

URBAN FOREST GOALS



GOAL 3

**MANAGE** THE URBAN FOREST THROUGH COORDINATED PLANNING, DESIGN AND MAINTENANCE TO ENSURE ITS LONG-TERM HEALTH AND SUSTAINABILITY.

STRATEGIES

- 3.1 CREATE A COHESIVE MANAGEMENT PROGRAM FOR THE CITY'S STREET TREES.
- 3.2 EMPLOY BEST MANAGEMENT PRACTICES IN STREET TREE MAINTENANCE TO CREATE A MORE COST-EFFICIENT AND EFFECTIVE PROGRAM.
- 3.3 MANAGE AND CARE FOR STREET TREES THROUGHOUT THEIR ENTIRE LIFE-CYCLE.
- 3.4 PLAN FOR THE LONG-TERM HEALTH AND BEAUTY OF THE URBAN FOREST.
- 3.5 COLLECT AND USE DATA TO MANAGE AND MONITOR THE URBAN FOREST.
- 3.6 IMPROVE COORDINATION AND COMMUNICATION BETWEEN AGENCIES, POLICY MAKERS AND THE COMMUNITY.



**STRATEGY 3.1**

***Create a cohesive management program for the City's street trees.***

**3.1.1** Adequately fund and establish the Department of Public Works' Bureau of Urban Forestry as the primary maintenance provider of ALL trees in the public right-of-way.

The establishment of a Citywide Municipal Street Tree Program would provide the City's trees with a higher level of care than the existing fragmented system. Maintenance responsibility for all City street trees should be standardized under the management of the Department of Public Works. Under such a program, property owners would be relieved of all responsibility for street tree maintenance, pruning, and tree-related sidewalk repair. Property owners who currently care for street trees will be relieved of their responsibilities and see their costs decline, and many others will receive street trees in front of their homes.

Street trees would receive regular maintenance (under a five-year pruning cycle) from arborists or other tree care professionals. Substantial cost efficiencies can be achieved through a programmed citywide maintenance program. Regular tree pruning would reduce safety hazards associated with unmaintained trees.

With such a maintenance program established, the City would also finally be able to substantially expand the urban forest. Approximately 50,000+ new street trees would be planted under a municipal street tree program. This proposal requires the establishment of stable funding stream as outlined in the **FUND chapter**.

**STRATEGY 3.2**

***Employ best management practices in street tree maintenance to create a more cost-efficient and effective program.***

**3.2.1** Implement an efficient and cost-effective routine maintenance program for all City street trees. By assuming responsibility for all trees in the public right-of-way, DPW could implement the following best practices:

- **Proactive Pruning Cycle (Reduction from 12 years/tree to 5 years/tree).** Due to severe staffing a budget constraints, street trees are on a 12-15 year pruning cycle. DPW's current street tree work involves responding almost exclusively to service calls and emergencies. This is costly and inefficient. Routine maintenance is more efficient and cost effective. Professional standards recommend that trees be pruned on average every three-to-five years. This preventive maintenance approach translates into fewer emergencies, which are more labor intensive and therefore more costly than routine pruning. The City's risk would further decline with sufficient funding to perform routine inspections and keep sidewalks in good repair.
- **Block-Pruning Maintenance Approach.** Less costly and more efficient, block pruning could reduce DPW's per-tree maintenance cost by up to 50%. Block pruning targets staff, equipment and resources to maintain and prune a large number of trees at once. This method greatly reduces the time and expense required per tree pruned. This differs

from the current inefficient approach of "spot" pruning where crews, due to limited resources, are only attending to individual trees on an emergency and service request basis. A comprehensive program would allow for staff to attend to both ongoing and high-risk pruning needs.

- **Structural Pruning & Early Tree Care.** A street tree's early years from 5 to 10 years of age are critical to the establishment of a healthy urban street tree structure and to ensure survival. In order to maximize proven urban forestry benefits (both biophysical and social), trees must reach maturity. Pruning young and established street trees can significantly reduce costs associated with maintenance and hazards down the line. A structural pruning program for young trees will promote healthy structure, extend life expectancy, and reduce future costs and liability.
- **Sidewalk Repair & Legal Liability.** A comprehensive maintenance program would involve the repair of sidewalk damage caused by street tree and root growth. Sidewalk repairs and basin widenings can help protect tree health while improving pedestrian safety. Under a comprehensive street tree program, the City would assume liability for claims associated with sidewalk trip and falls related to City maintained street trees. This would reduce risks and costs to private property owners. Repair of displaced pavement under a citywide program would also help reduce incidence of falls associated with sidewalks damaged by trees.

- **Risk Assessments/Management.** Trees should be regularly inspected (every 1-3 years) to identify trees with biggest risks to public safety and property damage.

### 3.2.2 **Develop a Street Tree Management Plan.**

A management plan should be created to clearly outline DPW's planting and maintenance plans over the long-term. A management plan would enable DPW to outline a maintenance strategy, plan for the succession of trees, create planting plans, and identify capital funding needs.

### 3.2.3 **Test new technologies and techniques to improve street tree health and minimize utility conflicts.**

A variety of new strategies have emerged to improve the health of street trees and minimize infrastructure conflicts in the urban environment. Some promising technologies to explore include: re-routing of sidewalks around trees; permeable concrete; root channels under sidewalks; suspended pavement systems; rubberized sidewalks; and "bridging" of sidewalks over root structures.

The City should install and test these to determine their applicability to San Francisco. Installation may require exemption from some existing standards and specifications. Projects should be monitored for success. Corresponding amendments to standards should be made if trials are found promising.

## STRATEGY 3.3

### *Manage and care for street trees throughout their full life-cycle.*

#### 3.3.1 **Consider establishing a Street Tree Nursery.**

A wide range of species of trees grow in San Francisco's unique climate. While this makes our urban forest special, it can also make finding certain species of trees challenging to find at commercial tree nurseries. The City and Friends of the Urban Forest have identified the potential for a Street Tree Nursery where trees could be grown locally and within our unique climatic conditions. The City of San Jose has a local tree nursery that supplies the city's urban forest with trees. A Street Tree Nursery is central to the full life-cycle management approach recommended by this Plan. A local nursery or several small facilities sponsored and run by the City and/or by community organizations would also provide valuable opportunities for job training and green jobs creation.

New tree planting is essential to a full life-cycle management approach. For actions related to tree planting, see GROW chapter.

**3.3.2 Continue Friends of the Urban Forest's (FUF) Early Tree Care Program.** All FUF planted trees receive tree pruning during their first five years to establish strong central leaders and reduce structural deficiencies after planting. Tree watering is the responsibility of property owners. This program is essential in helping establish fragile young newly planted trees.

**3.3.3 Plan phased removals of overmature trees and succession plantings.** Areas should be identified where aging trees may be required to be removed due to death or potential hazard. Succession plantings should be coordinated to retain no net loss to the urban forest.

**3.3.4 Make wood from removed street trees publicly available for re-use.** The beauty and value of our trees does not have to end once they have died or been removed. Wood from street trees, some of it over 100 years old, echoes the history of our city, the streets and the beauty of the tree itself. Trees removed due to death, hazard or by permits can live on as a valuable source of wood for re-use. Existing City policy and operations limit the ability to maximize re-use opportunities. This hinders the urban forest from achieving the full "cradle to grave" life-cycle management approach recommended in this Plan. An analysis and strategy should be developed to identify City policies, equipment needs, facilities and funding required to initiate an Urban Wood Re-Use Program. This would involve not only maximizing the chipping of wood for mulch, compost or fuel but also exploring opportunities to mill valuable wood for the creation of furniture, building materials and other artisan uses. An added benefit of re-using wood in products or lumber is the ability of finished wood products to act as a "carbon sink" by continuing to store greenhouse gases instead of releasing them back into the atmosphere during decomposition.



## STRATEGY 3.4

***Plan for the long-term health and beauty of the urban forest.***

**3.4.1 Create a Parks & Open Space Urban Forest Plan.** This Urban Forest Plan (Phase 1) focuses primarily on some of the City's most vulnerable trees - our street trees. A corresponding effort should be undertaken to develop a long-term policy vision and strategy for the urban forest in the City's parks and open spaces. Funding and staffing should be identified for the Urban Forest Plan (Phase 2: Parks & Open Spaces).

**3.4.2 Develop urban design strategies for trees in the public right-of-way.** Some of the most visually memorable streets and urban places are shaped by trees. Streets such as Dolores, Market and the Embarcadero employ limited and unique tree palettes to achieve dramatic effects. Consistency and variation in tree form, color and seasonal display can be used to create dynamic and harmonious streetscapes. Many of the city's neighborhoods and streets, however, feature less intentional plantings and an uncoordinated patchwork of trees. A study should be conducted that identifies urban forest design strategies and how to increase the public and private realm's capacity to accommodate more trees.

**3.4.3 Develop community tree plans for neighborhoods or major streets.** The City should engage neighborhoods in proactive planning for trees in their communities. Local urban forest plans at the scale of a commercial corridor or entire neighborhood can help identify a cohesive vision, planting/succession strategy

and preferred tree palette for neighborhoods or major streets. Streetscape design projects should involve the community in selecting trees.

**3.4.4 Implement Better Streets Plan's street tree and planting guidelines.** The Better Streets Plan's recommendations regarding street tree location, stature, line-of-sight placement and installation of wider tree basins where sidewalks allow should be followed in all street design projects.

**3.4.5 Maximize trees and landscaping in new streetscape designs.** Streetscape design projects provide a great opportunity to help achieve urban forest canopy goals and create a cohesive streetscape. The potential for incorporating street trees and other landscaping should be maximized. Sidewalks should be widened where possible to provide more room for increased tree canopies. The Plan recognizes a standard row of trees may not be an appropriate design solution in every case. Existing trees, species palettes, sidewalk widths, utilities, ecological goals, pedestrian volumes, major views, architectural features, historic landscapes and sunlight exposure all must be considered in developing a street design. If approved street designs call for any tree removals, replacement plantings or in-lieu fees should be collected to prevent net tree loss.

**3.4.6 Develop recommendations for trees and greening on buildings & private property.** San Francisco's urban forest has the potential to expand by embracing a range of greening methods on public and private property, especially where trees may not be feasible due to narrow sidewalks, under-

ground utilities and harsh growing environments. The Urban Forest Plan (Phase 3: Buildings & Private Property) is intended to advance a variety of greening opportunities including: green roofs, living walls, rooftop gardens, trees on private property, urban agriculture, sidewalk gardens and temporary greening projects like parklets. Since a single plan can not likely address all of these methods, the Urban Forest Plan (Phase 3: Buildings & Private Property) will include policies, recommendations and guidelines that advance a wide range of greening interventions.

## STRATEGY 3.5

***Collect and use data to manage and monitor the urban forest.***

**3.5.1 Complete the Citywide Street Tree Census & Summary Report.** The City can not manage a resource for which it does not have accurate data. DPW and the Planning Department have conducted a partial Street Tree Census of 25,000 street trees out of a total estimated 105,000 street trees. This inventory of street trees provides information essential to urban forest management in a centralized database. The data includes information on condition, location, species type, size. The full census should be completed and final database integrated into DPW's management system. Data should be made available to the public through the online Urban Forest Map, apps and other sources. Updates to the database should be performed based on maintenance performed and new planting and removal permits.

A final report summarizing the benefits and conditions of the City's street tree resource should be completed. A comprehensive street tree inventory will ensure that DPW obtains accurate data for all trees in the public right-of-way. Accurate data yields considerable efficiencies, facilitating block pruning and tracking of maintenance history, ultimately helping to manage costs.

**3.5.2 Perform an Urban Tree Canopy Analysis every five years.** An analysis of the City's tree canopy should be performed at regular intervals to track its size and growth or decline. Such an analysis provides valuable information on the City's progress towards meeting planting and canopy goals. Appropriate data such as aerial imagery, LiDAR data and other sources should be employed in the analysis. A corresponding report should be issued and reviewed by the Urban Forestry Council.

**3.5.3 Produce annual State of the Urban Forest Report.** The Urban Forestry Council's annual report is the primary document summarizing the current health and status of urban forestry in San Francisco. The report includes information about the following:

- annual plantings and removals
- emerging diseases and pests
- City pruning standards used by agencies maintaining trees
- quality of tree care provided by agencies or their contractors
- status of Plan implementation

The document requires the participation of various City agencies who manage and care for trees.

**3.5.4 Carry out an updated Citywide Urban Forest Analysis for all trees in San Francisco (streets, parks and private property).** The last citywide urban forestry analysis of the urban forest was performed in 2007 by the USDA Forest Service. A similar analysis should be performed using the Urban Forest Effects Model (UFORE). This tool and report helps managers and researchers quantify urban forest structure and its functions. The model calculates numerous attributes about the urban forest, including:

- Species composition
- Diameter distribution
- Tree health
- Species diversity
- Exotic vs. native species distribution
- Calculation of benefits

**3.5.5 Conduct focused local research on urban forest topics.** The Bay Area is home to a wealth of educational institutions that offer potential partnership opportunities for urban forest research. City agencies and the Urban Forestry Council should identify research topic areas (e.g. health and habitat of redwood stands in the city) and engage local universities or research organizations in projects and partnerships.

#### STRATEGY 3.6

***Improve coordination and communication between agencies, policy makers and the community.***

**3.6.1 Establish the Urban Forestry Council as the city's primary advisory body on urban forest**

**issues.** The Urban Forestry Council is comprised of representatives from City agencies, nonprofits, field professionals and community representatives. This body provides the appropriate forum to discuss cross-cutting issues related to the urban forest. Its recommendations should provide guidance to the City on urban forest policy and management. Its primary tasks include the following:

- Facilitate coordination among urban forest stakeholders to improve forest management across the city.
- Track and report on the state of the urban forest, including management activities, resources allocated to management, and the health of the urban forest.
- Develop, review, and update best management practices (BMPs) – adopted tree care standards, tree selection guidelines, planting practices, young tree care, tree removal and tree protection plans.
- Help secure and encourage commitment of adequate resources for urban forestry programs.
- Review and make policy recommendations related to the urban forest.
- Review major infrastructure and development projects affecting trees.
- Highlight the value and importance of the urban forest through education and outreach.
- Identify and highlight important specimen trees through the Landmark Tree Program.

**3.6.2 Improve coordination and communication between public and private entities with major tree resources.**