multiple route stops can be found at one location when multiple transit routes share stop or station) within 1 mile of the intersection was calculated. A distance of < 0.25 miles was given a score of 1, while distances between 0.25-0.49 miles were given a score of 0.9 and distances between 0.5-1.0 miles were given a score of 0.75.

Route stops were gathered by using General Transit Feed Specification (GTFS) data from Muni, Bart, Caltrain, the Bay Ferries, and AC Transit. The frequency that each route ran through each stop during a seven day week was attached to each route stop. Route and stop data for samTrans and Golden Gate Transit was taken from the Metropolitan Transportation Commission Transit Geodatabase (2008) and seven day route frequency was manually attached.

For each intersection the distance scores were multiplied by the seven day frequency for each route stop within 1 mile of the intersection. All of the products of the seven day route frequency and of the distance score were then summed for all of the route stops within 1 mile of the intersection. This number was normalized to a score of 100 to derive the final intersection Transit Resource Score. Intersection scores were then interpolated over the surface of San Francisco using inverse distance weighting. Neighborhood averages for the Transit Resource Score were calculated using zonal statistics.

AM.1.d. Bicycle Network

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To provide healthy, clean and affordable transportation options

**Indicator:** AM.1.d. Bicycle Network

**Metric:** Miles of bike lanes and paths

**Dataset:** SFMTA Bicycle Route Network

**Location of data:** Data SF <https://data.sfgov.org/Transportation/SFMTA-Bicycle-Route-Network/q36i-k43q>

**Data publically accessible:** YES

**Managing Department/Agency:** SFMTA

**Geography:** Route network

**Updating frequency:** Monthly (?)

**Baseline Year (for Data Dictionary):** 2013

**Description:**

Cities with well-maintained, highly connected, and safe bicycle infrastructure can help encourage people to choose bicycling as their main mode of transportation. A growing body of research indicates that on-road marked bike lanes have a positive effect on cyclist safety. Promotion of cycling in San Francisco can improve public health if projects and policies aim to provide safe and convenient bicycle access to all services, commercial and residential areas, regional and local transportation systems - along with safe and convenient bicycle parking facilities and connections to transit (e.g., bike racks on buses). Built environment factors that are associated with biking as an alternative to driving include increased resident and employment density, greater diversity of land use mix (e.g. residential land use near retail land uses), shorter distances to destinations, and street design (e.g. presence of protected bike lanes and paths, grid street networks).

AM.2.a. Motor Vehicle Access

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To reduce vehicle miles traveled and achieve a reduction in single-vehicle occupancy trips

**Indicator:** AM.2.a.Motor Vehicle Access

**Metric:** Proportion of households without vehicle access

**Dataset:** Vehicle Ownership, SF, CA

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Vehicle-Ownership-San-Francisco-CA/tixc-j2bp> (2005-2009); SFCTA (2006-2010) analysis; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/22>

**Data publically accessible:** YES

**Managing Department/Agency:** SFCTA

**Geography:** Census Tract

**Updating frequency:** 1-5 years (ACS data)

**Baseline Year (for Data Dictionary):** 2011 (updated by SFCTA for 2013, based on 2006-2010 data)

**Description:**

Car ownership is often indicative of the degree of transportation mode choice, shaped by factors including land use, the transportation system, and individual characteristics. Transportation mode choice can have effects community health through pathways including air quality, noise, physical activity, and traffic injuries. Air pollutants, including ozone and particulate matter, are causal factors for cardiovascular mortality and respiratory disease and illness. Additionally, areas with high levels of motor vehicle driving tend to have higher motor vehicle collisions and injury rates.

Car ownership is dependent upon many factors including individual and household income, cost of car, insurance and maintenance, distance regularly traveled, accessibility of public transportation, presence of bike routes and walking paths, perceived and actual safety from crime and traffic hazards, weather conditions, traffic patterns, availability of parking, availability of public transit travel stipends/incentives. Neighborhoods with higher densities of development and a mix of different land uses reduce trip length, increase mode choice (i.e., opportunities to walk, bike or take public transit), and decrease the need for vehicle ownership and travel by private vehicle. Projects in these types of communities with designed with restricted residential parking, parking pricing strategies and a variety of transportation demand management programs can reduce negative health impacts associated with dependence on motor vehicles.

AM.2.b. Trips by non-Auto Mode

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To reduce vehicle miles traveled and achieve a reduction in single-vehicle occupancy trips

**Indicator:** AM.2.b.Trips by non-Auto Mode

**Metric:** Proportion of commute trips taken by car, bike, public transit or on foot

**Dataset:** Mode Share, SF, CA

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Mode-Share-San-Francisco-CA/mvsf-4biw> (2011); SFCTA (2013) analysis; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/16>

**Data publically accessible:** YES

**Managing Department/Agency:** SFCTA

**Geography:** SF CTA Transportation District

**Updating frequency:** Annually

**Baseline Year (for Data Dictionary):** 2011 (updated by SFCTA for 2013)

**Description:**

Environments that support walking, biking and transit trips as an alternative to driving have multiple potential positive impacts. Quality, safe pedestrian and bicycle environments support a decreased risk of motor vehicle collisions and an increase in physical activity and social cohesion. Environments that encourage walking and biking while discouraging driving can further reduce traffic-related noise and air pollution – associated with cardiovascular and respiratory diseases, premature death, and lung function changes especially in children and people with lung diseases such as asthma.

Public transportation links people to jobs, goods and services, and also helps communities achieve public health benefits such as increased physical activity via walking to transit, reduced pollution, and reduced fatalities and injuries. Walk-to-transit trips account for 16% of all recorded walking trips based on an analysis of U.S. travel survey data; these trips tend to be longer than average walking trips. The lifetime odds of dying as a car driver or passenger are 1 in 303 – approximately 300 times the odds of dying as a bus occupant (1 in 89,945) and 750 times the odds of dying as a train occupant (1 in 227,509).

Public transit can also provide an equitable transportation option and improve mobility, independent of age, ability, income or race. In California, transportation costs are the third largest expense behind housing and food among low-income households—roughly the poorest 25%. Walking and biking are relatively inexpensive forms of transportation when they are able to provide access for residents to nearby goods, services, or jobs. Ensuring adequate non-auto trip opportunities – including via public transit, walking or cycling - with matching infrastructure, particularly in lower income communities, could increase non-auto trips and support multiple health benefits in communities often disproportionately burdened with poorer health outcomes.

AM.2.c. Distance (miles) traveled in private auto (VMTs)

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To reduce vehicle miles traveled and achieve a reduction in single-vehicle occupancy trips

**Indicator:** AM.2.c.Distrance (miles) traveled in private auto (VMTs)

**Metric:** Average daily distance traveled in autos by residents

**Dataset:** Vehicle Miles Travel, SF, CA

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Vehicle-Miles-Traveled-San-Francisco-CA/ht3w-smej> (2011); SFCTA (2013) analysis; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/20>

**Data publically accessible:** YES

**Managing Department/Agency:** SFCTA

**Geography:** SF CTA Transportation District

**Updating frequency:** Annually

**Baseline Year (for Data Dictionary):** 2011 (updated by SFCTA for 2013)

**Description:**

Land use and transportation planning defines the distances people travel to access jobs, schools, goods, services, and recreation. As distances between destinations increase so do the miles driven in motor vehicles, along with the associated hazards from air and water pollutants, noise, and vehicle collisions. In the Bay Area, transportation contributes over one-third of greenhouse gas emissions. Climate change in turn threatens to have global and catastrophic effects on health through: increased frequency, intensity and length of heat waves, floods, droughts, windstorms and wildfire, leading to increased mortality, illness and mental health impacts; increased exposures to ground-level ozone and aeroallergens, exacerbating cardiovascular and pulmonary illness; and shifts towards warmer temperatures, leading to increased risk of food- and waterborne infectious diseases. Neighborhoods with higher densities of development and a mix of different land uses support reduced trip lengths, increased mode choice, and decrease the need for vehicle ownership.

AM.3.a. Severe/fatal traffic injuries

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To ensure streets are accessible, walkable, and safe for pedestrians and non-auto modes of transportation

**Indicator:** AM.3.a. Severe/fatal traffic injuries

**Metric:** Severe/fatal traffic injuries normalized by employment

**Dataset:** Pedestrian, Cyclist, and Car Fatalities and Severe Injuries

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Pedestrian-Severe-Injuries-and-Fatalities-2006-201/h38v-wgvt> (2006-2010); SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/19>

**Data publically accessible:** YES

**Managing Department/Agency:** SFDPH; CA Highway Patrol

**Geography:** Point (geocoded to nearest intersection)

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2005-2010

**Description:**

Traffic collisions involving motor vehicles are one of the leading causes of preventable injury in San Francisco, the nation, and the world, and the leading cause of death in the United States for people aged 5-34. As area-level vehicle miles traveled and traffic volumes increase, so do traffic casualties. Speed is the other main contributing factor to injury severity – with higher speeds allowing for less driver reaction time and increased force when collisions occur. Vehicle speed has particularly profound impacts on more vulnerable road users, including pedestrians and cyclists. Small increases in impact speed translate into large increases in fatality risks – for example, it has been estimated that the risk of pedestrian fatality is six times that at 30 mph relative to 20 mph. In addition to targeted enforcement efforts, planning and design decisions that reduce traffic volumes, speeds, and the need to drive, while promoting more walkable, safe environments include: traffic calming, street and intersection engineering countermeasures, transportation-land use planning coordination, and other transportation demand management measures such as road pricing. The injuries and deaths suffered in these collisions, as well as high medical and social costs, reflect a need for transportation safety practices, projects and policies to be integrated into all relevant agency agendas and across all levels of government to prevent injuries.

AM.3.b. Speed limit compliance

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To ensure streets are accessible, walkable, and safe for pedestrians and non-auto modes of transportation

**Indicator:** AM.3.b. Speed limit compliance

**Metric:** Speeding rates and exceedance of speed limit along select street segments through SF

**Dataset:** Speed limit compliance

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Speed-Limit-Compliance-San-Francisco-CA/9tap-3c96>; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/21> **Data publically accessible:** YES

**Managing Department/Agency:** SFMTA

**Geography:** Street segment and planning neighborhood

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2004-2009

**Description:**

Vehicle speed is a primary contributing factor to the severity of injuries suffered by pedestrians, cyclists, drivers and passengers in traffic collisions – with higher speeds allowing for less driver reaction time and increased force when collisions occur.  Vehicle speed has particularly profound impacts on more vulnerable road users, including pedestrians and cyclists.  Small increases in impact speed translate into large increases in fatality risks  –  for example, it has been estimated that the risk of pedestrian fatality is six times that at 30 mph relative to 20 mph. Reducing vehicle speed is thus a priority focus of international initiatives to improve road safety. Given the correlation between vehicle speed and injury severity, there is a need for targeted speed management measures to ensure speed limit compliance such as engineering and enforcement efforts including the consideration of automated speed enforcement which has effectively reduced urban traffic speeds in other countries.Though posted speed limit signs inform drivers of the speed, roadways can be designed with traffic calming improvements to alter driving behavior to drive slower, while also encouraging safety and awareness of other road users.

Speed compliance data was collected from 2004 to 2009 by the San Francisco Municipal Transportation Agency (SFMTA) on 57.8 miles of San Francisco streets (approximately 5% of San Francisco’s street length) with speed limits of 25, 30 and 35 miles per hour (mph).  The data reflects the proportion of drivers who exceed the speed limit by 5 mph per speed limit.  An average of the proportion of drivers who exceed the speed limit by 5mph per neighborhood and citywide was calculated for each of the speed limits, as well as for the average of the combination of all three speed limits.

AM.3.c. Traffic Density

**Eco-District Principle:** Connected

**Eco-District Performance Area:** Access and Mobility

**Objective:** To ensure streets are accessible, walkable, and safe for pedestrians and non-auto modes of transportation

**Indicator:** AM.3.c. Traffic Density

**Metric:** % of households living in traffic density from lowest to highest (6 quintiles)

**Dataset:** Daily vehicle count per mile of street segment aggregated at the U.S. Census Tract level in San Francisco, CA.

**Location of data:** Data SF <https://data.sfgov.org/Public-Health/Traffic-Density-San-Francisco-CA/rhp4-jr7s>; SF DPH Sustainable Communities Index <http://www.sustainablecommunitiesindex.org/city_indicators/view/18>

**Data publically accessible:** YES

**Managing Department/Agency:** SFCTA

**Geography:** Census tract

**Updating frequency:** Annually (?)

**Baseline Year (for Data Dictionary):** 2010

**Description:**

Traffic density is a general proxy for adverse environmental exposures and health hazards of traffic. Epidemiological research supports consistent statistical associations among traffic proximity and several adverse respiratory health outcomes, including impairment of lung function and asthma incidence and symptoms in children; these associations remain significant after adjustment for economic position. Chronic exposure to road traffic noise is associated with several adverse health outcomes, including interference with thoughts and feelings, deficits in cognitive functioning, lowered school performance, sleep disturbance, and ischemic heart disease. The intensity of vehicle air pollution emissions, traffic noise, and safety hazards are all strongly predicted by the density and proximity of vehicles in an area.

Methods

The proportion of households per neighborhood within each Traffic Density quintile category was based on a Kernel Density analysis conducted using ESRI’s ArcMap 10. The 24-hour daily vehicle volume per street segment for 2010 was provided by the San Francisco County Transportation Authority from their travel forecasting model, SF CHAMP. Estimated Traffic Density was calculated as a smooth surface over San Francisco using the ArcGIS 10 Kernel Density tool and a 100-meter grid size (with the default search radius of 450 meters). This method calculates the density of traffic on roadways in the neighborhood of each 100-meter cell. A smoothly curved surface is fitted over each street, with its value greatest on the street and diminishing as distance increases from the street (line) reaching zero at the search radius. The surface is defined so the volume under the surface equals the product of street length and the 24-hour vehicle count metric described above. The density at each 100-meter grid cell is calculated by adding the values of all the surfaces where they overlay the grid cell center. For more information regarding this method see: http://webhelp.esri.com/arcgisdesktop/9.3/index.cfm?TopicName=How Kernel Density works.

Once created, the final Traffic Density raster image was then classified into quintiles from Low to Highest. Quintiles split the ordered Traffic Density data into five groups, each containing equal counts of observations. For mapping purposes, the ‘Low’ category was split into two groups, ‘Lowest’ and ‘Low,’ to allow for the visualization of the location of the absolute lowest Traffic Density values (see map above). For the Neighborhood Tables, however, the 5 original Traffic Density quintile categories (which collapse the “lowest” and the “low” categories depicted on the map into the first quintile) were joined to the nearest household and then used to calculate the proportion of households in each Traffic Density category per neighborhood. For each neighborhood, the household count was summed per the Traffic Density category and divided by the total household count to assess the proportion of households within each Traffic Density category.