PART 2
TECHNICAL ASSESSMENT

1

URBAN FOREST MANAGEMENT PRACTICES

1.1 Introduction

While the Urban Forest Master Plan (UFMP) covers the key analyses on the current state of Pleasanton's urban forest, as well as the strategies and implementation steps for reaching the City's urban forest goals, the Technical Assessment provides a detailed account of Pleasanton's urban forestry program. The Technical Assessment addresses all facets of urban forestry in the City ranging from the administrative (budgeting, staffing, and policy) to field practices (nursery stock selection, tree establishment, infrastructure conflicts, pruning, and removals). Appendices related to tree management considerations are also included at the end of this document. For a comprehensive list of all recommendations for the City's urban forestry program, see **Appendix I.**

1.2 City Resources

1.2.1 Budget

Knowing where you are starting from is the first step in being able to plan for the future. This section highlights where and how much of the City's budget (on average) is spent on the maintenance and management of Pleasanton's urban forest. **Table 1-1** shows the total expenditures on tree care. Pleasanton's most recent annual urban forest program spending in fiscal year (FY) 2023-2024 was roughly $1.6 million, which when divided by the City's most recent inventory of 23,722 trees, equates to spending roughly $68 per tree per year. **Table 1-2** shows a comparison of what other California cities of both similar and larger size spend on the management of their public trees which ranges from $26 per tree in Napa to over $80 per tree in San Francisco. There are many unique factors for each city in managing their urban forests which makes it challenging to directly compare one city's per-tree budget to another city, so a more useful metric comes from looking at what services Pleasanton is accomplishing with the funding it spends on its public trees. This is discussed further in Section 1.2.3 Annual Service Data. The increasing amount spent over the last four years by Pleasanton, a difference of over $687,200 when comparing the spending in FY 23/24 compared to FY 20/21, shows a dedication from the City to keep pace with the rising costs of tree establishment and maintenance work, in order to provide the same level of tree services to its residents.

Table 1-1. Total Urban Forest Activity Expenditure by Fiscal Year

Fiscal Year	Total Spent
FY 23/24	$1,604,187
FY 22/23	$1,514,107
FY 21/22	$1,200,273
FY 20/21	$916,987
FY 19/20	$1,089,017
FY 18/19	$922,925
Six Year Average	**$1,207,916**

Table 1-2. Comparison of Municipal Urban Forest Management Funding

California City	Population	Annual Public Tree Budget	Number of Public Managed Trees	Tree Budget Allocation per Tree
Pleasanton	74,653	$1,604,187	23,348	$67.62
Comparison with Other Northern California Municipal Program				
Chico	130,178	$1,443,653	34,874	$41.40
Dublin	72,060	$900,000	14,000	$64.29
Napa	79,039	$1,299,900	50,000	$26.00
Rancho Cordova	73,147	$329,000	3,910	$84.14
Sacramento	501,334	$6,700,000	100,000	$67.00
San Francisco	874,961	$19,000,000	236,000	$80.51
San Ramon	84,929	$669,248	45,606	$14.68

Table 1-3 has the six-year average of tree maintenance activities separated by contractor and City staff labor. Outsourcing pruning work is frequently done by cities as it can generally be a cost-effective method to conduct municipal pruning activities by limiting a city's overhead costs for purchasing, maintaining, and having the space to store the large equipment needed to conduct the work. This also allows City staff to focus on other management activities that involve planning and interfacing with the public, like managing permits, responding to residents' service requests, and other arboricultural tasks.

Table 1-3. Six Year Average of Urban Forest Expenditures by the City

Urban Forest Task	Contractor Services	Department Staff	Totals	Annual Service Data
Pruning	$483,745	$91,273	$575,018	3,455 Trees Pruned
Removals	$67,834	$71,919	$139,753	226 Trees Removed
Management Activities	$16,150	$176,062	$192,212	11.6% of management time is spent on City managed trees
Storm Cleanup/ Emergency Work	$28,464	-	$28,464	Metrics contained within Trees Pruned and Trees Removed data above
Downed Tree Cleanup	-	$83,741	$83,741	Metrics contained within Trees Pruned and Trees Removed data above
Planting	-	$61,771	$61,771	151 Trees Planted
Establishment Care	-	$17,982	$17,982	254 Trees Watered
Other Expenses	$108,975	-	$108,975	-
Total	**$705,168**	**$502,748**	**$1,207,916**	

The budget data above highlights where current expenditures are going, and what each line items' average cost is over the past six years. Pairing this budget data with services provided allows City staff to more accurately predict future expenses. Currently, Pleasanton's urban forest program is 97% funded through the General Fund, with the remaining funding coming from the Urban Forestry Fund. The Urban Forestry Fund is primarily funded through developer contributions from development projects within the City. **Appendix E** describes other potential funding sources to help meet urban forestry goals.

Table 1-4. Urban Forest Program Funding Sources for FY 2023-2024

Funding Source	Amount	Percent of Total
General Fund	$1,168,000	97%
Urban Forestry Fund	$40,000	3%

1.2.2 Funding Pleasanton's Future Urban Forest Goals

Determining How to Achieve the City's Canopy Cover Goal

Pleasanton's total canopy is currently averaging approximately 25% within the City's urban boundary. While this is considered above average for a city that was historically in a grassland setting (Nowak and Greenfield 2020), the canopy cover is not evenly distributed and falls below 25% in 26 of the 77 residential neighborhoods (See **Figure 2-3**). Instead of setting a city-wide goal to increase canopy cover, Pleasanton plans to focus its resources into those areas with lower canopy cover and has set a goal to achieve 25% canopy cover across all neighborhoods over the next 25-years. This section highlights a management pathway the City can take to achieve the goal of having all neighborhoods within Pleasanton reach 25% canopy over the next 25 years.

Approximately 6,300 new trees will need to be planted within those 26 residential neighborhoods that are lacking the target canopy cover level (See **Table 2-6**). In the recent tree inventory of publicly managed trees, only 1,106 vacant sites were identified as being readily available for planting in the 26 targeted neighborhoods, though there may be other potential available planting spaces for trees not yet identified in the City's parks within these neighborhoods, which is discussed below. This leaves approximately 5,200 trees that will need new planting locations.

Creating new tree wells in urban areas requires removing impermeable surfaces on public property and is often a long-term and costly planning effort. While there may be a few opportunities to increase the canopy cover on streets in these neighborhoods that currently have few street trees such as the western-most portion of West Las Positas Boulevard, most of the public land in Pleasanton is already developed for crucial city infrastructure, limiting the space that can be converted to a new tree site. These limitations on public land highlight the importance of residents and businesses planting and maintaining trees on their private properties. Private property trees will play an important role in achieving the City's goal of getting targeted neighborhoods to reach 25% canopy cover in 25 years.

Residential Tree Give-Away Program

To incentivize and reduce the barrier of entry into tree ownership, Pleasanton will set out to create an annual tree give-away program where the City would purchase young trees/saplings to give out to its residents in targeted neighborhoods. The tree give-away program will help the City progress towards elevating targeted neighborhoods to reach canopy evenness with the rest of the City and build

the shared experience of tree planting within the community and reaching a common goal. Depending on the year, the City will aim to give away approximately 100 trees annually to the community in these target neighborhoods to reach the canopy goal.

Businesses and Developer Contributions

Businesses and developers can also support the City's tree planting goal by planting and maintaining trees on their properties. Based on current development projects that are either approved or in the planning phase within the targeted neighborhoods, the City predicts that an average of 25 trees will be planted annually as part of the project design requirements. The City estimates that on a city-wide basis, developers have planted close to 200 trees per year on average due to requirements of their development plan process. Currently, this data is not consistently tracked as part of the urban forestry program, and collecting this data in the future will allow the City to better track progress towards their city-wide canopy cover goal, and better understand the annual contributions from development projects to tree canopy.

Management Pathway and Projected Budget Summary

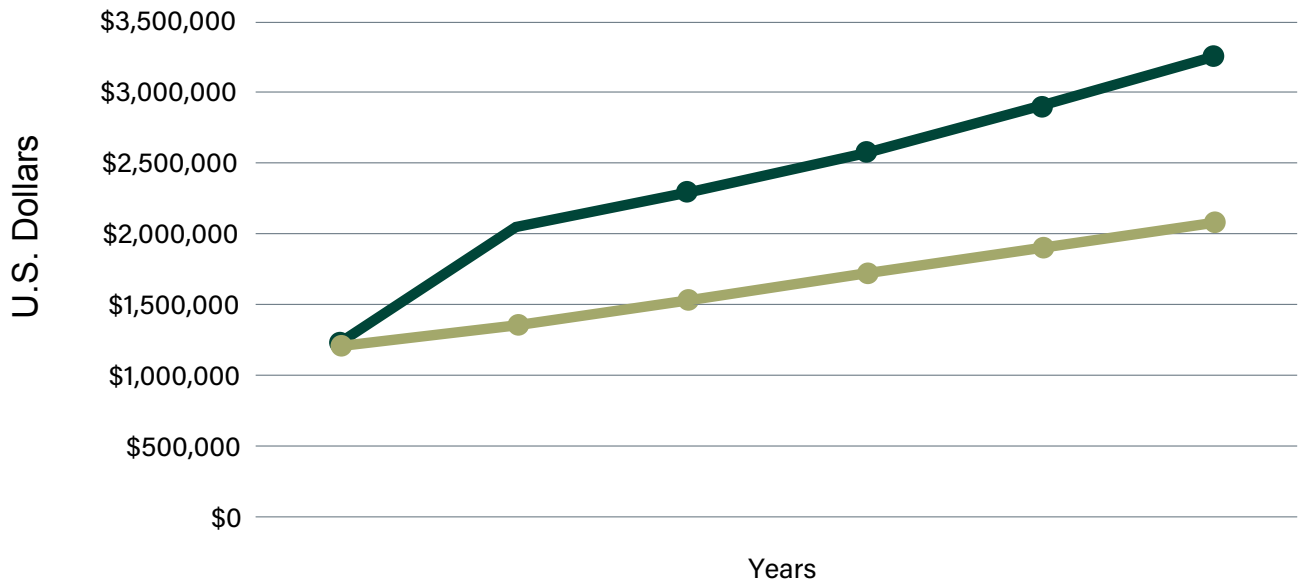
Given the assumptions above which include the City filling 1,106 vacant tree sites, giving out a total of 2,500 trees to residents in target neighborhoods, and developers planting a total of 625 trees over the next 25 years, this still leaves 2,076 trees to be planted across the 26 neighborhoods. Different strategies are discussed below which will impact the actualized cost for the City, but to simplify the budget model, we have projected the cost for the City to create the remaining 2,076 new tree sites in these neighborhoods which are needed to meet the canopy cover goal. In addition to the new trees planted, this budget model also accounts for the City maintaining its standard tree services such as removing and replanting an average of 175 dead trees per year, watering and structurally pruning newly planted trees as part of a three-year establishment program and pruning an average of 4,670 mature trees per year to maintain a five-year pruning cycle.

Based on these assumptions, the City would need to spend an estimated $61.6 million over the 25-year timeline, ranging from roughly $1.2 million annually at year one to $3.2 million annually at year 25, to achieve the canopy goal (**Figure 1-1**). While the year one projection is roughly equal in cost to the current average annual spending on the urban forestry program, as more trees are planted and needing to be maintained, the year 25 funding needed represents an estimated difference of over $1.2 million from the City's current budget, even when considering a three percent inflation adjustment. This would necessitate that the City identify potential future funding sources (see **Appendix E**)

to supplement the current urban forest program funding or consider alternate strategies such as decreasing the establishment program to only one year or having the community take a larger role in the canopy cover goal.

Figure 1-1. Estimated Cost for achieving City's 25% Neighborhood Canopy Cover Goal with a Mixed Private / Public Approach

Cost Projection to meet 25% Canopy goal *in* Targeted Neighborhoods *with* Mixed Private/Public Approach



	1	5	10	15	20	25
Annual Budget Needed to Achieve Urban Forest Goal	$1,244,234	$2,046,179	$2,296,558	$2,567,265	$2,898,549	$3,248,415
Current Urban Forest Budget with 3% Annual Inflation	$1,207,916	$1,352,866	$1,534,053	$1,715,241	$1,896,428	$2,077,616

Here is a breakdown of the overall proposed planting effort, on an annual basis:

- 44 trees planted in existing vacant sites by the City
- 83 new tree sites created and planted by the City (* See the following section for how this could change)
- 175 trees removed and replaced by the City
- 100 trees given away by the City to the community in target neighborhoods
- 25 trees planted by developers and businesses in target neighborhoods
- The planting efforts described in this section total approximately 425 to 430 trees planted annually on both public and private land throughout the City of Pleasanton.

Alternative Strategies That May Impact the Proposed Management Pathway and Cost to the City

There are several alternative strategies that the City can take to encourage the community to take a bigger role in meeting the canopy cover goal. Engaging community members to plant trees on residences, commercial properties, and schools, will decrease the need for the City to create new plantable vacant sites in developed public spaces. This would lead to significant cost savings for the City, as they would no longer be responsible for tree establishment and maintenance of these trees.

Opportunities in Parks and Open spaces

As previously mentioned, there are likely several vacant trees sites, that are yet unidentified in the Pleasanton's parks, and on some streets. There are 14 parks and two open space areas totaling 282 acres within or directly adjacent to the 26 targeted neighborhoods, which likely have some available planting spaces for new trees. While this wouldn't reduce costs for establishment care and long-term maintenance, it would reduce the costs of breaking concrete to create new tree sites in developed areas which is estimated to cost the City $880 per site. Park staff should plan to set aside extra time to identify and map additional planting spaces within these parks and open spaces, as well as to look for opportunities to replace smaller trees with larger canopy trees in parkways, medians, and rights-of-way, so that each space is being maximized where appropriate.

Opportunities in Schools

Schools may be another participant in the canopy cover goal and may provide additional space for trees to grow in these neighborhoods. There are seven schools totaling 109 acres that are within or directly adjacent to the 26 targeted neighborhoods. The City hasn't previously worked with

schools for tree planting, so City staff would need to set aside a significant amount of time to conduct outreach to the seven schools within the targeted neighborhoods, as well as to research grants that may be available to these schools such as the Green Schoolyards grant program (See **Appendix C**). In addition to having schools plant trees on school property, the City may be able to purchase additional trees for the schools that the teachers could then give away to their students for planting in the yards of the student's homes.

Opportunities for More Residential Front Yard Trees

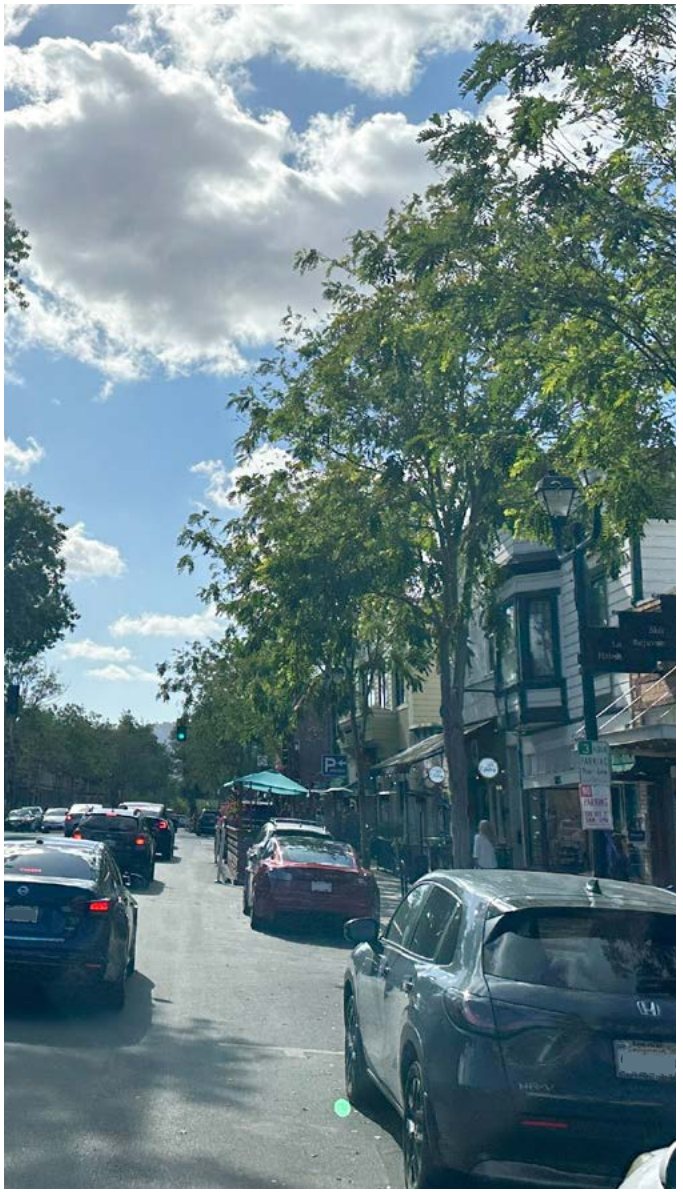
A third strategy that the City may consider is implementing a front yard ordinance that would require residents to plant and maintain at least one tree in their residential front yards. While the City encourages its residents to voluntarily plant and maintain trees in their front yards, a stronger approach could be taken with a front yard ordinance, but this may come with pushback from the community. The City of Hayward currently has requirements in their Zoning Ordinance under the Minimum Design Standards section 10-1.204 that each front yard and side street yard have a minimum of one 15-gallon tree planted for low density residential, and residential natural preservation districts. Other cities such as San Jose, Temecula, and Claremont have language in their municipal code that assigns property owners the responsibility to water and maintain the street trees that are in front of their property. Pleasanton may find that starting with a tree giveaway program paired with outreach, education on the benefits of trees, and the provision of informational materials for how to plant and care for a tree, may be a more successful strategy for getting more residents to plant trees in their front yards. If there is still a need to get more residents to plant trees on private property after this initial effort, then a front yard ordinance could be considered.

Opportunities for Cost Savings from Tree Establishment

A large portion ($40 million or 57%), of the total cost in the budget model comes from the establishment program that is recommended the City implement for newly planted trees, which would include watering and structural pruning for three years. The City currently only waters newly planted trees for the first growing season and does not conduct structural pruning. A longer watering period should result in higher survival rates for young trees that have to make it through Pleasanton's hot summers, and structural pruning can eliminate problems like co-dominant leader stems early on, which can reduce mature tree pruning costs in the future. If the City is not able to find sufficient additional funding to meet the projected urban forestry program funding gap, the City may need to consider reducing the establishment program to only one or two years.

Recommendation:

- The City should first focus on filling the 1,106 vacant sites in the target neighborhoods along with creating the tree-giveaway program for private residences.
- The City should also explore opportunities to reduce the number of new tree sites to be created by identifying any undocumented vacant sites that already exist in parks, medians, parkways and rights-of-way.
- Identify which public tree sites with smaller trees can be replaced with larger canopy tree species, without creating infrastructure conflicts.
- Create and maintain a standardized system for tracking tree plantings by private residents and businesses.
- Focus on building relationships with target schools and research funding opportunities like the Green Schoolyards grant program that may be able to provide resources for tree planting projects, outreach and education in the target neighborhoods.
- Analyze the success of the initial tree giveaway programs and consider whether creating a new front yard ordinance is needed.
- Consider whether to reduce the length of the tree establishment program to save additional costs.



1.2.3 Staffing

1.2.3.1 Current Staffing

The City uses a combination of in-house employees and external contractors to manage and maintain the urban forest. **Table 1-5** details the City's tree-related staff positions. Within Pleasanton's Parks Department, there are 40 positions, eight of which are part-time to assist with mostly additional park maintenance work during the busy park use season (April through August).

The primary work of the current tree maintenance contractor is street tree pruning (62% of contracted work) and removals (10% of contracted work). City staff are being utilized across a wider range of urban forest tasks from planting, establishment care, pruning, removals, and tree debris clean up. The most expensive line item for city staff is management-related activities at 29% in FY23/24, followed by pruning and planting activities at 19% and 16%, respectively. Providing additional details in future work records categorized as 'management-related' activities will allow for a more comprehensive analysis on the City's urban forestry tasks and associated funding.

Table 1-5. City of Pleasanton Tree-Related Staff Positions and Their Cost

Type	Salary + Fringe	Number of positions	Number of FTEs	Total Labor Costs
Parks Maintenance Supervisor	$247,520	3	0.81	$200,491
Parks Lead Worker	$220,480	6	0.72	$661,440
Parks Maintenance Worker II	$197,600	12	0.72	$2,371,200
Parks Maintenance Worker I	$160,160	9	0.72	$1,441,440
Park Maintenance Aide (Part Time)	$34,125	8	0.72	$196,219
Landscape Architect	$250,494	1	0.2	$50,099
Landscape Architect Assistant	$179,210	1	0.75	$134,408
Total	**$1,289,589**	**40**	**4.64**	**$825,901**

Figure 1-2 provides a snapshot of the Parks Department's organizational chart for tree maintenance. The organizational chart shown is only one-third of the total Parks staff, with the other two-thirds being similarly structured.

Figure 1-2. Parks Department Simplified Organization Chart for the Urban Forest

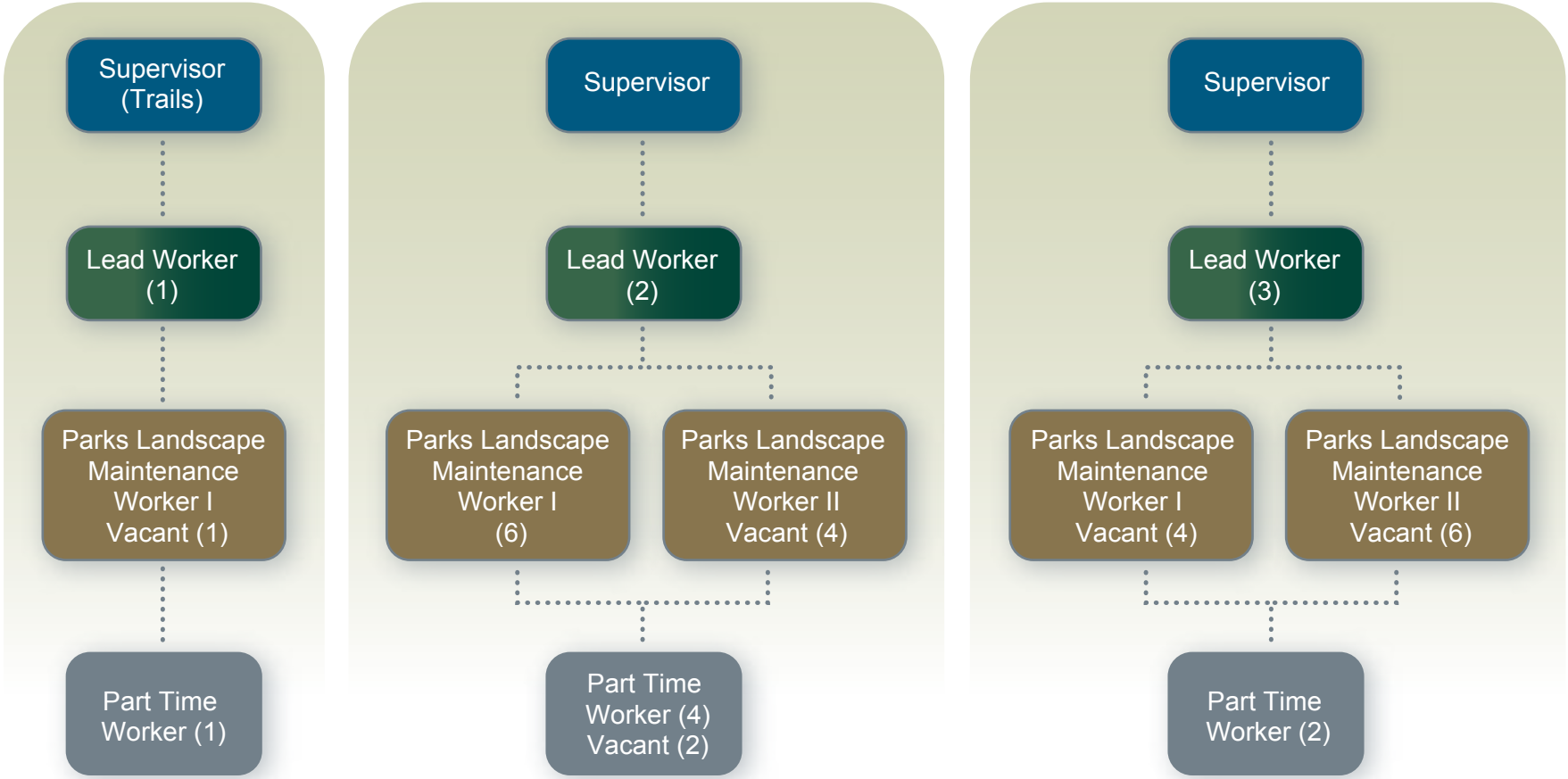


Table 1-6 compares Pleasanton's FTEs related to tree management to other Cities of comparable sizes. Pleasanton's 4.64 FTEs are slightly lower than the average number of FTEs reported by cities of similar size in the 2016 Hauer and Peterson study regarding municipal tree care and management. This can largely be explained by the fact that, like some of the other cities listed in **Table 1-6**, Pleasanton utilizes contractors for all its street tree maintenance work. It follows that the City only has the equivalent of a few full-time staff to carry out the remaining urban forestry work which includes tree planting and establishment care work throughout the city and tree maintenance work in parks. Pleasanton should continue to track and use their annual tree service data (presented in the next section), to determine if the current number of FTEs and contracted work are sufficient to provide the level of service desired by the City as well as sufficient to achieve future canopy cover goals (discussed in Chapter 2).

Table 1-6. Comparison of Municipal Urban Forest Management Staffing

California City	Population	Number of Publicly Managed Trees	Number of FTEs related to tree management
Pleasanton	74,653	23,348	4.64
Hauer and Peterson 2016b (87 Survey respondents)	50,000 – 99,999	30,036	6.27
Chico	130,178	34,874	9.25
Redding	95,542	20,600	2.58
Oxnard	208,154	48,806	4.57
San Ramon	84,929	45,606	1.0
Temecula	115,202	30,715	0.40

1.2.3.2 Current Staffing Challenges

The City currently implements its urban forestry programs, including enforcement of the tree preservation ordinance, through joint efforts by the Community Development and Public Works Departments. Most of the enforcement and response has been handled by the City's Landscape Architecture Division which has two staff people (a Landscape Architect and a Landscape Architect Assistant). In addition to the various tasks that the Landscape Architecture Division is responsible for, including managing Capital Improvement Projects, Maintenance of the City's Landscape and Lighting Maintenance Districts, plan review for both Planning and Building Departments and Landscape Inspections as well as master planning, the division also reviews and responds to all tree applications, pruning and removal violations as well as a number of other tree related services and programs the City provides including an annual Arbor Day Celebration and maintaining the City's Tree City USA status .

In addition to the work done by the Landscape Architecture Division, the Parks Division is also heavily involved in tree care, maintenance, and response. The tasks associated with tree care fall on many individuals within the Parks Division and range from disaster response to proactive tree care. While many individuals touch trees in their everyday work, there is no dedicated team of tree care professionals within the City organization. This leaves all the work associated with trees to be performed by members whose primary responsibilities are not tree focused. This system means that tree care management and response is often reactive instead of proactive. The City requires a dedicated team of professionals to be responsible for the tree care program. Doing this would allow Pleasanton to more effectively meet its tree service standards and urban forestry goals.

Recommendation:

- Explore the capacity of current positions or create a new Urban Forestry Team that's overseen by a dedicated Urban Forest Manager (who is a certified arborist) to coordinate with all City departments on implementation of the UFMP and to oversee urban forestry programming, tree care and management, and community engagement efforts including finding and applying for grants, educating the public, and coordinating with non-profits.

1.2.4 Annual Tree Service Data

Keeping current and detailed records on the total number of pruning, plantings, and other services performed by the City allow for the City's Urban Forestry-related staff to track service trends of the City-managed tree inventory. It will also allow the City to determine gaps between the current level of tree service and the ideal level of tree service it wants to provide based on its UFMP goals. **Table 1-7** shows five current annual tree service metrics and how they measure up to current tree service goals.

One tree service metric that the City is performing well is keeping up with the removal of dead trees in a timely manner. The City reported that, in most cases, dead trees are removed within four to eight weeks of the removal request, and there are no remaining removal requests by the end of the year. **Table 1-7** also illuminates a few metrics where the City is not meeting their tree service standards, which includes tree planting and establishment care. Based on the last six years of data, an average of 151 trees are planted and 254 trees are watered annually by the City. To meet a three-year establishment and watering period goal, around 675 trees would need to be watered annually.

The lack of a formal three-year establishment program and insufficient watering of newly planted trees could be a potential reason why the City's annual removals (average of 226 per year) are outpacing their tree plantings (average of 151 per year).

Another area where the City could improve adding structural pruning for new trees, which it doesn't currently conduct. Structural pruning can save costs down the line because it is easier to address a structural problem using a pair of pruners when that tree is young versus needing to address a structural problem when the tree is matured, which may involve much more equipment and staff time. Generally, newly planted trees need a year to establish in their new environment once planted, but then should receive structural pruning once a year for two to three years, and then once again in two to three years later before it's 'graduated' to the mature tree inventory. Continuing to track and analyze the service data regularly will allow the City to better measure its progress toward achieving its tree service standards and goals.

Table 1-7. Annual Service Data, Goals, and Gaps

	Tree Planting	Establishment Care	Tree Pruning	Dead Tree Removals
Current Service (Average of last 6 years)	An average of **150 tree**s are planted annually.	**250 trees** are watered, on average, annually.	The City currently operates a 5-year pruning cycle, with approximately **3,455 trees** pruned per year, but with no structural pruning of young trees.	Approximately **225 trees** are removed per year.
Current Annual Service Goal	Replace all trees removed annually (**225 trees** on average) *Note this number may increase up to 320 trees per year as the City's tree inventory increases, assuming a 1% mortality rate)	**675 trees** watered annually (newly planted trees watered for first 3 years multiplied by 226 trees per year)	Achieve a 5-year mature tree pruning cycle based on the City's 2024 tree inventory of 23,722 trees and perform structural pruning on the previous three years of newly planted trees totaling trees annually in 2024	No dead trees left standing at end of year (225 trees on average annually)
Gap to Current Service Goal	**75 additional trees** planted annually	**425 additional trees** to be watered annually	The City is currently meeting their mature tree 5-year pruning cycle goal, but is **missing structural pruning on the previous three years of newly planted trees** annually	Currently meeting the Service goal

1.3 Management Practices

1.3.1 Tree Planting

Trees along streets and in parks are dependent on human intervention, unlike trees in wildland areas that can rely on natural recruitment and disturbance. Young trees must be planted continuously to replace the trees that have been removed if the urban forest is to thrive and grow. Best management practices for tree planting, spacing guidelines, and recommendations for replacement based on the stature of the removed tree can be found in **Appendix J**.

Current practices

Currently, vacant tree sites are prioritized for planting based on resident requests. A few tree options that would be suitable for the site are presented to the property owner for selection. Once selected, the ground is prepped and the tree is planted by the City's tree contractor. The planting is done in conformance with City standard detail 806. Watering for establishment is scheduled and added to the rotation and will be watered by a seasonal employee employed by the City of Pleasanton. The past six years of City work records reveal that the number of trees planted (773 trees) is only 57% of the number of trees removed (1357 trees), which is equivalent to losing an average of 75 trees per year.

According to the City's inventory data, 85.6% of the mapped tree planting sites are currently occupied. New sites must be identified and developed to reach the target canopy cover. At present, the City does not have the staff, or extra time with existing staff, to actively identify new planting locations. The primary focus is on care required for young tree establishment. (See: Establishment Care, section 1.3.2).

Recommendations

- Ensure replacements are planted when City trees are removed
- Plant trees in all sites allocated for trees.
- For detailed information on the number of trees required to achieve canopy cover goals and the specific areas of the city where tree plantings should be concentrated, please refer to Chapters 2 and 3 of this technical assessment.

Tree Selection

Each species of tree has its own unique set of characteristics like flower type, crown shape, and growth rate. Tree species also vary in their needs for water, space, soil, and light for health and growth. For example, some trees need the wide-open space of woodlands and parks to thrive, while others can live and grow vigorously in small parkway spaces seen along downtown streets. Tree and site issues may occur when a tree species and it's planting site do not match, like a shortened life span, raised sidewalks, or conflicts with

overhead powerlines. Because of this, it is crucial to select a tree with characteristics appropriate for the site as well as to plan sites appropriate for desired trees.

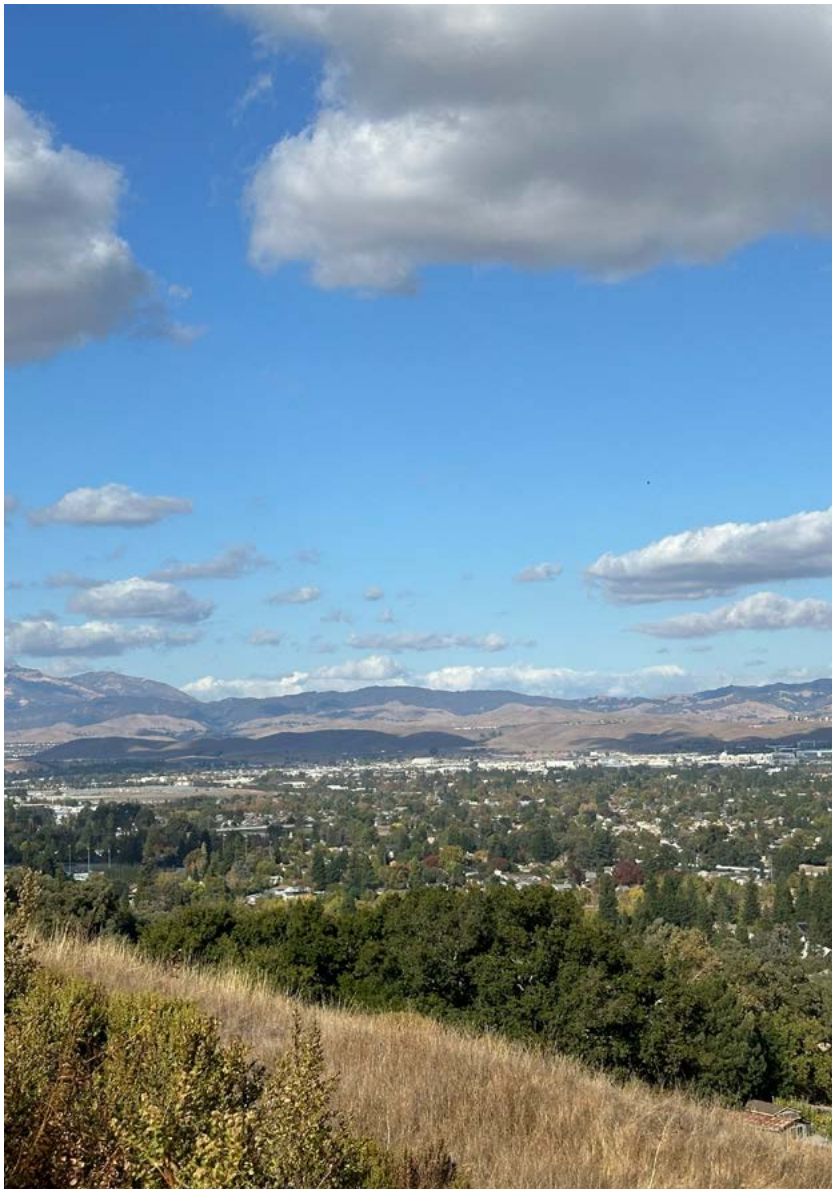
Current Practices

The City maintains a recommended plant list that includes species-specific information including water use and size classification. With State-mandated water restrictions, anticipated tem perature increases and extended drought periods, the species list has been evaluated to ensure that the city plants trees that are expected to be able to survive in a hotter and drier climate. **Appendix C** is an updated list for recommended tree species specific to the City of Pleasanton's landscape. It was developed by using the following parameters:

- A preference for trees that are rated as very low or low by the Water Use Classification of Landscape Species (WUCOLS)
- Inclusion of well-adapted local and regionally native species.
- Diverse planting size requirements to allow for various tree planting locations
- A diversity of species available for each site type to achieve species diversity standards
- Options to reflect existing neighborhood character
- Species in the City's current tree inventory were considered and removed if they are known as high water users or deemed invasive by California Invasive Plant Council.

Recommendations

- Tree planting should start with a site analysis. Once site characteristics are understood, consult the updated tree list to find an appropriate species that matches the site conditions. Please note that the tree list should be re-evaluated from time to time as more information is learned about specific species performance in Pleasanton as well as to add new cultivars or varietals of climate adapted species.
- Develop and maintain a set of notes on the species list and regularly evaluate city tree species that are especially beneficial or problematic, or well or poorly suited for specific locations within the city.
- Maintain species diversity of the City's tree inventory.



1.3.2 Establishment Care

Establishment care refers to the maintenance actions that are taken to ensure a newly planted tree successfully transplants into the landscape. These actions typically include supplemental watering, keeping the watering basin free of weeds and debris, adjusting stakes and ties, structural pruning, and adding mulch. The amount of time a tree will need establishment care can vary based on annual rainfall, annual temperatures, and the consistency of supplemental watering. Pleasanton historically experiences mild, wet winters and hot, dry summers. It is expected that future climate conditions will make these seasonal conditions more variable, with more extreme weather events, extended periods of drought, and severe heat. Based on these factors, three years of establishment care is a recommended timeframe to ensure newly planted trees successfully transplant into the landscape. Industry best management practices for establishment care can be found in **Appendix J**.

Current Practices

The expansion of tree planting efforts has been significantly hindered by limited budget and labor allocations, particularly in the area of tree watering. This constraint has resulted in the City not being able to plant as many new trees as the number of trees they are removing annually. If the City is to achieve its canopy goal of all neighborhoods reaching 25%

cover, there will be an even larger need for establishment care and watering as more trees are planted every year. Just to fill the 1,100 existing vacant trees sites in the 26 target neighborhoods, the City will need to plant 44 additional trees a year for 25 years, on top of the regular tree replacements. There will likely be additional trees that the City will need to plant to reach the canopy goal, depending on the level of participation from the residents, businesses, developers, and schools.

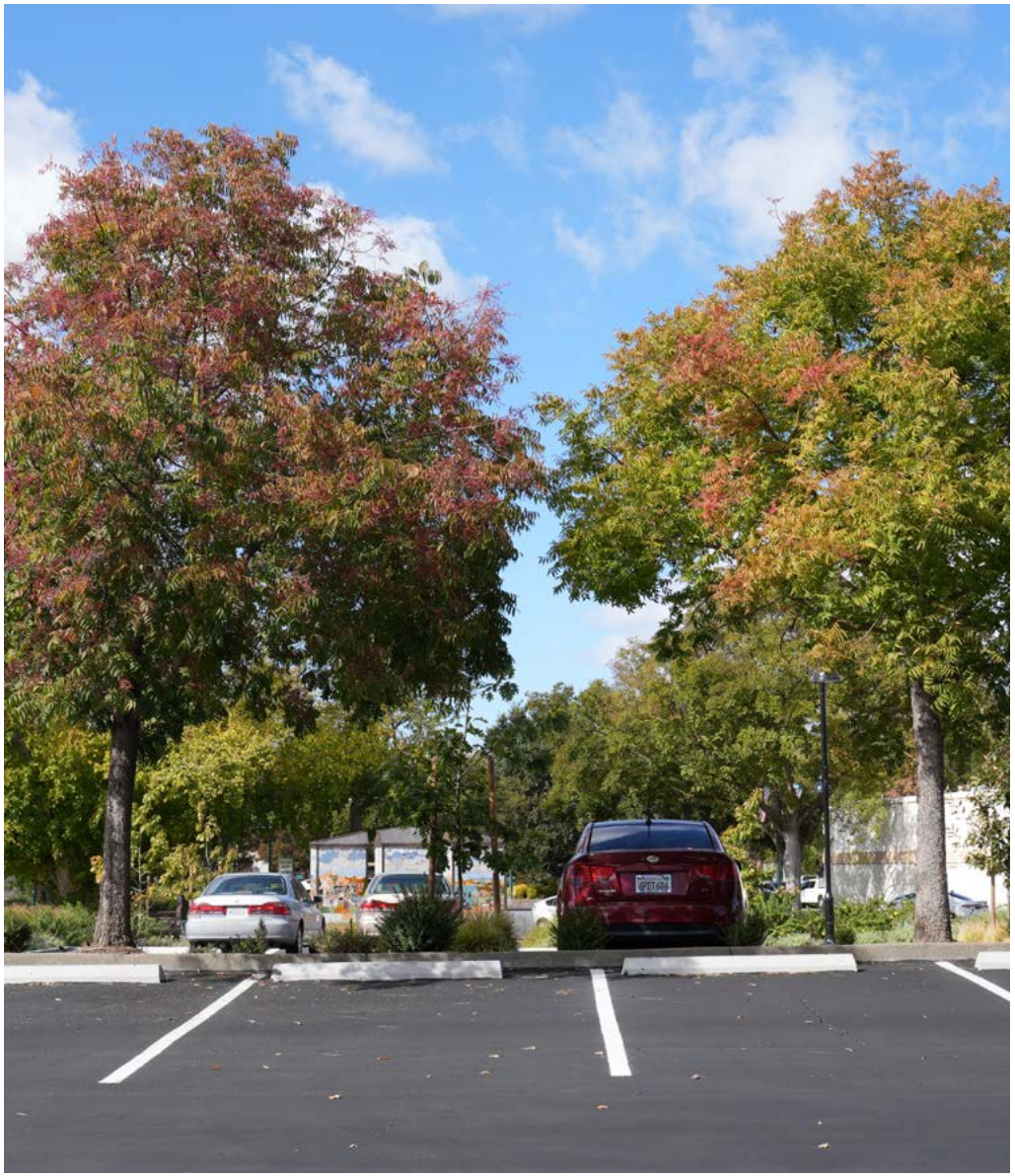
In FY 23/24 the City allocated $24,096 to establishment care activities to maintain 290 newly planted trees, for a per-tree establishment cost of $83. **Table 1-8** is based on three years of establishment care and represents the number of trees the City should be caring for during FY2023-2024, and the level of funding required under this scenario, using the three most recent years of tree plantings. An increase in funding (over double the current spending) for establishment care is needed to maintain and water all newly planted trees for the full three years.

Recommendations

- Provide a standardized baseline for establishment care that is within budget. Prioritize watering above all else.
- Implement young tree pruning practice as described in **Appendix I**
- Allocate a long-term funding stream toward establishment care, estimated between roughly $1.01 million and $1.59 million per year for a three-year program.

Table 1-8. City Managed Trees Receiving Establishment Care by Year and Cost

	FY 2021 - 2022	FY 2022 - 2023	FY 2023 - 2024	FY2022-2024 3-year Totals
Trees	249	200	290	739 trees
Cost	$17,907	$16,183	$24,096	$58,186



1.3.3 Tree Pruning

Maintaining the health and structure of trees is a key aspect of urban forest management. Regular pruning and inspections help ensure trees can grow into healthy canopies and damaged limbs can be removed in a timely manner. Structural pruning for young trees is especially important as it promotes strong trunk development, strong branch attachments, and reduces the need for more expensive and extensive pruning as the tree matures. Urban forest managers play a crucial role in maintaining trees and ensuring they remain a healthy and valuable part of the urban landscape.

A 5–7-year pruning and inspection cycle is considered ideal for municipal arborists managing a city tree inventory, balancing the need for safety with resource constraints (Miller et al. 1981). Trees vary in their growth patterns, structure, and pruning needs so a skilled urban forestry manager can determine where best to allocate resources. Guidelines for tree pruning can be found in **Appendix J**.

Table 1-9. Average Cost to Prune a Street Tree in Fiscal Year 23/24

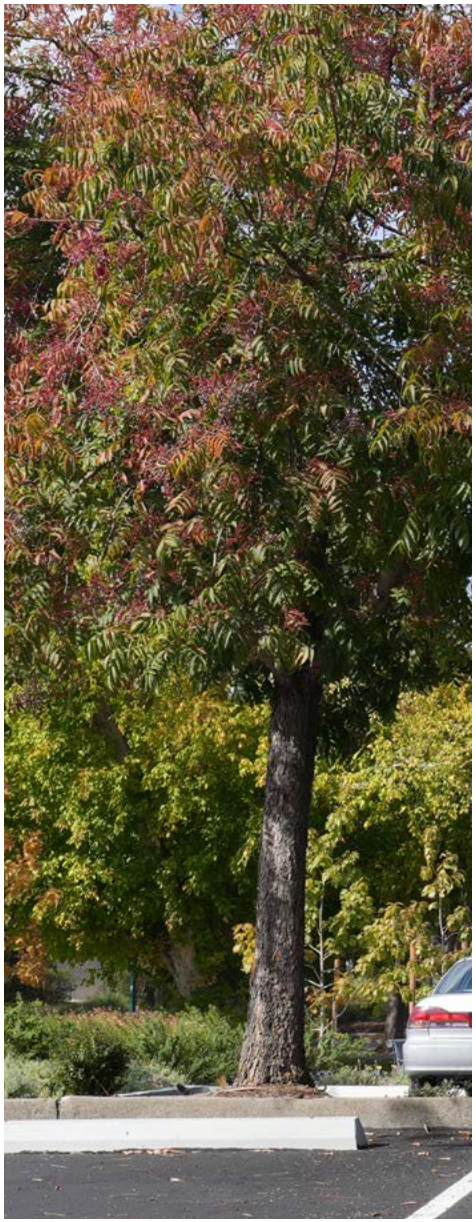
Trees Pruned	City Spending	Contracted Labor	Total Spending	Per Tree Cost
4422	$133,440	$530,640	$ 664,080	$150.17

Current Practices

In Pleasanton, street trees are currently divided into maintenance districts and mature trees are pruned on a 5-year cycle by the tree maintenance contractor. The City does not have an established structural pruning practice. Trees in City-managed parks are not on a defined pruning cycle since trees in parks generally have less interaction with people and infrastructure. The City has noted that while a pruning cycle for park trees may not be feasible at this time, there is a need for regular monitoring of tree health and structural defects. **Table 1-9** represents that in fiscal year 23/24 the City spent an average of $150 to prune each street tree. The City would like to keep the current five-year pruning cycle, but may be able to reduce mature tree pruning costs if they spend more on structural pruning of young trees. Structurally pruning can significantly reduce the need to prune large trees in the future for structure, which would allow the City to use those extra funds on other goals like increasing tree plantings and establishment care.

Recommendations

- Conduct structural pruning while trees are young and developing branching structure (Gilman 2002). This pruning method helps to correct structural defects when the tree is smaller, therefore reducing the labor costs and trauma to the tree. Structural pruning offers an opportunity to increase tree safety without significantly increasing City funding for tree maintenance.
- Develop a periodic park tree risk assessment program. Trees with conditions that present a greater risk than the city is willing to accept should be promptly mitigated.
- Consider reducing the current five-year pruning cycle to a seven-year pruning cycle and shifting those funding resources to new tree planting and/or establishment care.



1.3.4 Infrastructure Conflicts

An infrastructure conflict exists when the proximity of a tree's canopy, roots, or trunk poses a risk of damage to adjacent buildings, roofs, walkways, roads, pipes, or other structures. **Appendix K: Infrastructure Conflicts and Sidewalk Solutions** provides guidelines for decision-making when various tree-related infrastructure conflicts arise, and **Appendix L: Sidewalk Solutions** provides specific options to mitigate conflict between a tree and sidewalk damage.

Current Practices

The most common tree and infrastructure conflicts in Pleasanton involve tree roots impacting sewer lines, curbs, or gutters. The Operations and Maintenance - Streets and Signs Division of Public Works is responsible for addressing sidewalk repairs in Pleasanton and was not able to provide specific annual costs for tree-related infrastructure repairs. A study by McPherson (2000) indicates that California cities allocate approximately 30% of their tree budgets to addressing infrastructure conflicts, which includes mitigative tree work, prevention, and litigation. Similarly, about 30% of all liability claims filed against the City of Pleasanton are related to these tree infrastructure conflicts.

Recommendations:

- Proper species selection in the planting phase will help minimize the frequency of costly infrastructure conflicts. Refer to **Appendix C: Recommended Tree Species List**.
- Consult **Table 1-10** to determine the most appropriate mitigation option when presented with an infrastructure conflict. Also refer to **Appendix K: Infrastructure Conflicts and Sidewalk Solutions**.

Table 1-10. Infrastructure Conflict Action Menu

Solution Category	Solution	Description
Conflict Prevention	**Right tree, right place**	Available soil volume, presence of existing infrastructure, and site conditions should be deciding factors when selecting species for tree planting projects.
Infrastructure Adaptations	**Expand tree well space**	Large trees require large areas to grow at the ground level. Expanding tree wells to provide growing space can help avoid conflicts with sidewalks.
	Alternative sidewalk materials	Technological advancements for sidewalks, such as rebar concrete reinforcement, pervious pavement, and flexible joints, continue to be developed and may provide adaptive solutions.
	Meandering sidewalks	Rebuild sidewalks to meander around planting areas, allowing the trees more grow space.
	Bridging	A bridged surface that does not require compacted subgrade can replace a damaged sidewalk.
	Root control devices	Root control devices are designed to guide roots underground and away from surface-level infrastructure. Note that root barriers are least effective in poorly aerated soils that are commonplace in the built environment (Randrup et al. 2001; Gilman 1996).
Tree Work	**Root pruning**	Root pruning should be considered when infrastructure changes are not possible. When possible, avoid pruning roots greater than 3 inches in diameter. All root pruning decisions should be made by a qualified arborist as pruning roots within a distance five times the tree's trunk diameter can impact tree health.
	Removal	In some cases, tree removal is the only feasible option and should only be approved when all other options have been considered and determined to not be viable to resolve the infrastructure conflict.

1.3.5 Tree Removal

Dead, dying, damaged, and diseased trees represent an inherent elevated level of risk to the public, making a City's tree removal program an important component of public safety (Miller et. al 2015). In other situations, the need for tree removal isn't as clear. Decisions regarding tree removal are often tied to the willingness of a city to explore alternatives like sidewalk redesign, root pruning, and other preservation methods like those presented in **Table 1-10** above. While it is not possible to preserve all trees in every instance, the City desires to preserve existing trees, which is a positive step to maintaining existing canopy cover. Community involvement in tree removal is crucial to ensure transparency and prioritize preservation efforts. Additionally, considering the environmental impact of tree removal, such as habitat loss and reduced air quality, is essential. Implementing a robust tree replacement strategy is also a key component of a tree removal strategy.

Current Practices

City staff report that the most common reasons for tree removal in Pleasanton occur due to proposed development, declining tree health, and dead trees. The City ensures that the majority of trees are removed within four to eight weeks of the removal request and that there is no backlog of trees on the removal list by the end of the fiscal year**. Appendix J** provides information on how to protect trees during construction and development.

Recommendations

- Ensure all trees listed for removal are removed within one month to limit the City's potential liability from tree claims.
- Prioritize alternatives to tree removal, such as sidewalk redesign and root pruning. These methods can help preserve existing trees and maintain urban canopy cover.
- Implement replacements for all City trees removed at a 1:1 ratio or greater.
- Evaluate the environmental consequences of tree removal, such as habitat loss and reduced air quality. This assessment can guide decisions to minimize negative impacts.

Figure 1-3. A bench at the Pleasanton Cultural Arts Center that was crafted from a recycled black locust tree.

1.3.6 Urban Wood Reuse

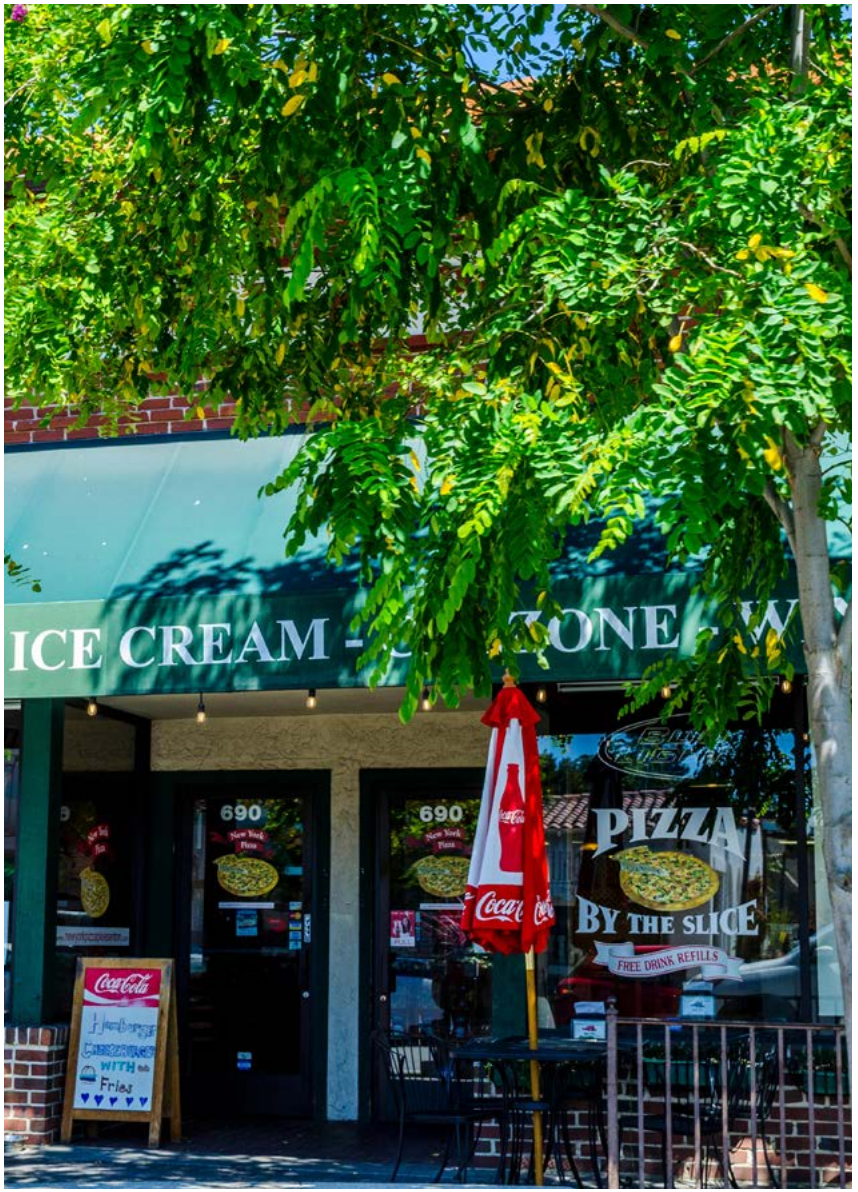
Developing an urban wood reuse program contributes to a sustainable urban forest and extends the environmental services of a tree after it's been removed. Trees used as lumber or artisan wood products will continue to store carbon instead of releasing it into the atmosphere. An urban wood reuse program also diverts tree debris that would otherwise populate landfills and avoids the production of greenhouse gas emissions during traditional disposal processes. The remaining organic material can be used as mulch around trees and in landscapes to develop healthy soil and increase water retention. Creative reuse of urban wood can significantly enhance community character by transforming discarded or fallen trees into functional and artistic pieces, such as benches and sculptures. This approach not only promotes sustainability but also fosters a sense of local identity and pride.

Current Practices

The City of Pleasanton uses the mulch generated from tree work as landscaping material for parks and medians. The City's Climate Action Plan (CAP) has set forth a goal to manage the amount, source, placement, and timing of plant nutrients and soil amendments in City parks, green spaces, and natural areas through actions such as applying recycled wood mulch from tree trimmings into planters, medians, and tree wells and leaving green waste on-site to the extent feasible In 2017, the city recycled a black locust tree to craft a bench for a public plaza in front of the Cultural Arts Center on Black Avenue (**Figure 1-3**).

Recommendations

- Consider alternative and creative uses for urban wood repurposing, such as partnership projects with local schools, artisans, and lumber mills.
- Encourage tree contractors to provide mulch to residents or consider establishing mulch giveaway locations throughout the City. Another resource to inform residents about is the website chipdrop.com.



1.3.7 Tree Risk Inspections

Living with trees and the countless benefits they provide to our urban areas also involves acknowledging some potential risks associated with trees. The urban forest is interwoven with people, homes, cars, and infrastructure that may be impacted by tree failures. The risks associated with trees can be minimized through routine monitoring and appropriate mitigation efforts. **Appendix J** provides more details on tree risk assessment and the ISA TRAQ program.

Current Practices

The City of Pleasanton experiences most tree and branch failures during storm and high wind events, but tree failures can occur in any weather condition. The unpredictable nature of tree failures imposes a need for a more systematic approach to tree management. The City does not have a routine tree risk assessment protocol but inspects trees in response to work orders submitted by residents, hazardous conditions recognized by staff, or after a tree has a limb failure. **Appendix J** describes findings regarding tree care in high wind areas.

Recommendations

- Implement tree risk assessment and mitigation procedures developed by the International Society of Arboriculture (Smiley et. al. 2017).
- Develop a periodic tree risk assessment program to inspect City trees, focusing on trees in high occupancy areas.
- Consider risk when prioritizing trees for removal and replacement.

1.3.8 Tree Maintenance Responsibilities

There are some trees in the city where the management responsibility is unclear. Examples include trees that grow on property boundaries, trees planted by residents in the right-of-way without permits, and trees in waterways and wetlands.

Current Practices

The Public Works Supervisor determines whether the City is responsible for tree maintenance when management responsibility issues arise. This determination is based on past practices, and research of existing documents or agreements regarding maintenance.

Recommendations

- Utilize **Appendix P**: Tree Maintenance Responsibilities as a guideline to determine tree maintenance responsibilities.

2

STATUS OF THE URBAN FOREST (PUBLIC AND PRIVATE TREES)

2.1 Historical Context

The City of Pleasanton is located in the Amador Valley, east of the San Francisco Bay. The City resides over a former large marsh complex, surrounded by grasslands and oak woodland hills. Before European influence, most trees grew in the riparian areas along the various waterways that ran through the valley and in the hills to the west of the City, with only a relatively sparse coverage of oak trees in the flatter grassland areas (SFEI 2013). After the arrival of the first European settlers, the marshes and wetlands were largely drained, and the land was converted to farmland and ranches. The City had a big population boom in the 1960's and 1970s, resulting in conversion of much of the agricultural land to residential and commercial land uses. In 1971, the City really began prioritizing tree preservation when they created and adopted its first Tree Preservation Ordinance (Ordinance) in 1971, which has since gone through a number of updates. In the 1980s, construction began on the 850-acre Hacienda (business park) which converted old swampland to the largest commercial area in the City. Pleasanton today is recognized as a Tree City USA by the Arbor Day Foundation and has achieved 25% canopy cover city-wide. The City is aiming now to increase canopy cover in all residential neighborhoods to 25% which will also increase city-wide canopy cover in alignment with CAP 2.0 goals.

2.2 Tree Canopy Assessment

The urban tree canopy provides multiple environmental services and economic value to the surrounding community. A robust tree canopy that is equitably distributed helps to create a healthier, more resilient community, and the environmental benefits and services received from the urban forest increase as tree canopy increases (Clark, et al. 1997). Likewise, low canopy cover can result in increased vulnerability to pollution, extreme heat, and associated health issues. Residents who live beneath dense tree canopy experience greater tree benefits than residents who live in areas of low tree canopy. For example, low canopy cover may be an indicator of a community's vulnerability to pollution, extreme heat, and associated potential health issues (Wolf 2020). Trees contribute to cleaner, healthier air in urban environments through direct pollution removal (e.g., uptake via leaf stomata or intercepting airborne particles), air temperature reductions (e.g., transpiration), and reduction of urban heat islands, building energy consumption and consequent energy emissions (e.g., temperature reductions provided by tree shade). These community enhancements provided by tree canopy cover improve the quality of life for residents and businesses.

This section of the Technical Assessment provides a review of the historical and existing canopy cover, and identifies priority areas for increasing tree canopy by evaluating the distribution of the tree canopy across the City. The canopy cover analysis establishes the baseline condition from which to develop short- and long-term goals and objectives for maintaining and growing healthy and large trees and increasing tree canopy to maximize resident enjoyment of the environmental services provided by trees.

The following sections describe the current status of the City's tree canopy and provide recommendations that can help advance the City toward maintaining existing tree canopy and achieving a more equitable canopy cover that improves the community.

2.3 Canopy Cover Assessment

A City-wide land cover classification and canopy cover assessment was conducted for Pleasanton using 2022 aerial imagery. This assessment included a canopy change analysis that compared the 2022 canopy results with data from 2012 and 2018 to identify trends and changes in urban tree canopy cover over time. See **Appendix F** for the methodology on the Land Cover Classification and Canopy Change Analysis.

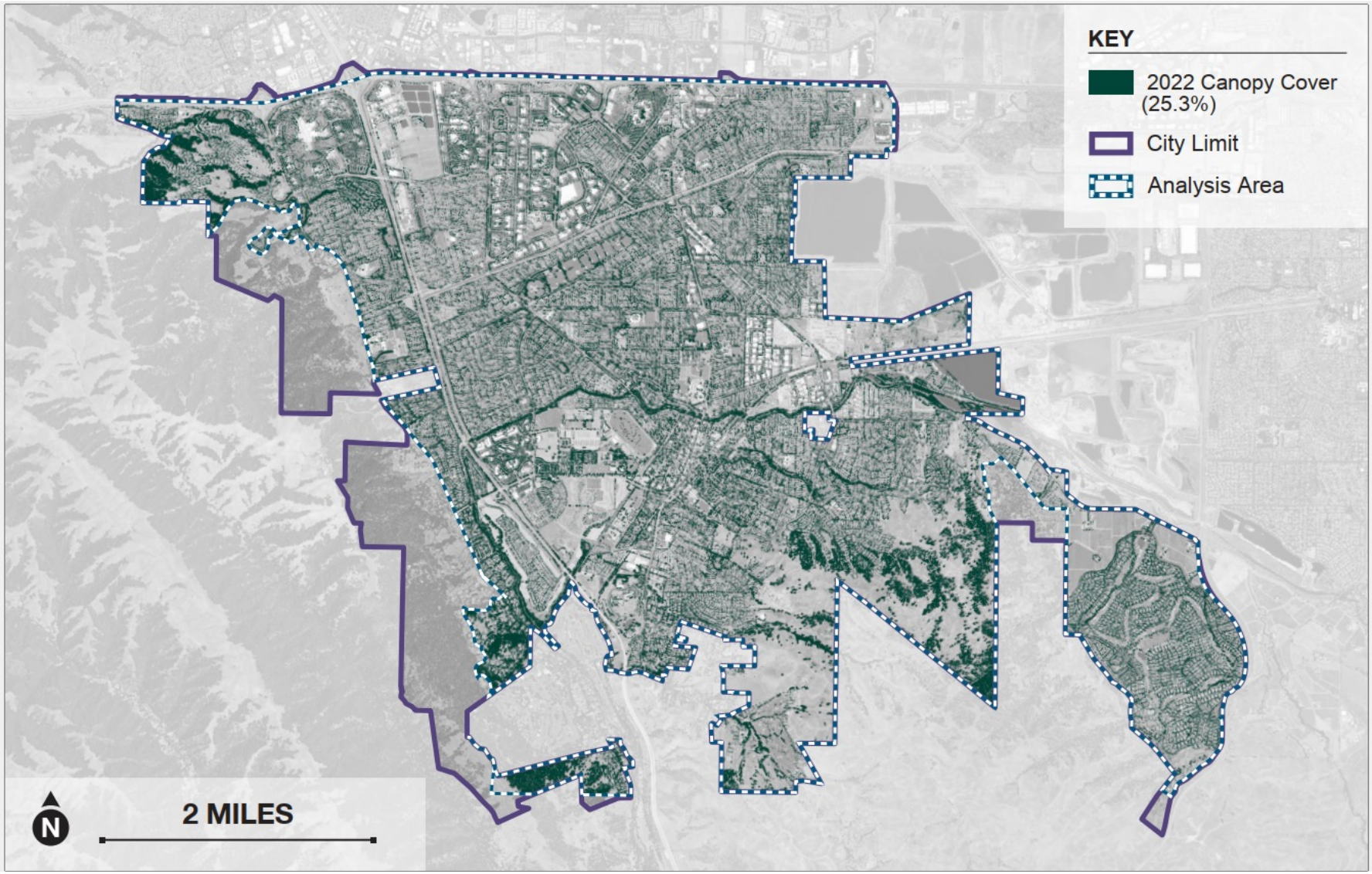
Land Cover Results

The land cover percentages for 2022 are presented in **Table 2-1**, with the canopy cover illustrated in **Figure 2-1**.

Table 2-1. 2022 Land Cover

Land Cover Type	Acres	Land Cover Percent (%)
Canopy	3,472	25.3%
Low-Medium Vegetation	2,370	17.3%
Bare Ground	1,920	14.0%
Impervious Surfaces	5,809	42.3%
Water	149	1.1%

Figure 2-1. Canopy Cover Map



Canopy Change Analysis Results

The canopy change analysis between 2012 and 2022 revealed a notable increase in canopy cover over the decade, as detailed in **Table 2-2**.

Table 2-2. Canopy Cover Change (2012-2022)

Year	Canopy Acres	Canopy Percent
2012	2,544	18.5%
2018	2,567	18.7%
2022	3,472	25.3%

- **Absolute Change:** The canopy cover increased by 928 acres from 2012 to 2022, representing a 6.8% increase in the total canopy area.

  [**Absolute Change = 2022 canopy - 2012 canopy**]

- **Relative Change:** The canopy cover percentage increased by 36.5 % over the same period, indicating a substantial improvement in the proportion of urban areas covered by trees.

  [**Relative Change = Absolute Change/2012 canopy**]

Tables 2-3, 2-4, and 2-5 present the canopy cover data categorized by land use, council districts, and tree maintenance districts. This analysis highlights how canopy cover has evolved across different areas within the City from 2012 to 2022.

Table 2-3. Canopy Cover by Land Use

Land Use Type	Canopy Percent (2012)	Canopy Percent (2022)	Absolute Change
Circulation	7.9%	8.1%	0.2%
Community Facility / Parks	13.0%	15.3%	2.3%
Industrial Commercial Offices	15.9%	19.4%	3.5%
Mixed Use	17.7%	21.9%	4.2%
Open Space	19.0%	27.9%	8.9%
Residential	20.2%	27.5%	7.3%

Table 2-4. Canopy Cover by Council District

Council District	Canopy Percent (2012)	Canopy Percent (2022)	Absolute Change
1	18.4%	22.9%	4.5%
2	18.7%	23.7%	5.0%
3	19.8%	25.6%	5.8%
4	17.6%	27.7%	10.1%

Figure 2-2. Canopy Cover by Council Districts Map

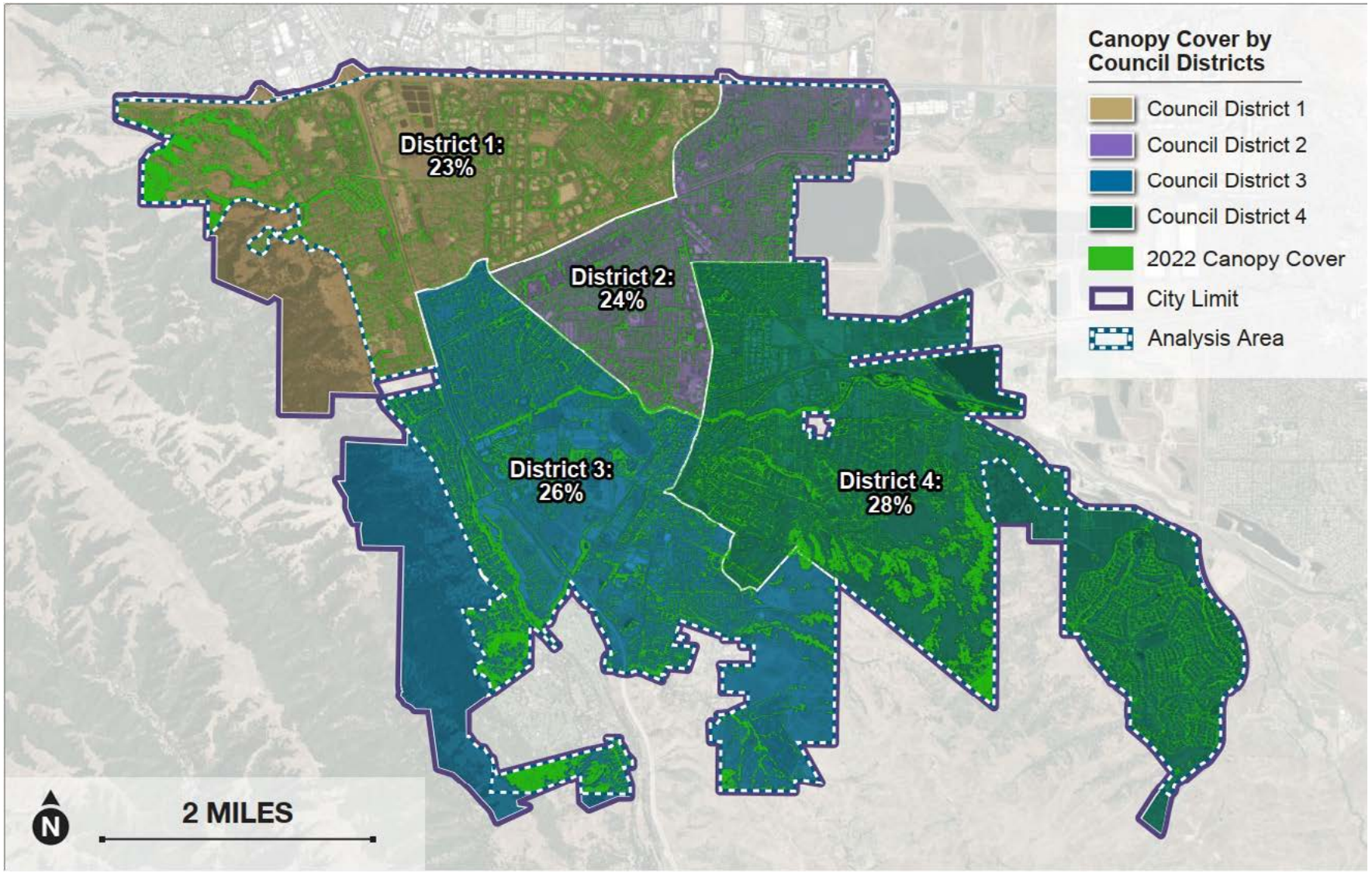


Table 2-5. Canopy Cover by Tree Maintenance District

Tree Maintenance District	Canopy Cover Percent (2012)	Canopy Percent (2022)	Absolute Change
1	22.8%	27.6%	4.8%
2	22.7%	29.8%	7.1%
3	14.9%	24.3%	9.4%
4	13.9%	17.9%	4.0%
5	21.1%	25.4%	4.3%
6	21.8%	25.4%	3.6%
7	22.7%	26.1%	3.4%
8	24.0%	26.2%	2.2%
9	12.4%	18.8%	6.4%
10	19.6%	25.8%	6.2%
11	9.6%	15.9%	6.3%
12	15.1%	30.0%	14.9%
13	16.4%	21.1%	4.7%
17	7.9%	16.6%	8.7%

Neighborhoods

Among the 77 neighborhoods within the analysis boundary, 72 experienced an increase, in absolute canopy change percentage terms, ranging from 0.7% to 22.7%, with Ruby Hill recording the largest increase at 22.7%. Only one neighborhood, Jensen Tract, saw a decrease of 0.2%. The average canopy across neighborhoods increased from 23.0% in 2012 to 29.8% in 2022. These results provide valuable insights for the City to focus efforts on targeted areas that require canopy enhancement.

Parks

Of the 48 parks within the analysis boundary, 39 experienced an increase ranging from 0.8% to 22.5%, while nine parks experienced a decrease ranging from 0.2% to 19.8%. Vintage Hills Park saw the largest increase at 22.5%, whereas Civic Park experienced the largest decrease at 19.8% due to the loss of the mature American Elm trees to Dutch Elm disease. The average canopy cover across all parks was 36.5% in 2012 and 41.9% in 2022.

Potential Reasons for Canopy Cover Increase

The results reveal an overall increase in canopy cover across all examined delineations from 2012 to 2022.

Several factors may contribute to this observed increase. Improved data quality over the years plays a role, with 2022 data providing a finer resolution of 0.076 meters (0.25 U.S. survey feet) compared to the 1-meter resolution in 2012 and 0.6-meter resolution in 2018. This enhanced resolution, coupled with the use of lidar technology in 2022, likely enabled more precise detection and measurement of tree cover. The findings indicate a notable expansion of Pleasanton's urban forest, although further analysis could be conducted to identify specific areas of increased growth and better understand the factors driving this expansion. Other factors that have likely contributed to this observed increase include younger trees maturing in the urban forest, improved tree ordinance enforcement practices, and the Green Building code requiring more trees in parking lots and the many large private development projects over the last decade to preserve and plant more trees. The City will need to continue to improve management actions, like achieving its goal to replace all trees that are removed annually and plant an additional 44 trees each year over the next 25 years to fill the 1,100 vacant City-owned tree sites in target neighborhoods to maintain growth of its urban forest. Prioritizing these efforts in neighborhoods with lower canopy levels will help progress towards an equitable distribution of the urban forest.

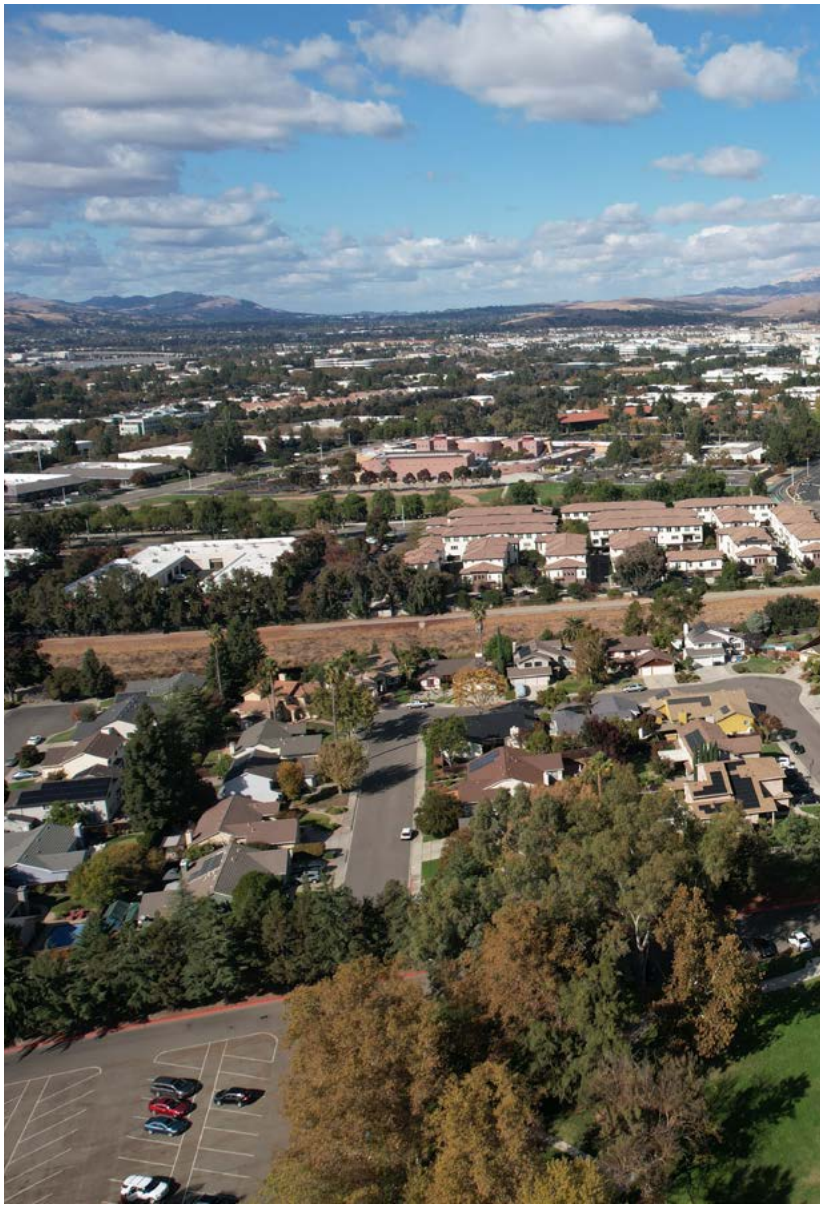


Figure 2-3A. Canopy Cover by Neighborhood Map

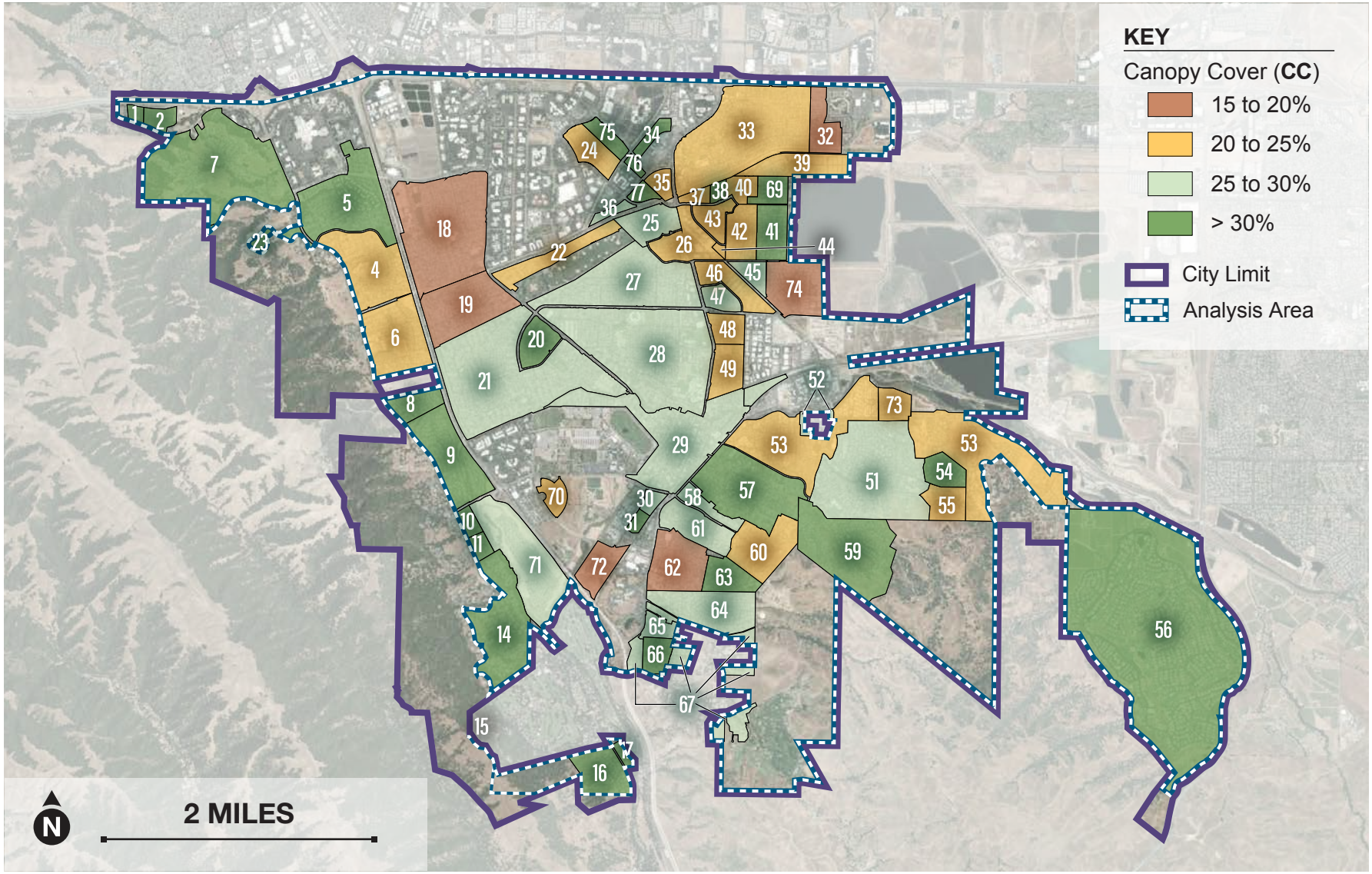


Figure 2-3B. Canopy Cover by Neighborhood Map

ID	Neighborhood Name	CC	ID	Neighborhood Name	CC	ID	Neighborhood Name	CC
1	Canyon Creek	35%	29	Downtown	27%	54	Foxbrough Estates	35%
2	Canyon Meadows	38%	30	Civic Square	30%	55	Grey Eagle Estates	21%
4	North Muirwood	25%	31	Ridgeview Commons	40%	56	Ruby Hill	35%
5	Stoneridge	33%	32	California Somerset	19%	57	Pleasanton Heights	33%
6	South Muirwood	24%	33	Pleasanton Meadows	21%	58	Old Towne	26%
7	The Preserve	44%	34	Hacienda Gardens	36%	59	Kottinger Ranch	37%
8	Foothill Knolls	38%	35	Las Positias Garden Homes	20%	60	Bonde Ranch	21%
9	Laguna Oaks	34%	36	Verona	29%	61	Mission Hill	26%
10	Foothill Place	44%	37	Belvedere	22%	62	Mission Park	19%
11	Laguna Vista	41%	38	Gatewood	39%	63	Lund Ranch	31%
14	Golden Eagle Farms	55%	39	Stoneridge Park	23%	64	North Sycamore	30%
15	Castlewood	78%	40	Stoneridge Orchards	21%	65	Rosepointe	26%
16	Oak Tree Farms	50%	41	Mohr-Martin	32%	66	Carriage Gardens	41%
17	Oak Tree Acres	51%	42	Mohr Park	24%	67	Happy Valley	27%
18	Val Vista	16%	43	Pleasanton Village	24%	69	Walnut Glen	31%
19	Valley Trails	19%	44	Sycamore Place	25%	70	Walnut Hills	21%
20	Country Fair	30%	45	Rosewood	27%	71	Pleasant Ridge	28%
21	Del Prado	25%	46	Heritage Valley	23%	72	Canyon Oaks	16%
22	Parkside	23%	47	Danbury Park	28%	73	Shadow Cliffs	22%
23	Moller Ranch	40%	48	Amador Estates	21%	74	Ironwood	20%
24	Valencia/Siena/Avila	25%	49	Jensen Tract	24%	75	Archstone	30%
25	Amberwood/Wood Meadows	29%	50	California Reflections	25%	76	Hacienda Commons	36%
26	Willow West	24%	51	Vintage Hills	25%	77	Springhouse	39%
27	Birdland	27%	52	Remen Tract	27%			
28	Pleasanton Valley	27%	53	Vineyard Avenue	23%			

2.4 Increasing Canopy Cover

The new City goal to reach 25% canopy cover in every residential neighborhood in 25 years was established based on the canopy cover analysis, a financial analysis, and discussions with City staff. Currently, there are 26 of 77 neighborhoods in Pleasanton that are under 25% canopy cover. To reach 25% canopy cover in every neighborhood, strategic planning and sustained efforts are necessary. The canopy cover increase analysis identifies the total number of new trees required to in each neighborhood to meet this objective over the next 25 years. These planting efforts consider varying tree species and canopy sizes, ensuring a diverse and resilient urban forest.

Table 2-6 presents the total number of new trees per mature canopy size that would need to be planted in each neighborhood over the next 25 years to achieve 25% canopy cover in each of the targeted neighborhoods. Assuming a combination of tree sizes, planting approximately 6,262 trees over the next 25 years would progress the City toward achieving this canopy goal. As the City implements this goal, they will need to monitor progress, and adjust strategies to stay on track toward the 2049 target. See **Appendix F** for the methodology on the Canopy Cover Analysis.

Table 2-6. Total Number of Trees Needed to Increase Canopy Cover in Targeted Neighborhoods

Map ID	Neighborhood Name	Current Canopy Cover %	20 ft diameter canopy	30 ft diameter canopy	40 ft diameter canopy	50 ft diameter canopy	Total Trees
18	**Val Vista**	15.5	1,010	273	155	322	1,760
72	**Canyon Oaks**	15.5	211	63	36	34	344
19	**Valley Trails**	18.9	237	64	37	120	458
32	**California Somerset**	19.0	113	24	14	40	191
62	**Mission Park**	19.4	285	71	40	38	434
74	**Ironwood**	19.7	194	58	33	55	340

Table 2-6. Total Number of Trees Needed to Increase Canopy Cover in Targeted Neighborhoods

Map ID	Neighborhood Name	Current Canopy Cover %	20 ft diameter canopy	30 ft diameter canopy	40 ft diameter canopy	50 ft diameter canopy	Total Trees
35	Las Positas Garden Homes	20.2	43	13	8	7	71
55	Grey Eagle Estates	20.5	91	27	16	15	149
48	Amador Estates	20.5	68	21	12	11	112
60	Bonde Ranch	20.7	166	51	27	38	282
33	Pleasanton Meadows	20.8	581	161	74	126	942
70	Walnut Hills	20.9	46	14	8	8	76
40	Stoneridge Orchards	21.0	49	15	18	8	90
73	Shadow Cliffs	21.6	52	15	10	8	85
37	Belvedere	22.2	16	5	3	3	27
46	Heritage Valley	22.7	40	8	6	5	59
39	Stoneridge Park	22.8	0	0	0	39	39
22	Parkside	23.0	47	14	8	13	82
53	Vineyard Avenue	23.4	234	62	49	90	435
26	Willow West	23.5	34	7	5	15	61

Table 2-6. Total Number of Trees Needed to Increase Canopy Cover in Targeted Neighborhoods

Map ID	Neighborhood Name	Current Canopy Cover %	20 ft diameter canopy	30 ft diameter canopy	40 ft diameter canopy	50 ft diameter canopy	Total Trees
49	**Jensen Tract**	23.6	33	10	6	6	55
42	**Mohr Park**	23.7	57	10	6	6	79
24	**Valencia/Siena/Avila**	23.8	26	8	5	5	44
6	**South Muirwood**	24.1	0	0	0	30	30
43	**Pleasanton Village**	24.3	0	0	0	6	6
4	**North Muirwood**	24.7	0	0	0	11	11
Total Trees			**3,633**	**994**	**576**	**1,059**	**6,262**

2.4.1 Private Property

While the City plays a large role in increasing canopy cover across Pleasanton through the management of public trees, the health and growth of an urban forest are also greatly influenced by actions taken on private property. The canopy cover analysis shows that 70% (2,446 acres) of the City's total canopy cover is located on private property, with the remaining 30% (1,027 acres) located on public land and rights-of-way. The City of Pleasanton is committed to the preservation of trees throughout the community, recognizing that residents play a crucial role in maintaining and growing the urban forest. Individuals are encouraged to actively engage in urban forestry by maintaining healthy trees on residential properties, participating in tree planting events, and speaking up for tree preservation in public forums.

Current Practices

The City of Pleasanton has a long history of protecting Heritage Trees, City-owned trees, and trees planted as a condition of approval alongside development. The City's municipal code includes permit requirements to remove such trees and a set of conditions that must be met for trees to be removed.

The City also provides helpful resources to community members on the City website. Resources include tree selection and planting guidelines, a list of qualified arborists, and supporting documents that help community members understand tree policy within the City of Pleasanton.

Recommendations

- Host a series of outreach events to help community understand the new tree ordinance.
- Host annual tree education events centered around the UFMP initiatives, the tree ordinance, and tree plantings.
- Create a tree/seedling giveaway program and aim to give out 100 trees per year to residents living in neighborhoods that most need more canopy
- Consider implementing an In-lieu fee and alternatives when protected trees are removed and on-site replacement is not feasible.

While the previous sections focused on the entire urban forest (public and private trees), the following sections' (2.5 through 2.8) analyses are based on only the public trees that the City manages.

2.5 Species Diversity (City Managed Trees Only)

Cities with tree inventories that have low species diversity are more susceptible to invasive pests, pathogens, and significant weather events. California acquires a new invasive pest approximately once every 60 days (Sutherland 2014). While not all introduced invasive species result in destructive losses to urban forests, an important strategy to increase resiliency to threats is to foster a diverse urban forest. For example, Dutch Elm Disease wiped out many of the American Elm population throughout the United States in the mid-1900s after it was accidentally introduced in the 1930s.

An urban forest that loses many of its trees from pests and pathogens due to low species diversity will have direct implications on public health. Loss of trees in an urban forest mean loss of the benefits provided by those trees, including shade on hot days, reduction of the heat island effect, stormwater capture, improved air quality, and benefits to mental well-being.

To improve the resilience of the urban forest, a city's tree inventory should contain no more than 10% of any one species, 20% of any one genus, or 30% of any one family (Miller and Miller 1991; Richards 1993; Ball 2007). These recommendations provide useful guidelines to measure the vulnerability of the City's tree population. Pleasanton's 23,722 City-managed trees are composed of 113 genera and 250 species. The top 10 genera and species are shown in **Tables 2-7 and 2-8**. Sustainability goals are as follows:

- **Sustainability Goal (Genus):** No genus represents more than 20% of inventory.
- **Sustainability Goal (Species):** No species represents more than 10% of inventory.

An exception to the genus and species goals above are for native species such as oaks, which may exceed the recommended sustainability goals. The City and community have put a high value on native species as these trees are naturally adapted to Pleasanton's local environment and climate, and provide habitat to a wide variety of native animals. The oak genus Quercus currently makes up just over 20% of the inventory and the two most common oak species (coast live oak and valley oak) within the City make up 9.4% and 7.2%, respectively, of the overall species in the inventory. Another exception to consider for the City are tree species that already have a proven history of resiliency in Pleasanton's urban landscape, which might include species that have already survived extreme heat and drought periods, recovered from pest infestations, or that have successfully grown in limited spaces with suboptimal soil volume.

Table 2-7. Genus Diversity

Rank	Genus	Number of Trees	Percentage of Inventory
1	*Quercus*	4,772	20.1%
2	*Platanus*	2,982	12.6%
3	*Sequoia*	2,010	8.5%
4	*Pistacia*	1,609	6.8%
5	*Lagerstroemia*	1,451	6.1%
6	*Fraxinus*	1,265	5.3%
7	*Liquidambar*	984	4.1%
8	*Pyrus*	967	4.1%
9	*Acer*	705	3.0%
10	*Pinus*	504	2.1%
Total		**17,249**	**72.7%**

Table 2-8. Species Diversity

Rank	Botanical Name	Common Name	Number of Trees	Percentage of Inventory
1	*Platanus × hispanica*	London plane	2,732	11.5%
2	*Quercus agrifolia*	Coast live oak	2,225	9.4%
3	*Sequoia sempervirens*	Coast redwood	2,010	8.5%
4	*Quercus lobata*	Valley oak	1,704	7.2%
5	*Pistacia chinensis*	Chinese pistache	1,608	6.8%
6	*Lagerstroemia indica*	Crape myrtle	1,449	6.1%
7	*Liquidambar styraciflua*	American sweetgum	984	4.2%
8	*Pyrus calleryana*	Callery pear	795	3.3%
9	*Fraxinus angustifolia*	Raywood ash	632	2.7%
10	*Celtis sinensis*	Chinese hackberry	416	1.8%
Total			**14,555**	**60.2%**

2.6 DSH Distribution

The most common and least invasive method to approximate the age of a living tree is to measure the trunk diameter at 4.5 feet above the ground (diameter at standard height [DSH]). Since trees vary in size and growth patterns, using DSH to determine age can only be considered an estimate. General age recommendations suggest an urban forest have a distribution of immature trees (40%) to replace failing or aging ones, young (30%) and middle-aged (20%) trees to provide the bulk of economic and environmental benefits, and relatively fewer mature trees (10%) that have most of their life behind them but provided significant environmental benefits for many years (Morgenroth et al. 2020; Richards 1983).

Table 2-9 shows the DSH distribution of all trees in the 2024 City inventory compared to the recommended DSH distributions. The age classes of the City's trees are not substantially different from the recommended distributions discussed above. There is a lower than recommended percentage (12%) of middle-aged trees, but the City's population of immature (28%) and young (51%) trees are anticipated to adequately replace mature trees as they reach the end of their life. The current distribution, with a higher proportion of young and immature trees, suggests that the City is well-positioned to sustain its urban canopy over time. However, the low percentage of middle-aged trees could lead to a temporary gap in ecosystem services. This gap occurs as mature trees decline and are removed before younger trees can fully replace their canopy and environmental benefits. Middle-aged trees are crucial as successors to mature trees, ensuring a steady transition and continuity in providing benefits like air quality improvement and carbon sequestration.

Recommendations:

- Develop a detailed tree planting succession plan that identifies areas with a high concentration of mature trees and schedules the planting of younger trees nearby. This ensures that as mature trees decline, there are already younger trees in place to take over.
- Develop long-term planting plans aimed at maintaining the age diversity recommendations shown in **Table 2-9**.

Table 2-9. DSH Distributions in the Pleasanton Inventory

Sustainability goal: *Age classes of trees are sufficiently distributed to ensure environmental benefits continue*				
Age Category	**DSH** *(inches)*	**Number of Trees**	**% of inventory**	**Recommended Percentage of Tree Inventory**
Immature	1–6	6,564	28%	40%
Young	7–18	12,144	51%	30%
Middle-aged	19–24	2,740	12%	20%
Mature	25+	2,219	9%	10%

Source: City of Pleasanton Tree Inventory (Dudek 2024); Richards 1983.

2.7 Tree Condition and Relative Performance Index

Trees that are healthy with good trunk and branch structure generally have a lower risk of failure and contribute to a safer City. To determine tree condition, arborists conducting the City's tree inventory rated trees on a scale based on visible characteristics of health condition and canopy structure (**Table 2-10**). Pursuant to the Council of Tree and Landscape Appraisers' "Guide for Plant Appraisal," tree health and structure were evaluated with respect to five distinct tree components: roots, trunk, scaffold branches, small branches, and foliage. Each component of the tree was assessed with regard to health factors such as insect or pathogen damage, mechanical damage, presence of decay, presence of wilted or dead leaves, and wound closure. Tree health and structure were graded as good, fair, poor, critical, or dead, with good representing no apparent problems and dead representing a dying or dead tree. Good condition trees exhibit acceptable vigor, healthy foliage, and adequate structure and lack any major maladies. Fair condition trees typically have few maladies but declining vigor. Trees in poor and critical condition exhibit declining vigor, unhealthy foliage, poor branch structure, and excessive lean. This method of tree condition rating is comprehensive and results in ratings that are useful for determining the status of trees based on common urban forestry standards.

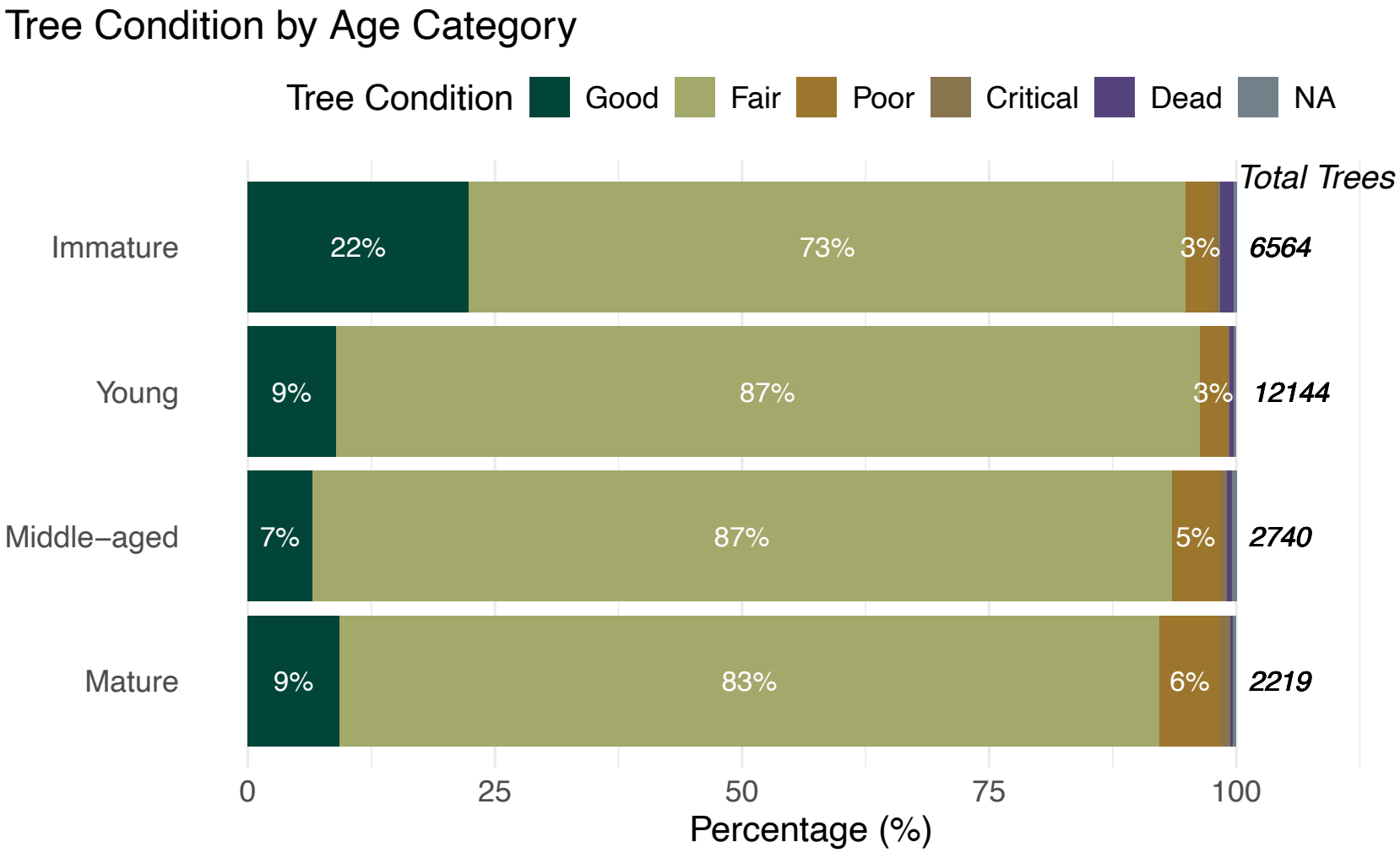
Tree condition of the City's inventory varied, with roughly 12% rated as good, and 83% as fair, and 4% rated poor, critical, or dead. The most common health defects observed in these trees included drought stress, decay, and poor root function, and various pest and pathogen problems. The most common structure defects included cavities, dead limbs or branches, leaning, topping, and issues with branch unions and root systems. **Table 2-11** shows that the relative distribution of the various tree conditions is mostly the same for all age categories. The only exception to this is that immature age trees (the trees that have been most recently planted by the City) have the highest relative percentage of trees in 'good' condition at 22% (compared to 7% and 9% for the other age categories) and the lowest relative percentage of trees in 'fair' condition at 73% (compared to 83%, 87%, and 88% for the other age categories). This distribution of conditions makes sense for immature trees as 1) they should be starting in a good condition coming straight from the tree nursery, and 2) they haven't developed mature canopies that might have more obvious structural issues or outgrown their planting spaces. Mortality of these immature trees is likely between 1 and 5% depending on how many of these trees in the 'critical' and 'poor' categories survive to maturity.

Table 2-10. Tree Conditions of the Pleasanton Inventory

Condition	Number of Trees	Percent
Good	2,934	12.4%
Fair	19,642	82.8%
Poor	803	3.4%
Critical	108	0.5%
Dead	159	0.7%

Source: City of Pleasanton Tree Inventory (Dudek 2024)

Figure 2-4. Tree Condition and Age



Percentages less than 1% are unlabeled.

Table 2-11. Tree Conditions by Tree Age of the Pleasanton Inventory

Age Category	Tree Condition - # of Trees (% of Total Age Category)					
	Good	Fair	Poor	Critical	Dead	Total
Immature	1,468 (22%)	4,763 (73%)	191 (3%)	36 (1%)	93 (1%)	6,564
Young	1,080 (9%)	10,614 (88%)	341 (3%)	29 (0.2%)	52 (0.4%)	12,144
Middle-aged	179 (7%)	2,382 (87%)	133 (5%)	20 (1%)	14 (1%)	2740
Mature	206 (9%)	1,841 (83%)	136 (6 %)	23 (1%)	6 (0.3%)	2219

Because tree condition ratings are qualitative, a single tree's rating may differ depending on each inventory arborist. While the 2024 inventories were not conducted by the same individuals, it can be useful to broadly compare the findings.

The Relative Performance Index (RPI) can help identify species that are doing well or those that may need further analysis and management recommendations to improve vigor. RPI is calculated by dividing the percentage of trees in a single species that were categorized in good condition and by the percentage of all trees in the inventory that were in good condition. Species with an RPI of 1 or higher are performing as well or better than the entire population. Species with an RPI less than 1 are performing below the entire population (**Table 2-12**). A sustainability goal that the City should strive for is for all six of the most common species to have higher RPI scores than the average of all species in the public tree inventory (RPI of 1.0 or higher). This could be achieved through a number of strategies including using a strategic planting plan to guide the selection of the appropriate tree species type and size for a given planting site, by including structural pruning of young trees into the establishment care program which should help improve structure as the tree matures, and in drought years, implementing a supplemental watering program for those trees that seem to be most affected.

Table 2-12. Relative Performance Index for the Six Most Common Species in Pleasanton's Inventory

Relative Performance Index (RPI) **Goal:** Six Most Common Species have an RPI Score of 1.0 or Higher			
Rank	**Botanical name**	**Common name**	**RPI**
City Inventory			**Entire Inventory Average 1.76**
1	*Platanus x hispanica*	London plane	**0.7**
2	*Quercus agrifolia*	coast live oak	**2.4**
3	*Sequoia sempervirens*	coast redwood	**0.1**
4	*Quercus lobata*	valley oak	**2.7**
5	*Pistacia chinensis*	Chinese pistache	**0.8**
6	*Lagerstroemia indica*	crape myrtle	**0.6**
RPI Average			**1.22**

Source: City of Pleasanton Tree Inventory (Dudek 2024)

The City of Pleasanton is not currently meeting the recommended RPI goal as the City's top six tree species average score is currently 1.22, and the average score for the entire tree inventory is 1.76. While the City's two most common oak species have RPI scores greater than 2.0, the other four of the six most common tree species in Pleasanton have RPI scores below the overall average. The first and third most common tree species in the City inventory, *Sequoia sempervirens* has the lowest RPI score of 0.1, and is considered unsuitable for Pleasanton's predicted future climate without supplemental watering (McBride and Lacan 2022). Although *Platanus x hispanica* and *Lagerstroemia indica* both have RPI scores below 1, these two tree species are staples within Pleasanton and there are many examples of these two species performing well even in tough conditions, such as the *Platanus x hispanica* trees that have survived without irrigation along Bernal Avenue (**See Figure 1-7 in Part 1**)

Recommendations

- The City should enhance maintenance practices with targeted care, such as improved watering, pruning, and pest management. Increased monitoring will help address health issues promptly. For persistently unhealthy species, phased replacement with species that typically have higher RPI scores is recommended.

3

CANOPY COVER AND EQUITY

3.1 Why Canopy Cover Matters

The urban forest is an integral component of a city's infrastructure that delivers benefits every resident should have equal access to. Urban forest canopy cover can be inequitably distributed throughout a community and different demographic groups experience wide ranges of canopy cover, with sparse canopy cover often occurring in socioeconomically disadvantaged and neighborhoods of color. While Pleasanton doesn't have any census tracts classified as disadvantaged communities, there are several neighborhoods that have less canopy cover than the City-wide average of 25%. Residents in areas with lower canopy cover experience fewer benefits from the urban forest, such as cooler temperatures from shade, cleaner air and water, access to green space, stormwater mitigation, improved physical and mental health, and increased property values (American Forests, 2024, Wolf 2007).

A City must address neighborhoods that lack tree canopy cover to ensure that everyone in the community, is able to experience the benefits of trees. Tree-lined streets should be considered an essential aspect of providing a high quality of life for residents, and it is crucial that Pleasanton continues to promote the equitable distribution of its canopy cover so that those tree-related benefits can be experienced by all for generations to come.

Tree equity in Pleasanton was evaluated by assessing the results of the canopy cover study against public data sources and tools, including urban heat island data (Trust for Public Land 2023), pollution burden data (CalEnviroScreen 2021), and tree equity score (American Forests 2021).

3.1.1 Urban Heat Islands

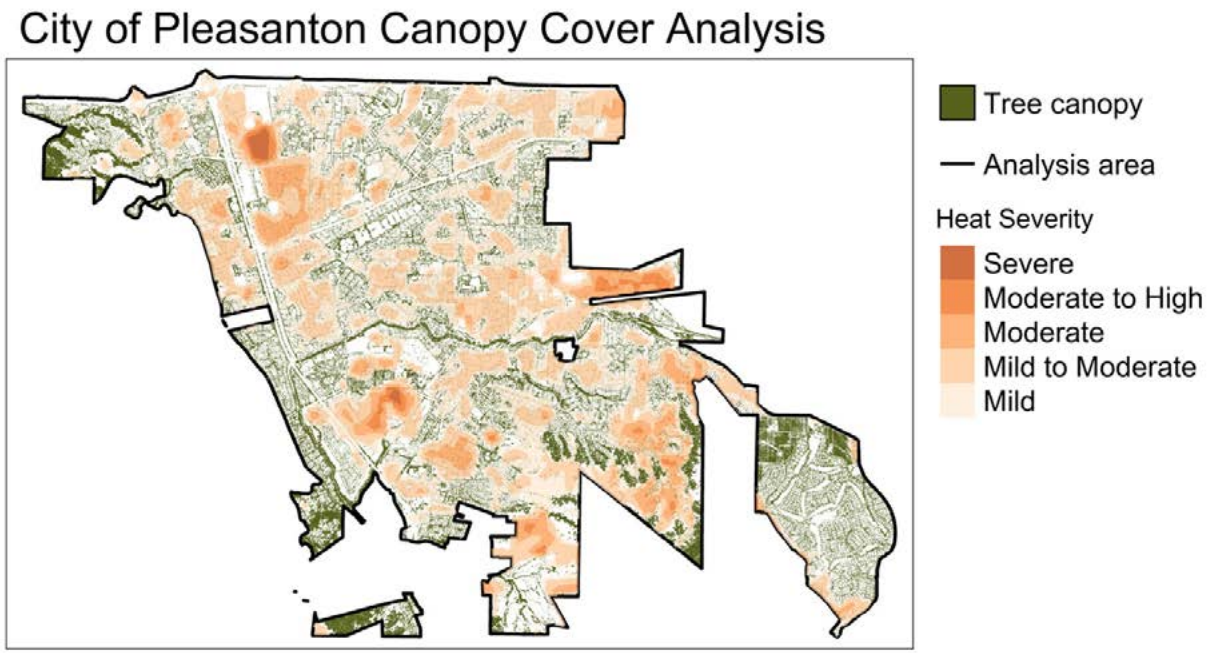
The urban heat island (UHI) effect occurs when urban areas experience higher temperatures relative to surrounding non-urban areas. Multiple factors contribute to the urban heat island effect, including increased impervious surfaces, lack of vegetation, and increased pollutant levels. Impervious surfaces, such as asphalt, concrete, buildings or roofs, absorb the sun's heat during the day, and can reach temperatures that are 50°F to 90°F hotter than the surrounding air temperature (EPA 2021). Lack of vegetation not only limits cooling effects but also exacerbates air pollution by preventing the dispersion of pollutants trapped by tall buildings. The combination of increased temperatures

and emissions contribute to compromised human health and comfort, leading to increased incidences of heat-related illness and deaths (EPA 2020).

Urban trees and vegetation offer a significant countermeasure to the UHI effect. By providing shade and facilitating evapotranspiration, trees can lower surface temperatures by 20°F to 45°F (11°C to 25°C) compared to areas without tree cover (Loughner et al. 2012). Additionally, appropriately placed trees can lower building temperatures and reduce energy demand by up to 35% (EPA 2021). The effectiveness of these cooling benefits depends on the extent and distribution of canopy cover across different urban areas.

Analysis of the City's census tracts reveals a relationship between canopy cover and the severity of heat islands. Heat severity is quantified on a scale from 1 to 5, where 1 represents mild heat areas, and 5 signifies severe heat areas (Trust for Public Lands 2023). **Figure 3-1** visualizes the overlap of heat islands and canopy cover across the City.

Figure 3-1 . Urban Heat Island and Canopy Cover



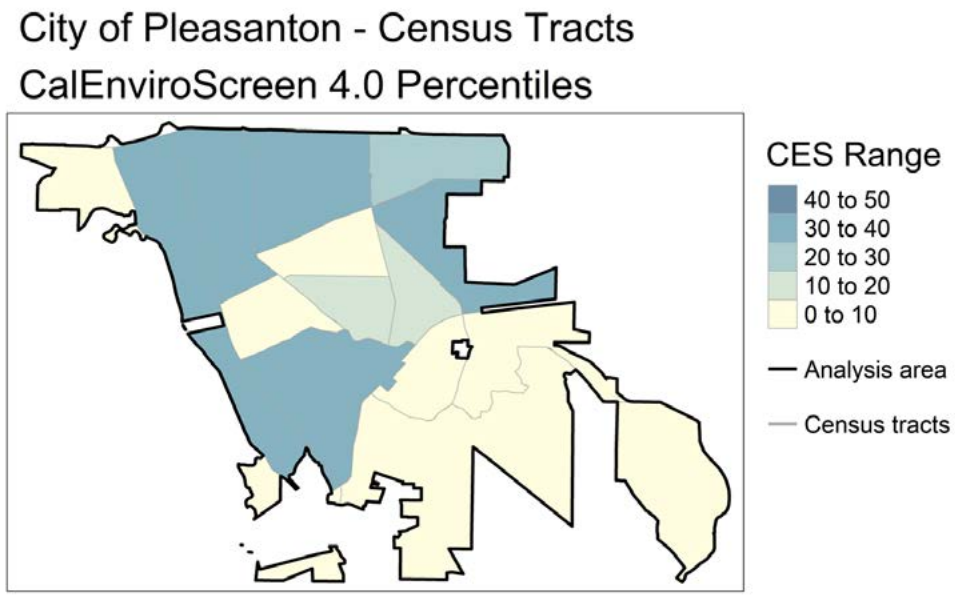
The map highlights that while all tracts experience UHI effects, those with lower canopy cover tend to have increased heat island severity. This underscores the importance of enhancing urban tree canopy to mitigate heat island impacts. By increasing canopy cover, cities can effectively reduce temperatures, improve air quality, and promote better overall public health.

3.1.2 CalEnviroScreen

CalEnviroScreen, an online mapping tool created by the Environmental Protection Agency, identifies pollution burden and vulnerability to the health effects of pollution in California communities (OEHHA 2018). The tool uses environmental, health, and socioeconomic information to identify the inequities associated with pollution throughout the state. CalEnviroScreen scores are calculated using 21 statewide indicators to characterize Pollution Burden and Population Characteristics. The Pollution Burden indicators represent the potential exposures to pollutants and the adverse environmental conditions caused by pollution, while the Population Characteristics indicators represent biological traits, health status, or community characteristics that can result in increased vulnerability to pollution. The data is presented via scores that are mapped by census tract. The scale for vulnerability is shown in percentage ranges, from 1-10% (least vulnerable) to 90-100% (most vulnerable).

CalEnviroScreen 4.0 was used to evaluate the Pleasanton's pollution burden (shown in **Table 3-2**) and the results are further discussed below. **Figure 3-2** depicts the CalEnviroScreen scores for Pleasanton's census tracts. Of the 14 census tracts that are included within the Pleasanton analysis boundary:

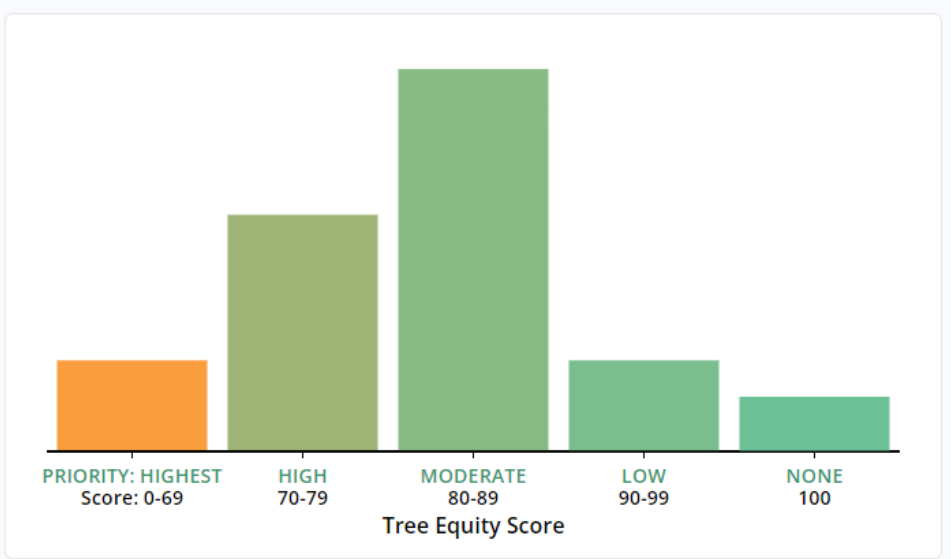
Figure 3-2. CalEnviroScreen Map



- Five census tracts (approximately 41% of residents) in Pleasanton had a CalEnviroScreen percentile score between 30 and 40%.
- Three census tracts (approximately 16% of residents) scored between 10 and 21%.
- The remaining 6 census tracts (approximately 42% of residents) scored below 10%.
- There are no census tracts in the City that scored above 40%.

The CalEnviroScreen data indicates that all of Pleasanton's residents live in a census tract that has a low vulnerability to pollution. The census tracts with scores between 30% - 40% are largely located along major roads and highways that pass through the City (US 580 and US 680) or contain some major commercial or industrial center indicating that proximity to these roadways and frequented commercial areas contributes to a greater vulnerability to pollution. While it is challenging to plant trees along highways and commercial and industrial areas, targeted green infrastructure projects and strategic plantings in surrounding areas would provide benefits in mitigating pollution and improving overall air quality.

Figure 3-3. Distribution of Tree Equity Scores



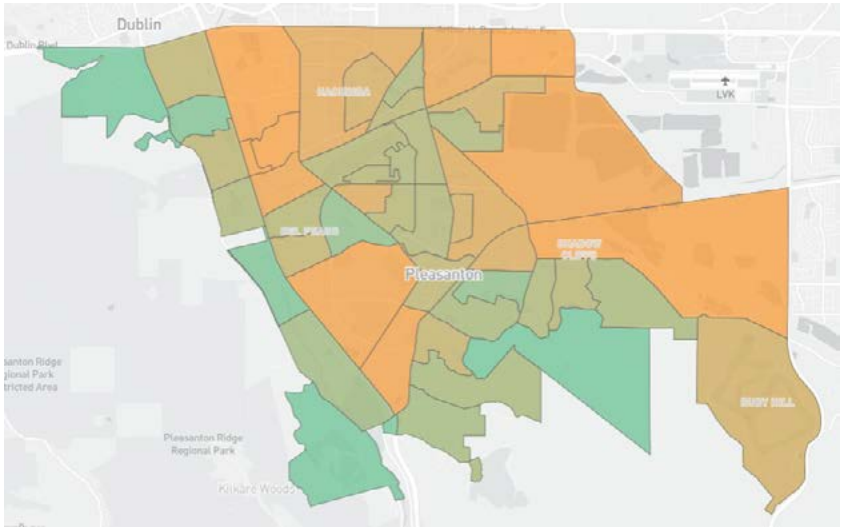
Source: American Forests (2023).

3.1.3 Tree Equity Score

To prioritize tree planting initiatives that address existing gaps in tree canopy cover, the Tree Equity Score can identify neighborhoods within census block groups that could benefit from more green spaces. The Tree Equity Score (TES) metric was developed by American Forests, a nonprofit organization dedicated to increasing tree canopy in urban, rural, and natural areas. The variables used when calculating the Priority Index as part of the Tree Equity Score include canopy cover, climate, health, and socioeconomic data, such as percentage of population below 20% of the poverty line, unemployment rate, and urban heat severity (American Forests, 2024). The TES is calculated by multiplying the Gap Score by the Priority Index. A lower TES indicates a greater priority for tree planting and protection. The TES for Pleasanton was evaluated to assess how well the benefits of urban tree canopy are distributed across different census block groups (neighborhoods).

The target score established by American Forests for a City to achieve Tree Equity is a minimum of 75. Overall, Pleasanton has a TES of 81. Ten out of 47 neighborhoods have a TES below 75. Based on the information provided in the TES report, the average canopy cover across these 10

Figure 3-4. Tree Equity Score Map



neighborhoods is 13.4%, which is notably lower than the City-wide canopy cover of 25.3%. The 10 neighborhoods have scores ranging from 56 to 73, indicating a high priority for tree equity. The distribution of TES for the City of Pleasanton is displayed in **Figure 3-3**. **Figure 3-4** depicts the TES scores for Pleasanton's neighborhoods.

The neighborhoods with a TES below 75 are clear targets for prioritized planting initiatives. These areas have socioeconomic challenges and lower canopy cover, making them ideal candidates for urban greening efforts to improve environmental and social outcomes.

3.2 What Environmental Equity Means to Pleasanton

The City of Pleasanton recognizes that equitable access to the benefits of trees is essential for improving the quality of life and public health across all its neighborhoods. Pleasanton's commitment to environmental equity involves ensuring that all residents, regardless of where they live, have access to the advantages provided by a robust urban canopy. The City's overall TES of 81 indicates that while Pleasanton generally has a well-distributed canopy, there are specific neighborhoods where improvements are needed. These areas with lower TES scores, often experiencing higher UHI effects and greater socioeconomic and pollution burdens, are priority targets for urban greening initiatives.

Recommendations:

- To address these disparities, the City should focus on investing in neighborhoods with the highest canopy needs. This involves engaging residents in the process of expanding and maintaining their local tree canopy and preserving existing mature trees. By prioritizing resources where they are needed most, Pleasanton can reduce canopy gaps and ensure that all residents benefit from the urban forest.

4

ANALYSIS OF CURRENT PLANS, POLICIES, AND ORDINANCES

This section provides a review of the Pleasanton's current plans, design standards, and ordinances, as well as new state laws, and how they relate to City's management of the urban forest. The recent update of the City's Tree Preservation Ordinance is highlighted here and the full review of the City's other relevant planning documents, including the General Plan, Climate Action Plan, and Trails Master Plan, can be found in **Appendix M**.

4.1 Tree Preservation Ordinance

Pleasanton's Tree Preservation Ordinance is codified in the City's Municipal Code Chapter 17.16 Tree Preservation. **Table 4-1** presents the analysis and revisions to the specific sections of the ordinance code. All other sections are considered to either be in line with best management practices, or are procedural matters defined at the discretion of the City.

Table 4-1. Chapter 17.16 Tree Preservation Ordinance Updates

Chapter 17.16 Heritage Tree Preservation Ordinance	
Section	**Comment**
Section 17.16.006 Definitions	The largest changes were new definitions for "Heritage Tree" and "Protected Trees." A new special classification for Protected Trees was created for trees that are native to Pleasanton which are protected at 37 inches in circumference. All other (non-invasive) tree species are now protected at 55 inches in circumference and the height criterion of 35 feet was removed from the definition of Heritage and Protected Trees. Definitions were added for "Consulting Arborist", "Director", "Emergency", and "Significant Impact."
Section 17.16.010 Permit - Required	The text "effectively remove" was added to section A to clarify definition in place of "remove, destroy, or disfigure."
Section 17.16.020 Permit - Procedure	Language modified in section A to replace "Engineering Department" with "Director." A number of changes were made to this section to make the ordinance easier to understand. New conditions were added to provide more flexibility to accommodate resident's needs including, permit categories for high fire risk, ADU construction, and damage from trees to utilities or structures. Tree replacement requirements were added at a minimum of a 1:1 ratio.

Table 4-1. Chapter 17.16 Tree Preservation Ordinance Updates

Section 17.16.040 Appeals	Section title changed to remove the words "not involving new development" Added new item regarding cost of the appeal which states: "The cost of the appeal shall be the same as the cost to appeal a Planning decision as listed in the current City of Pleasanton Master Fee Schedule and shall be refunded if the appeal is successful."
Section 17.16.050 New property development	Under sections A and B, text was added to clarify the requirements of the property owner/developer. Under item C, the $5,000 penal sum was replaced with "$100 for each inch circumference of the tree's trunk (when measured 54" above grade)," and the maximum penal sum was increased from $100,000 to $200,000. The following sentences were added to the end of the section: "The Director may require an additional time period beyond one year should the trees show signs of decline post construction. Such requirement would be in writing and would be in lieu of penalties."
Section 17.16.070 Protection of existing trees	Items A through E, which discussed best management practices and required precautions to protect trees during construction, where replaced with more general language stating all persons shall comply with "The current version of the City Standard Details and Specifications for tree protection." "Certified Arborist" was replaced with "Consulting Arborist." A new category for "minor development" was added to make it more straightforward for applicants to get a permit for minor construction improvements that allow for the economic enjoyment of the property (e.g. ADUs, or swimming pools, etc).
Section 17.16.080 Pruning and maintenance	Language was added to clarify that all pruning shall be performed "under the supervision of an International Society of Arboriculture (ISA) certified arborist" using pruning guidelines "established by ISA." The last sentence discussing developments that require a tree report was removed.
Section 17.16.090 Public utilities	Under Item A, the language "obtain permission from the director..." was replaced with, "notify the City and obtain an encroachment permit."

Table 4-1. Chapter 17.16 Tree Preservation Ordinance Updates

Section 17.16.100 Insurance requirements	Language was added to further clarify licenses and insurance requirements for contractors involved with pruning Protected trees.
Section 17.16.110 Penalties	This section title and all relevant similar language in Item B was altered to remove the word "fines," so it now just says "penalties" and text was replaced to clarify the actions resulting in penalties. The penalty structure was amended so that now penalties are more specific to each situation.

4.2 Review of City Design Guidelines and Standard Details

4.2.1 City of Pleasanton Design Guidelines

Pleasanton applies a combination of landscape design requirements through conditions of approval on all projects that come through the City's Planning department, through the Tree Preservation Ordinance (Ch. 17.16), and through requirements for certain development projects to complete wildfire management plans. . While the Pleasanton does not have one standard document with all landscape design standards, the City does have a set of Tree Establishment Details which are discussed below in **Table 4-2.**

Standard Details: The below table summarizes where Pleasanton's details are not in compliance with ANSI standards and ISA best management practices.

Recommended additional Standard Details:

- Nursery Stock Standards
- Spacing Guidelines
- Young tree establishment
- Pruning guidelines

Table 4-2. Pleasanton Tree Establishment Details

Document	Context	Recommended Update
Tree Planting Detail 806	(2) 1" Wide x 30" recycled tire rubber tree tie in figure 8 pattern; 2 per tree	It is recommended that the rubber tree tie is secured loosely, allowing the tree to sway. (Swaying at youth encourages the tree to develop a tapered trunk better suited for high wind events)
	Temporary watering basin: 4" high berm x minimum 3' diameter. (Not to be used in turf areas)	Consider adding the following language: "Berms should be periodically expanded so the full root zone is watered and can be removed when the establishment care/ watering period is over."
	Well-developed root ball	Not descriptive enough for non-specialists to discern. May be beneficial for the city to have an additional detail for nursery stock standards (See **Appendix T**).
	Native soil, compacted to 85% or undisturbed	Consider clarifying that the soil filled back into the planting hole should be compacted, but the soil beneath tree planting hole should be uncompacted and undisturbed.
	Fertilizer tablets per specifications	Consider removing from city standards. A consistent supply of mulch every 2-3 years is generally sufficient for nutrient provision. (ISA BMPs state that fertilizer generally does not aid in establishment, and fertilizer tablets are only necessary if soil tests report low nutrient levels).
	3" layer of wood mulch, hold mulch back a minimum of 3" from trunk	Consider adding replenishment of mulch as needed on an annual basis.
	Trees may require root barrier if planted within 8 ft. of paved areas, subject to City Landscape Architect.	Recommended that the city has a separate and more elaborate resource regarding spacing guidelines.
Root Barrier Detail 807	General Comment	If the city struggles with root barrier performance, it may be a function of soil aeration. Tree root growth is largely dependent on availability of oxygen within the soil. Trees resist growing roots deep into soil if the soil is poorly aerated. Since root barriers guide roots downward, they are least effective in poorly aerated soils, which are commonplace in the urban environment.

Document	Context	Recommended Update
Root Pruning Detail 824	2" dia. And larger roots within 8' of trunk must be approved by the construction inspector for grinding or removal.	Replace "Construction Inspector" with "Certified Arborist"
Tree Protection Detail 829	Tree Protection Zone (TPZ)	Consider adding specifications for a TPZ which should be at least 1.5 inches wide per every inch DSH, rather than just having the protected area be equal to the dripline of the tree.
	Height of TPZ Fencing	Consider adding specifications that the TPZ fencing must be four to six feet tall.
	5" of Mulch	Generally, mulch is only required when a protective fence cannot be installed around the tree. Consider adding a note that the mulch should be reduced to 2 to 4 inches after the completion of the project.
	Inspection and Monitoring	Consider adding a requirement for an ISA Certified Arborist to be present on site to inspect and monitor trees that are impacted during construction, maintenance, or renovation activities.

4.3 Other Laws Pertaining to Trees

Assembly Bill 1572 Non-functional Turf Ban

Assembly Bill 1572 prioritizes potable drinking water over other water uses and states that "(1) The use of potable water to irrigate nonfunctional turf is wasteful and incompatible with state policy relating to climate change, water conservation, and reduced reliance on the Sacramento-San Joaquin Delta ecosystem." Because this bill affects all land uses except for single-family residential, the City will be removing all non-functional and non-recreational turf on City property over the next few years and public trees in those areas will no longer receive the irrigation that was associated with the turf. To account for this loss of automated sprinkler

irrigation, the City should consider installing drip irrigation or instituting a summer deep watering program for new and young trees. In addition, the City should also increase efforts for planting more trees on private property, to make up for any potential future tree deaths resulting from the lost sprinkler irrigation.

Solar Shade Control Act

The Solar Shade Control Act (Sections 25980 – 25986 of the Public Resources Code) was originally passed by the California state legislature in 1978 to give solar collectors access to sunlight, and limit shading from trees and shrubs. Under this Act, "a tree or shrub cannot cast a shadow greater than 10 percent of a solar collector absorption area upon that solar collector surface at any one time between the hours of 10 a.m. and 2 p.m. local standard time if the tree or shrub is placed after installation of a solar collector." The Act was amended in 2009 to allow for trees that may be partially or fully shading solar collectors to remain if were planted before the solar collector was installed.

Under Section 25984, this Act also does not apply to the replacement of a tree or shrub that had been growing prior to the installation of the solar structure, or a tree or shrub that is subject to a city or county ordinance, such as Pleasanton's Heritage Tree Preservation Ordinance. Therefore, a resident that wants to remove a tree that is covered under the current Heritage Tree Ordinance to install solar collectors, would not be exempt from getting a tree removal permit.

California Green Building Standards Code, Title 24, Part 11 (CALGreen)

Under Chapter 5 of the California Green Building Standards Code which specifies requirements for Nonresidential Mandatory Measures, section 5.106.12 (Shade Trees) requires that certain areas be covered with tree shade within 15 years of the project. Surface parking areas must have trees installed that provide shade over 50 percent of the parking area, while landscape areas and hardscape areas must be planted with trees that provide shade for at least 20 percent of those respective areas within 15 years. Both surface parking areas and hardscape areas can have solar collector shade structures or other roofed shade structures as an alternative to shade trees

5

COMMUNITY ENGAGEMENT

Community outreach was a key step in the development process of the UFMP to understand and amplify the voices of Pleasanton's community. Kicking off in the Summer of 2023, residents and businesses were engaged in outreach efforts that included the following activities and educational materials:

- Two (2) online Pleasanton tree surveys (686 responses total).
- Tabling at community events including two (2) farmers markets and one (1) summer concert in the park event with educational flyers describing tree benefits, and a QR code linking to the tree survey.
- Presenting on the UFMP for the Pleasanton Youth Commission and gathering ideas on how to better engage Pleasanton's younger population.
- Pleasanton UFMP website (ptowntrees.org), detailing project updates, educational materials, public meeting notifications, community resources, and the results of City's tree inventory.
- Social media outreach through the City of Pleasanton channels (E-newsletters, Instagram, Facebook).
- An Urban Forest Summit hosted in tandem with a Pleasanton Earth Day event to inform attendees on the status of Urban Forest Master Plan, preliminary tree inventory and canopy cover analysis results, and to gather general feedback on the urban forest and Pleasanton's UFMP Vision Statement (Estimated 30 attendees).
- Working Group (3 meetings, 8 members).

5.1 Summary of Public Input

5.1.1 Online Surveys

Two online surveys were created to identify the public's perception and understanding of the City's trees, and to offer a space for public feedback on the City's Tree Preservation Ordinance. The first 22-question survey was open between August 1, 2023 and October 31, 2023, and was distributed through various City social media outlets, local newspapers, farmers markets, and the public library. Due to the low number of responses from respondents under the age of 25, a second survey was created and targeted outreach to Pleasanton's younger residents. It was presented to the City's Youth Committee, school administrators, and teachers, and was open from February 1st through March 26th, 2024.

The first survey had a total of 603 respondents, and the second survey had a total of 83 respondents. Of the combined 686 respondents, 69% live in Pleasanton, 27% work in Pleasanton, and 8% go to school in Pleasanton (**Table 5-1**).

Table 5-2 highlights other relevant survey respondent demographics, and how they compare to City data from the US Census Bureau. The survey responses may reflect the opinions of Pleasanton's residents that are older, more likely to be homeowners, and received a higher degree of education than the average demographics of the City's residents. During the implementation phase of the UFMP, it will be important to continue to outreach to City residents to ensure that diverse prospectives are heard and valued.

Table 5-1. Percentage of Survey Respondents Who Live, Work, or go to School in Pleasanton

Response	Percent of Respondents
Live in Pleasanton	69%
Work in Pleasanton	27%
Go to school in Pleasanton	8%

Source: Pleasanton UFMP Public Surveys 2023 - 2024

Table 5-2. Demographics of Survey Respondents Compared to Demographics of the City of Pleasanton

Category	Demographics of Survey Respondents		U.S. Census Demographics of City of Pleasanton 2020	
Age	65 or older	31%	65 or older	16%
Age	Under 18	9%	Under 18	24%
Housing Type	Single family home	89%	Single family home	65%
Housing Status	Homeowner	80%	Homeowner	68%
Education	Bachelor's degree or higher	74%	Bachelor's degree or higher	68%

Source: U.S Census Bureau 2020

5.1.1.1 Survey Results and How the UFMP Addresses Concerns Raised by Respondents

The results of the survey are summarized below in **Table 5-3,** along with related recommendations in the UFMP that address topics raised in survey responses. A full copy of the survey results is included in **Appendix H**. The City and the Working Group, discussed in Section 5.1.3, used feedback from the survey and other in-person engagement events to guide the goals and actions of the UFMP Strategic Plan. The City takes the feedback from community engagement seriously and will use the UFMP as a road map to address the biggest concerns raised by the community around trees and the urban forest over the next 25 years.

Table 5-3. Summary of Online Survey Responses and UFMP Recommendations

Topic	What Survey Respondents Said	UFMP Recommendations
Views on the City's street trees	▪ 86% of survey respondents are in support of having street trees in their neighborhoods ▪ 50% of survey respondents said they would like to see more trees planted along sidewalks and streets	▪ The City has set a goal to fill 1,100 vacant street tree sites in target neighborhoods over the next 25 years.
Top benefits of trees	▪ 84% of survey respondents believe that shade and cooling of neighborhoods is the most important benefit trees provide in Pleasanton	▪ The City has set a goal to achieve 25% canopy cover in all neighborhoods and will prioritize resources in those neighborhoods with the least canopy with a focus on establishing larger shade trees.
Top Priorities for the Urban Forest	▪ 43% of survey respondents believe that the planting more native trees which enhance wildlife habitat is the top priority of the Pleasanton Urban Forest Master Plan	▪ The updated Tree Preservation Ordinance (Ch.17.16) now has better protections for native tree species. The City has also added more native species to its recommended tree species list (**Appendix C**).

Table 5-3. Summary of Online Survey Responses and UFMP Recommendations

Topic	What Survey Respondents Said	UFMP Recommendations
Top Challenges Facing Trees	▪ 67% of survey respondents believe drought and water restrictions are the biggest threat facing trees in their neighborhood	▪ The UFMP recommends that the City increase the number of years that it waters newly planted public trees to maximize survival rates. The UFMP also provides recommendations on drought tolerant tree species that the City should include in their regular tree plantings. See
Opinions on the Tree Preservation Ordinance	▪ 51% of survey respondents support the level of tree protection that the current ordinance provides	▪ The City has recently updated the Tree Preservation Ordinance with several improvements through the UFMP process, including adding greater protections for native trees, while also making it easier for applicants to apply for tree permits for minor development projects such as the construction of ADUs. See **Table 4.1** in the Technical Assessment.
	▪ 47% of survey respondents believe that the City effectively protects its trees	
Cost of tree watering and maintenance	▪ 39% of survey respondents said lower water costs to water trees would make them more inclined to plant a tree on their property.	▪ The UFMP recommends that the City coordinate with Alameda County's Zone 7 Water Agency to explore options for water rebates for residents with trees.
	▪ 34% of survey respondents said assistance with cost to maintain and prune trees would make them more inclined to plant a tree on their property.	▪ The UFMP recommends the City create and distribute informational materials on how to plant and maintain a tree on private property. These materials would include information on structural pruning when the tree is young, which can reduce the need for pruning when the tree matures.

Table 5-3. Summary of Online Survey Responses and UFMP Recommendations

Topic	What Survey Respondents Said	UFMP Recommendations
Opportunities for community involvement	▪ 38% of survey respondents are willing to attend a tree education workshop (in person or virtual)	▪ The UFMP has set a goal to reach 50% of residents through outreach and informational efforts on the City's UFMP and updated Tree Preservation Ordinance over the next 5 to 10 years.
	▪ 30% of survey respondents are willing to participate in a community tree planting event	▪ The UFMP recommends the City partner with a non-profit to increase voluntary tree planting on private property.
Planting and maintaining trees on private property	▪ 53% of survey respondents are willing to water a newly planted tree for up to three years on or near their property, without financial incentives from the City. ▪ 45% of survey respondents are willing to plant, maintain, and care or a tree on their property, without support from the City.	▪ The UFMP recommends the City create a tree-giveaway program with the goal of purchasing and giving away up to 100 trees/seedlings per year to targeted neighborhoods lacking canopy cover.
Tree species recommendations	▪ 47% of survey respondents said having tree species suggestions for trees that don't damage sewer pipes/sidewalk/driveways would make them more willing to plant a tree on their property.	▪ The recommended tree list (**Appendix G**) was updated through the UFMP process and includes a species selection guide as well as information on hardscape damage potential.

5.1.2 Urban Forest Summit

The Urban Forest Summit was held in tandem with the Earth Day event at the Pleasanton Public Library on April 20, 2024. The Project Team had three tables with information on poster boards that introduced residents and other attendees to the UFMP, provided preliminary inventory and community survey data analysis, and created a venue for residents to voice their opinions and perceptions about the City's urban forest. The Urban Forest Summit was attended by approximately 30 individuals who stopped by the tables and/or participated in one of the poster board activities.

Attendees were asked if they were willing to provide input about their experiences with Pleasanton's trees, and the first poster board activity instructed attendees to write down their responses to three questions on sticky notes and place each note to the poster board. The questions were:

1. How can we get more trees on private property?
2. How can we help preserve / maintain the existing Urban Forest?
3. How can we get more residents involved with Pleasanton's Urban Forest?

The sticky note responses were typed up and organized by theme. Responses are detailed in **Table 5-4** and **Figures 5-1.**

Table 5-4. Urban Forest Summit Engagement Responses

1. How can we get more trees on private property?

Financial Incentive

- Water credit for residents
- More incentives for developers and homeowners
- Make trees less expensive to plant
- Apply for grants with specifications of tree and support with planting

Recognition

- "Friend of the Forest" Recognition / Sign for front yard

Education / Consultation

- Consultation on proper tree species for property
- Online training for proper planting
- Recommend gardeners who can plant and maintain the trees
- Address concerns with trees and solar panel conflicts

Assistance from Volunteers

- Have boy scout or girl scout troop help with planting trees
- Host a tree planting day

2. How can we help preserve / maintain the existing Urban Forest?

Funding and Resources

- Help source water during a drought
- Donate trees when they get too big

City Planting Efforts

- Plant more trees
- More trees, more fresh air to breathe

Species selection

- Grow more drought resistant trees
- Plant trees that don't cause allergies
- Don't plant magnolia trees due to the difficulty in cleaning up large leaves
- Don't plant spikey ball trees (Liquidambar)
- Plant trees that don't damage sidewalks
- We need trees to climb that don't have sap, pine trees are ok, but not for climbing

Better Maintenance and Replacement

- Maintain existing trees better
- Faster replacement of dead trees
- Plant trees for every tree removed
- Help trees make more oxygen for us
- Cleaning up of oak acorns that have fallen on St John street which pose a tripping hazard

Increased trees in specific locations

- More trees and shade needed at Pleasanton Middle School
- More trees at Pleasanton schools
- Fairlands needs more street trees
- More trees over bike trails
- More big shade trees along major roadways

Better Tree Protections

- Protect larger trees, neighbors cut down trees
- Don't cut down trees

Education

- Educate residents regarding the importance of trees
- Provide tree pruning knowledge
- Educate how to care for private trees
- Neighbors planted trees after we did, lead by example
- Make friends with a tree
- Better outreach and education to make people care about their trees
- Spread the word about how important trees are
- Don't litter

Limits to Urbanization Expansion

- Prevent over-urbanization
- Less housing development

Studies

- Do a benefit analysis of how Muir Park is used

Table 5-4. Urban Forest Summit Engagement Responses

3. How can we get more residents involved in Pleasanton's Urban Forest?
Volunteer Events ▪ Hold more volunteer events ▪ Volunteer events for kids
Education and Outreach ▪ Need more public information for UFMP ▪ Education on tree care for the public ▪ Inspire people and kids by revealing the importance of forests ▪ Come to Alviso Adobe Community Park ▪ Come to sporting events and advertise there
School Involvement ▪ Get schools involved ▪ Come to schools ▪ Offer volunteer hours for students
Conflicts with Trees and Solar ▪ Address concerns over solar panel conflicts

Figure 5-1. Attendee Post-It Response to Urban Forest Summit Poster Activities

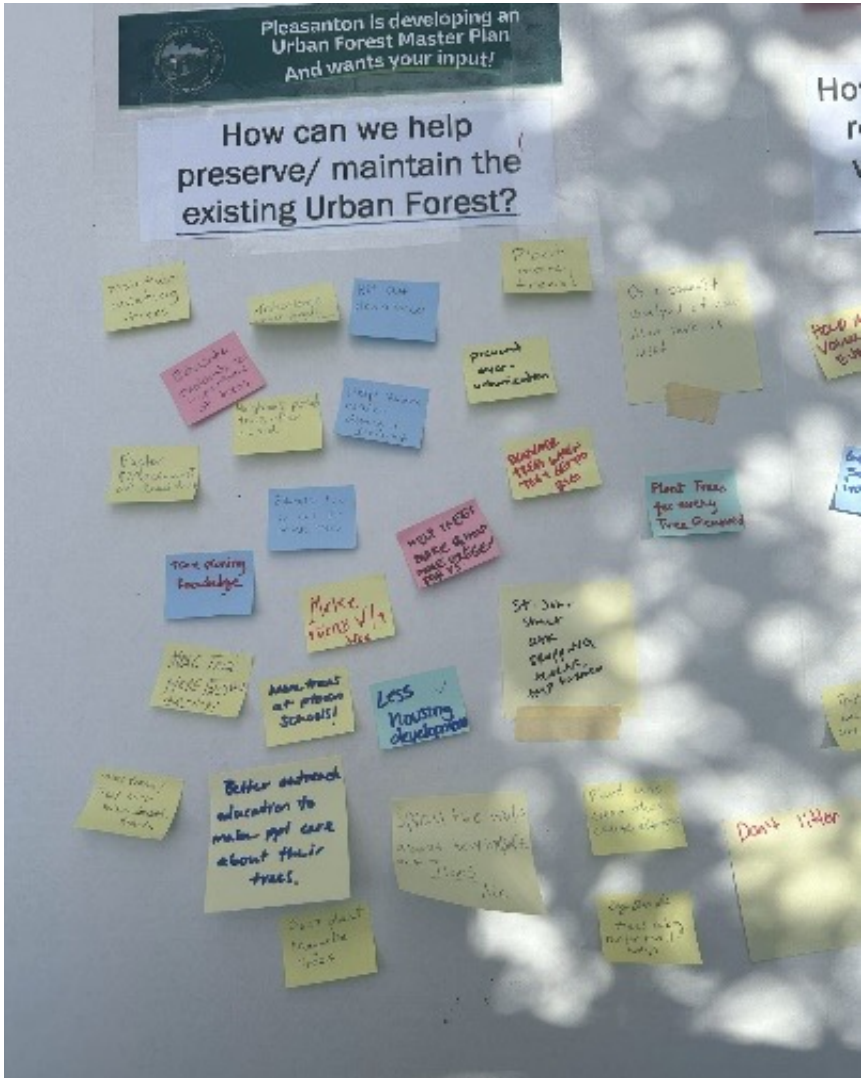
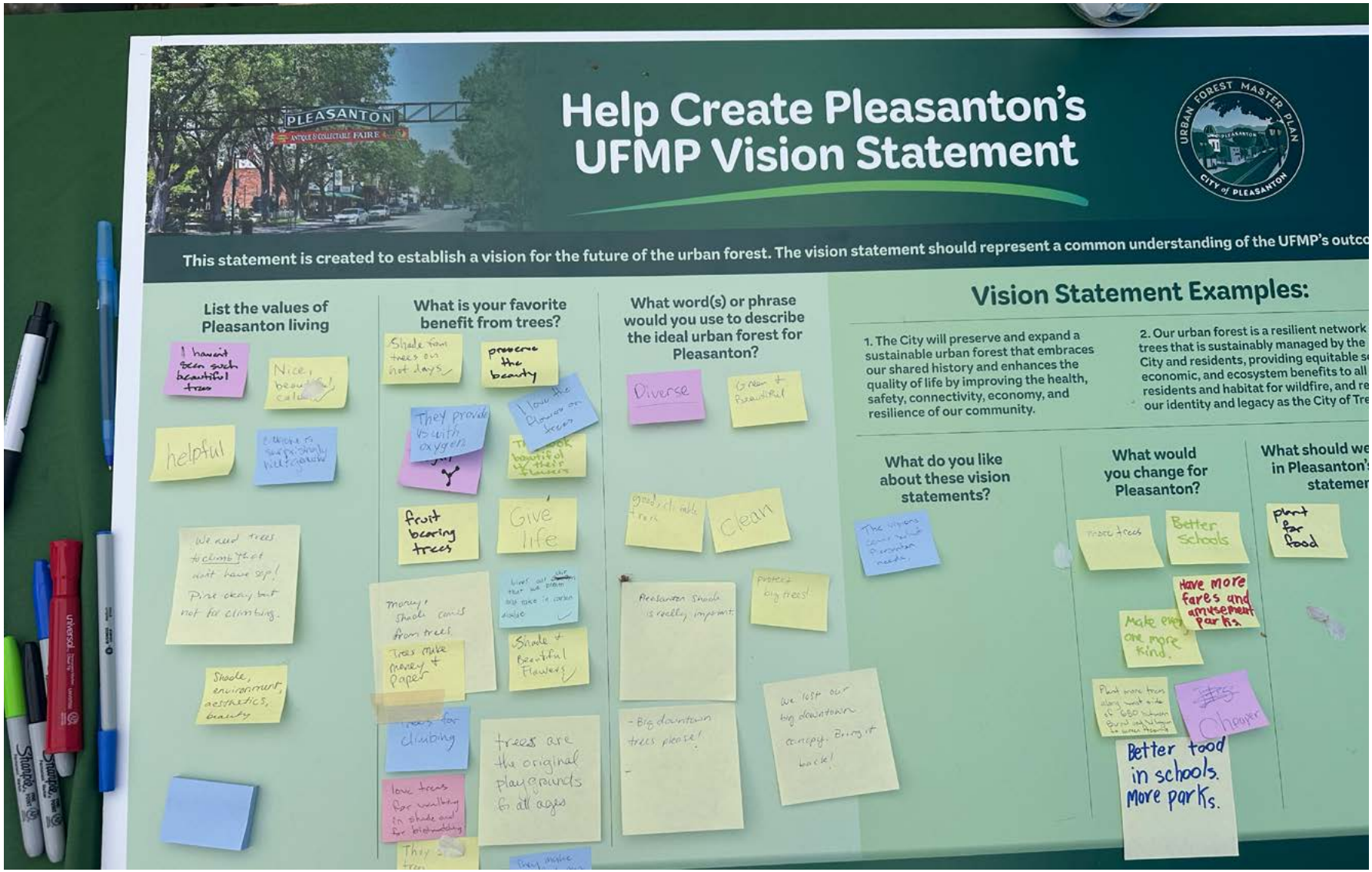


Figure 5-1. Attendee Post-It Response to Urban Forest Summit Poster Activities



The second Urban Forest Summit activity was having attendees provide feedback and ideas for the City's UFMP Vision Statement (**Table 5-5**). The feedback received for these questions was incorporated into the development of the UFMP's vision statement.

Table 5-5. Guided Vision Statement Brainstorming Activity Responses

Values of living in Pleasanton	What is your favorite benefit from trees?	What word(s) or phrase would you use to describe the ideal urban forest for Pleasanton
▪ Beautiful trees ▪ Nice, beautiful, calm ▪ Helpful (people) ▪ Everyone is surprisingly nice and genuine ▪ Shade, environment, aesthetics, beauty	▪ Shade from trees on hot days ▪ Preserving the beauty (of the City) ▪ They provide us with oxygen and take in carbon dioxide ▪ The flowers on trees ▪ Fruit-bearing trees ▪ Trees give life ▪ Trees for climbing ▪ Trees are the original playground for all ages ▪ Paper is made from trees ▪ Love trees for birdwatching ▪ Trees make me feel more connected to life. ▪ Trees are cool	▪ Diverse ▪ Green and beautiful ▪ Sustainable with climate change ▪ Good, climbable trees ▪ Clean ▪ Importance of shade from trees ▪ Protection of big trees ▪ Big downtown trees

5.1.3 Working Group

The City's UFMP Working Group was formed to bring together City staff from multiple departments and a representative from the City's commercial sector to help advise the UFMP's development. A list of the Working Group's members is included in Table 5-6. Three working group meetings were held between May 2024 and September 2024, and each meeting was facilitated by the consultant team.

Table 5-6. Pleasanton's Urban Forest Master Plan Working Group Members

Name	Affiliation	Area of Expertise
Sarah Hosterman	City of Pleasanton	Landscape Architect Assistant (City Arborist)
Mattew Gruber	City of Pleasanton	Landscape Architect
Giacomo Damonte	City of Pleasanton	Parks Division Manager
Victor Cazarez	City of Pleasanton	Park Maintenance Supervisor
Tim Annear	City of Pleasanton	Park Maintenance Supervisor
Megan Campbell	City of Pleasanton	Associate Planner
Myer Walden	City of Pleasanton	Program Assistant
James Paxon	Hacienda General Manager	Commercial Sector

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ADA	Americans with Disabilities Act
ANSI	American National Standards Institute
BMP	Best Management Practices
CAP	Climate Action Plan 2.0
CBO	Community-Based Organization
City	City of Pleasanton
DSH	Diameter at Standard Height
FTE	Full Time Equivalent
FY	Fiscal Year
GHG	Greenhouse Gas
GP	General Plan
HOAs	Homeowners Associations
ISA	International Society of Arboriculture
KPI	Key Performance Indicator
PGE	Pacific Gas and Electric Company
PW	Public Works
RCDs	Resource Conservation District
ROW	Right-of-way
TA	Technical Assessment
TRAQ	Tree Risk Assessment Qualified
UFMP	Urban Forest Master Plan
USFS	United States Forest Service
WCA	West Coast Arborists
WUI	Wildland Urban Interface/Intermix
WUCOLS	Water Use Classification of Landscape Species