

## GROW

## STRATEGY 1.1

***Pursue an expanded and equitable distribution of trees and greening throughout the City.***

- 1.1.1** Continue to enforce existing requirements for street tree planting (Planning Code & Public Works Code).
- **Planning Code: Section 138.1** requires street trees to be planted as part of new development projects. The Code requires street trees for every 20' of building frontage for new construction projects, significant building expansions, paving of front setbacks or addition of a dwelling unit, garage or parking space. When trees are required but not permitted due to underground utilities or other conditions, in-lieu fees will be collected to fund tree planting in other areas.
  - **Section 428** requires payment of in-lieu fees for tree planting to DPW's Adopt-A-Tree Fund in cases where planting requirements of Sec. 138.1 are waived by the Zoning Administrator.
  - **Public Works Code: Article 16 (Urban Forestry Ordinance)** outlines City requirements related to street tree procedures and care. The Code describes DPW's jurisdiction and oversight responsibilities of trees in the public right-of-way and other trees protected under DPW's jurisdiction, including: tree planting requirements and procedures, tree care requirements and responsibilities, tree removal procedures, and oversight of the landmark and significant tree programs.

**1.1.2** Pursue an expanded City sponsored street tree planting program. As recommended in the MANAGE and FUND chapters, increased resources should be made available that would expand the existing limited capacity of the Department of Public Works to engage in larger scale street tree planting.

**1.1.3** Support Friends of Urban Forest's tree planting, stewardship and sidewalk garden programs. Friends of the Urban Forest (FUF) is largely responsible for the planting and care of many of San Francisco's street trees. This important organization has excelled at involving communities in greening their neighborhoods. FUF's strong programs should continue to be supported by the City.

**1.1.4** Increase the number of street trees by half (50,000 new trees). The Plan proposes increasing the number of street trees by half (50%) over the next 20 years. Planting an additional 50,000 new street trees (2,500 trees/year plus replacement trees) will grow our street tree population from 105,00 to 155,000 trees. Currently, an estimated 1,500 trees are planted each year by Friends of the Urban Forest (1,200 trees) and the Department of Public Works (375 trees). However, these include a portion of replacement plantings for trees removed or that have died and so do not represent a significant increase in forest canopy. Additional street trees are planted by property owners and through development requirements. A concentrated effort to add new street trees will help stem the decline of the urban forest while bringing highly visible greening benefits to the public and reducing inequities in tree cover between neighborhoods. Drought-tolerant tree species should con-

tinue to be prioritized. The proposed growth in street tree canopy requires the establishment of a sustainable maintenance funding program to ensure health and care of newly planted trees (see FUND chapter).

**1.1.5** Develop a Citywide Tree Canopy Coverage Goal for San Francisco. San Francisco's tree canopy is one of the smallest of any major U.S. city (13.7%)<sup>1</sup>. The U.S. metropolitan canopy cover average is 33%.<sup>2</sup> While this Plan recommends an increase in street trees, it does not establish a citywide tree canopy coverage goal. As part of the Urban Forest Plan's Phases 2 & 3, a citywide canopy goal should be developed that addresses tree cover comprehensively on streets, parks and private properties. Creation of this goal will require community input, ecological analysis, and an inventory of allowable planting areas. The canopy goal should recognize trees may not be appropriate in all locations and that other forms of vegetation may be more suited to support other policy priorities such as habitat creation, neighborhood character and recreational needs.

**1.1.6** Develop a Citywide Street Tree Planting Strategy. A cohesive strategy should be developed for the planting of new street trees in the City. The Strategy should aim to fill gaps in canopy cover, address aging tree population, and identify vacant and new

1 San Francisco Planning Department (2012). San Francisco Urban Tree Canopy Analysis.

2 U.S. Department of Agriculture Forest Service, Nowak & Dwyer, Connecting People With Ecosystems in the 21st Century: An Assessment of Our Nation's Urban Forests, Dwyer & Nowak (2000). "American Forests, the nation's oldest nonprofit citizens' conservation organization, recommends an average 25 percent tree canopy for the dry west." (California Department of Forestry and Fire Protection, *California's Forests and Rangelands: 2010 Assessment* at p. 176).

planting spots. Core elements of a strategy should include the following:

- **Consider ecological and public health considerations related to air quality, stormwater, habitat and biodiversity when selecting and planting trees.**
- **Target planting where pedestrian and public realm improvements are prioritized such as those identified in WalkFirst.**
- **Re-stock all empty tree basins and other available planting spaces.** Available but empty tree basins and planter strips offer prime opportunities to increase tree stocking levels. These locations should be identified and targeted for tree planting. By filling these empty spaces, the benefits provided by trees can increase significantly.
- **Create new spaces for street trees, sidewalk gardens and other plantings.** Excess paving should be removed to allow installation of new tree basins and sidewalk gardens. Future streetscape projects should be designed for an increase in street trees. Excessively wide streets should be considered for the installation of plantable medians. In special cases, the conversion of streets into community maintained urban forest preserves may be possible (i.e. Cohen Alley's Tenderloin National Forest).
- **Outline a strategy for care and maintenance of newly planted trees.**

**1.1.7 Continue to maintain and update List of Recommended Street Trees & Other Plantings.** The City's list of Recommended Street Trees provides guidance to the public and City agencies on which trees are recommended for planting on San Francisco's streets. The list should also be expanded to include a discussion of various benefits provided by different trees. As part of the Green Connections Project, a city-wide Planting List is being completed that will include recommendations for both street trees and other landscaping in the public right-of-way. These lists should be updated annually based on updated performance information, species evaluations and consideration of benefits. Endorsement of these lists should take place through the Urban Forestry Council.

#### STRATEGY 1.2

### *Maximize benefits of the urban forest – social, economic and environmental.*

**1.2.1 Consider selecting and planting trees based on their ability to provide specific benefits.** While urban trees have a number of benefits, the largest benefits to San Francisco should be captured and expanded upon. Consider performance-based tree selection and planting to target specific tree benefits in areas where they are needed most such as the following:

#### AIR QUALITY

**1.2.2 Explore opportunities to use trees to mitigate air pollution.** Evaluate potential for increased plantings near pollution sources, high-volume traffic corridors and along freeways. Select trees that are low emitters of volatile organic compounds (VOCs). Where space allows, medium to large-stature evergreen trees with large canopies and leaf surfaces should be selected.

#### STORMWATER

**1.2.3 Help manage stormwater through increased use of trees and landscaping.** Increasingly, trees and landscaping are being utilized as effective tools to manage stormwater. An important addition to traditional "grey infrastructure" (pipes and sewers), landscape-based solutions or "green infrastructure" uses plants and soils to manage the City's stormwater sustainably and cost effectively. Urban trees and landscaping capture rainfall on leaf surfaces and roots allowing for evaporation, storage and infiltration of stormwater into soil. A tree's ability to reduce stormwater runoff is largely related to the size of the tree and its canopy. Rainfall interception by trees helps reduce the speed and amount of stormwater entering collection and treatment facilities during large storm events. Trees and landscaping can also play a role in decreasing combined sewer discharges into the Bay and ocean.

Certain tree species perform better at reducing stormwater runoff than others. Estimates for the water a typ-



ical street tree can intercept range from 760 - 4,000 gallons/tree per year.<sup>3</sup> Large and medium broadleaf evergreen trees, large conifers and some deciduous trees with large leaf surface areas and a mature canopy typically demonstrate greater stormwater benefits. These trees should be considered for planting where space allows to maximize their benefits. Some large stature trees will not be appropriate as street trees due to their size and space requirements, but in those cases sidewalk gardens and medium stature trees can be utilized to maximize stormwater benefits. Recommendations for enhancing stormwater management through the urban forest are described below.

- Improve design of new tree wells to allow better infiltration of stormwater.
- Create sidewalk gardens and install sidewalk landscaping.
- Remove impermeable surfaces where possible.
- Conduct a study to determine which street tree species have the greatest runoff reduction capacity for San Francisco.

<sup>3</sup> Stormwater, Trees, and the Urban Environment: A Comparative Analysis of Conventional Street Tree Pits and Stormwater Tree Pits for Stormwater Management in Ultra Urban Environments. Charles River Watershed Association (2009).

## PUBLIC HEALTH

**1.2.4 Target trees to achieve public health benefits, especially for children and seniors.** Some strategies to improve public health through tree planting are described below.

Air quality and respiratory health can be improved by tree planting in:

- High-volume traffic corridors and freeways
- Areas with increased asthma rates

Trees have pedestrian safety and traffic calming effects by buffering of pedestrians from vehicles along:

- Higher-speed arterial streets that are also priority transit or walking streets

Mental health and physical activity are supported by trees in:

- Areas with limited access to parks and green space
- Areas with lower than average tree canopy

Shading and temperature control can be provided by trees in:

- Areas with higher risk of heat vulnerability

## CARBON SEQUESTRATION & CLIMATE CHANGE

**1.2.5 Maximize carbon storage potential of urban forest to combat climate change.** Almost half of San Francisco's greenhouse gas emissions come from vehicles. Trees along city streets can provide a direct benefit to reducing San Francisco's climate impacts. As trees grow, they store carbon in woody tissues and soil. Healthy mature forests can sequester carbon for long periods acting as carbon "sinks." A variety of strategies should be considered to support the urban forest's ability to store greenhouse gases:

- Quantify carbon storage potential of City trees by species.
- Re-use urban wood from dead or removed trees to retain carbon storage capacity of woody biomass.
- Research Innovative tree farming/harvesting techniques that may increase carbon storage potential.
- Plant trees with high uptake of carbon including fast-growing species and those with significant biomass.

**1.2.6 Consider adaptation to climate change in identifying a local tree species palette.** As the climate changes, San Francisco may experience more extreme weather fluctuations that may result in increased fog and rain as well as intense periods of

dryness. These conditions could be exacerbated by local microclimates. Ongoing climate science research and local weather projections should be considered for their impact on the urban forest. Cities like Chicago have identified planting palettes as part of climate change adaptation. Test plantings of various tree species may be appropriate to determine suitability for San Francisco.

#### BIODIVERSITY & HABITAT

**1.2.7 Use the urban forest to support local wildlife and provide habitat.** Opportunities exist to incorporate trees and plantings on streets that provide higher ecosystem value and support wildlife. While many native trees provide above average benefits to local wildlife, they often do not make suitable street trees because of large or fragile structures and space requirements. Specific strategies include the following:

- Utilize plants and trees that promote key species habitat along the Green Connections network of key bicycle and walking streets linking open spaces.
- Consider planting streets buffering parks and Natural Areas with habitat supportive plantings where appropriate.
- Seek opportunities to create large planting strips on streets with wider sidewalks to mimic more natural landscape systems.

- Explore opportunities to integrate some local, regional and state native trees in medians or other larger planting areas where space allows.
- Removal and maintenance of street trees should comply with the Migratory Bird Treaty Act.

#### URBAN AGRICULTURE

**1.2.8 Promote urban agriculture through the urban forest where possible.** The Plan recognizes the importance of urban agriculture in promoting production of local food and fostering community cohesion. Fruit trees are generally not permitted as street trees due to safety, liability and nuisance concerns related to dropping fruit. However, fruit trees should be encouraged in strategic locations on public and private lands where fruiting trees may be allowed. Some City programs support the planting of fruit trees and the collection of fruit from neighborhood trees for distribution.

- **Identify locations for fruit trees and urban orchards.**
- **Support SF Environment's Urban Orchards Program and DPW's Urban Gleaning Program.**

#### LOCAL ECONOMY

**1.2.9 Promote tree planting and maintenance to help create successful commercial districts and support local businesses.** Trees and landscaping energize commercial districts by creating greener, more inviting streetscapes for residents, visitors and merchants. According to studies<sup>4</sup>, tree-lined commercial streets naturally draw people to linger longer, return more often and purchase more goods at local businesses. Merchant needs for natural light and clear visibility of store signage must be recognized when maintaining existing trees and considering planting of new trees.

#### STRATEGY 1.3

***Promote a range of greening tools in the public right-of-way.***

**1.3.1 Utilize existing programs to expand greenery in the public right-of-way including the Sidewalk Landscaping Program (DPW), Pavement to Parks (Planning Dept), Green Infrastructure Program (SFPUC) and others.** A variety of City programs exist to support the installation of landscaping and remove impervious surfaces in the public right-of-way. These provide important contributions to the City's urban forest. Funding and implementation of these programs should be expanded to maximize their reach.

<sup>4</sup> Wolf, K.L. 1999. Nature and commerce: human ecology in business districts. In Kollin, C., ed. *Building Cities of Green: Proceedings of the 1999 National Urban Forest Conference*. Washington, DC: American Forests: 56-59.