Five-Year Report on Urban Forestry Program
City of San Diego, 2017-2022

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and Community Forest Advisory Board

Summary

This report reviews accomplishments since the Urban Forestry Program Five-Year Plan (Five-year Plan) was approved in 2017 and identifies staffing and contract funds to accomplish the action items. The urban forestry program is also guided by the 2015 Climate Action Plan, 2021 Parks Master Plan, 2021 Climate Resilient SD, and draft revised 2022 Climate Action Plan (CAP).

The Five-year Plan has six objectives that focus on assembling information about the urban forest, protecting and maintaining trees, increasing the urban tree canopy cover, promoting equity and partnerships, and strengthening forest management practices and policies. In the five years since the Five-year Plan was adopted, the City increased staffing, budgets, tree planting programs, and tree risk evaluation processes, and other core urban forest management activities.

This report outlines issues and opportunities for many essential programs, acknowledging that urban forestry is complex and challenging. Recommendations for the next five years are to:

- Accelerate staff investments in three areas: update codes, regulations, and policies; invest in information technology; and expand permit enforcement.
- Commit to climate action and adaptation, including a realistic yet ambitious tree canopy goal for the CAP, and implementation strategies and resources to accomplish canopy goals.
- Engage community members and local professionals to review policies and practices, outreach to invite collective action to protect and grow trees, and advocate for policy changes and budgets
- Extend the Five-year plan, increase budgets for professional staff and contract funds, and enhance strategic and operational leadership

There is great urgency to investments in urban forestry. Tree losses to development, drought and pests are increasing. As the climate warms and extreme heat events increase, neighborhoods need the shade, cooling, and the health and social benefits of trees and urban greening. Trees in parks and along streets provide the greatest community-wide benefits, but trees on residential and commercial property have more potential to increase city-wide tree canopy. Trees reduce stormwater runoff, absorb air pollutants, provide wildlife habitat, and deliver other ecosystem services. Trees matter.

Introduction

The City Council approved the Five-Year Urban Forestry Program Plan (Five-year Plan) on January 14, 2017. This report assembles information on action items approved in this plan, as a "Five-year Report" and recommends next steps. Some actions have been completed, some dropped, and some additions listed in the draft Climate Action Plan (CAP) revision. This report outlines the issues related to implementation of the action items, recommends staffing and contract funds, and calls for an extension to the Five-year Plan.

The report was prepared by Anne Fege, an urban forester who has chaired the City's Community Forest Advisory Board since 2012. Readers are invited to offer comments and corrections, to afege@aol.com.

1 Development of urban forestry program and climate action plans

Six plans have elements and actions for urban forest management. They cover trees on public land and on residential and commercial properties, with decisions made by landowners and/or property managers. Public trees are in the City's parks, administrative sites (libraries, fire and police stations, offices), streets and other public easements, and land managed by other public agencies (school districts, county, state, Federal).

1.1 2008 General Plan

The San Diego General Plan[1] was adopted in 2008 and established specific urban forestry goals, in the Plan's *Conservation Element, Section J. Urban Forestry*. The Policies address protecting and expanding a sustainable urban forest, developing street tree master plans within community plans and implementing the plans through the development process.

1.2 2015 Climate Action Plan

The Climate Action Plan (CAP)[2] was adopted in 2015 and identified tree canopy cover as a "resilience" goal. The CAP calls for increasing urban tree coverage by 15 percent by 2020 and 35 percent by 2035. Progress toward these goals is featured in section 4.10 of this report. Four actions were met, and the fifth (action 4, plan for the long-term maintenance of additional trees and ensure sufficient staff and funding are available) is ongoing.

1.3 Urban Forestry Program Five-Year Plan

The Urban Forestry Program Five Year Plan[3] (UFMP) was written to implement the General Plan and Climate Action Plan. It was funded by a $75,000 State Grant from CAL FIRE and included public outreach that began in 2014. The report was adopted at the January 24, 2017 meeting of the City Council.[4]

1.4 2021 Parks Master Plan

The City Council approved the Parks Master Plan in August,2021.[5] The Plan includes tree elements in the policies for Parks and programming: Co-benefits; Equity; Mobility as Recreation; Conservation,

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[1] City of San Diego, General Plan 2008, https://www.sandiego.gov/planning/genplan
[2] City of San Diego, Climate Action Plan, 2015, https://www.sandiego.gov/sites/default/files/legacy/mayor/pdf/2014/climateactionplan2014.pdf
[3] City of San Diego, Urban Forestry Five Year Plan, 2017, https://www.sandiego.gov/sites/default/files/final_adopted_urban_forestry_program_five_year_plan.pdf
[4] City Council agenda, January 24, 2017, https://onbase.sandiego.gov/OnBaseAgendaOnline/Meetings/ViewMeeting?id=1977&doctype=1
[5] City of San Diego, Parks Master Plan, 2021, https://www.sandiego.gov/sites/default/files/parks-master-plan-adopted-2021.pdf

Sustainability and Resilience; and Partnerships. Trees are included for providing shade in two elements of the Recreation Value Park Scoring Matrix.

1.5 2022 Climate Action Plan Revision

The City released a draft proposed Climate Action Plan (CAP) on November 20, 2021.[6] There are eight actions and 12 supporting actions, and they begin to identify strategies to achieve the CAP targets. Target goals of 28% were set for 2030 and 35% by 2035.

1.6 2021 Climate Resilient San Diego

The City Council approved the Climate Resilient SD plan[7] in October 2021, with approaches for adaptation to climate change. The City invited residents to express their expectations for climate action and adaptation, and they overwhelmingly asked for more trees and green spaces in their neighborhoods. Two policies relate to trees: Policy RE-2: Foster vibrant, healthy and sustainable communities; and Policy TNE-6: Protect and expand the City's urban forest.

2 Action items in the urban forestry plans

The actions for the Five-year Plan, draft revised Climate Action Plan, and the Parks Master Plan were assembled as appendices to this report, and are available at https://drive.google.com/drive/folders/17BY1-GhcKYKButtbrb87HZywDxpzzXfo?usp=sharing. Issues and suggestions are offered for the six objectives, in this section.

Goal 1: Maximize the benefits of trees

2.1 Objective A: Obtain a comprehensive understanding of our urban forest (Information)

The Five-year Plan described opportunities for "unifying the urban forestry program through technology" citing street tree inventories and integration of information in the City's Enterprise Asset Management System. Urban forestry has long incorporated measurements and monitoring, and information technologies have been transforming this work for decades.

Street tree inventories have been assembled independently with two tree care and three tree inventory contracts over the past decade. These can and need to be centralized onto one inventory platform such as TreePlotter for more timely, consistent and useful monitoring.

Canopy-based tree inventories are drawn from remotely sensed information and are further described in section 4 for CAP action items.

The **"Get it Done" app** is an example of technology-enhanced information management, although it has brought workload challenges. The City gets more than 7,000 tree reports and requests annually in the "Get it done" app that relate to trees, including infrastructure conflicts, public safety, code compliance, contract oversight, interdepartmental coordination, and more. There is insufficient staff to respond to these reports, thus disproportionate attention given to reactive rather than proactive urban forest management. Because

[6] City of San Diego, draft revised Climate Action Plan, https://www.sandiego.gov/sites/default/files/climate_action_plan_draft.pdf
[7] Climate Resilient San Diego, approved by City Council on December x, 2021, https://www.sandiego.gov/sites/default/files/crsd_final_plan_with_appendices.pdf

urban forest management is unlike other City services, the support by Performance Analytics and other departments has been limited.

Monitoring is critical to successful urban forestry. These were outlined in a draft Five-year plan version from late 2015,[8] but not included in the plan that was presented to the Council for approval. Monitoring actions included spot-checking tree nursery stock, inspecting young trees after planting, evaluating conditions of tree failures and limb drops, tracking tree-related conflicts with infrastructure, and surveying participants in public education and other programs.

2.2 Objective B: Preserve and grow urban tree canopy cover

The Five-year Plan outlined challenges for protecting, maintaining, and planting trees.

The highest priority should be to **maintain and protect existing trees**, as large trees provide more shade, cooling, habitat, carbon sequestration and other benefits than newly planted small trees. Trees are dominant features of parks, and provide valuable shade, beauty, and places to socialize and recreate. Large heritage trees have aesthetic, historical, ecological, and social values. Planting young trees is not a sufficient substitute to loss of any mature trees.

Insufficient tree care budgets results in shade trees not inspected and pruned to keep them healthy (every 7 to 10 years), palms not trimmed (every two years), broken irrigation systems that result tree mortality in drought conditions, and delayed removal of infested trees such that insects and pathogens spread to healthy trees. Inattention to these will (and does) cause more tree losses, increase City exposure to liabilities and lawsuits, and detract from reaching canopy goals.

The **Heritage Tree program** is currently suspended, with only a handful of trees nominated or considered in the past five years, and the tree protection policies are not being effectively applied or enforced. This results in the removal of mature trees for various reasons and without any due process or notice. Council Policy 900-19 provides guidance but needs to be transferred into municipal code.

Growing healthy trees is both deceptively simple and at the same time complex. Many factors influence the establishment of a healthy tree, yet trees are very resilient after about three years, and most live for decades in San Diego unless affected by drought or vandalism. Even as funds have increased for the "free street tree" program, there are insufficient staff to proactively manage community engagement, education, and evaluation of tree planting.

The **"free tree request" process** (for planting trees in public easements) has finally been automated, but considerable staff time is still needed to contact the requester, confirm site suitability, arrange for contractor to plant trees, monitor plantings, and respond to community questions. Frustrations have included the wait by some homeowners and community groups for months for requested trees, and the lack of choice in tree species planted. The "Free tree" requests have come disproportionately from districts that already have many trees and parks.

More **tree planting grants** will be available, with newly-appropriated State and anticipated Federal funds to increase tree cover, urban greening, and urban cooling. These grants would be welcome investments, but their long-term impact will only be achieved with quality tree planting, young tree care, and continuing maintenance. Current capacities, across all sectors, are limited and need to be boosted to attract funding for considerable tree planting.

[8]Draft Urban Forest Management Plan (from consultant), https://www.sandiego.gov/sites/default/files/december_9_2015_attachment_urban_forrest_management_plan.pdf

Tree canopy on private property in all neighborhoods could be increased with incentives or at least education about planting small trees. Trees in these small containers adjust much better to their "new home" site than trees than have grown longer in containers at the nursery, are easier to transport, and require smaller holes to be dug for planting. Heritage trees need to be identified and protected in the City's park system to maintain aesthetic, historical and ecological value of the landscape.

Trees in parks were not addressed in the Five-year urban forestry plan, but any extension needs to incorporate them. Trees are the most dominant and defining natural element in parks, providing the shade, cooling, beauty, and calming nature. Stronger protection needs to be given to actively managing trees to keep them healthy, long living and safe elements in (all) areas of public use.

Goal 2: Maximize the efficiencies in maintaining the benefits of trees

2.3 Objective A: Unify and coordinate urban forest management practices (Practices)

The Five-year plan includes actions relating to permits, public works projects, and practices that influence tree losses.

Development permits require trees to be planted and maintained in perpetuity, and many have been illegally topped, underwatered, or removed. The City needs to inspect, issue compliance notices and fines, require trees to be replaced and maintained, and provide trees and shade in the de facto public spaces that are commercial parking lots and other properties.

Permit enforcement could restore some of this tree canopy and contribute to the CAP goals. Historically there was a "tree warden," a code enforcement officer, and this position was transferred from DSD to Transportation about three years ago. The urban forestry program gained an FTE for the overall workload and now occasionally provides arboriculture expertise to DSD on permit designs, installations, and violations.

Over the years, development permits have required trees to be planted and maintained in commercial developments, and many subdivision plans included a tree in every front yard. Parking lots are de facto public spaces, and trees provide shade for vehicles as well as pedestrians. Many parking lot trees have been illegally topped, dwarfed, or removed, so the parking lots are hot and contribute to urban summer heat.

The **"no-fee permit"** allows property owners to plant, trim, or remove trees in the street easement adjacent to their property.[9] This is administered by Development Services, and there is currently a backlog of approvals and that delays or discourages property owners from planting trees in their own street right-of-way, a decidedly low-cost approach to increasing tree canopy.

Public works projects include sidewalks, street reconstruction, buildings on City properties, and Capital Improvement Projects (CIP). Sidewalk reconstruction is a recurring activity which are sometimes instigated because of tree conflicts, and which can greatly affect street trees. The Public Works Department (renamed Engineering and Capital Projects) no longer has a landscape architect so occasionally consults with urban forestry staff. Thus, some project designs lack or limit trees in the design, and some planting practices limit tree health and longevity.

Lack of contract oversight can create extra liabilities and lawsuits, for example, the miscommunication or "mistake" by a sidewalk contractor in 2020. On a sidewalk replacement project, the agreement was made

[9] https://www.sandiego.gov/sites/default/files/legacy/ced/pdf/streettreepermitapplication.pdf

with the resident (adjacent to the sidewalk) that the tree would be preserved, then the sidewalk contractor replaced the sidewalk but removed the 100-year-old sound, healthy tree.

The City requires contractors to be licensed and to follow local codes and industry standards, including ANSI standards. Illegal tree removal and maintenance practices go undetected, unreported and unresolved. Penalties are not considered, imposed, or collected—and property owners and managers assume that they can violate City code without detection or enforcement. This results in tree canopy loss, declining tree health and safety, and City exposure to liabilities and lawsuits.

Drought stress affects the long-term health and vigor of trees, making them susceptible to diseases and pests. Even short-duration droughts can seriously damage or kill trees, and these benefits will take decades to get back. The strictest drought restrictions allow for watering trees on residential and commercial properties, and landscape vegetation in parks, schools, and other public places. The City needs to ensure that public trees are irrigated, and that the Water Department provides information to City residents about tree watering requirements during the drought.

Emerging pests need to be given more attention, before the only option becomes widespread and expensive removal of dead trees. For example, the Gold Spotted oak borer has infested hundreds of oak trees in Los Peñasquitos Canyon Preserve, and the nonprofit Friends of Los Peñasquitos Canyon have paid for proactive spraying for about four years. Shot hole borers infest many different species and are spreading. City has begun allocating more tree care funds to remove dead palms infected by South American palm weevil, to slow the spread and ensure public safety, but detracts from proactive tree care monitoring and actions on other pests.

2.4 Objective B: Promote inclusiveness, equity, and effective communication

The Five-year Plan identifies opportunities for public advocacy, advise from the Community Forest Advisory Board (CFAB) and contributions from non-profit partners. These actions focus on engaging communities, non-profit organizations, volunteers, youth, local professionals, and businesses.

Partnerships can multiply City resources for education, training, advocacy, tree inventories, planting and maintaining trees. Some organizations are already planting and protecting trees, often as part of broad environmental or social missions, as well as tree-focused groups such as Tree San Diego.

Tree equity is an emerging concern. All San Diegans deserve healthy neighborhoods, yet decades of inequitable public investments (locally and nationally) have perpetuated such environmental injustice as few trees and parks, more pavement, and hotter temperatures. Most of San Diego's underserved neighborhoods have few trees, as historically few parks were designated, housing lots were smaller, streets were unpaved and most never got sidewalks when they were paved, front yards were filled in to provide off-street parking, and street trees were not planted or not replaced if they died.

The **Climate Equity Index** (CEI) has been developed with solid local and state data on population, health, pollution, and other data. Some draft CAP actions refer to Communities of Concern, those that have low climate equity scores. Tree equity scores[10] have been developed nationally for urban areas and provide additional insights into local equity.

Community engagement may lead to better understanding of why street tree requests lag in some areas with great "tree inequity." Greater flexibility is needed for planting trees that thrive, such as funding community-based tree watering, removing concrete, planting shade trees on blocks where dead palms are removed, giving credits on water bills (about $20 per year), and fostering (not funding) tree planting on

[10] Get map for San Diego, https://www.treeequityscore.org/

private property for climate action goals. More residents may be willing to request and water trees, if they had some choice in the species planted.

The **Climate Resilient SD** plan included an invitation for residents to express their expectations for climate action and adaptation, and 93% asked for urban nature, trees, parks and community gardens. Now the City needs to take actions to align with those expectations—or reduce those expectations.

Citizen (or Community) Science has drawn national and local interest in collecting tree inventory data can generate information about private trees and engage youth and other community members in contributing to their urban forest. About 100 students in a class at UCSD collected basic tree inventory data on trees in 12 neighborhood parks, half which are in low-equity and half in high-equity areas.[11]

The **San Diego Urban Corps** provided tree planting and care for City projects until 2018, about $100,000 annually. Although this was discontinued, Urban Corps still plants trees for other municipalities and organizations and has been awarded several grants for this work. A grant focused on workforce development was awarded in early 2022, and will provide training, internships and other preparation of Corps members for local tree care industry employment. There is national emphasis on jobs in the tree and urban greening sectors.[12]

Goal 3: Minimize the risk of trees in an urban environment

2.5 Objective A: Improve the health of the urban forest with superior tree care and maintenance (Maintenance)

The Five-year plan outlines challenges for tree planting, including tree planting specifications, nursery stock, species diversity, watering, structural pruning for young trees, and industry standards for tree care.

Siting, planting, and maintaining young trees are deceptively complicated and shortcuts result in death of planted trees within a few years. When poor quality trees are planted in spaces with insufficient soil capacity, they have a high likelihood of dying within a few years, technically known as the "death spiral" for street trees. Trees are removed, planted again and death spiral repeated if attention is not paid to conditions for tree success. Once established for five years as healthy trees, most trees live for decades in San Diego unless affected by drought or vandalism.

Tree risk assessment could be more transparent. Public safety is an essential municipal role, and sometimes trees present risks that cannot be reduced without tree removal. Relevant information includes documentation of the arborists' assessments, risk assessment levels and tree risk rating (tree condition and targets), measures that can be taken to improve health of mature trees, and provisions for inspecting trees for birds and other wildlife if removed during nesting season.[13] Inviting community input and options can increase public support for maintaining mature trees and planting new trees, and avoid situations where the public is left feeling disenfranchised.

Development policies will result in some tree losses. Many older San Diego homes were built on large lots and now have large trees and other established landscaping. Infill policies and permits allow most or all of these trees to be removed, and require only narrow setbacks that leave little or no room for trees on the property. In discussions about infill, there are few mentions of tree losses or about mitigations for removal of large trees, and the result is net tree and shade losses during urban infill projects.

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[11] Keith Pezzoli, Professor, Urban Studies and Planning, University of California at San Diego, February 2022
[12] American Forests, Career Pathways program, https://www.americanforests.org/project/career-pathways/
[13] Tree care management practices to protect birds and other wildlife, https://treecareforbirds.com

Whereas more dense, affordable, and smaller unit housing is clearly needed in San Diego, the City's policies and practices should not lead to widespread elimination of neighborhood tree canopy and nature. It doesn't have to be an "either or" choice. Development permits can be expected to provide for irrigated parkways, street tree planting, and set aside of "front yards" so that public greenspace is enjoyed by neighborhood residents.[14]

2.6 Objective B: Unify and coordinate urban forest management policies

The Five-year plan addresses the roles of planning, policies and code changes.

Some **code revisions** were drafted in 2018, drawing from codes in other cities, but have not been formally reviewed or proposed by the City Attorney's office. This includes existing street tree code (§62.06), Council Policy 900-19 for Public Tree Protection, and Council Policy 200-05 for Planting of Trees on City Streets. Other code sources are national recommendations.[15]

Land development code revisions are managed in an annual process. In 2020, four proposed revisions for tree-related codes were discussed, and one change approved, which is that planting of palms will no longer be considered in the landscape "point system." The code for infill development is still evolving, with two trees now required (remaining or planted) for properties exceeding 5,000 sq ft.

Planting diagrams are also important. Locally, they are reviewed and recommended at the County level, and usually adapted with few changes by municipalities. These need to be reviewed for the City,[16] and current expert recommendations incorporated.[17]

Planning documents need to be aligned with and implement policies. There are about 40 community plans and many programmatic plans that influence trees, such as mobility and bicycling.

2.7 Actions included in the proposed Climate Action Plan revision

The draft revised CAP identified eight actions and 12 supporting actions. It also states that 100,000 would be planted by 2035, which is about 8,000 trees per year.

The CAP revision included a qualitative evaluation based on co-benefits, feasibility and equity is qualitative. This needs to be expanded to identify measurable, achievable actions and their estimated costs. This CAP should not be approved without a pathway to achieve the goals through City policies, enforcement, staffing and other resources.

2.8 Estimated annual costs for action items

Table 1 provides an estimate of the professional staff (FTEs) to implement the Five-year Plan and the CAP action items. Each action was assigned 0.1 FTE per year, recognizing that some will require fewer and some more staff to carry out. There are one-time investments in reviewing and revising policies and practices and are subtracted out from These costs were estimated by Anne Fege, a longtime forestry professional, and open to discussion and refinement.

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[14] https://www.sightline.org/2018/09/14/portland-housing-infill-and-tree-infill/

[15] Guidelines for Developing and Evaluating Tree Ordinances, International Society for Arboriculture, 2001, 181 pages, https://wwv.isa-arbor.com/education/resources/educ_TreeOrdinanceGuidelines.pdf

[16] "White book:" Standard specifications for public works construction, 2018, 598 pages, https://www.sandiego.gov/sites/default/files/the_whitebook_2018_edition_effective_january_1_2019.pdf

[17] Recommended urban forestry diagrams and details, http://www.urbantree.org/index.shtml

The contract funds are committed to two activities: tree planting (Goal 1-B) and tree protection and maintenance (Goal 3-A). The nine tree care workers and three horticulturalists are counted in these two activities. Estimated costs are displayed in Table 1, by objective.

Table 1. Annual estimated funds to implement Five-year plan and Climate Action Plan

	Annual FTE	**Annual Contracts $ 1,000**
Goal 1, Objective A: Obtain a comprehensive understanding of our urban forest.		0.8
Goal 1, Objective B: Preserve and grow urban tree canopy cover. (tree planting)	$ 7,200	6.1
Goal 2, Objective A: Unify and coordinate urban forest management practices.		2.9
Goal 2, Objective B: Promote inclusiveness, equity, and effective communication.		1.1
Goal 3, Objective A: Improve the health of the urban forest with superior tree care and maintenance. (tree protection and maintenance)	$ 6,000	13.7
Goal 3, Objective B: Unify and coordinate urban forest management policies.		0.8
City Forester		1.0
Sub-total	$13,200	26.4
One-time FTE for revising policies and practices		3.7
Total annual FTE after one-time actions		22.7

3 Five-year update on the urban forestry program

There is limited information on the actions in the five-year plan. Some actions have been completed, some dropped, and some need to be added. Staffing and funding information was gathered from a variety of sources.

3.1 Accomplishments

Information about activities and accomplishments for street and park trees is limited. Most staffing and funding is dedicated to tree maintenance, evaluating tree reports (now in Get it Done), and responding to those reports (pruning, branch or tree removal, sidewalk conditions) and requests for "free trees." Table 2 assembles the tree trimming and planting data.

Table 2: Accomplishments, from approved budget documents since FY 2015

	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY2023 Proposed
Number of trees and palms trimmed	20,106	42,142	39,054	43,506	30,120	15,000	28,100	35,800	42,000
Number of trees planted						589	1,840	700	1,000

Tree care accomplishments are now assembled monthly by department, and the FY 2021 totals are provided in Table 3. The definition and the source of the activities are unknown, for those reported by Development Services. The City planted 1,446 trees in 2018; and the City planted 704 trees and Urban Corps planted 154 in 2019.[18] In 2020, the City removed about 1,600 trees and planted about 1,600 street and park trees. Information for 2021 is displayed in Table 3.

Table 3: Trees planted, trimmed and removed in Fiscal Year 2021[19]

	Trees planted	Trees trimmed	Trees removed
Transportation and Stormwater	1,771	24,345	1,059
Parks and Recreation	552	11,704	1,142
Development Services	7,052	806	140

3.2 Staffing

Current staffing for public tree management is shown in Table 4. This includes all funded positions, even if some are vacant for part of the year. Costs of vehicles and other support for staff are not included in this report, as they are not itemized in annual budget documents.

Table 4: Staffing in recent Fiscal Years[20]

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Transportation—Professionals (City Forester and horticulturalists)	2	3	4	4	4
Transportation—Tree care workers	9	9	9	9	9
Parks—Professionals (Park Arborist and horticulturalists)	5	5	5	5	3
Parks—Tree care workers	3	3	3	3	3
Total	19	20	21	21	19

The City's Five-year Financial Outlook (dated November 10, 2021) calls for an increase in Tree Maintenance and Planting, with "additional positions to support tree trimming, planting, evaluation, and data collection, as well as additional funding for removal of dead palms and tree planting and watering." The projection was for 5.0 FTE in FY 2023-2024, and 8.0 FTE for FT 2025-2027.

3.3 Contract funds

Tree care work is done by City tree workers and their crew leaders, and by contractors. Annual budgets include funds for tree care contracts, which are generally awarded after a competitive contracting process. The current contractor is West Coast Arborists for street trees (agreement signed in 2019), and the previous contract was held by Atlas Tree Services. The City's Proposed and Approved budget documents only address year-to-year changes in non-personnel funds, without stating the annual budget levels. Funds for the

[18] City Forester Brian Widener, 7/7/2020 email message
[19] City Forester Brian Widener, personal communications
[20] Brian Widener and Erich Kast, personal communication

tree care contract were $2.3 million from about FY 2015 to FY 2021. [21] Per-tree costs increased for the current contract, and the Council added $900,000 in FY2022 to adjust for the increased costs.

Trees and other landscaping are also maintained in Business Improvement Districts[22] and Maintenance Assessment Districts,[23] set up over the past decades in developed areas and financed by property fees (not General Fund). Their expansion into older communities would increase tree maintenance and tree health.

The City has been awarded several grants from CalFire, including:

- 2012-13, Comprehensive long-term urban forest management plan, $75,000
- 2014-15 (approx.), Tree inventory and planting, for disadvantage communities, $750,000
- 2017-18, Citywide tree inventory and South Bay planting, $802,200
- CalFire grants awarded to Tree San Diego and Urban Corps San Diego in several years have planted street trees in the City of San Diego

Tree care activities, staffing and funding can be compared with other cities.[24] The City's expenditures for tree care contracts is "in line" or just above what other cities spend for contracts. Personnel cannot easily be compared as the information collected from each city didn't differentiate between urban forestry professionals and tree care workers. In these cities, 72% of funds came from "general fund." State and federal forestry grants were used by 30% of communities, and a mean 2.6% of the total budget was supported by grants.

4 Recommendations

There is great urgency to investing in urban forestry. Tree losses to development, drought and pests are increasing. As the climate warms and extreme heat events increase, neighborhoods need the shade, cooling, and the health and social benefits of trees and urban greening. Trees in parks and along streets provide the greatest community-wide benefits, but trees on residential and commercial property have more potential to increase city-wide tree canopy.

4.1 Five-year extension

This Five-year Urban Forestry Program plan is realistic and comprehensive. In the five years since the Five-year Plan was adopted, the City increased staffing, budgets, tree planting programs, and tree risk evaluation processes, and other core urban forest management activities.

Recommendations for the next five years are to:

1. Accelerate staff investments in three areas
    a. Update codes, regulations, and policies (see Goal 3, Obj. B) and practices (Goal 2, Obj. A)
    b. Invest in Information Technology, as this will provide data for assessing needs, setting priorities, assigning and overseeing work, and reporting accomplishments. (see Goal 1, Objective A)
    c. Enforce development permits and contract provisions. (see Goal 2, Objective A)

[21] Various budget documents
[22] Business Improvement District Organizations, https://www.sandiego.gov/economic-development/resources/bidorgs
[23] Maintenance Assessment Districts, https://www.sandiego.gov/park-and-recreation/general-info/mads/engreports
[24] Hauer and Peterson, ibid.

2. Commit to climate action and adaptation
    a. Determine a realistic yet ambitious tree canopy goal for the Climate Action Plan
    b. Prepare detailed implementation schedule to accomplish these goals
    c. Continue to focus on increasing tree, shade and cooling in Communities of Concern
3. Invest in urban forestry implementation and leadership
    a. Extend the Five-year plan to add the actions from the draft revised Climate Action Plan.
    b. Develop a phased schedule and appropriate budget increases for professional staff and contract funds to implement the Five-year plan and CAP
    c. Enhance strategic and operational leadership for urban forestry programs to address diverse land ownerships, integrate department roles and resources and accelerate climate action
4. Invite community contributions to urban forestry
    a. Appoint members to the Community Forest Advisory Board (CFAB) and actively invite and apply their advice
    b. Set up a task force of local professionals to review and propose revisions for policies and practices.
    c. Expand outreach programs to invite residents, businesses, communities, commercial districts and others to take individual and collective action to grow trees.
    d. Encourage community members to advocate for policy changes, participate in budget processes and take action for tree inventories, heritage tree nominations, tree planting and care, and public education.

4.2 Climate Action Plan goals and actions

The 2015 CAP set tree canopy goals as 20% by 2020 and 35% by 2035. The draft revised CAP set goals of of 28% by 2025 and 35% by 2035.

The LiDAR-based urban tree canopy assessment was made in 2014, and the City's overall tree canopy cover was estimated as 12.9%, in an analysis completed by the University of Vermont. Recently, the University of California San Diego purchased the US Tree Map remote sensing-based data for 2020 and 2014, and that data is currently being analyzed.

The goals need to be reality checked by transforming these into number of trees beyond the trees in the existing 13% tree canopy cover. Calculations would reveal the number of existing trees that would have to be protected, the number of planted trees that would provide substantial shade in 15 or 20 years, and projected losses. American Forests has broadly recommended 20% tree cover for "grassland" biomes in the Tree Equity Score.[25] They set 15% for deserts and 40% for forests. San Diego's climate is most similar to the grasslands.

The revised goals need to be reviewed, as the 35% goal is aspirational but likely achievable. If a goal is set too high, there will be continuing failure, discouragement, and lack of appreciation for accomplishments. Councilmembers, community leaders, local professionals, businesses and residents can be invited to work toward achievable targets and collectively celebrate increased tree canopy and benefits.

Strong consideration needs to be given to the Climate Resilient SD survey results that 93% of participants wanted more trees and green spaces in their neighborhood.

The revised CAP states that 100,000 trees would be planted by 2035, which is 8,000 trees per year.

[25] https://www.treeequityscore.org/methodology/

4.3 Climate Action Plan implementation

As others have expressed, it is unreasonable to revise the CAP without displaying and making a commitment to the implementation of the goals. For the urban forestry component, there needs to be an evaluation of strategies to include setting measurable tree outcomes and estimating annual staffing, funds and other resources needed to achieve them. Strategies would focus on protecting and maintaining public trees, planting and young tree care for street and park trees, enforcing City policies and codes, and providing incentives for residents to protect and grow trees. Relative costs would be compared to projected benefits.

The US Tree Map data for 2020 has land cover data by parcel, and this data can be evaluated with land uses by parcel (from SanGIS). Various strategies can be analyzed, and the costs and contribution to tree canopy compared. For example, directing code enforcement to restore parking lot trees, or installing irrigation so trees can be planted along boulevards or along transit routes.

The CAP sets policies for the entire city, not just the City-owned lands and assets. The City can identify and commit to actions to increase overall tree canopy on residential and commercial properties, such as incentivizing private property owners to plant trees, and giving a credit on residential water bills for watering street trees for the first three (or ten) years. Other trees are managed by other managers, notably school districts, San Diego County, the State of California, and Federal agencies.

4.4 City-wide leadership

The Five-year Plan and this five-year report show that urban forestry is both complex and comprehensive. There are many tree owners and reasons for growing trees, multiple departments with roles and resources, and both operational and strategic leadership needs. Insights into urban forestry management components and challenges are offered by Cities4Forests.[26]

Public trees are managed by Transportation (street trees), and the City Forester provides supervision and technical direction. Parks and Recreation staff manage the trees in developed parks and open space. Urban forestry work is also done by Development Services, Planning, Public Works, Sustainability, and other departments. The operational roles leave little time for policy analysis, monitoring, coordination with other departments, and City-wide strategic leadership.

It's time to strengthen urban forest leadership. That could involve developing strategies for various landowners and managers, strengthening coordination among departments, establishing monitoring programs and embedding more information technologies, and elevating the City Forester's role relative to other departments.

4.5 Alignment of staffing

None of this will happen with current staffing levels. The following urban forest management professional staff need to be added to the current professionals that manage the public street tree program and provide overall leadership for urban forestry. These urban foresters are partly based on the list of twelve professionals identified in 2016 for urban forest management for public/street trees, developed as a "Canopy Implementation Plan."[27] Staffing is not included for trees in parks, but needs to be reviewed and increased.

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[26] Urban Forests for Healthier Cities: Policy, Planning, Regulations, and Institutional Arrangements, from Cities4Forests, 2020, learning guide at https://cities4forests.com/lg-urban-forests-for-healthier-cities/ , same content in report format, 48p., https://cities4forests.com/wp-content/uploads/2020/06/C4F-Urban-Forests-for-Healthier-Cities.pdf

[27] Personal communication, Jeremy Barrett, City Forester, October 2016

These professional staff are in addition to the City's four professionals, two tree maintenance crew supervisors and seven tree trimmers.

City Forester. Overall urban forestry program leadership, and supervision of street tree programs in the Transportation Department.

Horticulturalists/arborists. Current staff (three horticulturalists) focuses on tree evaluations, oversight of contractors, tree planting, and other urban forestry activities.

Additional Street Tree Maintenance Supervisor and **Street Tree Planting Supervisor**. Plan, assign, and supervise the work of field crews and contractors engaged in street tree planting, trimming, maintenance, and removal.

Code enforcement officer/arborist. Inspect, issue compliance notices and fines, and require permitted trees to be replaced and maintained. Also administer the No-Fee Tree Permit

Information specialist/arborist. Coordinate and streamline tree inventories, apply GIS data and maps, oversee monitoring, and allow the City to apply information technologies that are transforming urban forestry nationally.

Outreach specialist. Provide leadership, coordination and oversight of partnerships and outreach for tree planting.

Policy analyst/arborist. Draft policy analysis, guidelines, codes, climate action plans and various strategies. This position will support the City Forester in his efforts to provide leadership and oversight for a broad important urban forestry program.

Public works inspector/arborist. Review landscape designs and inspect installations, embedded with the Engineering staff.

Tree planting coordinators/arborists. Work with communities, non-governmental groups, other departments, and contractors to identify places to plant trees, supervise installation, and monitor watering and young tree care.

Tree inspector/arborist. Respond to tree reports, conduct evaluations, and oversee work done by City tree workers and contractors. Also manage the "no-fee permit" system that covers tree planting, pruning and removal of trees in the right-of-way

Tree protection officer/arborist. Manage the heritage tree programs and provide tree valuations for illegal tree damages and removals.

4.6 Closing

This five-year report is intended to be a starting point. Readers of the report are invited and encouraged to review, suggest revisions and offer additional approaches in this report (send to afege@aol.com).

This report closes with two questions and answers. What does it cost, to not manage trees?[28]

> The initial investment in planting and maintaining urban trees is a cost incurred with the expectation of future benefits. Maintenance of tree populations is linked to tree structure and function, which benefits the urban forest. It is likely that benefits will accrue without maintenance; however, indirect costs and disservices may result from this lack of maintenance, including tree failures, debris, pests,

[28] Hauer, R.J., J.M. Vogt, and B.C. Fischer. 2015. The cost of not maintaining the urban forest. Arborist 24(1):12-17 http://www.isa-arbor.com/education/resources/CNMTArboristNewsArticle.pdf

branches blocking intersections, and other issues. Thus, urban trees frequently necessitate at least some level of tree maintenance in order to prevent conflicts with other urban infrastructure.

Proactive (i.e., systematic) maintenance should also lead to more efficient tree management than reactive (i.e., crisis) maintenance. The urban forest manager is tasked with applying a level of maintenance that optimizes the net benefits of tree populations. Allocation of maintenance resources (e.g., time, money, labor) below an optimal level results in a trade-off—potentially less healthy trees that may have a shorter life span or service life. Allocation of resources for maintenance in excess of what is needed also results in a lower net benefit. The question then becomes: What is an optimal level of maintenance? The literature provides some examples through studies with pruning, establishment, and pest management.

What broad civic approach can guide us? Answers from an appeal in recent Arborist Today article:[29]

> "This opinion piece addresses the challenges industry professionals and administrators face in communicating and convincing people in their communities, primarily property owners, of the value in planting, maintaining, and preserving the trees of the urban forest….. The concept of property owners, developers, community groups, homeowners' associations, property managers, nonprofits, businesses, industrial operators, urban forestry alliances, and local agencies all working together to meet the ever-increasing needs of urban forest preservation and growth is promising….
>
> "The philosophy of communal living, citizenship, and social justice is a highly debatable topic in today's political environment, [but] the environment provides the resources for our survival, and we must try and preserve and replace these resources for future generations…. Even the individual parts [of urban forestry] can be daunting, challenging, and at times seem insurmountable; however, throughout the history of human life it has been proven that the combined efforts of a group of people are always more impactful then the individual efforts of its parts. Every one of us is responsible for what happens to our urban forest next."

Appendix A: List of actions from climate action, urban forestry program, and parks master plans

Appendix B: List of actions, sorted by management approaches

Appendix C: Monitoring plan provided in draft Five-year Urban Forestry Program

Appendices available at
https://drive.google.com/drive/folders/17BY1-GhcKYKButtbrb87HZywDxpzzXfo?usp=sharing

[29] Arborist Today, 2019, "Maintaining the Urban Forest: Everyone's Responsibility"