

URBAN FOREST MANAGEMENT PLAN

CITY OF
LOS BANOS,
CALIFORNIA

NOVEMBER | 2022



City of
Los Banos
At the Crossroads of California



PlanIT Geo
developers of TreePlotter

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City of
Los Banos
At the Crossroads of California



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TABLE OF CONTENTS

Executive Summary	1
Analysis of Los Banos' Urban Forest	1
History of Los Banos' Settlement and Landscape	4
Urban Forest Status: Urban Tree Canopy	5
Urban Forest Status: Tree Equity	6
Threats to the Urban Forest: Climate Change and Urban Heat Islands	10
Threats to the Urban Forest: Climate Change and Wildfires	12
Threats to the Urban Forest: Tree Pests and Diseases	14
Threats to the Urban Forest: Development Pressures	17
Addressing Urban Forest Threats with Tree Canopy Cover and Equity Goals	18
Urban Tree Canopy Benchmarks and Comparisons	25
Recommendations for Urban Tree Canopy	26
Public Tree Status	27
Public Tree Benchmarks and Comparisons	43
Recommendations for Public Trees	45
Urban Forest Function, Benefits, and Services	48
Cost-Benefit Analysis of Public Trees	56
Urban Forest Benefits Benchmarks and Comparisons	58
Recommendations for Urban Forest Benefits	59
The Management Framework	61
Overview	61
City Planning Documents	61
Benchmarks and Comparisons for City Planning Documents	68
Recommendations for City Planning Documents	68
Current Structure for Managing Los Banos' Urban Forest	69
Public Tree Management Structure	70
Private Property Tree Management Structure	72
Park Maintenance Funding Structure	74
Workflows, Shared Priorities, and Challenges	76
Benchmarks and Comparisons for Program Structure	77
Recommendations for Program Structure	78
Existing Tree Code and Regulations	80
Benchmarks for Tree Code and Regulations	81
Recommendations for Tree Code and Regulations	82
Urban Forestry Best Practices	83
Identifying Optimal Pruning Cycles	83
Tree Inventory Best Practices	86
Tree Maintenance Best Practices	86
Utility Tree Maintenance Best Practices	88
Young Tree Maintenance Best Practices	89
Tree Planting Best Practices	90
Tree Irrigation Considerations and Best Practices	90
Private Property Tree Management Best Practices	91
Additional Best Practices for Urban Forest Management	91
Benchmarks and Comparisons for Best Practices	94
Recommendations for Best Practices	95
Funding Best Practices	99
Funding Mechanisms	99

Funding Benchmarks and Comparisons.....	106
Recommendations for Funding.....	107
Community Framework for Engagement	109
Engagement to Inform the Plan.....	109
Engagement to Implement the Plan.....	111
Use Multiple Avenues of Communication	112
Create a Volunteer Corps.....	114
Explore Partnerships.....	114
Public Education.....	115
Support the City's Tree Commission.....	116
Environmental Justice.....	117
Support or Establish a City Volunteer Coordinator	117
Community Engagement Summary	117
Community Benchmarks and Comparisons.....	118
Recommendations for Community Engagement	119
Urban Forest Management and Sustainability Goals	121
Los Banos' Urban Forest Vision.....	121
Guiding Principles	121
Primary Goals for Los Banos' Urban Forest.....	122
Strategic Actions to Achieve Urban Forestry Goals	123
Recommendations Summary Tables.....	129
Implementation Plan	147
Implementation Summary	147
Monitoring Plan	150
Evaluate.....	151
Monitor.....	157
Report.....	159
Revise	161
Appendices	1a
Appendix A. References.....	2a
Appendix B. Master Street Tree List.....	4a
Appendix C. Solutions Workbook and Possible Guidelines for Tree and Sidewalk Conflicts	8a
Appendix D. 2021 Urban Forest Audit Results.....	19a
Appendix E. Interactive Goal and Action Worksheet.....	30a
Appendix F. Tree Ordinance Recommendations.....	43a

LIST OF TABLES AND FIGURES

TABLES

Table 1. Summary of baseline conditions, tree canopy goals, and forecasted future benefits and services.....	22
Table 2. Summary of recommended tree canopy goals.....	23
Table 3. Most common public tree genera.....	28
Table 4. Relative Performance Index of the most common public trees.....	31
Table 5. Observations and defects recorded for Los Banos' public trees.....	32
Table 6. Public tree maintenance needs.....	33
Table 7. Details regarding the necessary maintenance.....	34
Table 8. The ISA tree risk assessment matrix to establish a risk rating.....	37
Table 9. Summary of planting site widths for existing public trees.....	40
Table 10. Summary and depiction of possible future planting sites in the public right-of-way.....	41
Table 11. Summary of possible planting sites with no site (wire) conflicts.....	41
Table 12. Summary of the annual benefits provided by the Citywide urban forest.....	54
Table 13. Summary of the annual benefits provided by Los Banos' public trees*.....	55
Table 14. Estimated maintenance costs for public trees (data reanalyzed February 2022).....	56
Table 15. Annual cost-benefit analysis for public trees.....	57
Table 16. Goals and policies within the General Plan that are supported by the UFMP.....	62
Table 17. Goals and policies within the Parks Master Plan that are supported by the UFMP.....	66
Table 18. Proposed tree plantings for park improvements listed in the Parks Master Plan.....	67
Table 19. Los Banos Urban Forestry Program budget summary reported for Tree City USA 2019.....	75
Table 20. Los Banos Urban Forestry Program activity summary reported for Tree City USA 2019.....	75
Table 21. Current and recommended maintenance regimen for Los Banos' public tree population.....	84
Table 22. Assumptions for estimating the costs to effectively maintain the public tree population.....	85
Table 23. Parcel tax options and provisions for Los Banos' Urban Forestry Program.....	101
Table 24. Summary of financing options for Los Banos' urban forest.....	104
Table 25. Categories for evaluation using the U.S. Forest Service's Urban Forest Audit System.....	151
Table 26. List of subcategories within the Management Policy and Ordinances category of the audit.....	151
Table 27. Outcomes of the urban forest audit completed in 2021 for Los Banos' UFMP.....	152
Table 28. Interpretation of the 2021 Urban Forest Audit scores.....	154
Table 29. Los Banos' primary urban forest benchmark values to measure Plan progress.....	158
Table 30. Evaluation, monitoring, and reporting techniques to achieve the urban forestry goals.....	159
Table 31. Summary count of the evaluations completed in the 2021 Urban Forest Audit.....	162
Table 32. Urban Forest Audit scores applied to the Plan's actions.....	162
Table 33. Summary of attributes collected for the recommended Master Street Tree List.....	4a
Table 34. Proposed street trees (predominantly large statured).....	5a
Table 35. Proposed parkway, accent, and median trees (predominantly medium to small statured).....	7a
Table 36. Description of possible alternative solutions for tree and construction conflicts.....	15a
Table 37. Results of the 2021 Urban Forest Audit.....	19a
Table 38. Description of attributes in the action tables.....	30a
Table 39. Description of attributes in the targets tables.....	30a
Table 42. Los Banos Urban Forest Management Plan actions and targets.....	31a

FIGURES

Figure 1. The extent and various landscapes comprising Los Banos' urban forest.....	2
Figure 2. Maintenance responsibility of trees comprising Los Banos' urban forest	3
Figure 3. Summary of the 2021 tree canopy assessment.....	5
Figure 4. Comparison of land cover change between 2015 and 2021 and the change in percentage.....	5
Figure 5. Tree canopy cover comparison for California cities.....	7
Figure 6. Tree canopy shown in green with individual inventoried trees shown as points. Grayed out.....	7
Figure 7. Comparison of Tree Equity Scores (data not available for Los Banos at this time).....	8
Figure 8. The Urban Heat Island Index for Los Banos (Source - CalEPA).....	10
Figure 9. The effects of vegetation and trees on urban heat islands in cities.....	11
Figure 10. Count of recent confirmed fires in CA compared to the normal range (Global Forest Watch).....	12
Figure 11. Amount of land hectares burned in CA due to fire in 2020 compared to the average range.....	13
Figure 12. Example of the wildland-urban interface (WUI) along the eastern boundary of Los Banos.....	13
Figure 13. California oakworm caterpillar (A) and oakworm moth (B), and emerald ash borer (C), larvae.....	15
Figure 14. Signs and symptoms of sudden oak death. Source: USDA APHIS.....	16
Figure 15. An example of tree canopy and pervious area loss experienced between 2006 and 2020 in the.....	17
Figure 16. Demonstration of Possible Planting Areas including vegetative space where it is feasible to plant.....	18
Figure 17. Map indicating the CalEnviroScreen 4.0 scores for Los Banos' Census Tracts	19
Figure 18. Los Banos' draft incremental and long-term Citywide tree canopy cover goals	21
Figure 19. Most common public tree species (top 3).....	28
Figure 20. Most common public tree species.....	28
Figure 21. Comparison of the size distribution of Los Banos' public trees to an ideal distribution	29
Figure 22. Summary and illustration of public tree condition classes.....	30
Figure 23. Examples of the potentially human-caused defects seen in the public tree observations	33
Figure 24. Common public tree maintenance needs.....	34
Figure 25. Diagram showing the impacts maintenance has on tree structure, function, and benefits	39
Figure 26. Examples of techniques for routine tree pruning (Source: Arbor Day Foundation).....	39
Figure 27. Growing space widths for existing trees.....	40
Figure 28. Visual depiction of planting site widths of existing public trees	40
Figure 29. Illustration of the benefits and services provided by public trees.....	48
Figure 30. Overview of the ecosystem benefits and services provided by trees in communities	50
Figure 31. The street tree pictured adds \$7,593 to the price of the house it fronts and \$7,098 to the seven.....	52
Figure 32. Organizational chart detailing the departments and divisions involved in urban forestry activities.....	69
Figure 33. Illustration of the responses from the staff and commission member survey	76
Figure 34. a) Relationship between pruning cycle length (number of years since last pruning) and condition.....	83
Figure 35. As the time (years) between street tree pruning increases, tree health and safety decrease and.....	84
Figure 36. Examples of the types of tree pruning.....	87
Figure 37. Types of pruning cuts and proper branch cutting technique.....	87
Figure 38. Examples of trees directionally pruned for clearance from power lines	88
Figure 39. Example of branches to be pruned for newly planted trees to promote good structure	89
Figure 40. Los Banos' announcement for the public survey	109
Figure 41. Summary of responses from the public survey to develop Los Banos Urban Forest Management.....	110
Figure 42. Story maps can visualize urban forest stories, maps, and data for the public.....	113
Figure 43. Summary of the Plan implementation and monitoring process	150
Figure 44. Summary of the 2021 Urban Forest Audit for Los Banos' Plan.....	153
Figure 45. Example of the plan implementation, evaluation, and revision process	161
Figure 46. Proposed decision matrix for tree and construction conflicts.....	8a
Figure 47. Example of alternative solutions for tree and construction conflicts.....	17a

URBAN FOREST VISION

Our City's trees, forests, and other natural resources are recognized as integral to sustaining life and health for all City residents. A healthy, thriving, and sustainable urban forest is a community priority, to be thoughtfully managed and cared for by partnerships between the City and its residents to maximize public safety and benefits that include a thriving ecosystem, vibrant economy, and livable communities shared by all who live, work, and play in Los Banos.

CITY LEADER STATEMENT

"The completion of the first Urban Forest Management Plan is a significant accomplishment for the City of Los Banos. The Plan provides the recommendations and resources to properly prepare for the future of tree care in Los Banos. Trees in Los Banos are one of our most valuable assets and we often take for granted all of the benefits they provide. Whether it is beautifying our neighborhoods where families make their home or keeping us in the shade through the 300+ days of sun we see each year. Los Banos remains a small enough city where just one tree can make a big difference and we are hopeful that this plan will provide the framework to maximize our tree care resources." – Joe Heim, City of Los Banos Parks and Recreation Operations Manager

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Los Banos' Urban Forest Vision

Our City's trees, forests, and other natural resources are recognized as integral to sustaining life and health for all City residents. A healthy, thriving, and sustainable urban forest is a community priority, to be thoughtfully managed and cared for by partnerships between the City and its residents to maximize public safety and benefits that include a thriving ecosystem, vibrant economy, and livable communities shared by all who live, work, and play in Los Banos.

Plan Mission

The City of Los Banos, in partnership with the community and urban forestry consultants, completed this Urban Forest Management Plan in 2022. This plan is a guide to maintain, protect, and enhance Los Banos' extensive tree canopy cover resource and the multitude of associated benefits. The Urban Forest Management Plan extends beyond maintenance and operational guidance to include a variety of long-term goals, strategies, and priorities to achieve optimal levels of urban forest management, sustainability, and equity in a comprehensive and systematic manner. Achieving the goals set forth in this plan requires a shared commitment and partnership between the City and its community to sustain a thriving urban forest providing benefits to Los Banos' environment, economy, and well-being for future generations.

OVERVIEW

Nestled into the West side of the San Joaquin Valley within Merced County, lies the City of Los Banos at the crossroads of California. Interstate 5 is situated just to the west of town, which connects the major cities of Sacramento and Los Angeles. Los Banos provides a suburban and rural feel for residents who value outdoor recreation and a more reasonable cost of living compared to neighboring cities. Los Banos, with an estimated population of 43,188 (2021), boasts many parks and opportunities for families to thrive.

Los Banos' close proximity to the San Luis River has shaped much of the City's history. The City's name translates to "the baths" in reference to the spring that provides water to wetlands, state game refuges, and rare grassland habitat. With these land and water resources, came a large agricultural industry started by Henry Miller and Charles Lux in the 1850s. Once acquiring land and water rights, the Miller and Lux company grew to become the largest producer of cattle in California and one of the largest landowners in the United States.

Upon the death of Henry Miller in 1916, the Miller and Lux company fizzled out. However, Los Banos continues to be an agricultural center to this day and with this comes the responsibility to care for and preserve Los Banos' natural resources. With an increasing population of new residents looking for a more suburban life, affordable cost of living, while commuting to larger cities, comes the reality that more focus will need to be put on preserving and enhancing the community's urban forest and natural resources.

Specific priorities and actions have been addressed in the General Plan in regard to natural resources. In turn, the City has a growing concern for the protection and enhancement of City assets such as the urban forest.



IMPORTANCE OF THIS PLANNING EFFORT

Los Banos is a community that recognizes its trees as one of its most valuable resources and with this Urban Forest Management Plan, has dedicated itself to the preservation, proper maintenance, and continued enhancement of the urban forest. The trees throughout Los Banos are an asset that bring value and benefits to the community. The urban forest provides environmental benefits, adds to property values, and contributes to an enhanced quality of life for all of Los Banos' residents. These urban forest efforts along with the transformation of the river's edge are a tremendous opportunity to bolster the City as a whole.

Unfortunately, the trees comprising the urban forest in Los Banos suffer from the rigors of urban life, including pests and diseases, the current and changing climate, air pollution, compacted soils, limited growing spaces, and limited resources. To overcome such rigorous conditions for the City's trees and reap the benefits of these, our most valuable assets, the care of the urban forest must be strategically and efficiently planned and cared for.

This Urban Forest Management Plan seeks to secure adequate tree management levels and garner the enabling support through staffing, funding, the community, and policy. Adequate tree management includes efficient and effective tree care, bolstered tree plantings to maintain age and species diversity in the public tree population, the equitable preservation and enhancement of canopy coverage Citywide to enhance the character and aesthetics of neighborhoods, and exemplary stewardship of the forest from all who live and work in Los Banos. The Urban Forest Management Plan must be regarded as both a long-range policy guide and a living document that will respond to changing conditions over its life. It requires a close partnership between policy makers, staff, and the community. Adoption of this Urban Forest Management Plan enables the City to accomplish these objectives.

THE CITY AND ITS URBAN FOREST

In adhering to best management practice as framed by the Urban Forest Management Plan's guiding principles, the urban forest stands a chance of being a sustainable and resilient resource. This will require an integrated ecosystem management approach. That system is based on the recognition that the urban forest is a resource which should be viewed as a tangible asset which confers broad benefits to all citizens of the City of Los Banos and compliments the biodiversity values of the surrounding natural environment. Urban forests face unprecedented challenges in a warming environment with ever expanding development needs. In order to preserve the urban forest and the myriad benefits conferred, the residents of Los Banos will need to be vigilant and remain committed to sound environmental standards which will ensure that generations to come will enjoy the same. If Los Banos is to be a leader and environmental champion, the stewardship of its green infrastructure and the fundamental role played by trees in that ecology is paramount. This 40-year Urban Forest Management Plan is an important piece of that larger mission. All community stakeholders should be involved in bringing this to fruition and safeguarding the future of trees in Los Banos' neighborhoods.

LOS BANOS' GENERAL PLAN AND THE URBAN FOREST

A central theme of the City's 2030 General Plan Update is the concept of sustainability and sustainable development. The basic concept of sustainability is meeting the needs of current generations without compromising that ability of future generations to meet their own needs. One major goal of sustainable development is to reduce greenhouse gas emissions and to promote energy efficiency and alternative energy sources. Scientific consensus has emerged that carbon dioxide emissions are contributing to a warming climate. Some of the consequences include rising sea levels, increased intensity of hurricanes and other storms, increased acidity of ocean waters which has negative impacts on marine biodiversity, reduced agricultural productivity, and declining urban forests.

CLIMATE CHANGE AND THE URBAN FOREST

The City recognizes its growing role in confronting climate change. Actions to contend with increased greenhouse gas (GHG) emissions and effects of climate change start at the local level. City goals and policies must address reducing the carbon footprint from new development. These goals and policies should promote transit-oriented and infill development, maintain a jobs/housing balance, protect and conserve open space, encourage development of linear parks that can be used for cycling and walking as an alternative to vehicle trips, and implement air and water quality standards. The urban forest is a vital component of the strategies to address these concerns.

Los Banos is planning for a future that addresses climate change, improves the quality of life, promotes equity, and bolsters resiliency across the community. Efforts to lower greenhouse gas emissions resulting from activity in the energy, water, waste, and transportation sectors should be paired with efforts to sequester—or draw down—carbon dioxide and other GHGs from the atmosphere, so that in the future, no new net greenhouse gases will be emitted. In addition, the City should explore efforts to enhance the community's resiliency to future climatic changes as well as to adapt to changes that are already underway. As a component to the Urban Forest Management Plan project, draft goals for tree canopy cover and additional tree plantings were provided and are supported by the Plan's goals, strategies, and actions.

ABOUT LOS BANOS' URBAN FOREST

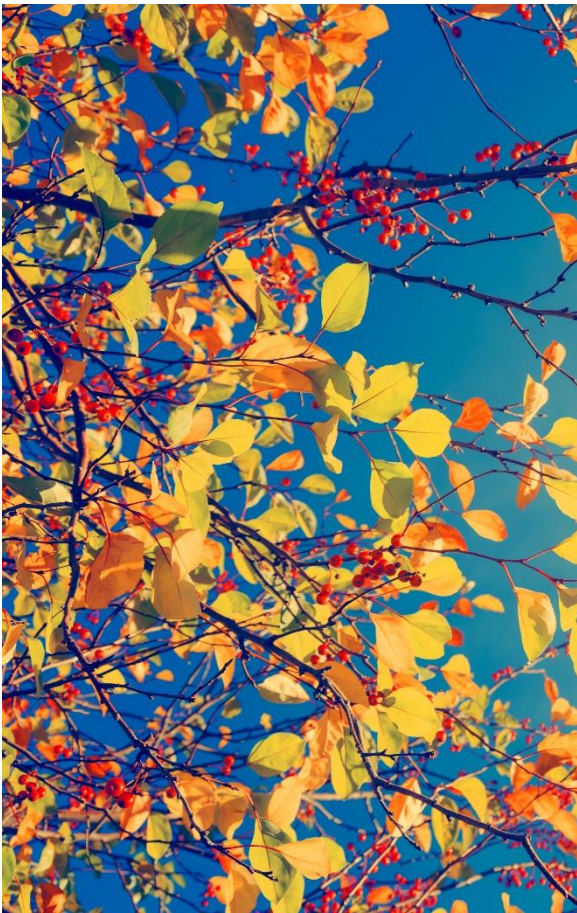


Image Description 2. Source - City of Los Banos, CA

Los Banos is situated among an abundant natural environment that includes wetlands, grasslands, wildlife habitat and refuges, and a wide array of open spaces. The City is directly tied to its natural environment and Los Banos' residents value these assets. As stated in the City's General Plan, Los Banos aspires to create balanced and sustainable growth; integration of neighborhoods and neighborhood centers; creation of a network of parks and open space; creation of a safe, efficient, and attractive circulation system; and targeted planning for environmental justice.

Regarding growth of the urban forest canopy, it is the City's responsibility to maintain trees within the public rights-of-way and on City-owned parks, open spaces, and facilities. Los Banos' Parks and Recreation Division, within the Public Works Department, leading this Urban Forest Management Plan effort, is responsible for the planning, development, coordination and promotion of the physical, social, and economic well-being of the City. A multifaceted approach is implemented in Los Banos for the care and enhancement of urban forestry. In addition to the Parks and Recreation Division, the Tree Commission provides support relating to the City's urban forestry efforts, and the City works closely with the Los Banos Downtown Association.

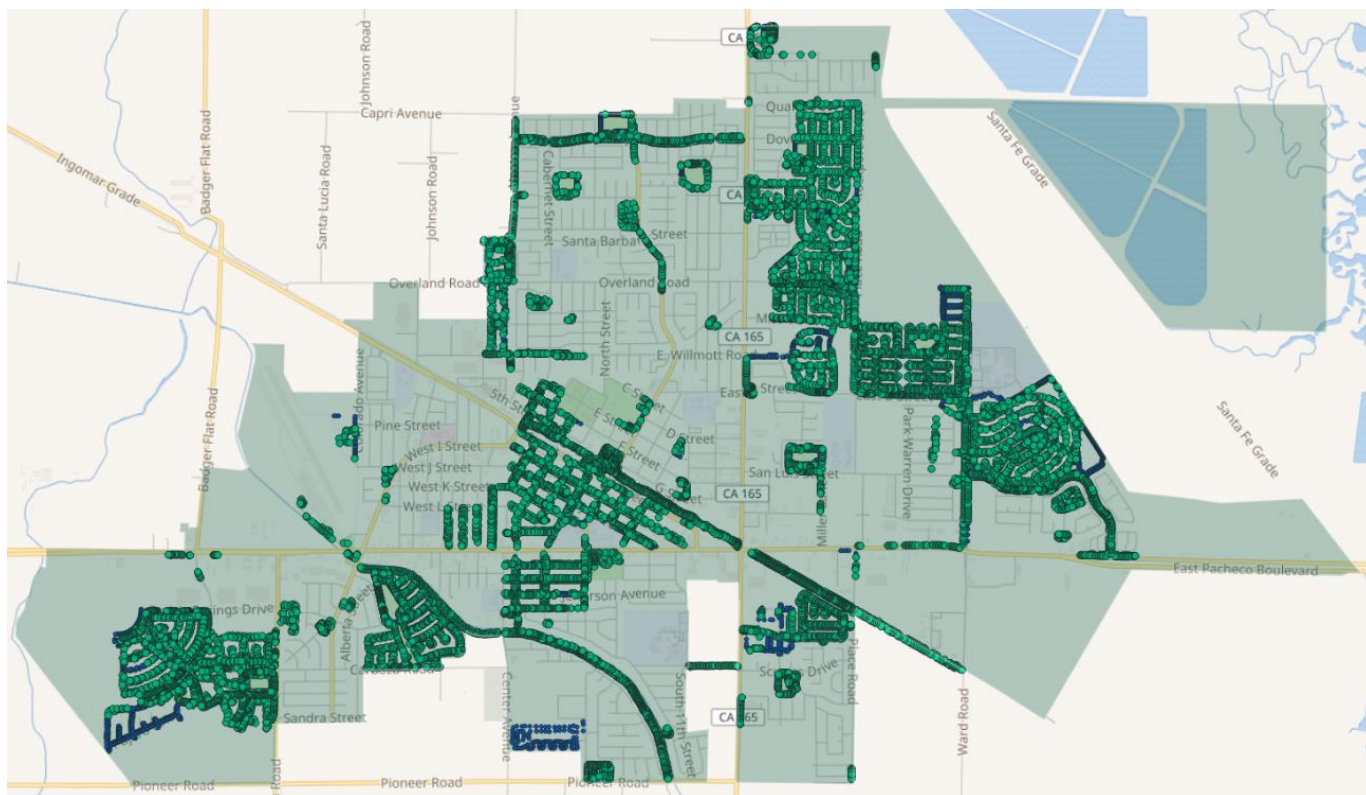
Though it is the City's responsibility for tree care within public rights-of-way, the preservation and growth of Citywide urban forest canopy should be the concern of both the City and the community residents. With this baseline assessment of the City's tree programs, the Urban Forest Management Plan was developed to provide recommendations for staffing levels, tree maintenance priority corridors, the sharing of the tree maintenance responsibility, strengthened tree management and preservation, best practices and ordinances, maintenance of Arbor Day Foundations' Tree City USA achievement, and enhanced community engagement and stewardship. For 30 years, Los Banos has been a certified Tree City USA, which further exemplifies the community's commitment to its trees and residents.



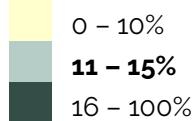
Existing City plans and efforts impact and influence Los Banos' urban forest. In addition to the 2030 General Plan Update, the City adopted the Master Parks Plan in October 2020, the Pioneer Road Complete Streets Plan in January 2021, and the Urban Water Management Plan Update in 2016. These various plans combined with the Urban Forest Management Plan will create the networks and working relationships to improve and enhance the urban forest in many facets of the Los Banos community.

Los Banos has a vibrant urban forest— spanning nearly 14 percent of the City's land area— that continues to be created, modified, and removed primarily by people. Sustaining it will require ongoing human intervention. The goal of this intervention is a sustainable urban forest— an urban forest that optimizes the benefits of trees while meeting established safety and economic goals. Achieving this requires robust management, diverse funding, adequate staffing, effective policies, and maintenance actions consistent with best practices. The urban forest offers many benefits, some of which are directly identifiable and quantifiable, and others that are experienced. Recognition of the role urban forests play in improving human health and well-being in addition to being critical climate change mitigators continues to increase.

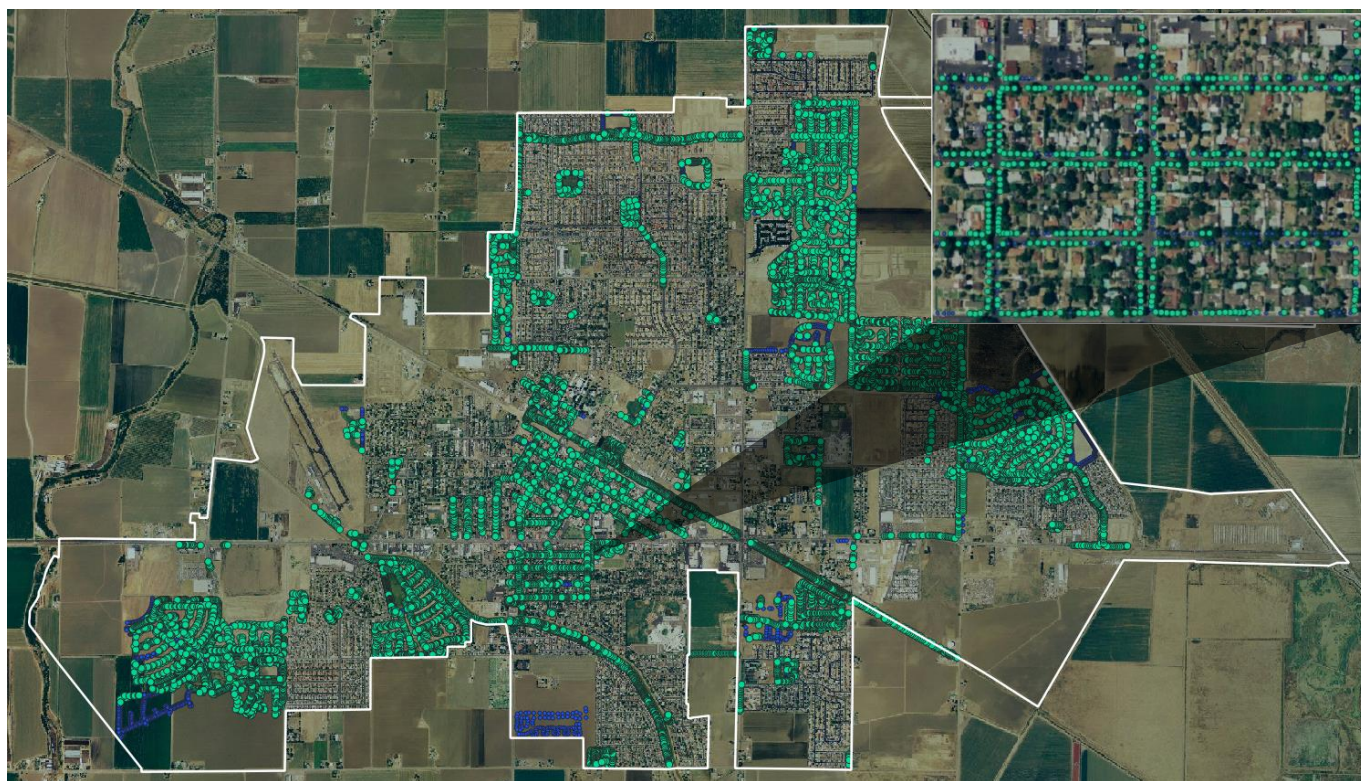
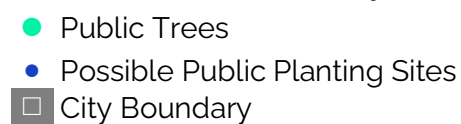
A Closer Look at Los Banos' Urban Forest: Canopy Cover and Public Trees



2021 i-Tree Canopy Assessment: Canopy % (above)



2021 Public Tree Inventory (below)



Urban Forest Benefits and Services

The quality of life of the citizens in any community depends on the urban forest, as trees make a vital and affordable contribution to the sense of community, pedestrian-friendly neighborhoods, energy savings, and air quality. Trees are one of the few infrastructure investments that grow in value over time. Tree canopy is a valuable component of Los Banos' urban ecosystem. Trees in urban settings are important to improving urban life, as well as human physical and emotional well-being. Research suggests that human beings have an innate affiliation to natural settings, a concept described as biophilia (Kellert, et al. 1993). Studies link access to living trees, outdoor air, and natural light to increased employee and student productivity, faster hospital recoveries, less crime, and an overall reduction in stress and anxiety. Thus, expanding the urban forest is part of the solution to Los Banos' social, environmental, and economic problems— it is integral to enhancing public health programs, increasing land values and local tax bases, providing job training and employment opportunities, reducing costs of city services, increasing public safety, improving air quality, offsetting carbon emissions, managing stormwater runoff, mitigating water shortages, and conserving energy.

An analysis of the total street and public tree population inventoried in 2021 (12,253 living trees) valued the ecosystem services and benefits at an estimated \$1.2 million annually. Most notably, the 12,253 inventoried trees increase property values by over \$1 million, prevent nearly 5.6 million gallons of stormwater runoff, and sequester nearly 400 tons of carbon annually. Citywide, the urban forest canopy cover across public and private boundaries offers benefits and services estimated at \$213 million (based on ecosystem and asset values derived from McPherson et al. 2017 research).

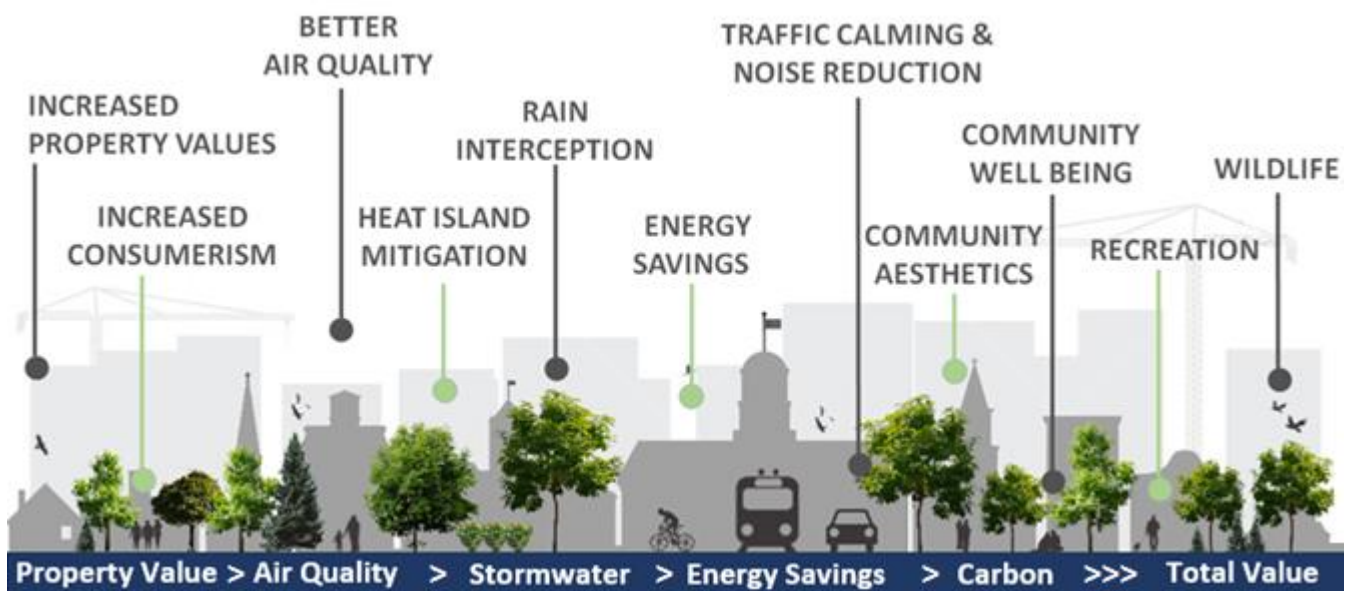
Public trees: \$1.2 million total annual ecosystem value

\$81 in annual benefits per tree

\$26 in annual benefits per capita

\$1 : \$3.38 annual cost-benefit ratio

\$213 million Citywide urban forest benefits and value



Challenges Facing Los Banos' Urban Forest

The City of Los Banos has a unique urban form and character. Its size, layout, and development density influence the landscape and has created a charming and livable city. Los Banos' citizens show pride in their city, and their neighborhoods are well cared for. The City's climate is ideal for a wide range of plants and street trees and many of the City's streets and landscapes exhibit a unique and rich planting character. Some of the City's historic neighborhoods and its newest developments have a rich urban forest that illustrates Los Banos' potential to be an even greater tree-filled city guided by a strategic plan— a city that can be truly 'ahead of the curve'.

Urban trees can play a significant role in making cities resilient to weather and climate extremes, and in protecting human and ecosystem health and safety. To do so, trees must be consciously selected, planted, and managed as the central component of an urban forest where individual trees are maintained as part of a greater system with the purpose of improving the urban environment and enhancing the benefits of that ecosystem.

Sustainable Management – Addressing Deferred Street Tree Maintenance

The public street trees throughout Los Banos are primarily the responsibility of the City to maintain. Primarily, these trees are addressed based on the public service requests and call-ins received, resulting in a reactive public tree management approach overall.

One measure of sustainable management is the number of years it takes to prune all public trees, also referred to as the pruning cycle. Currently, the City does not maintain street trees on a programmed cycle, only trees within service request or otherwise identified as a priority. A pruning cycle of five years is recommended for communities in the region. This would require the City to collectively prune approximately 2,400 trees annually— up 400 trees per year from the current average. It should be noted, the City currently maintains approximately 2,000 trees each year and pruning more trees in a given year would add costs in terms of staffing, resources, and time.

Routine maintenance, often referred to as grid pruning or programmed pruning, is the most cost effective near- and long-term pruning management strategy for city tree maintenance since every tree within a given grid, priority area, or zone is pruned each pruning cycle. When each tree is inspected and pruned on a regular cycle, both short- and long-term maintenance costs are reduced due to efficiencies in mobilization, scheduling, and service tracking; both preventative and reactive maintenance are performed in one operation and the need for future priority pruning is minimized. Conversely, street trees that are not pruned on a regular cycle, or their maintenance is deferred, results in the opposite effect— as the interval between pruning increases the tree health declines and the maintenance costs increase.

The impact of deferred maintenance is felt by the City, the public, and the urban forest itself. Prolonged maintenance deferral will reduce the overall health of the urban forest, reduce the associated benefits and services provided by trees, and increase public safety risks. The condition of the inventoried public tree population represents the effects of this deferment, with nearly half the public tree population rated as fair in condition. Compounding the issue, Public Works has limited resources to address issues such as tree clearance and sidewalk upheaval.

Risk Tree Management

One of the unique challenges of managing Los Banos' urban forest stems in part from the nature of trees in the San Joaquin Valley— certain trees can grow exceptionally tall. These larger species of trees can be more prone to branch failures than other tree species. In addition to large tree size, the prevalence of particular species in the urban forest population presents more instances for possible damages and consequences as a result of the failure of a tree or tree part. Certain species require more frequent pruning when they exist in public spaces. Other species of trees are known to be prone to decay. The combination of large and maintenance-demanding public trees, coupled with the effects of deferred maintenance, requires thoughtful management that is consistent and transparent and adheres to industry standards and best practices.

The 2021 tree inventory provides the data and guidance to effectively manage risk and this Plan provides the framework for increasing funding and resources to address the concerns.

Tree Related Policies and Regulations

Trees can be found mentioned in several City codes, regulations, and plans. Regulations to guide tree planting and maintenance are limited and do not sufficiently address the concerns of many City staff and the public. Though significant improvements have been made, there still exist some inconsistencies or gaps in the policies and regulations for Los Banos' trees. These are detailed within the Plan and addressed in the Plan's strategies and actions.

Tree Protection during Construction

Currently, Best Management Practices (BMPs) for protecting trees on construction sites are inconsistently applied and the monitoring of tree protection zones (TPZ) is insufficient.

Alternative Solutions to Tree and Sidewalk Conflicts

The City habitually applies linear streetscape design which limits retrofits and alternative solutions to tree and sidewalk conflicts. Los Banos has made some use of flexible design, however, these types of designs could be considered more often. Flexible design would allow more sidewalks to meander around trees, parcels could be developed around healthy existing trees, and additional right-of-way easements/frontages could be obtained rather than blindly applying the 'safe streets' or ADA retrofit designs. Through the planning effort to develop this Plan, recommendations for updating City Code and regulations were provided along with the guidance for applying alternative solutions.

Limited Resources to Address Climate Change Impacts

Cities around the world, and specifically in the San Joaquin Valley, face dramatically intensifying extreme weather and climate impacts including sea level rise, drought, long-term water shortages, flooding, and extreme heat.

In many instances, these impacts are already exceeding the designed capacity of city infrastructure to protect the health and safety of residents, businesses, and neighborhoods, which in turn threatens the fiscal viability of the City. Urban trees can play a significant role in making Los Banos resilient to weather and climate extremes, and in protecting human and ecosystem health and safety. To do so, trees must be consciously selected, planted, and managed as the central component of an urban forest where individual trees are managed as part of a greater system with the purpose of improving the urban environment and enhancing benefits.

Strategic Tree Planting

The ability of Los Banos' urban trees and urban forests to achieve desired benefits is drastically limited due to poor maintenance and management stemming from insufficient municipal budgets, lacking urban forest management systems and programs, limited training of tree care professionals, and a lack of enforcement of tree-management best practices to support tree health. Consequently, long-term tree health is compromised in Los Banos, resulting in limiting the beneficial functions of trees,

leaving trees more susceptible to pests and disease, and leading to premature tree death. Urban trees face multiple challenges to surviving and thriving. Trees that die years prematurely will not create the root systems and canopies needed to reach their benefit potential and maximize their return on investment.

Los Banos' recent urban forestry projects funded by CAL FIRE Urban and Community Forestry Program are crucial efforts for building a more sustainable community and working toward carbon neutrality. Tree planting is one of the few tangible actions the City can directly take to address non-source specific pollution in Los Banos and the inventory and management plan will support strategic planning for continued plantings resulting in long-lasting benefits.

Planting trees in Los Banos should be strategically planned to address environmental justice, equity, access, and levels of service for all neighborhoods. Tree plantings can address canopy cover inequities, intensive tree management can reduce risks and prolong the associated benefits of trees, and diverse outreach approaches and unique programs can enhance urban forest stewardship in the community.

Planting and maintaining an urban forest that exists in concert with other green infrastructure must include management by trained individuals, the use of tree inventory data, an understanding of baseline conditions and forecasted environmental changes, collaboration among departments to mainstream urban forest management, a community with a shared vision for the urban forest, tree canopy goals and priority planting areas, and a roadmap for management provided in the Plan.

Addressing the Challenges

These issues and challenges recognized in Los Banos are exacerbated in disadvantaged areas of communities with limited resources. The City needs this comprehensive plan to preserve and expand the urban forest which results in an equitable distribution of tree canopy, associated benefits, and urban forestry opportunities. The City, its partners, and the community support a plan for the urban forest that sustains the resource and provides benefits to all who live, work, and recreate in the City.

To address these challenges, the Urban Forest Management Plan offers Los Banos an opportunity to study, evaluate, and plan for improving urban forest management toward the goal of supporting human and ecosystem health and well-being. The urgency of protecting the urban forest has risen sharply as drought, pests, disease, climate impacts and budget cuts lead to rapidly rising tree mortality. To address and reverse tree die-off and the loss of ecosystem benefits, Los Banos needs a robust system of professional management of public trees and improved support of resident engagement in the care and expansion of the urban forest, both public and private.

When making improvements to the urban forest, efforts should be prioritized to improve environmental justice, equity, access, and levels of service for underserved and vulnerable areas. These considerations may include additional tree plantings for more equitable distribution of urban forest cover and benefits, intensive tree management, diverse outreach approaches, and unique stewardship programs.

Los Banos' Urban Forest Management Plan is a crucial planning effort to build a more sustainable resource and a healthy community, among other core urban forest management elements. This strategic plan for Los Banos' urban forest aims to help guide how the City might think about strengthening City Code, policies, ordinances, standards, practices, and procedures; analyzes staffing structures and authority; identifies opportunities for sustained and diversified funding; provides guidance for routine and systematic inventories and assessments; identifies tree maintenance efficiencies and planting/canopy goals and priorities; addresses storm, disaster, and risk management needs; and strengthens community outreach, education, and engagement.

The urban forests in the San Joaquin Valley face many challenges. This Plan offers Los Banos an opportunity to study, evaluate and plan for improving urban forest management toward the goal of supporting human and ecosystem health and well-being. Los Banos needs a robust system of professional management and public access to support resident engagement in care and expansion of the urban forest.

PLANNING PROCESS

This Urban Forest Management Plan is the City's first of its kind. This Plan will set the stage for future actions and efforts that will ensure the long-term health, management, and success of the trees that comprise the urban forest.

PLANNING APPROACH

The purpose of the 40-year Urban Forest Management Plan is to answer the fundamental components of adaptive management: what do we have, what do we want, how do we get what we want, and how are we doing. Developing the Plan required input from City staff, stakeholders, residents, data sources, thoughtful analysis, a coordinated vision, and time.

What do we have?

The first step of the process is to complete a baseline assessment of the urban forest, the resources that manage it, and the people that influence and benefit from it. The elements completed in the planning process provide the foundation for setting goals and measuring progress.

What do we want?

The Plan is shaped by knowing what the urban forest needs, the resources required to manage it, and what the community wants. This was informed by public engagement through websites and social media, public surveys, presentations, staff interviews, and development of the urban forest vision and supporting goals.

How are we doing?

The City needs to continually monitor progress towards the vision and goals. The Urban Forest Management Plan includes guidance for implementing actions. The planning approach for this Plan provides the framework for continual monitoring and evaluation of efforts using the U.S. Forest Service's Urban Forest Audit System. Updates to this audit will inform any necessary changes to strategies in an adaptive management approach.

How to get what we want?

The goal, strategy, and action framework lay out the roadmap to achieve a shared vision that supports the needs of all members of the community. Recommended actions and the associated targets are strategic, measurable, attainable, realistic, and time-bound (SMART) and have been developed through extensive research, data analyses, stakeholder consultations, community engagement, benchmarking research, and gap analyses during the planning process.

PUBLIC PARTICIPATION

The public engagement sessions consisted of an online survey (43 responses), virtual meetings with the Tree Commission, news articles, social media posts, City website content, and email updates through the City's listservs.

Feedback received through these efforts was used to produce a draft Plan with a shared vision for the urban forest. The team then shared draft goals, strategies, and actions with City staff, key stakeholders, and the citizens of Los Banos to ensure initial input was accurately captured. In February of 2022, the draft Plan was presented to the City's Tree Commission and the draft was updated based on the feedback received. By November 2022, the final Plan was prepared for the presentation to City Council and on November 2, 2022, this Urban Forest Management Plan was adopted.

Within the final Plan, action priorities were developed to provide technical guidance for City departments that are relevant, accessible, and tangible to the community.

STAFF AND STAKEHOLDER PARTICIPATION

When stakeholder engagement is done effectively, it improves communication channels between parties, creates and maintains support for the Plan, gathers information for the urban forestry programs, reduces the potential for conflict or other issues, and enhances the reputation of the program and ultimately, the Plan. Effective communication with stakeholders not only ensures they are aware of the objectives and finer points of a plan, it also serves to help the program understand those who will be affected by the plan, how they will access and interpret information from the program, allows the program to anticipate how stakeholders will respond, and builds a support system within city departments to collectively implement the plan.

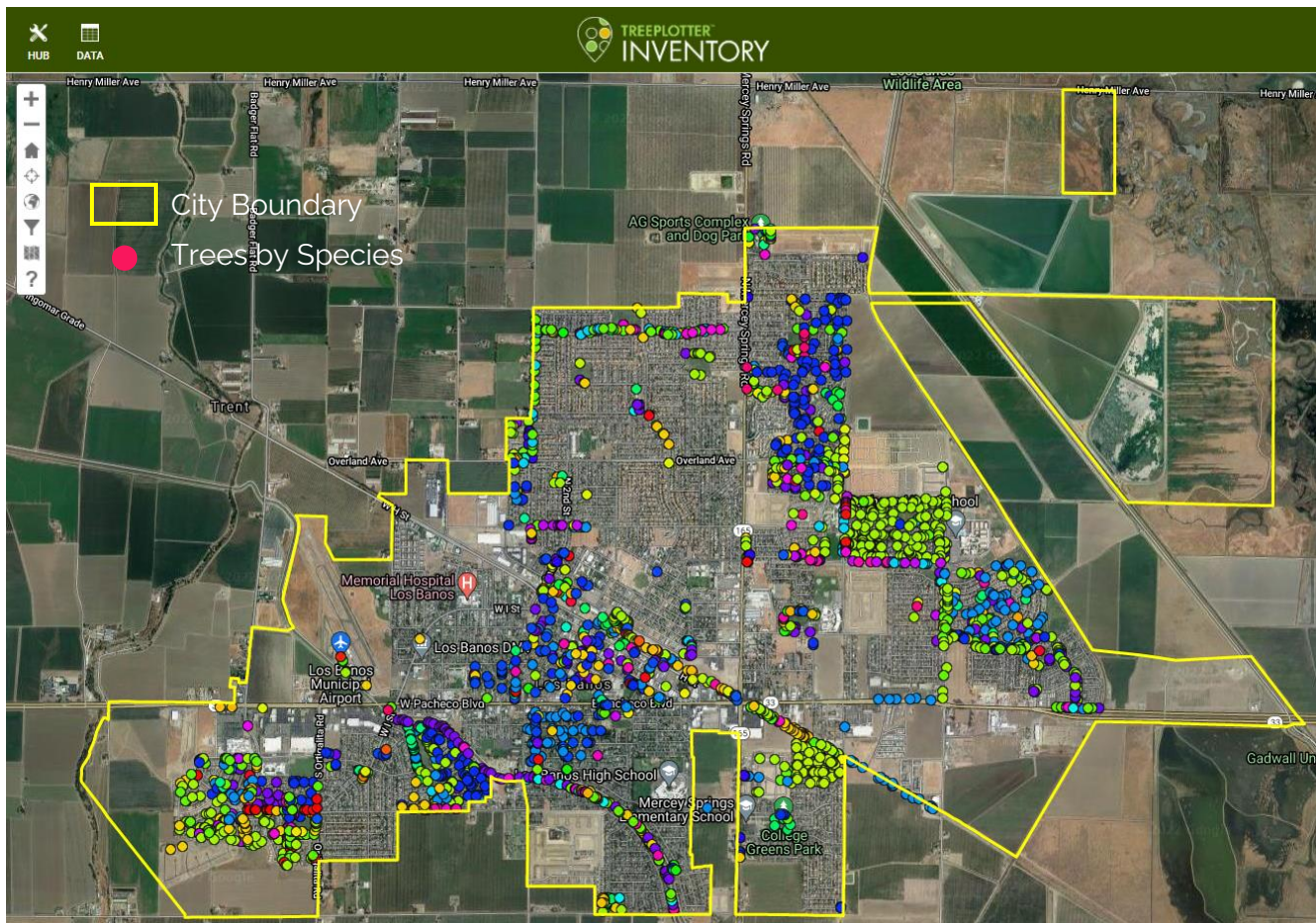
Prior to the development of Los Banos' Urban Forest Management Plan, the City's Parks and Recreation Operations Manager in the Parks and Recreation Division of Public Works along with supporting staff worked with City departments, partners, and the community to identify the needs of the urban forest. To inform the Plan, a total of 23 City staff or commission members were invited to a series of consultations. Staff participants represented the Public Works and the Community & Economic Development departments and representatives from the Tree Commission and Parks and Recreation Commission participated to provide a comprehensive understanding of urban forest management workflows, strengths, challenges, and shared priorities. In addition, traditional and non-conventional stakeholder engagement occurred throughout the planning process. This process enabled the development of strategies that are in alignment with existing workflows and operations as well as the strategies to improve efficiencies and achieve common goals.

KEY FINDINGS

The planning process uncovered various challenges and opportunities that have been addressed with the development of urban forestry goals, strategies, and recommendations in this Plan. Using the framework of A Model of Urban Forest Sustainability (Clark, 1997) the following key findings include:

STATE OF THE URBAN FOREST

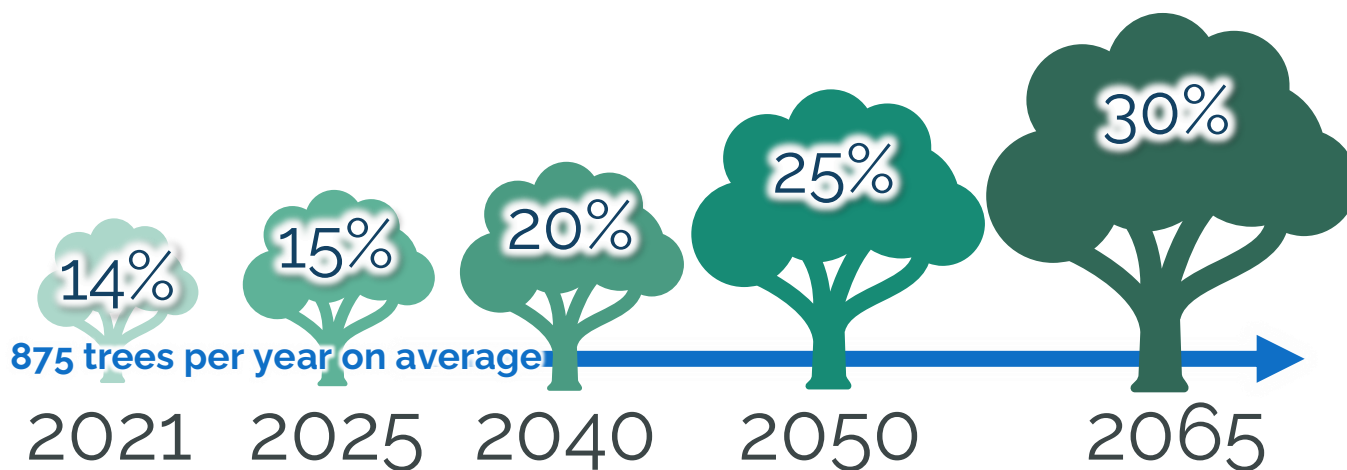
- ❖ 12,333 public trees consisting of 7,997 street trees 3,393 park trees, and 943 vacant/other trees.
- ❖ 13.6 percent urban tree canopy cover Citywide in 2021, up from 11.4 percent in 2015.
- ❖ 168 unique public tree species, Chinese pistache is the most common (20 percent).
- ❖ The top ten most common public tree species comprise 71 percent of the population.
- ❖ Of the ten most common public trees, Chinese pistache, common crapemyrtle, shiny xylosma, and California white oak / Valley oak are healthier than the overall average for the population.
- ❖ A total of 4,885 possible planting sites in public areas (parks and rights-of-way) were inventoried in 2021. About 50 percent of these sites are located along street rights-of-way.
- ❖ The Citywide urban forest provides an annual estimated benefit of \$729,852 by improving air quality, providing carbon storage and sequestration, and reducing stormwater volumes (excludes property values, energy savings, health savings, among others).
- ❖ Public trees provide over \$1.2 million in benefits and services annually equating to an annual average of \$99 per tree, and \$32 per capita.
- ❖ For every \$1 spent on public trees, there is a \$3.38 return on investment.



THE URBAN FORESTRY PROGRAM

- ❖ The urban forest is managed by the City's Parks and Recreation Division within the Public Works Department.
- ❖ City staff managing the urban forest amount to 10 full-time employee equivalents (FTEs) across multiple divisions.
- ❖ Most public trees are 12 inches in diameter or less (78 percent).
- ❖ The majority (42 percent) of public trees are in fair condition and 37 percent are in good condition (2021).
- ❖ The most common maintenance need for public trees is structural pruning (24 percent) and crown cleaning (14 percent)— maintenance activities commonly addressed through programmed pruning.
- ❖ The 2021 budget compared to the public tree population is \$9 per tree and there is one public tree for every three residents of Los Banos (2021).
- ❖ Los Banos' Urban Forest Audit Score based on U.S. Forest Service criteria is 60 percent (2021).
- ❖ Challenges and shared priorities among City staff and commission members include sustainable urban forest management, program efficiencies and resources, risk tree management, community outreach and engagement, and tree policies, regulation, and enforcement.
- ❖ The recommended long-term tree canopy cover goal is 30 percent by the year 2065 (44 years) requiring 875 trees to be planted per year on average (38,500 total trees) of which 50 percent should be City-led (440 trees per year on average). Achieving the canopy goal will stock 23 percent of the total available planting space (herbaceous and impervious) Citywide and add 1,111 new acres of canopy.
- ❖ Incremental short-term canopy goals include 15 percent by 2025 (3,502 total trees), 20 percent by 2040 (16,635 total trees), and 25 percent by 2050 (25,391 total trees).
- ❖ Future benefits and services forecasted for an urban forest that comprises 30 percent of the City in 44 years amounts to \$437,000 annually or \$10,000 added per year.

Los Banos Urban Tree Canopy Cover Goals



COMMUNITY VIEWPOINTS AND PRIORITIES

View the [Engagement to Inform the Plan](#) section for additional information and background.

- ❖ Out of 43 total survey responses, most respondents live in District 4 (35 percent) and District 2 (30 percent) of Los Banos (95 percent)
- ❖ Most were white non-Hispanics (52 percent) or Hispanic or Latino (38 percent).
- ❖ Respondents were primarily in the ages of 35-44 (41 percent)
- ❖ Most respondents have participated in some type of stewardship activity such as watering a tree (88 percent), harvesting fruit from a tree (77 percent), or planting a tree (72 percent).
- ❖ Respondents feel trees impact their life (98 percent). The greatest benefits provided by trees include bringing joy and shade and reducing air pollution and improving air quality (77 percent) followed by improved physical and mental health (74 percent) and mitigating the effects of climate change (74 percent).
- ❖ The survey respondents view the most urgent tree-related need in their neighborhood is tree planting (58 percent) and maintenance (19 percent) and view the primary issue caused by trees is the sidewalk and pavement cracking (67 percent) and roots damaging underground utilities (51 percent).
- ❖ Respondents feel there should be drastically more tree canopy cover (67 percent) since the canopy health has declined (28 percent). They support a realistic tree canopy cover goal (86 percent) with plantings focused in parks (84 percent), rights-of-way (70 percent), and schools (67 percent).
- ❖ The respondents believe the street trees in the public right-of-way are owned by the City (52 percent) and are managed by the Public Works Parks and Recreation Division (50 percent) and feel the current care and management is fair (46 percent).
- ❖ 95 percent of respondents support ordinances that mandate planting and protection during development and feel the street and park trees should be proactively managed i.e., program pruning (95 percent).
- ❖ With additional funding, the respondents primarily support more local green jobs and job training (79 percent), faster City response time to maintain trees (74 percent), and tree planting programs/giveaways (67 percent).



PLAN FRAMEWORK

URBAN FOREST MANAGEMENT PLAN FRAMEWORK

URBAN FOREST VISION

Represents City principles and the values and priorities of a diverse community.



GUIDING PRINCIPLES

Further refines the vision statement based on City and resident values and priorities.



URBAN FOREST ANALYSIS

An examination of the

- Urban Forest Resource
- Resources for Management
- Institutional Framework
- Community Structure



GOALS

The desired outcomes of achieving the Plan's vision:

- Management
- Sustainability
- Levels of Service
- Preservation
- Engagement



Strategies and Recommendations



IMPLEMENTATION AND MONITORING

The guidance to achieve the urban forest vision with:

- Priority Actions
- Measurable Targets
- Resource Needs



The primary framework of this Plan supplements the vision statement in Los Banos' General Plan— "vibrant, safe, and attractive city with community character and an improved economy, new job opportunities, affordable housing, improved public services and facilities, an excellent circulation system, and a superb quality of life"— and represents the diverse values and priorities unique to each community, resident, and property owner within the City. The Plan's framework begins with the urban forest vision statement that reflects the values of these stakeholders and identifies the optimal state of Los Banos' trees over the 40-year planning horizon. To achieve the vision of a healthy, sustainable, and equitable urban forest, guiding principles are defined and supported by goals, strategies, and recommended actions.

LOS BANOS URBAN FOREST VISION

Our City's trees, forests, and other natural resources are recognized as integral to sustaining life and health for all City residents. A healthy, thriving, and sustainable urban forest is a community priority, to be thoughtfully managed and cared for by partnerships between the City and its residents to maximize public safety and benefits that include a thriving ecosystem, vibrant economy, and livable communities shared by all who live, work, and play in Los Banos.

GUIDING PRINCIPLES

Program Efficiencies and Fair Policies

Long-lasting improvements to the urban forest are achieved with improved levels of service and sound policies, protocols, and standards.

Health and Sustainability The urban forest grows sustainably through Best Management Practices and shared commitments.

Preservation and Resiliency Continuous process of long-range planning and management

enhances and protects the urban forest for future generations.

Community Engagement The growth and management of the urban forest is informed by education and engagement that is equitable, inclusive, diverse, and transparent.

Green Asset Management Trees are vital components of the community to be thoughtfully managed.

Using the foundation of sound principles supporting a vision that captures the values of all stakeholders, the City will conduct urban forest management activities and services that recognize trees as not only aesthetic enhancements to communities but also as essential to human health and well-being. Management of the trees in Los Banos will be in recognition of the urban forest serving as the backbone of the urban ecosystem and an essential part of the City's green infrastructure. Encouraging the health and growth of the urban forest will follow scientifically established best management practices with long-lasting impacts enabled through robust and fair urban forest policies that reduce its vulnerability to known risks and future threats including the experienced and anticipated effects of climate change. These guiding principles will ensure management is engaged in a continuous process of long-range planning for the growth and maintenance of the urban forest and supported by the community. The support and a shared commitment to urban forest sustainability will be attained through consistent and inclusive community education and engagement.



Image Description 3. Source - City of Los Banos, CA

A CALL TO ACTION

The urban forest is an important green infrastructure asset for neighborhoods across Los Banos. However, the capacity of urban forests to support healthy and resilient communities is constrained and challenged by stressors such as climate change impacts, urban development pressures, altered soils, invasive species, and resource shortages. Now more than ever there is a critical need to sustain large, healthy, genetically appropriate trees on public and private land through long-term planning and budgeting, inclusive decision-making, and strategic policy development that supports adaptive management. Thus, comprehensive urban forest support must extend well beyond tree planting initiatives.

Management of Los Banos' urban forest should be a shared priority among its citizens, community groups, institutions, and City departments. All of these groups have important roles to play. Successful management frameworks must recognize that the urban forest is part of a complex system that includes the built environment and is influenced by human activities and policies and practices that shape Los Banos. Furthermore, decision-making must be made in the context of future uncertainty associated with climate change. With this understanding, along with the input from staff and residents of Los Banos, the following long-term goals for the City's urban forest were developed:

PRIMARY GOALS FOR LOS BANOS' URBAN FOREST

Tree Management Policy

Urban forest policies are the foundation for preserving the environmental benefits, management, and the character of Los Banos' urban forest.

Capacity, Training, and Authority

Los Banos has the capacity and expertise to provide optimal levels of service for sound urban forest management.

Budget and Funding

City resources enable comprehensive urban forest management for the preservation and enhancement of tree benefits.

Assessments and Planning

A thorough understanding of the urban forest ensures data-driven decisions, sustainable and comprehensive planning, and amplified tree benefits.

Community Engagement

Sustainable urban forest management and equity is achieved through a partnership with the City and its residents resulting in improved well-being, human health, and local economies.

Green Asset Management

Los Banos proactively manages the public trees, continues to grow and expand a healthy canopy, effectively mitigates storm damage, maintains public safety, and optimizes urban forest benefits.



Image Description 4. Source - City of Los Banos, CA



URBAN FOREST MANAGEMENT PLAN

CITY OF
LOS BANOS, CA



City of
Los Banos
At the Crossroads of California

NOVEMBER 2022



 **PlanITGeo**
developers of TreePlotter

EXECUTIVE SUMMARY

An aerial photograph of a suburban neighborhood. In the foreground, there is a large green lawn with several young trees planted in individual mulch pits. A paved path leads from the lawn towards a playground. The playground features a large, colorful structure with slides and climbing areas, set on a reddish-brown rubber safety mat. To the left of the main play structure is a smaller, blue and green play area. In the background, a dense residential area with houses and trees is visible. A water tower stands out against the sky in the distance. The sky is blue with some light clouds.

ANALYSIS OF LOS BANOS' URBAN FOREST

ANALYSIS OF LOS BANOS' URBAN FOREST

URBAN FOREST RESOURCE

Overview

The City of Los Banos is approximately 10 square miles in size and is located on the west side of the San Joaquin Valley. Across the City, trees along streets, in parks, yards, and natural areas constitute a valuable urban and community forest. This resource is a critical element of the region's green infrastructure, contributing to environmental quality, public health, water supply, local economies, and aesthetics.

Methods

A comprehensive resource analysis was completed to inform the vision, guiding principles, and goals. This included Citywide inventories and evaluations of public trees, a top-down look and urban tree canopy cover, and a review of possible future planting sites in public areas to support canopy goals. The datasets included a 2021 inventory of 17,507 data sites of which 12,333 points consist of public trees and 4,885 points consist of potential public tree planting sites across the City. The remaining 289 data sites are made up of stumps or sites marked where a tree has been removed. In addition to the bottom-up inventory, a top-down look at the urban forest canopy cover was evaluated using a point-based sampling technique with the U.S. Forest Service's i-Tree Canopy software. Also, to inform the urban forest resource analysis, historical planting records and recent maintenance activities were examined.

Defining the Urban Forest

The urban forest is comprised of trees across all City landscapes including streetscapes, parks and open space, trail and waterway corridors, commercial and residential properties, among others. While the Plan primarily addresses public trees, all trees across ownership types and the care of these trees contribute to overall urban forest health, sustainability, and associated benefits. To present an analysis of the urban forest, tree populations in these landscapes are characterized into the type of setting and land ownership type (public or private) and the responsibility for maintenance (City, property owner, or other).

Public trees are comprised of trees along streetscapes, in medians, backup lots, alleys, parks, open space, and natural areas on City-owned land. The City is primarily responsible for the maintenance of trees along streets and in medians, backup lots, alleys, parks, open space, and natural areas. The adjacent property owner to street trees may provide watering services and utilize the City's tree permit system to request planting, maintenance, or removal.

Figure 1. The extent and various landscapes comprising Los Banos' urban forest

THE URBAN FOREST EXTENT AND LANDSCAPES



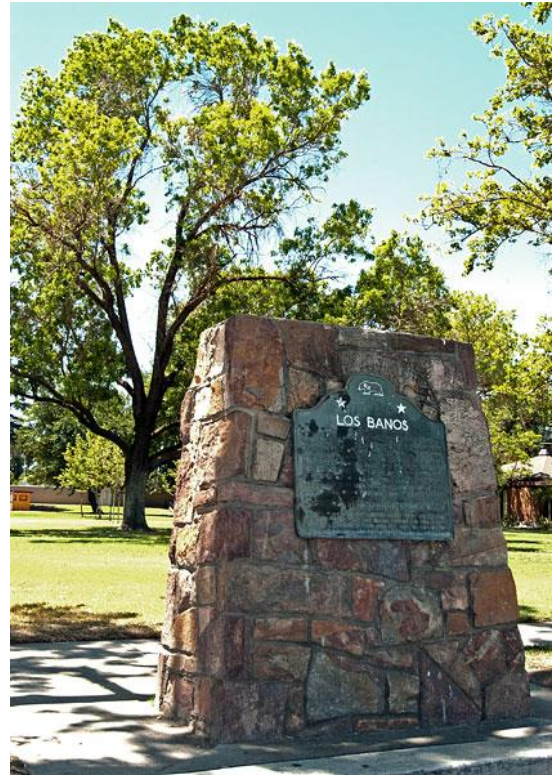
Figure 2. Maintenance responsibility of trees comprising Los Banos' urban forest



History of Los Banos' Settlement and Landscape

Los Banos sits on the southwestern edge of extensive national and state game refuges. Wetlands that support waterfowl and other wildlife habitat exist along a stretch of the San Joaquin River that still carries water and the Grassland Ecological Area, home to rare California grasslands habitat. Nearby wildlife refuges attract fishers, hunters, birdwatchers and other recreational users. The Mediterranean climate in Los Banos brings cool winters and hot summers with most of the precipitation falling in the winter months.

In the early 1800s, a Spanish Calvary from the Presidio of San Francisco were given orders from the Spanish Governor of California to explore the San Joaquin Valley. As they approached the Pacheco Pass, they noted the great wealth of natural life and undisturbed landscapes. Around the same time, missionaries stationed at Mission San Juan Bautista discovered pools of water in the rocks at the summit of the mountains in a creek bed that flowed down into the San Joaquin Valley. These baths became known as "El Arroyo de Los Banos del Padres Arroyo" by local ranchers, recognizing the missionary that visited. By mid-1850, Henry Miller came to the Valley and began his land acquisitions and cattle empire. Much of his land acquisitions and way of life helped to shape what Los Banos is today. With Miller's irrigation company, he became credited as the first to introduce cotton, rice, and alfalfa crops to the Valley. In 1889 the town of Los Banos was established and Miller is credited as the founder. At this time, he planted hundreds of shade trees and improved the streets. In addition to landscape, infrastructure, and many of the downtown buildings that stand today, Miller sought to extend the railroad through the West Side which eventually determined the present day location of Los Banos. By the end of the 19th century, the town grew into the agricultural industry it is known for and in 1907, the City of Los Banos was incorporated. Today, Los Banos is famous for its agricultural products such as melons, almonds, walnuts, apricots, cotton, tomatoes, and dairy products, its proximity to many great wildlife refuges and natural wonders, and its parks system (Source: City of Los Banos 2020-21 Adopted Budget).



Historical land marker (Source: City of Los Banos)



Historical photo of the Bath House taken in 1910 (left) and downtown Los Banos' May Day Parade in 1915 (right)
Source: Milliken Museum and City of Los Banos

Urban Forest Status: Urban Tree Canopy

The Citywide urban forest is measured with point-based sampling using aerial imagery in the U.S. Forest Service's i-Tree Canopy¹ online software application. The primary goal of this type of assessment is to identify a baseline and benchmark of the City's tree canopy and analyze the land cover class across a range of geographic boundaries. This analysis provides a baseline assessment of the urban forest resource from which Plan implementation progress and canopy goals can be measured.

Based on the 2021 assessment, 14 percent of the City's total area is covered by the canopy of trees when viewed from above. Similarly, 14 percent of the area is covered by impervious area that is theoretically feasible for planting trees. This area consists of primarily parking lot surfaces. The greatest coverage of the City area is the grass or soil land cover class (45 percent) where it is more feasible to plant new trees. Lastly, the unsuitable area consisting of buildings, roads, water, or agriculture makes up 28 percent of the total.

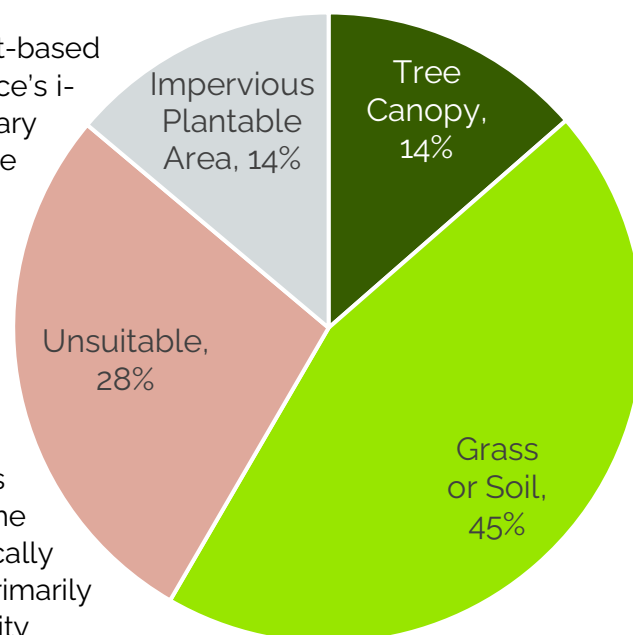


Figure 3. Summary of the 2021 tree canopy assessment

The tree canopy assessment was further analyzed to identify areas with more or less tree cover and areas where there are potential opportunities for more canopy to exist. The charts below summarize these metrics by City Council District and Census Block Groups.

2015 to 2021 Land Cover Comparison

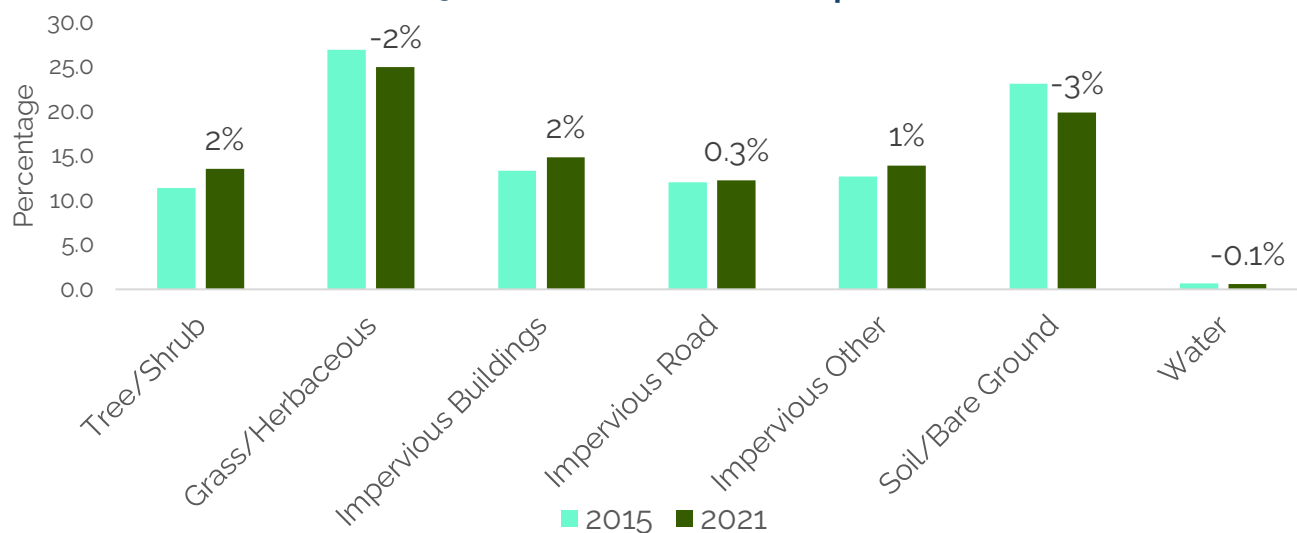


Figure 4. Comparison of land cover change between 2015 and 2021 and the change in percentage between the two time periods

The figure above summarizes the canopy cover change analysis completed as part of the i-Tree study. Between 2015 and 2021, tree canopy increased by 2 percent as well as building surface area (2 percent) and parking lots (1 percent). Conversely, available planting space reduced with grass land cover decreasing by 2 percent and soil/bare ground by 3 percent. A significant finding from this change analysis is the percent change of tree canopy cover and building surfaces with 19 percent and 12 percent respectively.

¹ i-Tree software developed by the U.S. Forest Service and partners, www.itreetools.org

Tree canopy cover is the percentage of a site covered by the canopies of trees. Many communities are adopting canopy cover goals to maintain and improve forest cover. Advances in technology and geographic information systems (GIS) make it practical to measure canopy cover on a periodic basis.

Tree canopy cover has become a popular metric for several reasons. It is relatively easy to measure and less costly than field sampling. It is comparable across a city and among cities. The size of the area measured does not matter. The canopy cover is a good performance measure because it can be applied to detect change across space and time. Finally, canopy cover is an easy-to-understand concept that is useful in communicating to the public.

It is important to recognize the limitations associated with using tree canopy cover as a metric. The canopy cover is two dimensional, only indicating the spread of canopy across land surfaces. It does not provide information on the vertical extent of tree canopy, species composition, age diversity, or health. To describe the structure, function, and value of urban forests fully, data obtained from field sampling are required as well (see the [Public Tree Status](#) section).

Urban Forest Status: Tree Equity

The sun shines across the State of California, but the surface temperature it triggers during a heat wave can vary dramatically by city and by neighborhood. A big reason for the difference across city neighborhoods is shade and the canopy of trees that line some sidewalks but not others. Through analyses and local assessments, it is observed that a city's wealthier areas zoned for single-family homes typically attract more city services, like wide sidewalks and trees. As time progresses, that disparity becomes more than a matter of aesthetics. Research shows shade and water evaporation from trees can lower surrounding air temperatures by six degrees or more. While it is well known that shade from a tree can help keep the ground temperatures cooler, as climate change continues to affect the Bay Area, the stakes are likely to get higher. In certain cases that shade could be the difference between life and death, especially for the sick, elderly, and disabled people. Studies show that just an extra degree during a heat wave increase mortality 2-3 percent (Dr. Feinstein, Sustainability and Resilience Policy Director of the non-profit organization "SPUR", 2021).

Many areas lack adequate tree canopy perhaps due to a series of consecutive policies championed by local authorities, codification through federal actions, and decisions to disinvest in neighborhoods where people of color resided as regions grew rapidly in population and infrastructure. A pattern was created that is replete in the urban studies literature (J. Wolch et al 2005. Parks and Park Funding in Los Angeles: An Equity-Mapping Analysis, *Urban Geography*, 26:1, 4-35).

Other possible factors may include the competition for limited physical space, and the increasing dominance of private real estate in driving development processes and occupying areas with pavement that might otherwise contain green space.

Specifically in Los Banos, trees are generally sparse in socioeconomically disadvantaged areas and more prominent in wealthier neighborhoods. The tree canopy and associated benefits of the urban forest are not equally shared and experienced by all communities. A study comparing tree canopy cover for other California cities found Los Banos to have the third lowest tree canopy cover compared to 10 other cities. Whatever the cause for canopy disparity, the purpose of this tree equity study is to state the baseline conditions, identify priorities, and establish goals for increasing tree canopy cover equitably while overcoming and contending with urban planning and development, the effects of climate change, exotic tree pests and diseases, limited resources, and other factors.

Comparison of Tree Canopy Cover in California Cities

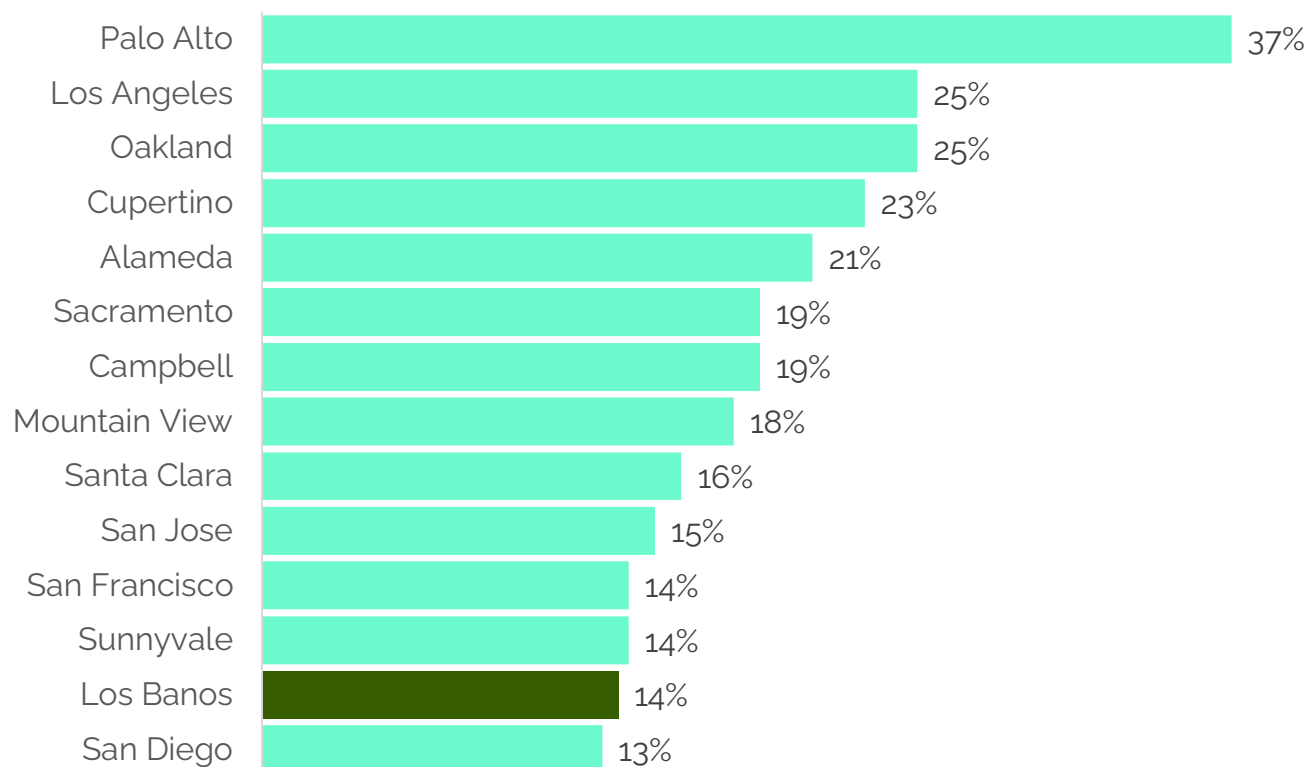


Figure 5. Tree canopy cover comparison for California cities

Tree Canopy Extent and Ownership



Figure 6. Tree canopy shown in green with individual inventoried trees shown as points. Grayed out areas represent publicly-managed spaces (for demonstration only)

As shown in the figure above, the tree canopy cover, responsibility to maintain trees, and space for new tree canopy varies across a city. No one entity is solely responsible for the tree disparity or addressing it, it is shared between a city and its property owners.

Focused on addressing this canopy cover inequity, the American Forests organization created the Tree Equity Score (TES, www.treeequityscore.org) tool that measures tree equity across 150,000 U.S. neighborhoods and 486 municipalities in urban areas. Each community's TES indicates whether there are enough trees for everyone to experience the health, economic, and climate benefits that trees provide. The scores are based on how much tree canopy and surface temperature align with income, employment, race, age, and health factors. A 0- to-100-point system makes it easy to understand how a community is doing. With the knowledge the score provides, Los Banos' community leaders, tree advocates, and residents alike can address climate change and public health through the lens of social equity, attract new resources, factor the scores into technical decisions, guide implementation of the 2022 Urban Forest Management Plan, and track progress toward achieving tree equity. A score of 100 represents tree equity. Currently, the freely available data from American Forests does not include the City of Los Banos though the City may pursue a high-resolution tree canopy and equity assessment using similar criteria, as recommended in the Plan's actions.

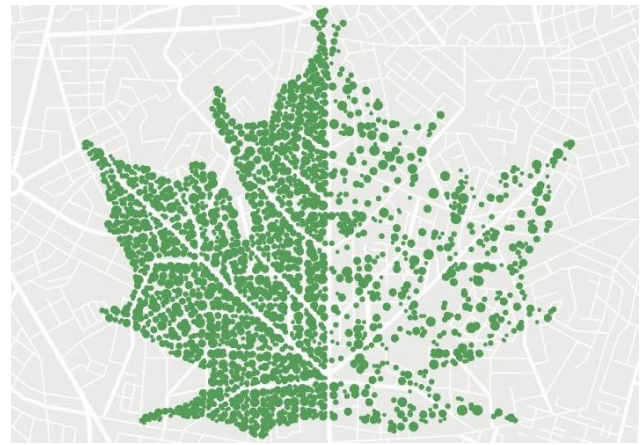


Image Description 5. Illustration of the tree canopy cover disparity often found in cities (Source - American Forests)

Tree Equity Scores of California Cities (TreeEquityScore.org)

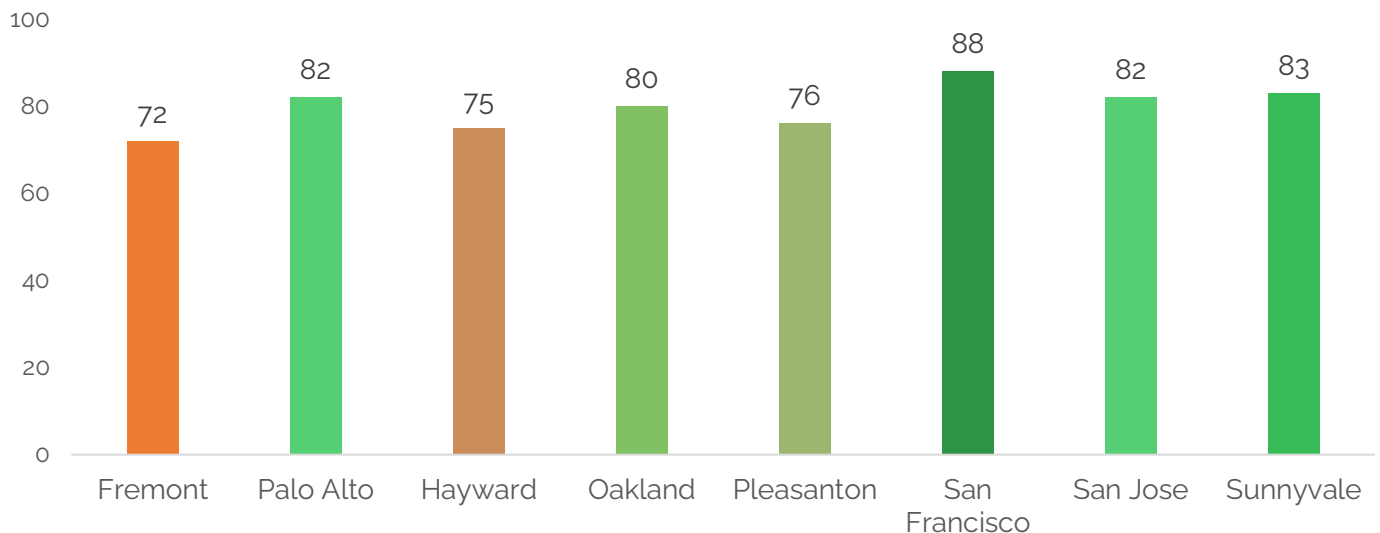


Figure 7. Comparison of Tree Equity Scores (data not available for Los Banos at this time)

Threats to the Urban Forest: Overview

Tree canopy is a valuable component of Los Banos' urban ecosystem. Trees in the City are essential to improving urban life, ecosystems, and human physical and emotional well-being.

Urbanization creates significant changes in land use and land cover, affecting the structure, pattern, and function of ecosystems. Impervious surfaces from development increase surface temperatures which in turn affect the air quality along with increased stormwater runoff and compounded negative effects of climate change. The City of Los Banos and its residents are increasingly concerned about how these changes influence daily life and affect the sustainability of "quality of life" for future generations. Improving air quality, alleviating water shortages, cooling urban heat islands, and reducing stormwater runoff are all challenges facing Los Banos. Implementing the recommendations in the Urban Forest Management Plan will achieve the vision for the urban forest to be sustainable and resilient to the threats and concerns identified in this section.

Potential Threats to Los Banos' Urban Forest



Image Description 6. Overview of the potential threats to the urban forest (clockwise: wildfires [courtesy of Redwood City, CA], development and construction, deferred maintenance, tree pests and diseases, and climate change and urban heat islands)

Threats to the Urban Forest: Climate Change and Urban Heat Islands

As the effects of climate change take hold and areas become more developed with impervious surfaces, the surface temperatures in cities will continue to rise. To measure this and to identify susceptible areas, the Urban Heat Island Index (UHII) was developed by the California Environmental Protection Agency (CalEPA).

The UHII is calculated as a temperature differential over time between an urban census tract and nearby upwind rural reference points at a height of two meters above ground level, where people experience heat. The index is reported in degree-hours per day on a Celsius scale – a measure of heat intensity over time. An increase of one degree over an eight hour period would equal eight degree-hours, as would an increase of two degrees over a four-hour period.

Los Banos' Urban Heat Island Index (CalEPA UHII)

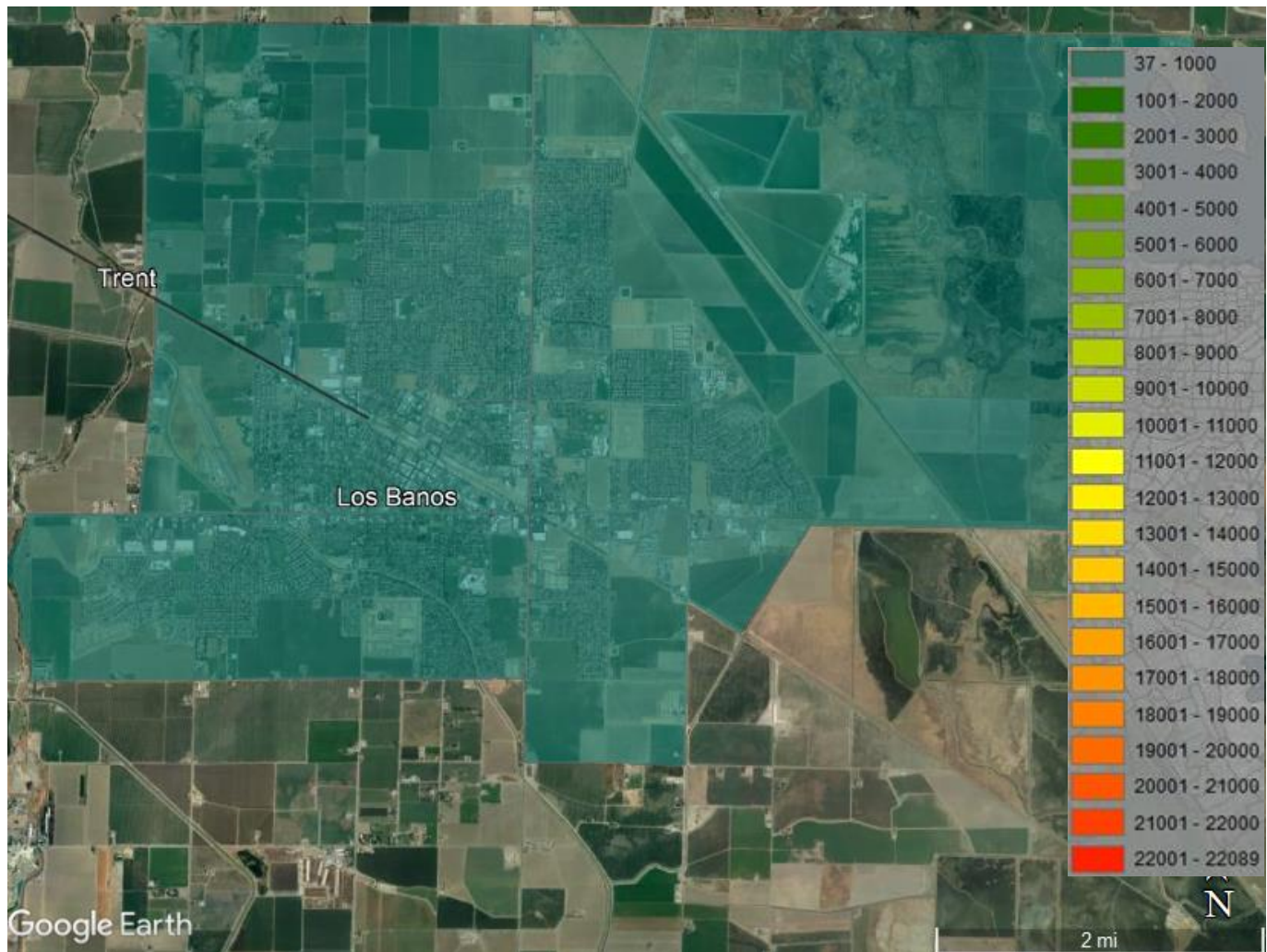


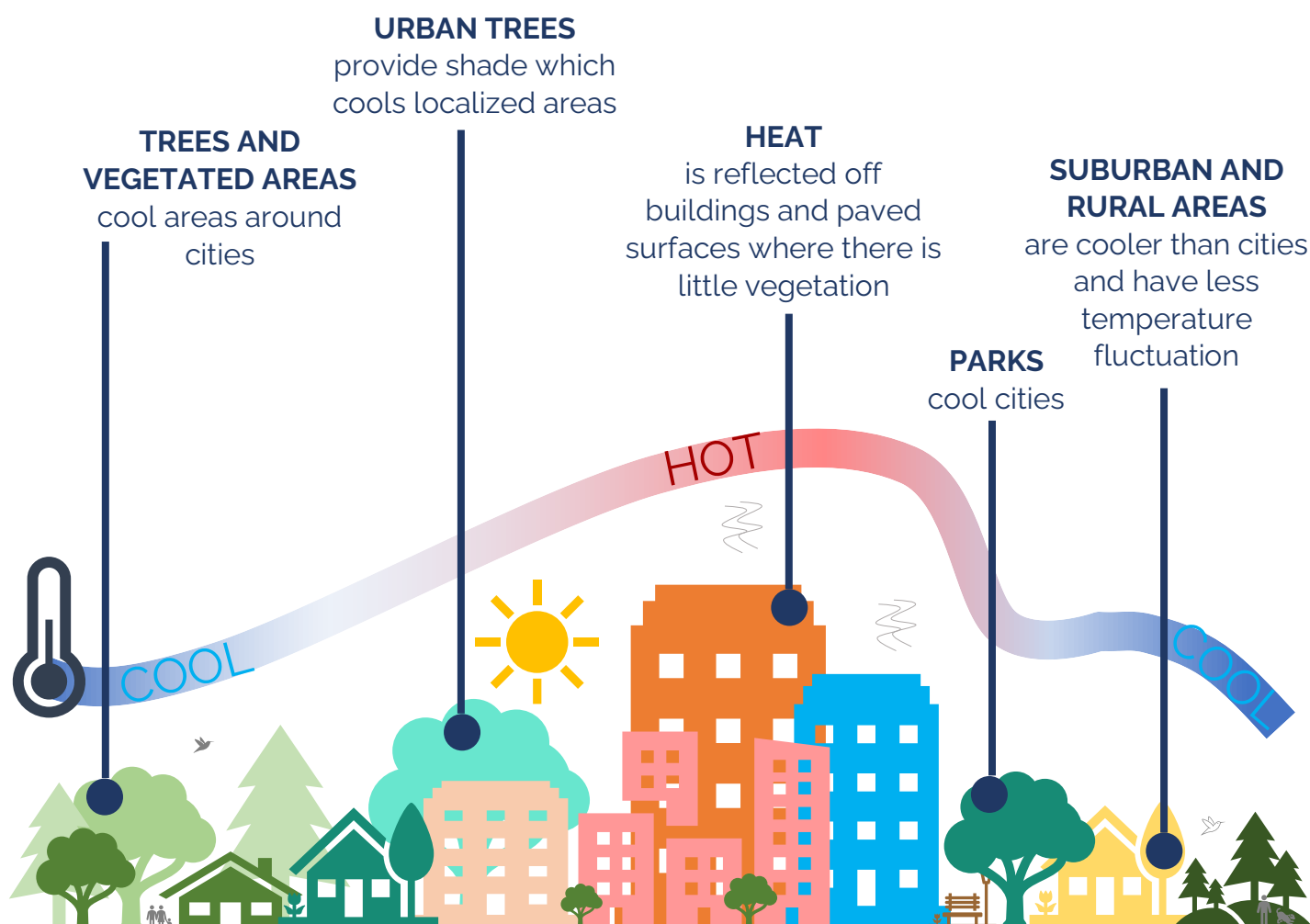
Figure 8. The Urban Heat Island Index for Los Banos (Source - CalEPA)

As shown in the previous map (Figure 8), Los Banos' Census Tracts have relatively higher UHII's compared to the surrounding area though it is currently on the lowest end of the UHII spectrum. Increases in impervious surfaces over time due to development can greatly impact, i.e., increase, the UHII. The UHII for each Census Tract is the total temperature differences every hour for every day over two summers, or 182 days. To determine the average surface temperature increase due to urban heat islands, the UHII is divided by 182 days and recorded as degree-hours per day (Celsius), or a measure of heat intensity over time. To convert to Fahrenheit, the degree-hours are then divided by 24 and multiplied by 1.8. For example, a Census Tract with a UHII of 18,000 would have a 7.4 degrees Fahrenheit temperature increase due to urban heat islands ($[(18,000 \div 182 \text{ days}) \div 24 \text{ hours}] \times 1.8$).

Asphalt and concrete gradually release stored heat at night, which can produce higher temperatures in the evening, creating a phenomenon known as the “urban heat island effect.” Research on the heat island effect indicates that people who live in the hottest parts of a city are more likely to be poor and experience increased health risks and violence. The prevalence of trees can offset the heat island impact by lowering the temperature up to 10 degrees at street level and up to 22 degrees at night (American Forests, 2020). For Los Banos, a city impacted by drought, extreme heat, and poor air quality, trees are critical infrastructure.

The increased temperatures and prolonged heat have a dramatic effect on not only the human population but also the ecology of the area— specifically, trees in urban areas. Urban trees already have an uphill struggle to reach their maximum size and function due to the competition for space, elements of an urban environment, vandalism, pests and diseases, among other factors and stressors. Abnormally high temperatures and prolonged heat can have a negative impact on established trees especially those not acclimated or unable to adjust to these changes. According to the USDA Plant Hardiness Zones, Los Banos is in zone 9a with an average annual minimum winter temperature of 20 to 25 degrees Fahrenheit. Planting the right trees for the current and changing climate along with the adequate care they require will play a vital role in Los Banos' sustainability and human health.

Figure 9. The effects of vegetation and trees on urban heat islands in cities



Threats to the Urban Forest: Climate Change and Wildfires

In California, wildfire management has become more complex, costly, and dangerous as a result of multiple factors, including climate change, legacies of wildfire suppression, and housing growth. One-third of all homes in the U.S. are built in or near wildland vegetation and constitute the wildland–urban interface, or WUI, a complex environment that increases the challenges of wildfire management (Schoennagel, et al. 2017).

Because ignitions are overwhelmingly human-caused, wildfire ignitions are more likely with WUI expansion and even more so as the entire wildfire season lengthens owing to more ignitions and climate change. At the same time, there are more homes to protect in the event of wildfire, resulting in greater wildfire suppression expenditures. In California, 75 percent of buildings destroyed by wildfire across the U.S. are located in the WUI (Kramer, et al. 2019).

Management of trees and forests within the wildland-urban interface are beyond the scope of this Plan but the WUI is recognized as it contributes to the overall urban forest in Los Banos.

Number of Recent Confirmed Fire Reports Compared to the Normal Range

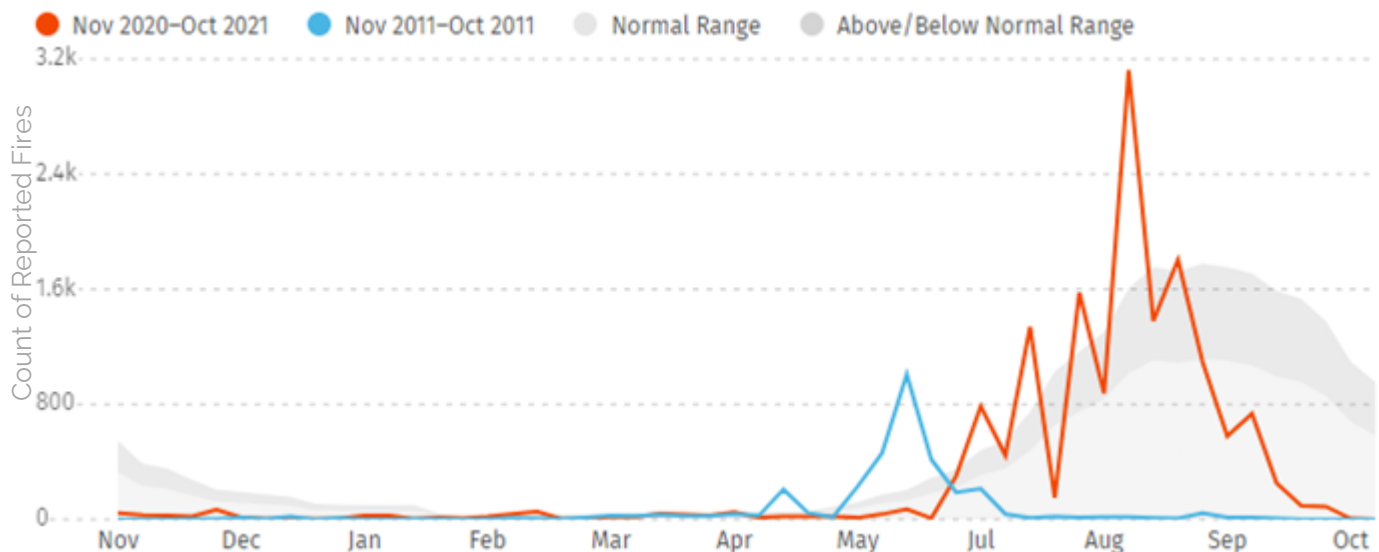


Figure 10. Count of recent confirmed fires in CA compared to the normal range (Global Forest Watch)

In California, the peak fire season typically begins in late July and lasts around 13 weeks. Between the months of November 2020 and October 2021, there were 15,445 high confidence fire alerts reported from the Visible Infrared Imaging Radiometer Suite (VIIRS). Based on comparisons of data dating back to 2012, the count of reported fires is significantly higher than normal (Global Forest Watch).

Specific to Los Banos, the City is surrounded by agricultural land which may potentially be at risk to grassland fires on occasion. The intersection of developed areas and these areas constitutes the wildland-urban interface and are potentially more at risk to wildfires. Developed areas on the brink of agricultural land are more rural in setting and many of the developed areas have large eucalyptus trees. These eucalyptus, gums, or “eucs” as they are often referred, are rather fire-resistant themselves, but their leaf litter adds fuel to the fire and the oils in the tree can heat up, causing a release of a flammable gas which can ignite into fire-spreading sparks.

Amount of Land Area Burned in 2020 Compared to the Normal Range

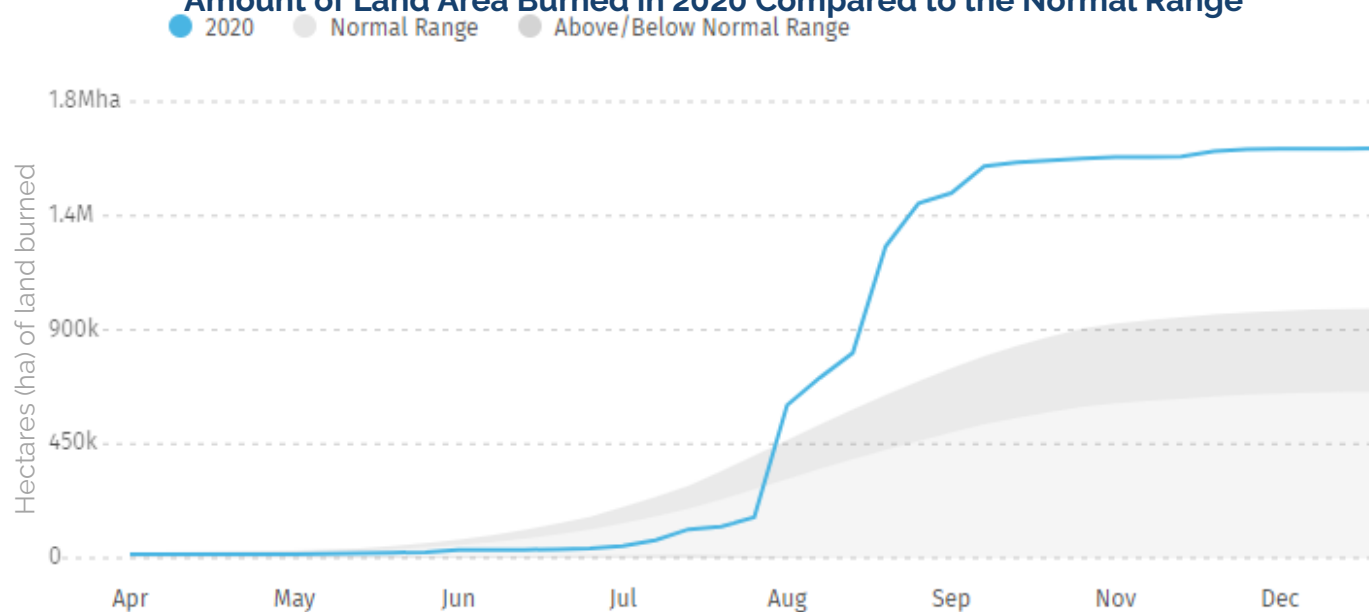


Figure 11. Amount of land hectares burned in CA due to fire in 2020 compared to the average range. 1 million hectares (Mha) is equivalent to 2,471,054 acres (Global Forest Watch)

According to Global Forest Watch, from 2001 to 2020, California lost 5.4 million acres of tree cover, equivalent to a 22 percent decrease in tree cover since 2000 (globalforestwatch.org).

Though the effects of fires on the existing tree canopy cover is a concern, the objective of this summary is to demonstrate the fire threat that continues to rise, and the role urban forests can play to slow this trend. Urban forests and all trees throughout the region sequester carbon dioxide, reducing the atmospheric amount resulting in a reduction of greenhouse gases— a primary factor of climate change.

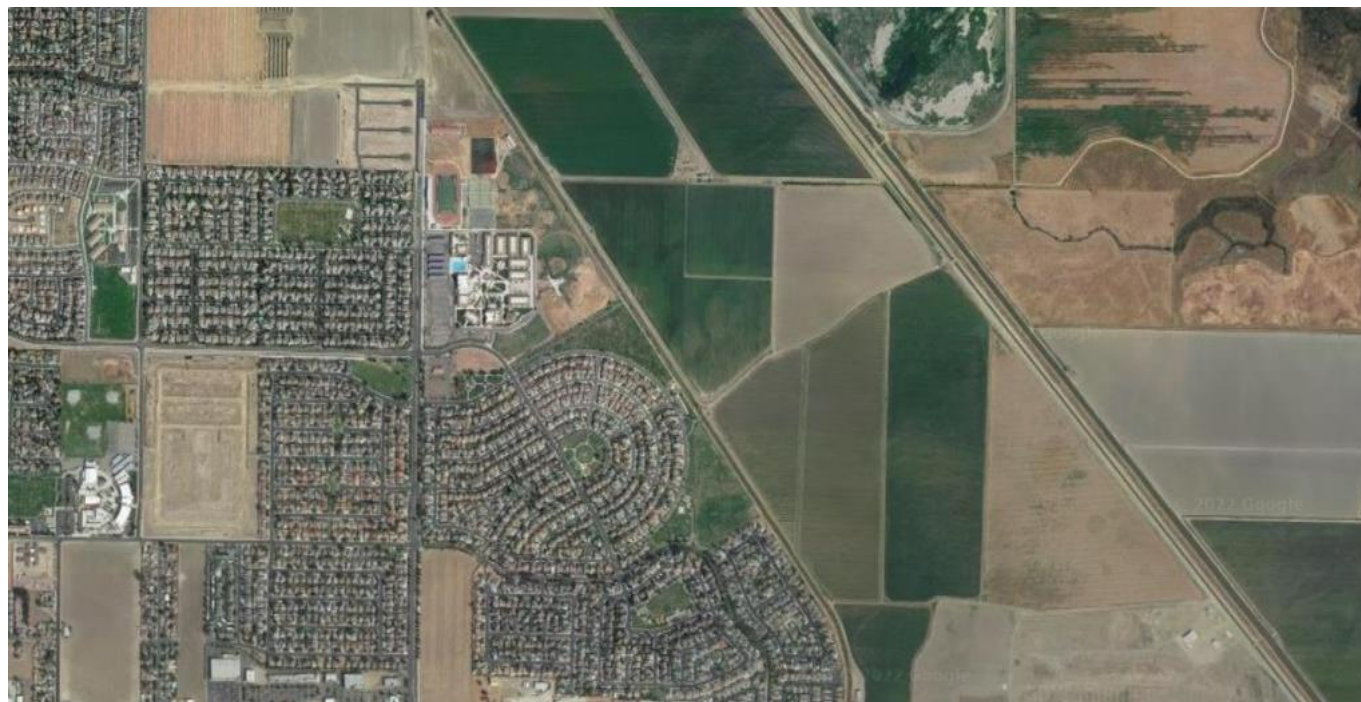


Figure 12. Example of the wildland-urban interface (WUI) along the eastern boundary of Los Banos

Threats to the Urban Forest: Tree Pests and Diseases



The management of dead and dying trees in the urban forest is costly. For example, local governments across the country spend an estimated \$1.7 billion each year to remove trees killed by non-native insect pests. Homeowners spend an additional \$1 billion to remove and replace trees lost to pests. They also suffer an additional \$1.5 billion per year in lost property value (Campbell, et al. 2013). A single detected pest such as the pathogen sudden oak death or the insect emerald ash borer can, and often does, indicate the presence of a much larger population. Without organizational structures in place, the worst of these pests can have irreversible, lasting impacts to the urban forests they infest. Without intervention, a pest can quickly spread to forests outside of the urban area and throughout the greater region.

There are many factors that can lead to the decline or death of a tree. From insects to disease and fungi to mechanical damage, sunscald, and everything in between, the trees comprising the urban forest are constantly at threat. Identification and diagnosis of the decline of trees can be crucial in warding off a mass urban forest devastation, those of the like seen with emerald ash borer (EAB), gypsy moth, and Dutch elm disease (DED). There are two types of tree stress indicators. Symptoms are effects that the causal agent has on a tree, whereas signs are what is left behind by the causal agent. An example of a symptom would be wilting of the leaves due to lack of water. An example of a sign is a fruiting body of a fungi or insect burrow holes. Some common signs and symptoms include:

- ❖ Leaf spot – spots of dead tissue on foliage: size, shape, color depends on causal agent.
- ❖ Leaf blotch – dead areas on leaves on foliage: larger than leaf spots.
- ❖ Scorch – browning and death of areas along leaf margins & between veins.
- ❖ Canker – localized dead stem tissue.
- ❖ Stunting – abnormally small plant growth.
- ❖ Gummosis – exudation of sap or gum from wounds.
- ❖ Rust – orange/reddish brown pustules on leaves.
- ❖ Gall – swollen plant tissue.
- ❖ Chlorosis – yellowing of green leaves due to lack of chlorophyll.
- ❖ Necrosis – death of tissue.
- ❖ Die back – dead portions of the tree (commonly seen on tips).
- ❖ Powdery mildew – white or greyish fungal growth on the surface of the leaves.
- ❖ Vascular discoloration – darkening of wood vascular elements, often along growth rings.
- ❖ Witch's broom – abnormal development of multiple shoots.

Biotic factors such as insects, disease, and fungi are considered infectious, whereas abiotic factors such as moisture and temperature extremes, mineral deficiency, pollution, and climate change are not considered infectious. Fungi and insects make up the largest portions of biotic factors. Insects are classified into three categories when it comes to affecting trees— chewing insects that use their mouth parts to eat portions of the tree, usually the leaves (i.e., Japanese beetles, gypsy moths and tent caterpillars); sucking insects that use their straw like mouth parts to suck sugars out of portions of the tree, usually stems and leaves (i.e., aphids and scales); and lastly, boring insects that bore into the tree and either eat portions of the inner bark or create nests there. These boring insects cause the most damage to trees (i.e., emerald ash borer and bark beetles).

Some insects in the San Joaquin Valley include:

- ❖ Aphids – small sucking insects that attach to stems and suck out juices and excrete a sticky chemical called frass.
- ❖ California oakworm – caterpillars that skeletonize oak trees, predominantly coast live oaks.
- ❖ Lace bugs – black shiny insects much like aphids, remove nutrients from leaves that cause white splotching.
- ❖ Tussock moth – caterpillars that defoliate trees quickly and affects all tree species.
- ❖ Potential future threat – emerald ash borer (EAB, *Agrilus planipennis* Fairmaire) feed on tree leaves, including those of ash (*Fraxinus* spp.) and white fringetree (*Chionanthus virginicus*), although most of the significant damage is caused by larval feeding. Eggs are laid on tree branches or trunks and the larvae tunnel into and feed on phloem and outer sapwood. The feeding damage causes dieback and eventual death (in as little as two years) of the tree. EAB is well-known to kill healthy trees on a large scale. It is estimated to have killed millions of ash trees in the eastern United States and is likely to have had ecosystem-level impacts there. Emerald ash borer is reported to attack two species of ash native to California, *Fraxinus latifolia* and *Fraxinus velutina*. The other species present may be attacked as well, such as the native California species, *Fraxinus latifolia* (Oregon ash). This tree is widespread in California and is found along the entire length of the state from the coast to the Sierra Nevada (CalFlora). As of 2022, EAB has not been found in CA though it was found in Forest Grove, Oregon in June 2022.

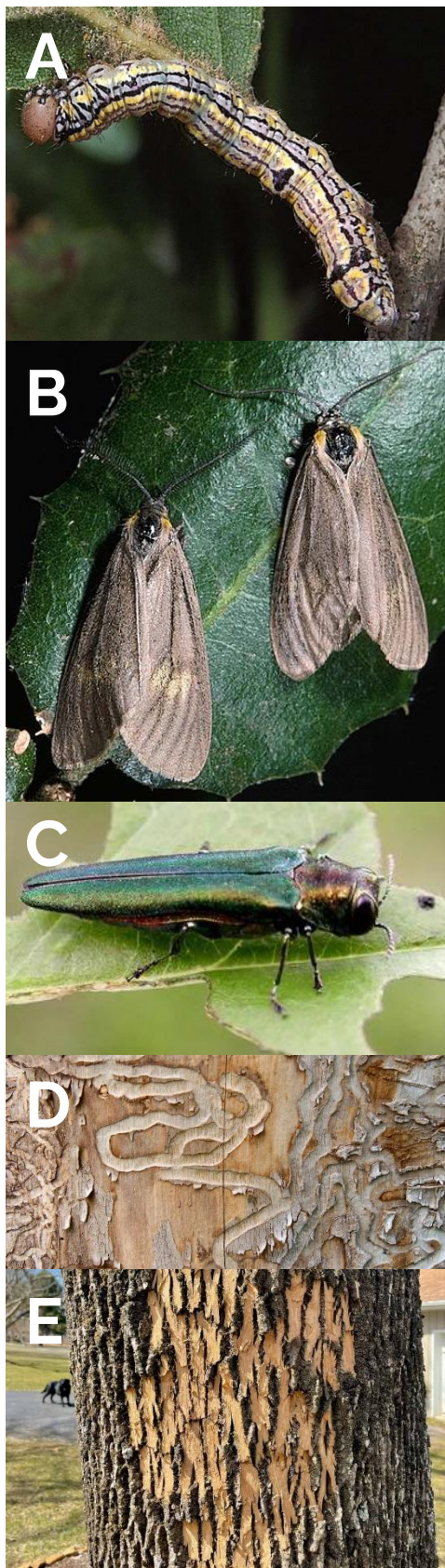


Figure 13. California oakworm caterpillar (A) and oakworm moth (B), and emerald ash borer (C), larvae galleries (D), and ash bark damage (E). Source: University of California and CDFA.

Regarding disease, fungi, and viruses there are three important factors to consider: the host, the pathogen, and the environment that make up the disease triangle. The host is identified as the plant that is in question; the pathogen would be the disease, fungi, or virus; and the environment would be all the factors that affect both pathogen and host. Most trees are susceptible to at least one disease causing fungi, yet most fungi are beneficial. Only a small portion of fungi are harmful to trees and other plants. Diseases can be carried by vectors, most commonly insects. This is seen in Dutch elm disease where the bark beetle works as a vector. A common disease in California, fireblight, can be spread by bees.

Some common San Joaquin Valley diseases include:

- ❖ Chinese elm anthracnose – dieback on tips, black spots on leaves and cankers form at the base of the tree.
- ❖ Fireblight – a very contagious bacteria disease, causes a burned look on stems, leaves and branches. Mostly affects pears and apples.
- ❖ Powdery mildew – white fungi that forms on leaves of plants.
- ❖ Shot hole disease – caused by a fungus that creates holes and browning of leaves, as well as yellowing of stems. Affects *Prunus* species including stone fruit and almond trees.
- ❖ Sooty mold – furry black mold on leaves, and yellowing of leaves. Common on fruit trees and attracts aphids.
- ❖ Sudden oak death – caused by the water mold pathogen *Phytophthora*. Signs include cankers, twig dieback and black/brown leaf spots.
- ❖ Foamy bark canker disease – a fungal disease (*Geosmithia pallida*) spread by the western oak bark beetle affecting live oaks.
- ❖ Sycamore anthracnose – erratic branching, cankers, dieback, and defoliation. It is a fungal disease that affects most sycamores and maple trees.



Figure 14. Signs and symptoms of sudden oak death.
Source: USDA APHIS

Threats to the Urban Forest: Development Pressures

Loss of Tree Canopy and Planting Space Due to Development Pressures



Figure 15. An example of tree canopy and pervious area loss experienced between 2006 and 2020 in the eastern most boundary of the City near Veteran's Park

In California, environmental quality has improved over the last few decades as evidenced by improved water quality, reduced air pollution, decrease in pesticide use, continued cleanup of hazardous waste sites as well as increased recycling and reduction of solid waste going into landfills. These improvements are observed and well documented at the state and regional level and are driven by updated environmental regulations for existing and new development. However, the pollution reduction and resulting health and environmental benefits are not uniformly distributed across the state, within a region, or among all population segments. Many communities continue to bear a disproportionate burden of pollution not only from multiple nearby sources, but also from pollution in multiple media (e.g., air or water). Some of these communities experience the additional burden of socioeconomic stressors and health conditions that render them more vulnerable to the impacts of pollution. Many of these negative consequences are a result of development and redevelopment projects that do not prioritize the urban forest resource in their planning and design.

As shown in the figure above, Los Banos' tree canopy cover and available space for future tree plantings is impacted by development pressures and construction projects throughout the City. In 2006, the northern portions of the development area contained grassland but in 2020, the trees and grassland are gone and in their place are homes and pockets of turf. Perhaps there are plans to replant this area but the tree canopy in 2006 was providing benefits in terms of shade, carbon sequestration, improved air quality, and reduced stormwater runoff volumes. It will take many years to fully recover the loss of this canopy and associated benefits.

Addressing Urban Forest Threats with Tree Canopy Cover and Equity Goals

In the past few years, regional partners are increasingly acknowledging and confronting the past practices, current perceptions, and accelerating progress to ensure that communities, landscapes, and policies are more intentional about enhancing historically disinvested areas. Driven in part by the City's Urban Forest Management Plan and City/regional initiatives, ambitious goals to increase tree canopy in areas of greatest need are taking hold. These goals will grow a more equitable urban forest that provides cooling, public health, habitat, energy saving, and other benefits. In addition, the City must commit to plant and maintain trees, update and align policies and procedures to grow and protect public and private trees, and engage the citizens of Los Banos to become advocates and stewards of the City's urban forest.

Although the City will oversee and monitor these canopy goals, the effort will inevitably require extensive support from all City departments, community-based organizations, and others aiming to prepare for a hotter and drier climate. As a first step, the City's 2022 Urban Forest Management Plan provides guidance to prioritize resilient, climate-appropriate trees, preserve and conserve mature trees, and properly manage resources to ensure that trees thrive in the urban environment. The cooperation of the City, partners, organizations, property owners, and others is instrumental to meeting these goals, and this section provides the approach to formally establish a tree canopy goal that will guide this shared commitment.

Identifying Possible Planting Area to Establish Tree Canopy Cover Goals



Figure 16. Demonstration of Possible Planting Areas including vegetative space where it is feasible to plant trees. Possible Planting Area should exclude unsuitable areas (as demonstrated in the polygons on the right)

OEHHA CalEnviroScreen 4.0 Map for Los Banos

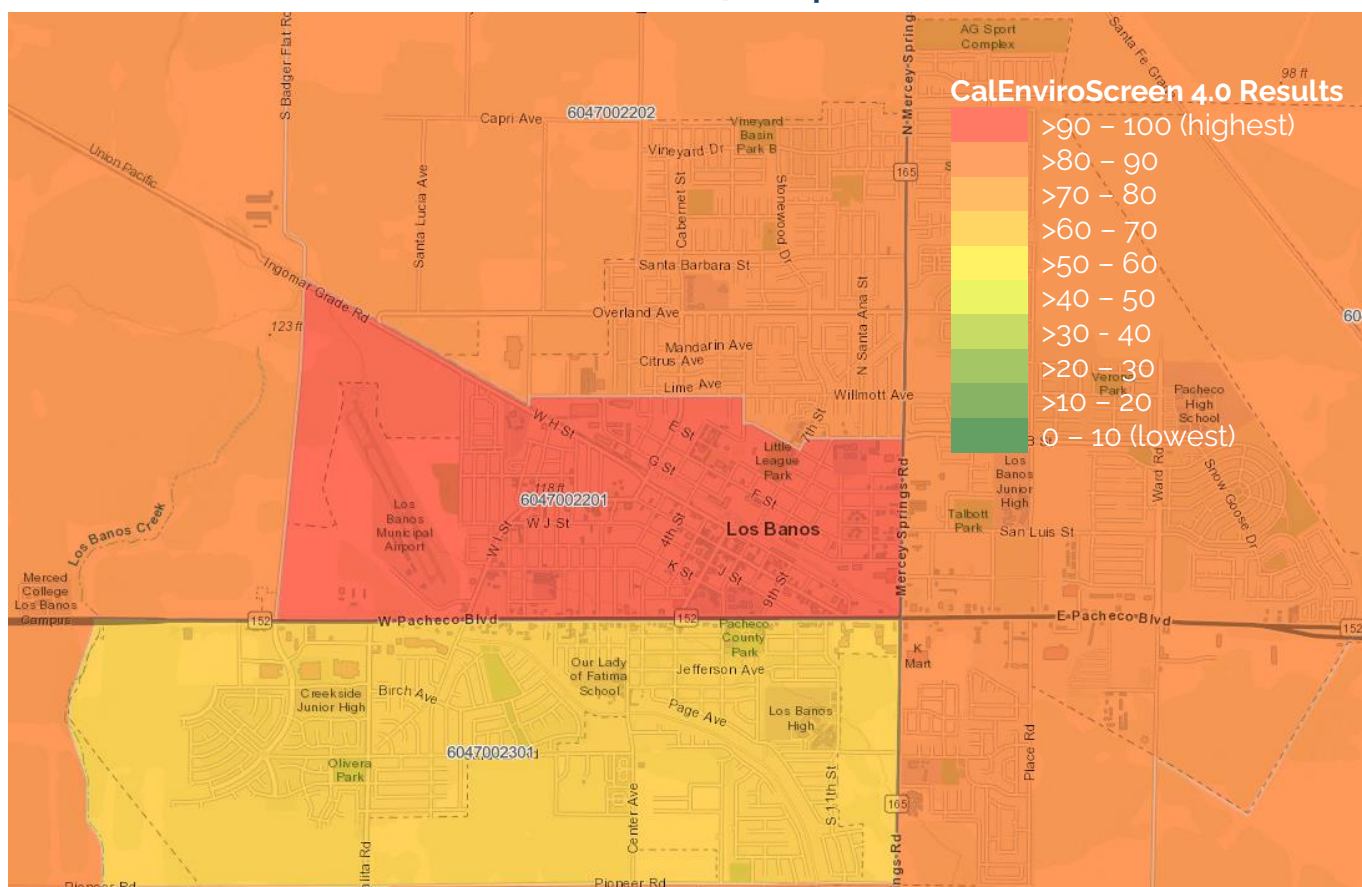


Figure 17. Map indicating the CalEnviroScreen 4.0 scores for Los Banos' Census Tracts

CalEnviroScreen for Los Banos Census Tracts

The CalEnviroScreen 4.0 tool (oehha.ca.gov) developed by California's Environmental Protection Agency (CalEPA) and the Office of Environmental Health Hazard Assessment (OEHHA) shows cumulative impacts in California communities by census tract. Low-income communities, communities of color, tribal nations, and other disadvantaged groups continue to be overburdened by unacceptable levels of pollution. CalEnviroScreen has become the national gold standard of geospatial data tools that can help drive more equitable decision-making.

CalEnviroScreen includes an online mapping tool, a supplemental race analysis and related documents. It analyzes data on environmental, public health and socioeconomic conditions in California's 8,000 census tracts to provide a clear picture of cumulative pollution burdens and vulnerabilities in communities throughout the state.

When CalEPA released the initial version of the California Communities Environmental Health Screening Tool (CalEnviroScreen) in 2013, it marked the first time a state used a science-based screening tool to demonstrate, from a geospatial perspective, who is most affected by environmental injustice. Since then, CalEnviroScreen has guided significant public investments aimed at improving environmental conditions in California's disadvantaged communities and ameliorating environmental injustice. The tool has helped CalEPA and other local, state and federal agencies ensure their activities address these pollution burdens and protect those communities from additional ones.

Planting trees and maintaining a healthy and thriving urban tree canopy can address many of the pollution concerns found in Los Banos. According to CalEnviroScreen 4.0, Los Banos' census tracts overall scores range from greater than 50 to over 90 indicating the City has a higher than average vulnerability and exposure to pollution and other factors.

Tree Canopy Goals

The 2021 tree canopy assessment completed as part of the Plan provides a baseline assessment of the City's urban forest across all boundaries. This assessment identifies the extent of land cover types such as tree canopy, vegetative plantable space (grass or turf), impervious surfaces (parking lots, driveways, sidewalks), and other types.

To guide urban forestry efforts and raise awareness, communities with this data often set tree canopy cover goals based on the existing tree canopy cover amount and the aim to provide an equitable distribution of canopy cover and associated benefits. For Los Banos, consultants closely examined the assessment data and other datasets to establish recommended Citywide canopy goals. These goals are attainable through partnerships and actions described in the Plan. Progress towards these canopy goals should be tracked, measured, and shared to guide urban forest management and maintain community interest and support.

Across the U.S. cities are setting goals— some based on careful study of current canopy, community needs, and availability of planting space, others base their goals on the principle that more trees are better than fewer, set ambitious campaign goals, then work to mobilize efforts to meet it. California's urban tree canopy covers 19 percent of the state's urban areas (McPherson, et al. 2017). Generally, the U.S. Forest Service recommends canopy cover of 25-40 percent in western communities and in 1997, the American Forests organization established a benchmark of 40 percent after analyzing the tree canopy in dozens of cities from 1992 to 1997 and working closely with the research community. While incredibly valuable and groundbreaking at the time, technology and research have significantly evolved over the past 20 years, leading to a consensus that more nuanced approaches to canopy goal setting are necessary. Supporting this statement, U.S. Forest Service Research Forester Greg McPherson of the Pacific Southwest Research Station adds, "Tree canopy cover targets are difficult to specify broadly because the opportunities to create canopy are highly variable among cities, even within a climatic region or land use class."

Tree canopy targets are best developed for specific cities and should consider constraints to creating canopy such as:

- ❖ Development densities (i.e., dense development patterns with more impervious surfaces have less opportunity for cover);
- ❖ Land use patterns (i.e., residential areas may have more opportunity for canopy than commercial areas, but canopy cover tends to be less in residential areas of disadvantaged communities versus wealthy ones);
- ❖ Ordinances (i.e., parking lot shade ordinances promote cover over some impervious areas); and
- ❖ Climate (i.e., canopy cover in desert cities is often less than tropical cities).

Within those parameters, quantifiable data can be used so a tree canopy goal achieves specific objectives, such as reaching the canopy percentage necessary to reduce urban heat island temperatures to a specific range, or to reduce stormwater runoff by a projected amount. According to a national analysis by U.S. Forest Service researchers, **a 40 percent urban tree canopy is attainable under ideal conditions in California's forested cities. Thirty percent in Mediterranean climates, 20 percent in grassland cities, and 15 percent in desert cities** are realistic baseline targets, with higher percentages possible through greater investment and prioritization.

It is important to note, however, that urban tree canopy percentage is just one of many criteria to consider. A robust tree canopy comprised of largely invasive species, for example, is not a healthy urban forest. Age and species diversity, tree preservation, condition of trees and equitable distribution across income levels, to name a few, should also be considered (Leahy, American Forests, 2017).

Potential Citywide Tree Canopy Goals

Recommended Citywide Tree Canopy Goal

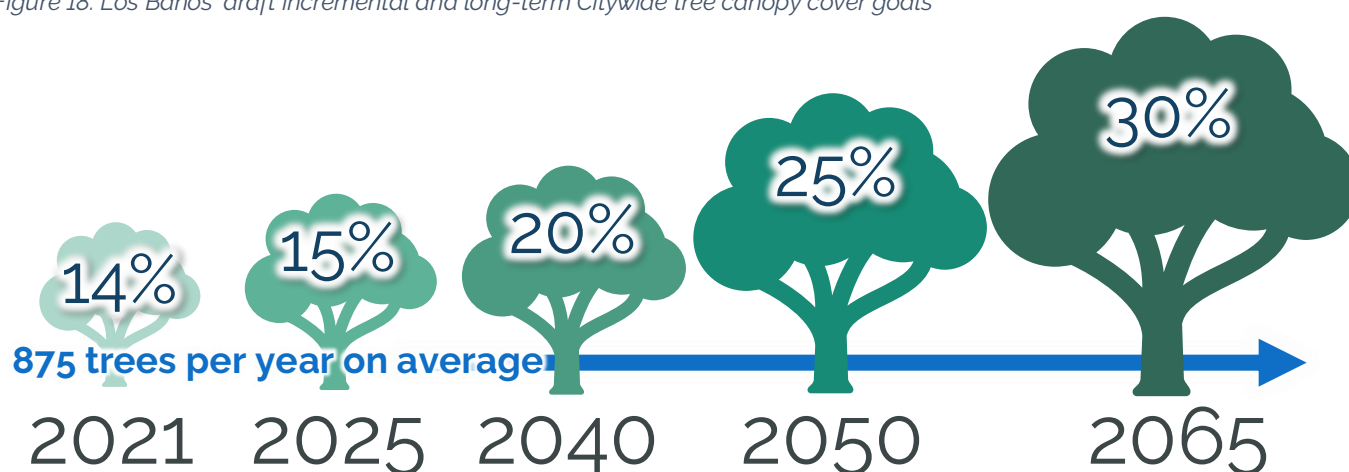
The following presents the proposed canopy goals though the City and partners should evaluate and refine these for approval by staff, City Council, and community partners.

For the City of Los Banos, the development of canopy goals was driven by tree canopy cover data, data from CalEnviroScreen 4.0 (see previous figure), benchmarking research, analysis of existing and potential resources, City input, and community feedback.

Using this integrated approach, the City of Los Banos' ambitious and achievable 44-year canopy goal is **30 percent tree canopy cover by 2065**. To achieve this, incremental canopy goals were established that provide the metrics to track progress. Therefore, the following incremental goals include:

15% by 2025 → 20% by 2040 → 25% by 2050 → 30% by 2065

Figure 18. Los Banos' draft incremental and long-term Citywide tree canopy cover goals



Implementation

Over the 44-year planning horizon, the City must increase canopy by 16 percent, **up from 13.6 percent currently covering the City**, and plant approximately 875 trees annually on average or a total of 38,500 trees. These new trees would collectively grow the canopy throughout the City to an area equivalent to nearly 850 football fields and would provide additional ecosystem services and benefits in the amount of approximately \$437,000 annually once the trees are all established— about \$10,000 in added benefits yearly. These calculations and estimates are based on industry research and practices though there are some assumptions including:

- ❖ A no-net-loss strategy, meaning the number of trees removed on private property or through development are replaced. Plantings should consider the natural and early tree mortality rates as well. Typically, industry rates mortality at 0.5 percent annually to account for loss of established trees. In addition, plantings should apply a 0.5 – 1.0 percent mortality rate annually.
- ❖ Trees that mature into large canopy-bearing trees are recommended wherever feasible but in some cases, plantings will be of smaller canopied trees. Calculations use an average tree canopy diameter of 40 feet for large trees equating to a surface area of 1,257 square feet.
- ❖ Includes City-led, partner, volunteer, and private tree plantings. In this study and canopy goal scenario, it is recommended the **City plant 50 percent of the necessary trees** or **approximately 440 trees per year** on average.

Tree Canopy Goal Setting Process

The following provides the calculated process of establishing the canopy goal for Los Banos:

The amount of tree canopy cover and available planting space was analyzed Citywide. Using the i-Tree study, a total of 921.6 acres of canopy currently exists across the City's 6,803.2 land acres. To set realistic canopy goals, an analysis of possible planting area combined grass, pavement (not buildings or roads), soil, and bare ground areas for a total possible planting area (PPA) of 4,832 acres or 71 percent of the City's land area.

A percentage of total possible planting area (vegetative and impervious) to be planted was assigned to the City's total amount of plantable space (4,832 acres) and considered the existing canopy, available resources, and other City needs. Using the average tree canopy square footage at maturity (1,257 square feet), the number of trees necessary to incrementally increase canopy cover was calculated. Then, the average annual benefits of mature trees (\$11.34 per tree) was applied to the number of trees to be planted to establish the estimated added benefits of achieving canopy goals.

Canopy goals and planting targets must not be standardized across the City, they should be specific to the area. Using the process described above, a series of recommended implementation frameworks are outlined in the [Possible Planting Targets and Priorities](#) section.

Summary of Tree Canopy Goals and Future Benefits

Table 1. Summary of baseline conditions, tree canopy goals, and forecasted future benefits and services

Existing Tree Canopy Cover (2021)	13.6% or 921.6 acres
Tree Canopy Compared to Bay Area Cities	13 th out of 14 (average canopy cover is 19%)
Total Possible Planting Area	71% or 4,832 acres
Tree Equity Score	TBD
Tree Equity Score Compared to Bay Area Cities	TBD
Long-Term Citywide Tree Canopy Goal	30%
Desired Tree Equity Score	TBD Recommended: All Census Block Groups at 75
Total Number of Trees Required	38,500 trees (or 1,111 new acres of canopy)
Timeframe	44 years (2022 – 2065)
Number of Trees to Plant per Year	875 trees (25 acres of new canopy) on average
Recommended Commitment by the City	50% of Total Plantings (19,300 trees)
Recommended Commitment by the Community	50% of Total Plantings (19,300 trees)
Canopy Goal Strategies and Planting Priorities	Priority Land Use Types Public and Private Ownership Low Tree Canopy Areas High Surface Temperature Areas Underserved Populations (lower income households) Vulnerable Populations (under 18 and over 65) Areas with Low Tree Equity
Tree Canopy Goal Milestones (City and Public-led)	15% by 2025 (3,502 more trees) 20% by 2040 (13,133 more trees) 25% by 2050 (8,755 more trees) 30% by 2065 (13,133 more trees)
Total Added Ecosystem Benefits	\$436,864
Total Future Carbon Sequestered	9.6 million pounds (\$224,000 annual value)

Table 2. Summary of recommended tree canopy goals

Goal Metric		2021 Canopy	2022 -2025	2026 – 2040	2043 – 2050	2053 - 2065
Canopy %		13.6%	15%	20%	25%	30%
Total Trees to Reach Goal	City-Led	N/A	1,751 trees	8,318 trees	12,695 trees	19,262 trees
	Public-Led	N/A	1,751 trees	8,318 trees	12,695 trees	19,262 trees
	Total Trees	N/A	3,502 trees	16,635 trees	25,391 trees	38,524 trees
Total Trees per Year to Reach Goal	City-Led	N/A	438 trees	438 trees	438 trees	438 trees
	Public-Led	N/A	438 trees	438 trees	438 trees	438 trees
	Total Trees per Year	N/A	876 trees	876 trees	876 trees	876 trees
Future Added Benefits		N/A	\$37,988	\$170,947	\$303,905	\$436,864



Possible Planting Targets and Priorities

Once the City finalizes tree canopy goals, it is recommended to establish priority areas based on a variety of themes and community needs. Themes may include ownership type (public and private), areas of low existing canopy, and greatest amount of available planting space while other themes may address air quality, stormwater reduction, and water quality. Others may evaluate opportunities to address disadvantaged areas, densely populated regions, and human health factors such as asthma cases, median age, and mental health. In any planting scenario, it is recommended the City complete a high-resolution urban tree canopy assessment and include planning scales like U.S. Census Bureau Census Blocks, Zoning Types or Land Use Type, City Council Districts, and the Citywide area. Potential planting priority scenarios are provided in the following section.

Recommended Prioritization Techniques

- ❖ Ownership type. This approach may include specific priorities and guidance for City-owned or maintained areas and privately-maintained areas.
- ❖ Census Block Groups where trees can mitigate air quality issues. Street and rights-of-way corridors typically have higher concentrations of particulate matter. Trees can be planted along roads to absorb vehicle exhaust and reduce pollution. This technique should examine the percent of road area. Higher concentrations of road surfaces may indicate poor air quality.
- ❖ Tree planting in Census Block Groups to reduce stormwater runoff. Trees can be integrated to help manage stormwater, specifically when targeting impervious surfaces. This technique should evaluate available planting area on impervious surfaces and available planting areas within 100 feet of surface water bodies.
- ❖ Tree planting in underserved or disadvantaged Census Block Groups. Tree canopy is positively correlated with higher median income. Planting trees in lower income communities can support environmental equity. This approach should examine the percentage of residents living below the poverty level.
- ❖ Tree plantings to improve human health. Trees clean the air that we breathe, filter the water that we drink, and can lower stress levels, in turn, improving public health. Planting trees can be a cost-effective way of improving a city's overall public health. Health reports with information about the reported asthma cases and mental health concerns can be utilized to target tree planting efforts.
- ❖ Composite priority for Census Block Groups. A composite map of priority areas combines all of the approaches and techniques into one for a visual depiction of areas where trees will be most impactful. An overlay of priority Census Block Groups based on low tree canopy cover, high surface temperatures and urban heat islands, and larger concentration of vulnerable and underserved populations is one example of a composite priority map.

The "Three Ps" for Prioritizing Tree Plantings

In any priority planting scenario, the City and its partners must evaluate the "possible" planting spaces to identify those that are "preferable" and "potential" spaces.²

1. "Possible Urban Tree Canopy (UTC)" is non-road, non-building, and non-water land, essentially where it is biophysically feasible to plant trees.
2. "Preferable UTC" considers where it is socially desirable to plant trees (needed and suitable).
3. "Potential UTC" is focused on the economic feasibility of tree planting based on available incentives and cost-effectiveness.

² Locke, D.H. et al. "Prioritizing Preferable Locations for Increasing Urban Tree Canopy in New York City", *Cities and the Environment*, Volume 3, Issue 1, Article 4. 2010.

URBAN TREE CANOPY BENCHMARKS AND COMPARISONS

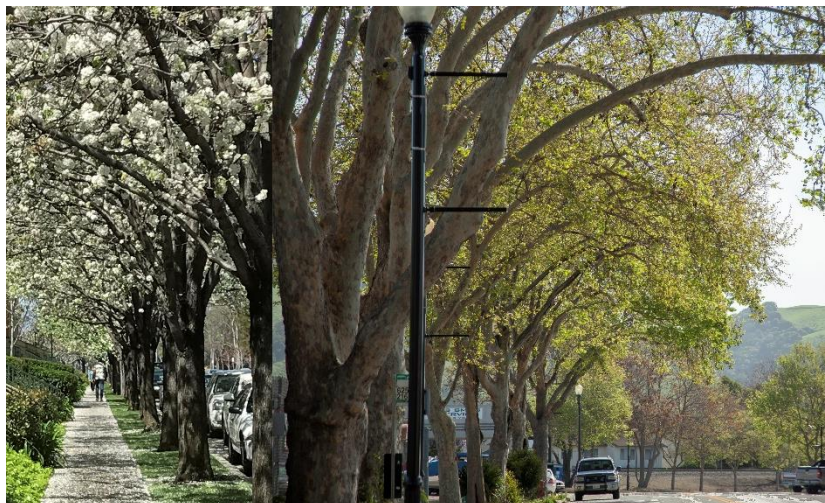
ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Tree Canopy Cover	14% Citywide <i>High-resolution assessment not available</i>	Statewide Tree Canopy: 15% in urban areas (McPherson, et al. 2017)	The methods for calculating tree canopy cover varies as does the accuracy and time of assessment.
Tree Equity Score (TES)	Not Available	Average of 80 TES for 8 CA cities	When adopting tree canopy goals, priority themes such as tree equity should be included in the strategy.
Tree Canopy Cover Goal(s)	In Progress	25% of cities nationwide have a canopy goal 23% of cities with 25-50k population have a canopy goal (Hauer, et al. 2014)	Draft canopy cover goals are provided in Los Banos' UFMP for review, refinement, and adoption.
Example Canopy Goals	15% by 2025 20% by 2040 25% by 2050 30% by 2065 38,500 total trees or approximately 875 trees per year 50/50 split between city and public	San Francisco (13.7% UTC): 50k street trees by 2034 (2014) Oakland (15% UTC): 1M trees for 40% UTC San Jose (13.5% UTC): 20% by 2062 ($\bar{x}$ = 284k trees) and 25% long-term ($\bar{x}$ = 503k trees)	Calculations for the number of trees required to reach canopy goals can vary. In addition, a city's land area will impact the total number of trees required to increase tree canopy cover.

* TES = Tree Equity Score; CBG = Census Block Group; k = 1,000 units; UTC = Urban Tree Canopy; UFMP = Urban Forest Management Plan

RECOMMENDATIONS FOR URBAN TREE CANOPY

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Urban Tree Canopy	Conduct finer scale analyses of tree canopy cover and possible planting space.	The i-Tree Canopy Assessment identifies existing canopy cover percentages and canopy change though it does not detail opportunities for new planting. A finer scale high-resolution urban tree canopy (UTC) assessment would provide accurate data for prioritizing tree planting and preservation and tracking progress towards canopy goals.
	Refine the recommended tree canopy cover goals and priority planting areas.	By identifying the feasible and most desired areas for planting trees, potential stakeholders, policy changes, and necessary resources, the City and partners can refine the short- and long-term tree canopy cover goals and planting targets.
	Continue to assess tree canopy cover change.	The tree canopy cover and other cover types such as possible planting area and impervious area should be assessed on at least a 5-year basis to monitor canopy gains and losses and inform strategy changes.
Tree Equity	Conduct finer scale analyses of tree equity.	The Tree Equity Score Tool provides an analysis of tree canopy cover equity by U.S. Census Block Group. Additional analyses of tree equity by neighborhood or land use provides a finer depiction of tree canopy disparities and opportunities.
	Use the tree equity analysis to support canopy goal setting and priority planting areas.	Tree canopy cover goals should be based on an amalgamation of City and stakeholder priorities and themes— tree equity should be one of the highest tiers for consideration in setting goals.
	Continue to assess tree equity and adjust strategies.	Similar to tree canopy cover change analyses, the change in tree equity on small- and large-scales should continually be measured to inform strategy updates.
Urban Forest Threats	Manage the urban forest to mitigate and reduce the effects of climate change.	Maintaining tree health and growing an urban forest that addresses climate change impacts should be guided by short- and long-term canopy goals. Tree plantings can address critical impacts such as increased surface temperatures. Management of open space and natural areas especially within the wildland-urban interface can reduce fire risks.
	Assess and manage tree pests and diseases.	Maintain an inventory of the public tree population by noting tree pests and diseases and reinventory trees on an appropriate cycle (~5 years). Analyze the composition of the urban forest for susceptibility and inform the public of common tree pest and disease signs, symptoms, and treatment/prevention options.
	Strengthen and enforce sound tree regulations.	Tree canopy data, recommendations in the Plan, and other sources of data will provide valuable information to effectively strengthen tree-related policies and regulations to minimize the impact of development pressures on the urban forest. Long-range planning should consider sustaining and maximizing the associated benefits provided by the urban forest while accommodating smart growth.

Public Tree Status



12,333
PUBLIC TREES

65% (7,997) Street Trees

8% (943) Vacant Lot/Other Trees

28% (3,393) Park Trees

4,885

Potential Public Tree Planting Sites

2,535 along streets | **2,350** in parks

To grow a healthy and diverse urban forest, the public tree population must be well understood and managed. Based on a comprehensive tree inventory completed in 2021 by Certified Arborists accredited by the International Society of Arboriculture (ISA), Los Banos has a total of 12,333 public trees across streetscapes and in maintained areas of public parks and properties. These trees were examined and assessed to determine the species, size, health, structural integrity, quality of the growing space, and maintenance needs, among other key characteristics for management.

The key to maintaining a sustainable and healthy urban forest is species and age diversity, proper tree maintenance, risk management, and community support, which is addressed in the Plan's recommendations.

A Note on the Data Collected and Analyzed

Note, the data collected and analyzed in the following summaries are derived from the 2021 Public Tree Inventory and analyses completed in September 2021 and February 2022. Public trees are dynamic assets that grow and change. Tree condition, observations, defects, maintenance needs, and other factors are constantly changing due to the nature of the trees, the growing environment, and the maintenance history. The summaries and associated recommendations are based on the inventory data at the time of analysis.

Public Street and Park Trees: Species Diversity

Species composition data are essential since the types of trees present throughout the City dictate the amount and type of benefits produced, tree maintenance activities required, and budget considerations.

The 12,333 trees inventoried consist of 168 different species and cultivar classifications and 90 unique tree genera. Chinese pistache comprise the highest percentage with 20 percent (2,528 trees) of the total tree population, followed by narrowleaf ash at 11 percent (1,310 trees) and London planetree with 10 percent (1,236 trees). The top ten most prevalent species comprise 71 percent of the total inventoried public tree population. The remaining 29 percent is made up of other species that are primarily oaks, ash, cherries or plums, crapemyrtles, zelkovas, elms, tallowtrees, coast redwoods, pines, maples, or pears.

Figure 19. Most common public tree species (top 3)



Street and Park Tree Species Diversity

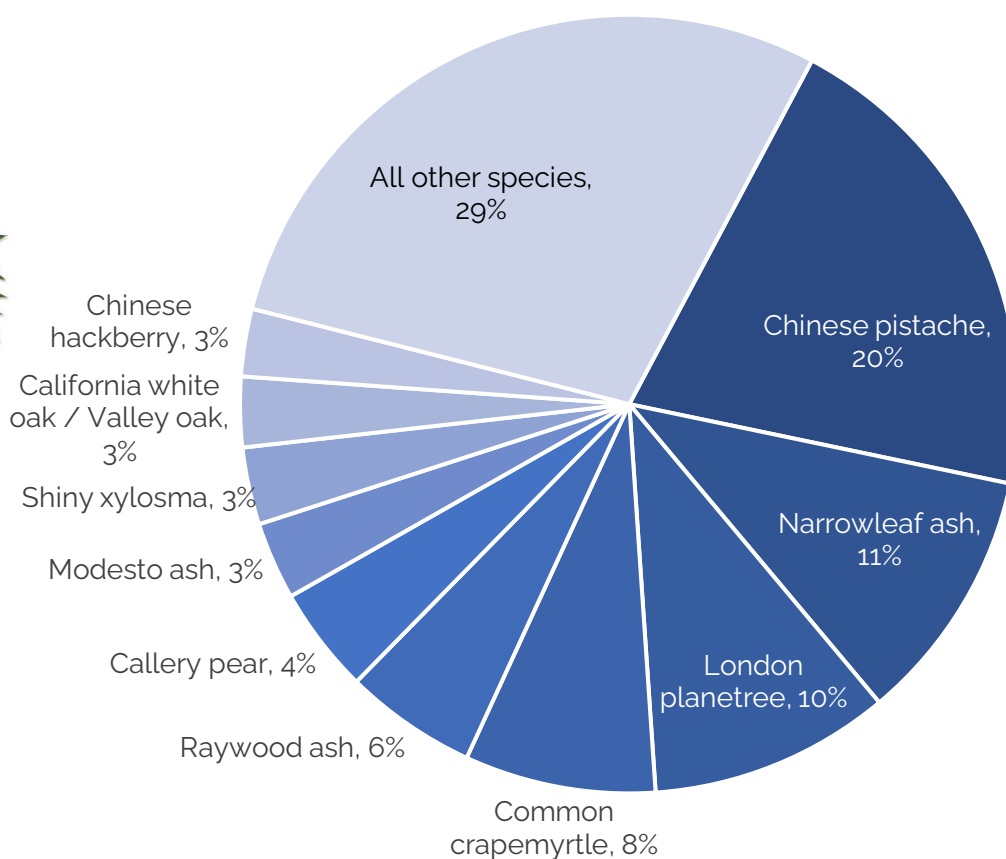


Figure 20. Most common public tree species

Table 3. Most common public tree genera

Genera	% of Population
<i>Pistacia</i> (pistache)	20%
<i>Fraxinus</i> (ash)	20%
<i>Platanus</i> (sycamore)	11%
<i>Lagerstroemia</i> (crapemyrtle)	8%
<i>Quercus</i> (oak)	6%

Genera	% of Population
<i>Pyrus</i> (pear)	5%
<i>Xylosma</i> (shiny xylosma)	3%
<i>Celtis</i> (hackberry)	3%
<i>Ligustrum</i> (privet)	2%
<i>Triadica</i> (tallow)	2%

Public Street and Park Trees: Size and Age Distribution

The distribution of tree ages influences the structure of the urban forest as well as the present and future costs. An unevenly aged urban forest offers continued flow of ecological benefits and a more uniform workflow allowing managers to more accurately allocate annual maintenance schedules and budgets.

To optimize the value and benefits of Los Banos' trees, the urban forest should have a high percentage of large canopy trees which provide greater ecosystem benefits. On the other hand, there must be a suitable number of younger, smaller trees in the urban forest to account for and eventually replace large and mature trees in decline. Having a healthy percentage of young trees in the urban forest will ensure a sustainable tree population as well as age distribution in future years. To compare Los Banos' urban forest structure to industry-recommended standards, the "ideal distribution" is used (Richards, 1983 and 1993). The diameter at breast height (4.5-feet) is used to measure relative age.

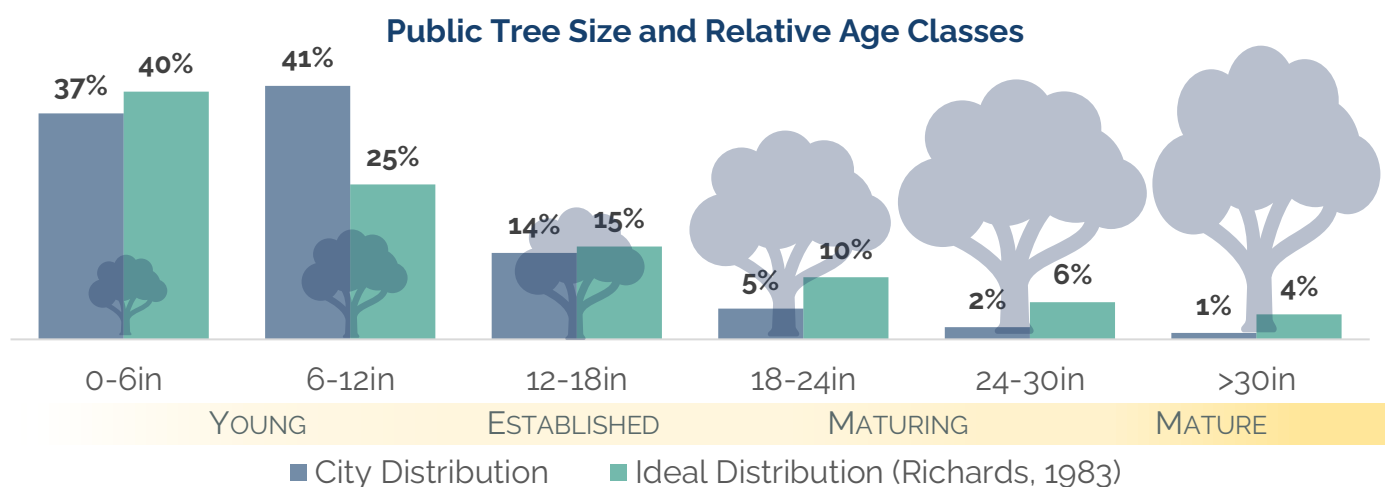


Figure 21. Comparison of the size distribution of Los Banos' public trees to an ideal distribution

Overall, the age distribution of Los Banos' urban forest is similar to the ideal age distribution. As the figure above (Figure 21) shows, 78 percent of the public tree population (9,578 trees) is composed of trees with a DBH (or "diameter at breast height," measured at 4.5 feet above grade) ranging from 1 to 12 inches. This indicates that the majority of trees are young or small-statured. Trees in this size class are crucial for a healthy urban forest, however the inventory found there are 16 percent more trees in the 6-12-inch size class than the ideal distribution of 25 percent. This could be due to increasing development in the City over the last 2-3 decades and the prioritization of planting smaller trees that are more popular with property owners, such as the Chinese pistache and crapemyrtle. Development often shapes the tree diversity in a city and the City should work with developers to ensure that the species they are planting allow for larger species where possible.

The size classes ranging from 18 inches to over 30 inches are all below the ideal distribution which may represent a declining public tree population, or a significant number of large trees removed over time. City trees in these larger DBH ranges can offer larger ecological benefits if the trees are properly maintained and remain healthy, but trees of this size should be monitored frequently to determine maintenance needs, potential risks, and signs of decline. The average DBH for the entire population is 8 inches, and the largest recorded DBH is 43 inches.

An ideal age distribution in the tree population allows managers to allocate and project annual maintenance costs uniformly. This ensures continuity in overall tree canopy coverage and associated benefits which are often dependent on the growing space of individual trees (e.g., open grown versus restricted growing areas). It is recommended to monitor and strategically manage large trees throughout the City and weigh the risks and benefits that are associated with large, mature trees.

Public Street and Park Trees: Condition

Tree characteristics and environmental factors affect the management needs for urban trees. An analysis of the condition and maintenance requirements assists managers in planning Los Banos' urban forest.

Tree condition indicates how well trees are managed and how well they perform, given site-specific conditions. Tree maintenance needs are assigned for public safety reasons and for the health and longevity of the trees themselves. Understanding the maintenance needs assists tree managers in establishing daily work plans and maintaining public safety. These needs are examined in the Maintenance Needs section of this study.

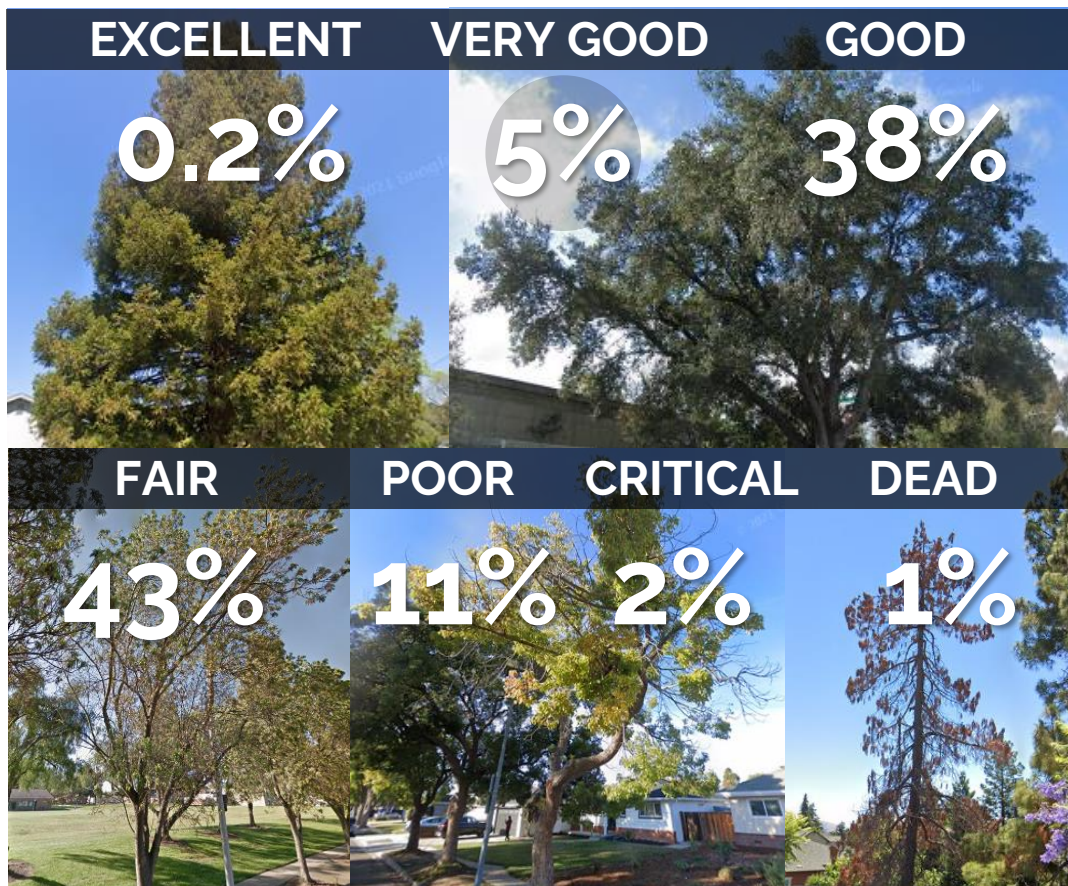
The public tree inventory data were analyzed to identify potential trends in tree condition and management needs. Information on the condition of trees plays an important role in planning, budgeting, and use of resources. Each inventoried tree's health was evaluated by ISA Certified Arborists based on the condition of the wood and the foliage as well as the structure.

Figure 22 summarizes the 12,333 trees that were assigned a condition rating and shows an example of the canopy health for each respective classification. The data show that every four of ten trees inventoried are classified as being in "Fair" condition, comprising 43 percent or 5,313 trees, followed by those in "Good" condition comprising 38 percent (4,670 trees).

1,712 (14 percent) trees are noted as being in "Poor", "Critical", or "Dead" condition. The dead trees or trees noted for removal should be addressed and planned for immediately. Trees classified as "Critical" may have a chance at recovery depending on the factor(s) affecting the rating. These trees should be examined to determine the mitigation necessary, if any.

Condition of Public Trees

Figure 22. Summary and illustration of public tree condition classes



Relative Performance Index of Most Common Public Tree Species

Table 4. Relative Performance Index of the most common public trees

		Target RPI (1.00)
	Chinese pistache	1.42
	Narrowleaf ash	0.65
	London planetree	0.85
	Common crapemyrtle	1.63
	Raywood ash	0.46
	Callery pear	0.51
	Modesto ash	0.05
	Shiny xylosma	1.26
	California white oak / Valley oak	1.55
	Chinese hackberry	0.52

In addition to understanding the overall condition of the public tree population to inform management strategies, an analysis of performance was also conducted for the ten most prevalent tree species using the Relative Performance Index approach. Relative Performance Index (RPI) is a comparison of a species' condition rating of "Good" and the tree population's "Good" rating. Using the percent of Good trees for a given species divided by the tree population percentage of Good trees gives a value of equal to 1, less than 1, or greater than 1. A value equal to 1 means the particular species is as healthy as the overall tree population. A value less than 1 means the species is not as healthy as the overall tree population. A value greater than 1 means the species is healthier than the overall tree population. RPI answers the question of how well a species is performing in terms of health compared to the entire inventoried population.

For the public tree population, Chinese pistache, crapemyrtle, shiny xylosma, and California white oak / valley oak trees are performing better than the overall public tree population. London planetrees are performing similar to the overall public tree population but narrowleaf ash, Raywood ash, callery pear, Modesto ash, and Chinese hackberry are underperforming and are in the poorest condition of the top ten most prevalent tree species. These metrics are useful in identifying concentrations of maintenance demand and determining the appropriate tree species to plant in the future.

Public Street and Park Trees: Observations and Defects

Tree observations (or defects) were recorded during the 2021 inventory to further describe a tree's health, structure, or location when more detail was needed. A total of 20 unique observation options were included in the inventory, 9,442 trees had one or more defects, and a total of 24,524 observations were recorded.

Public Tree Observations

The table (Table 5) to the right provides a summary of the observations for Los Banos' public trees. A total of 24,524 observations were recorded during the tree inventory, with 9,442 sites (76 percent) noted as having at least one observation while 2,891 sites (23 percent) have no observation recorded. Poor structure was the most frequent observation recorded (43 percent or 5,256 trees) during the 2021 tree inventory. Three out of every ten trees (30 percent or 3,711) were noted as having been improperly pruned, and over a quarter (26 percent or 3,211 trees) were observed to have mechanical damage.

Observation	Count	% of Trees
Poor Structure	5,256	43%
Improperly Pruned	3,711	30%
Mechanical Damage	3,211	26%
Poor Root System	2,190	18%
Codominant Stems	2,176	18%
Cavity Decay	2,061	17%
Crown Dieback	1,799	15%
Included Bark	1,312	11%
Girdling Roots	696	6%
Pests	423	3%
Hardscape Damage	381	3%
Poor Location	366	3%
All other observations	942	8%
TOTAL	24,524	

Table 5. Observations and defects recorded for Los Banos' public trees

Of the total observations made, 83 percent are preventable or mendable meaning the defects or concerns observed are primarily human-caused. For example, poor structure can be prevented or limited with proper young tree pruning, implementing best practices and standards would prevent or reduce the number of improperly pruned trees, and poor root systems can be prevented by choosing quality tree nursery stock, proper planting, and amending soils. Trees with poor location and/or hardscape damage observations could have been prevented by choosing the appropriate species for the site and ensuring adequate root space. Lastly, adequate mulch rings, growing space, grates, and awareness would reduce the count of mechanical damage observations. The data also shows the impacts of deferred maintenance. About 60 percent of the observations recorded could be addressed or prevented with proactive pruning.

Potentially Human-Caused Defects

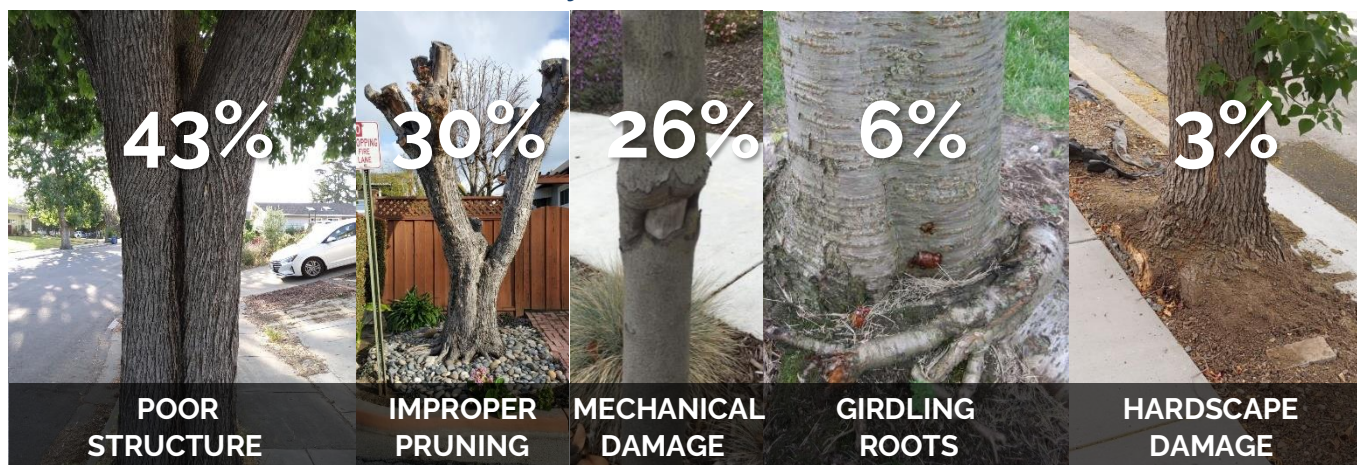


Figure 23. Examples of the potentially human-caused defects seen in the public tree observations

Public Street and Park Trees: Primary Maintenance Needs

The inventory required an assessment of the maintenance needs, if any, for each tree. A total of 10 unique maintenance needs or priorities were included as options in the inventory.

Table 6 provides a summary of the priority maintenance and removal recommendations for all of the inventoried trees. 85 percent of the public tree population requires routine pruning with 6,618 (54 percent) small trees and 3,879 (31 percent) large trees. Only 3 percent (345 trees) are recommended for removal and 10 percent of the 345 trees were given a Priority 1 rating for removal. Training prune consists of pruning to improve a tree's structure, integrity, strength, clearance, and natural form and only 10 percent of the population requires it. Newly planted trees should be structurally pruned (training pruned) within five years of planting.

Young tree training pruning is performed to improve tree form or structure; the recommended length of young tree pruning cycles is three years since young trees tend to grow at faster rates (on average) than more mature trees. The young tree cycle differs from a routine pruning cycle in that these trees generally can be pruned from the ground with a pole pruner or pruning shear.

The objective is to increase structural integrity by pruning for one dominant leader in most cases for most tree species. Young tree training pruning is species-specific, since many trees may naturally have more than one leader. For such trees, young tree training pruning is performed to develop a strong structural architecture of branches so that future growth will lead to a healthy, structurally sound tree. In addition to training pruning, young trees may also require additional maintenance such

Public Tree Maintenance Needs

Maintenance Need	Count	%
Priority 1 Removal	36	0.3%
Priority 1 Prune	44	0.4%
Priority 2 Removal	109	1%
Priority 2 Prune	255	2%
Priority 3 Removal	200	2%
Large Tree Routine Prune	3,879	31%
Small Tree Routine Prune	6,618	54%
Training Prune	1,191	10%
Stump Removal	1	0.0%
TOTAL	12,333	100%

Table 6. Public tree maintenance needs

as added or amended mulch, watering, added or removed stakes and ties, and/or clearance of debris and litter. These needs can potentially be addressed during young tree training pruning.

Trees included in the young tree training pruning cycle are generally less than six inches DBH. These younger trees sometimes have branch structures that can lead to potential problems as the tree ages. Potential structural problems include codominant leaders, multiple limbs attaching at the same point on the trunk, crossing/interfering limbs, or dead/diseased/damaged limbs. If these problems are not corrected, they may worsen as the tree grows, increasing risk and creating potential liability.

Public Street and Park Trees: Maintenance Details ("Tree Work")

In addition to the primary maintenance needs prescribed to each public tree, additional maintenance activities were recorded as "Tree Work" to detail the necessary care required for each tree. These activities can serve as an alternative to routine programmed pruning to address the primary need

Table 7. Details regarding the necessary maintenance

Tree Work	Count	% of Trees
Prune-Structural	3,059	25%
Crown Cleaning	1,728	14%
Remove Hardware	1,239	10%
Prune-Clearance	883	7%
Monitor	724	6%
Remove	347	3%
Prune-Utility	332	3%
Insects	130	1%
Prune-Restoration	93	1%
Remove-Hanger	93	1%
Remove-Girdling Root	78	1%
Other (Describe Below)	66	1%
Raise	50	0%
Disease	44	0%
Amend Mulch	34	0%
Reduce	33	0%
Thin	12	0%
TOTAL	8,945	73%

A total of 8,945 supporting recommendations were recorded for the public trees.

One quarter of the total public tree population (25 percent) require structural pruning, 14 percent require crown cleaning, 10 percent require removal of hardware primary consisting of young tree stakes and ties, 7 percent require clearance pruning, and 6 percent have a recommendation to be monitored.

Other supporting maintenance tasks include restoration pruning, removing a hanging limb, amend a girdling root, addressing other concerns, and amending mulch though these tasks were recorded for less than 100 trees each.

Public Tree Maintenance Details ("Tree Work")

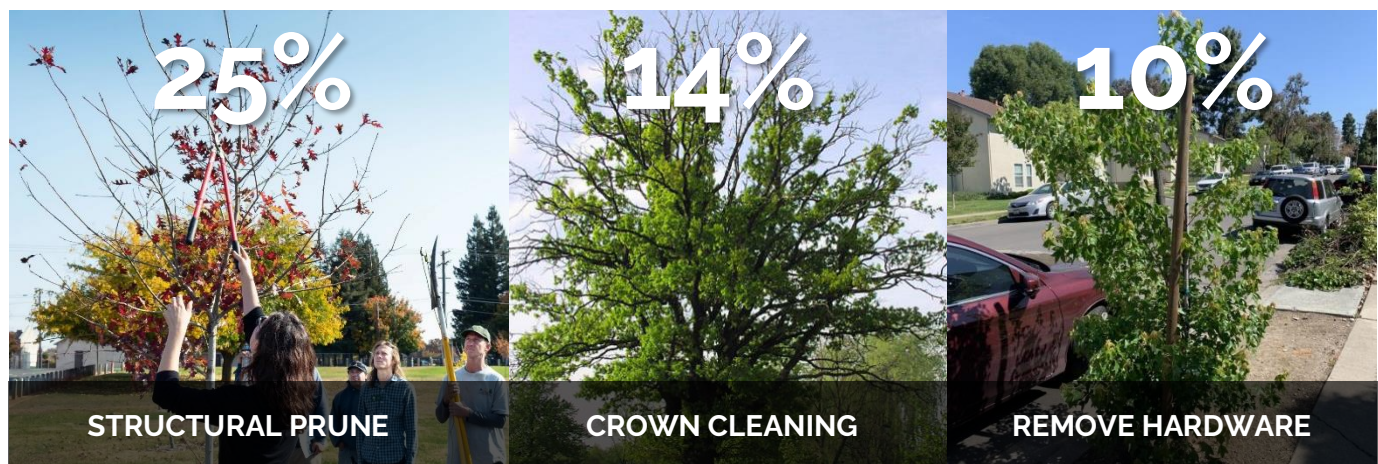


Figure 24. Common public tree maintenance needs

Public Street and Park Trees: Risk Tree Management

Overview

Risk management is a well-established concept in the management of public spaces. Acceptable levels of risk have been recognized or defined for most basic infrastructure elements such as sidewalks, curbs, streets, playgrounds, and utilities. In many communities, these elements are assessed and managed according to acceptable levels of risk that are specified within written policies or enacted through management practices. Although not all pot-holes can be immediately filled in, not all heaving sidewalks immediately repaired, not all burned-out street light bulbs immediately replaced, a successful risk management program provides a community with a systematic approach to implement corrective actions within a reasonable timeframe.

An urban community consists of both the gray infrastructure (buildings, streets, utilities) and the green infrastructure—the urban forest. Although gray infrastructure has long been assessed and monitored for acceptable levels of risks, green infrastructure has for the most part not received the same subjective evaluations. The urban forest is an integral part of a community's infrastructure, and trees often dominate the landscape or at least are the most visible part of it. Urban trees contribute to increased quality of life for many communities and their residents. Most people prefer to live, recreate, and work in communities of healthy and well-maintained urban forests. Considerable research documents that people not only prefer to recreate in well-maintained parks with trees, but are willing to pay extra for the privilege. Safety, or at least the perception of safety, is critical if urban forests are to be managed and enjoyed.

Management of Tree Risk

Community managers have the responsibility to create and maintain a safe and useful urban forest for their constituents. Urban foresters need the training, expertise, and data to recognize varying levels of risk, and to manage the forest at an acceptable level of risk. Tree risk management involves the process of inspecting and assessing trees for their potential to injure people or damage property. Traditionally the term "hazard" (or hazardous) had been used in the context of evaluating trees for their failure potential. To many people, "hazard" suggests trees are at immediate risk for failure. In this report, the term "risk" trees is used to define trees with structural defects that may cause the tree or tree part to fail, where such a failure may cause property damage or personal injury. Trees will vary, ranging from low to high risk for failure and may require attention immediately or in the near future. The threshold of risk acceptable to liable parties is dependent upon their policies and objectives. To make objective, science-based decisions on the safety of trees and the urban forest, individual trees and site conditions need to be evaluated for the level of risk that they do or do not present.

Liability and Risk

Community leaders and decision-makers must consider the perceived public liability for tree damage and injury claims. In the extreme, trees are excluded from public rights-of-way to minimize public exposure. In the risk management field this is called risk avoidance. In these cases, the public benefits that trees provide, which usually outweigh the perceived costs, are not delivered to the community. Attempts to attain zero risk often become costly over time, due to premature tree removals, more frequent tree replacements, and loss of benefits that mature trees provide. Instead, the City should actively monitor, prioritize, and mitigate risk as funding permits.

Street Tree Management in Los Banos

The City is responsible for the maintenance, removal, and planting of street trees as well as pruning the trees for street and sidewalk clearance, and the removal of dead, weak, or hazardous limbs. While pruning conforms to accepted professional standards, street trees are not pruned for aesthetic purposes. Pruning may be done by the adjacent property owner with a permit. Pruning must adhere to City standards in order to protect the health and vitality of public trees.

The City's Public Works Department maintains these street trees but currently, the program is understaffed to adequately address all hazards and potential risks (in addition to preventative maintenance). Therefore, this assessment aims to provide the City with the guidance to effectively mitigate priority risks within the confines of available resources and funding.

Purpose of Tree Risk Management

The purpose of a tree risk assessment is to inspect and assess in detail the structure and quality of the tree, tree parts, surrounding targets, and environmental conditions. An assessment provides the persons or entity responsible for tree care with options for mitigating or reducing risk associated with each tree assessed. By evaluating and ranking the risk potential, tree managers can prioritize mitigation efforts within the limits of available funding and resources.

Trees may appear to be permanent fixtures of our environment though at some point, trees will eventually decline in health, deteriorate in structure, collapse, and decompose. Trees may decline and eventually die from myriad causes including disease, insect attack, drought, uprooting, and catastrophic stem failure in high winds, or from combinations of factors working together. Others may die from old age and go through a natural cycle of senescence before failure. Some trees die and later collapse as their stems and branches decay, and some begin to break up while they are still green. While any large tree poses a risk of failure in high winds, in situations where people and trees must live together in close proximity it is important to identify where a tree has become an unacceptable risk.

Many different kinds of professionals are interested in managing tree risk in communities. For the City of Los Banos, a formal Urban Forestry Program to implement long-term planning and management of the street tree population does not exist. The City's Tree Commission does oversee some of these activities but not on a comprehensive level. Tree managers in Los Banos need reliable information concerning the identification and management of hazard or "risk" trees. In addition, public trees need to be routinely pruned to minimize risk, maintain public safety, improve tree health, strengthen the structure of trees, and provide a continual flow of ecosystem benefits and services.

Procedures for Tree Risk Management

The City should use tree inventory data, inventory software, service requests, and staff observations to continue to prioritize trees for risk assessment and potential mitigation. Risk assessors should use the ISA Level 2 Basic Risk Assessment protocols along with the American National Standards Institute's (ANSI) A300 Standards.

Both empirical data and subjective data should be gathered for each tree. The industry protocols require the assessor to evaluate the tree for conditions and factors that may qualify as a potential risk. The evaluation considers the tree's crown and branches, trunk(s), and roots. If a potential risk is identified in either or all of the tree's components, the site information is collected, and the risk assessment commences. Potential targets such as people or vehicles are noted along with site factors and tree health issues. The tree component causing the potential risk is then examined and documented. For the crown or branches, issues such as deadwood are recorded along with the deadwood size and the level of load bearing on the branch or branches. The likelihood of failure and impact are recorded, and the likelihood of failure and impact is autopopulated based on the ISA tree risk assessment matrix (see tables below). In addition, the level of consequence is autopopulated as is the risk rating for the specific tree component (e.g., crown and branches). If other tree components such as the trunk or roots pose a potential risk, a similar process is completed. Once all components are assessed, an overall risk rating is autopopulated indicating the risk level as extreme, high, moderate, or low risk.

Table 8. The ISA tree risk assessment matrix to establish a risk rating

Likelihood of Failure	Likelihood of Impact			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat Likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Likelihood of Failure	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat Likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Definitions

Risk Tree: Formerly referred to as a hazard tree, a risk tree has structural defects in the roots, stem, or branches that may cause the tree or tree part to fail, where such failure may cause property damage or personal injury.

Tree Defects: Tree defects are often organized into two categories— 1) injury or disease that seriously weakens the stems, roots, or branches of trees, predisposing them to fail or, 2) structural problems arising from poor tree architecture, including poorly attached stems and branches that lead to weak unions, shallow rooting habits, inherently brittle wood, and other physiological conditions.

Low Risk: The low risk category applies when consequences are “negligible” and likelihood is “unlikely”; or when consequences are “minor” and likelihood is “somewhat likely” (refer to Table 8 for terminology). Some trees with this level of risk may benefit from mitigation or maintenance measures, but immediate action is not usually required. Tree risk assessors may recommend retaining and monitoring these trees, as well as mitigation that does not include removal of the tree.

Moderate Risk: Moderate risk situations are those for which consequences are “minor” and likelihood is “very likely” or “likely”; or when likelihood is “somewhat likely” and consequences are “significant” or “severe” (refer to the ISA tree risk assessment matrix table in the overview provided at the beginning of this report). The tree risk assessor may recommend mitigation and/or retaining and monitoring. The decision for mitigation and timing of treatment depends upon the risk tolerance of the tree owner or manager.

High Risk: High risk situations are those for which consequences are “significant” and likelihood is “very likely” or “likely,” or when consequences are “severe” and likelihood is “likely”. This combination of likelihood and consequences indicates that the tree risk assessor should recommend mitigation measures be taken as soon as is practical. The decision for mitigation and timing of treatment depends upon the risk tolerance of the tree owner or risk manager. In populations of trees, the priority of high risk trees is second only to extreme risk trees.

Extreme Risk: The extreme risk category applies in situations in which failure is “imminent” and there is a high likelihood of impacting the target, and the consequences of the failure are “severe” (refer to Table 8). The tree risk assessor should recommend that mitigation measures be taken as soon as possible. In some cases, this may mean immediate restriction of access to the target zone area to avoid injury to people.

Programmed Pruning: Designed to create structurally sound trunk and branch architecture, this “preventative maintenance” will sustain a tree's benefits to the longest extent possible until the tree

naturally reaches a point of senescence— or process of deterioration with age. Programmed pruning is typically implemented citywide or in prioritized maintenance corridors on a rotation of five to seven years depending on the tree species, density of trees, frequency of pedestrians and vehicles, available budget, and other factors. This means that each tree in the programmed pruning cycle is pruned for clearance, risk, health, and/or structure at least once within the programmed cycle (e.g., five to seven years). The goal with mature trees is to develop and maintain a sound structure to minimize risks such as branch failure. This task is easier provided a good structure was established earlier in the tree's life. When properly executed, a variety of benefits are derived from pruning. Benefits include reduced risk of branch and stem breakage, better clearance for vehicles and pedestrians, improved health and appearance, and enhanced view.

Tree risk management and programmed pruning should be a prominently positioned component of Los Banos' Urban Forestry Program. Tree risk management and programmed pruning plans should complement the City's overall street and park tree management program goals, align with the Urban Forest Management Plan, and should be fully integrated with the tree planting, plant health care, and emergency response programs.

Programmed Pruning for Tree Preservation and Reduced Risk

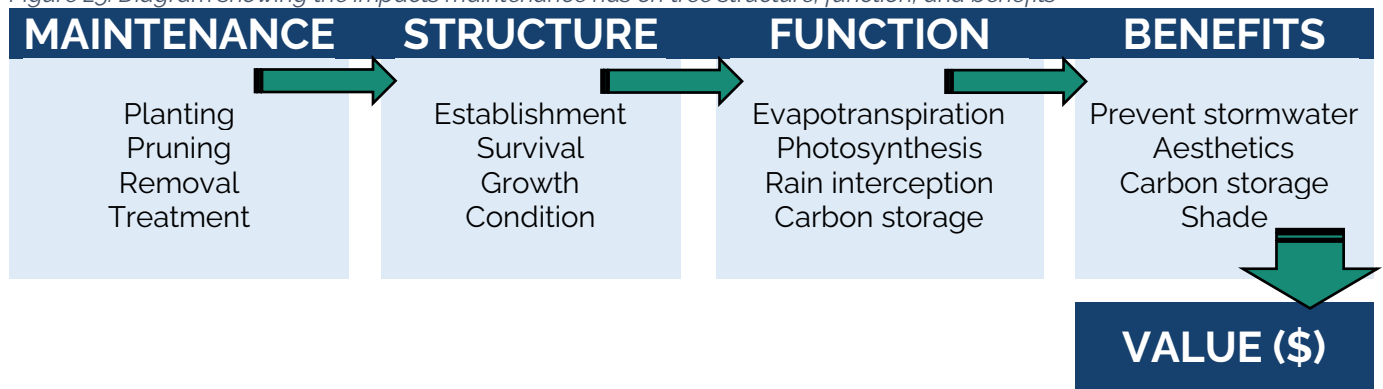
In addition to more frequent tree assessments, proper tree planting, and structural pruning of young trees, the routine maintenance of street trees reduces the overall risk, improves the health of trees, and reduces long-term costs.

Routine maintenance, often referred to as grid pruning or programmed pruning, is the most cost effective near- and long-term pruning management strategy for city tree maintenance since every tree within a given grid, priority area, or zone is pruned each pruning cycle. When each tree is inspected and pruned on a regular cycle, both short- and long-term maintenance costs are reduced due to efficiencies in mobilization, scheduling, and service tracking; both preventative and reactive maintenance are performed in one operation and the need for future priority pruning is minimized. Conversely, street trees that are not pruned on a regular cycle, or their maintenance is deferred, results in the opposite effect— as the interval between pruning increases the tree health declines and the maintenance costs increase.

The level of care or maintenance performed on a planted tree is linked to tree establishment, survival, growth, condition, and longevity. Survival, growth, and condition are closely connected to one another and to the structure of a tree (size, leaf area) and of the urban forest (canopy cover, diversity, age distribution). As a result, tree structure impacts the functions provided by the urban forest and ultimately the level of benefits generated by the tree. Thus, less than optimal maintenance may lead to decreased benefits produced by the urban forest. The benefits lost are the "costs" of not maintaining trees.

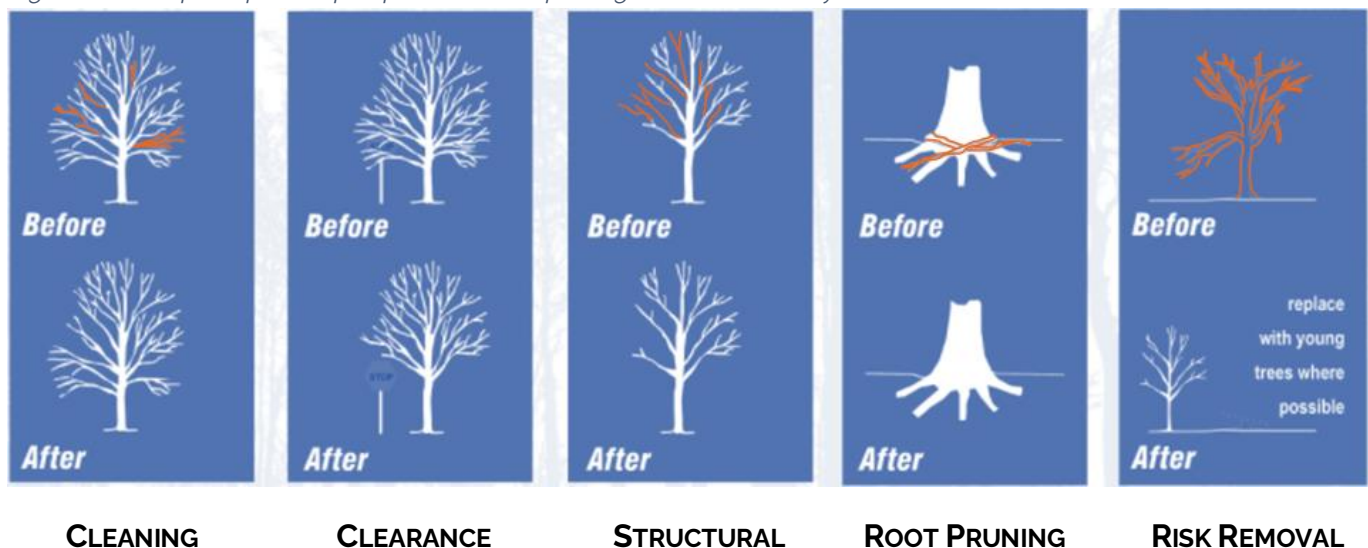
The Impacts of Programmed Pruning

Figure 25. Diagram showing the impacts maintenance has on tree structure, function, and benefits



Examples of Programmed Pruning Techniques for Preventative Maintenance

Figure 26. Examples of techniques for routine tree pruning (Source: Arbor Day Foundation)



Planting Sites Inventory

Tree species diversity, addressed through strategic planting, protects a city's tree canopy cover by limiting the amount of damage from any one threat such as pests, drought, or storms. A commonly accepted diversity goal is for no single species to account for more than 10 percent of the population, no genus more than 20 percent and no family more than 30 percent (Santamour, 1990). This rule can be applied at the city, neighborhood, and block level.

Planting Sites of Existing Trees

The planting site width for tree roots and basal flare can impact tree growth, health, and maintenance costs over time. Adequate space and soil volume should be considered for each site based on tree species requirements and root biology. Frequency of maintenance is also a consideration for tree selection when a tree needs to be replaced. An analysis of growing space can assist tree managers in making future tree species selections for sites with similar characteristics.

The planting site width measurements were collected for each inventoried public tree. An analysis of the planting site widths of existing public trees informs future planting sites and the tree species appropriate for replanting. The table and chart below show the number of trees and percentage of each planting site width classification. Of the inventoried trees, a total of 8,277 (67 percent) trees are growing in small sites with 1-5 feet of space. 20 percent, or 2,448 trees, are growing in sites with 6-10 feet of growing space. The remaining 13 percent, or 1,608 trees, are growing in sites with widths of 11 feet or greater.

Growing Space of Existing Public Trees

Table 9. Summary of planting site widths for existing public trees

Planting Site Width	Count	%
1-5 Feet	8,277	67%
6-10 Feet	2,448	20%
11-15 Feet	685	6%
16-20 Feet	436	4%
>20 Feet	487	4%
TOTAL	12,333	100%

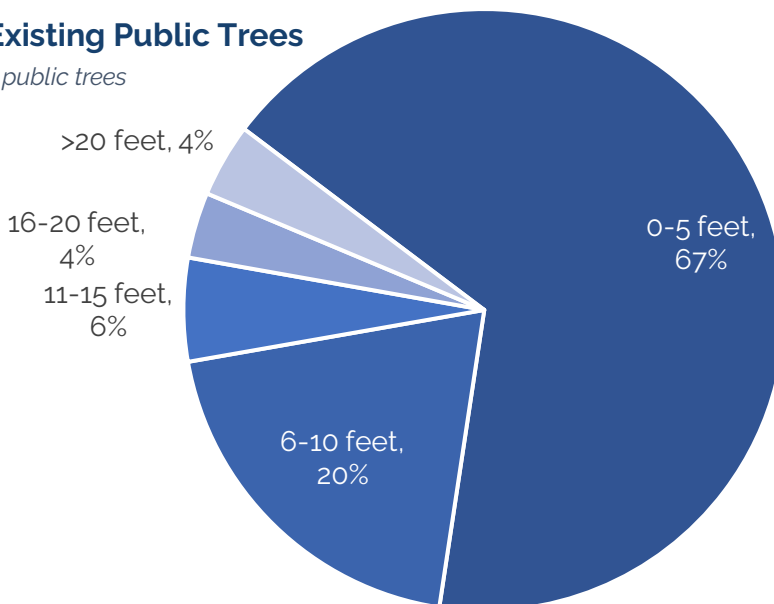


Figure 27. Growing space widths for existing trees



Figure 28. Visual depiction of planting site widths of existing public trees

Future Planting Sites

In addition to the inventory of public trees throughout Los Banos in 2021, an inventory of future possible planting sites within the public street right-of-way and parks was completed. A total of 4,885 possible sites were inventoried, of which 52 percent (2,535) sites are within the rights-of-way. At each site, the planting width and presence of wires were documented. Of the 4,885 possible planting sites, 46 percent (2,253 sites) are in the medium size class and 97 percent (4,728) of sites do not have any wires or observable utilities present.

Growing Space Size for Future Planting Sites

Table 10. Summary and depiction of possible future planting sites in the public right-of-way

	Planting Site Width	Count	%
	CLASS I (SMALL) 1-5 Feet	1,609	33%
	CLASS II (MEDIUM) 6-10 Feet	2,253	46%
	CLASS III (LARGE) >11 Feet	1,023	21%
	TOTAL	4,885	100%

Table 11. Summary of possible planting sites with no site (wire) conflicts

Planting Site Width	Count	% Total Sites within Class
CLASS I (SMALL), 1-5 Feet	1,486 of 1,609 sites	92%
CLASS II (MEDIUM), 6-10 Feet	2,219 of 2,253 sites	98%
CLASS III (LARGE), >11 Feet	1,023 of 1,023 sites	100%
TOTAL	4,728 of 4,885 sites	97%

Public Tree Stocking Level

There are numerous opportunities to plant more trees on public property in the City of Los Banos. Historically, the locations of new tree plantings on City-owned rights-of-way in Los Banos have been based on constituent requests, the replacement of dead or dying trees (where feasible), and project-specific plantings (e.g., streetscape improvement projects). With the updated tree inventory, City managers now also know the exact location of additional planting sites that are available throughout the City. Los Banos' street and park tree inventory includes 4,885 *possible* planting sites in the public rights-of-way and parks as of 2021. These sites would need further evaluation to determine if they are feasible and preferable sites for new trees, but the dataset provides initial information on how the City can grow its urban forest over time. In addition to tree inventory data, the development of a prioritization scheme based on canopy data in the Urban Forest Management Plan allows the City to begin significant tree planting efforts in high priority areas of the City.

According to the 2021 inventory data, the current stocking level is 72 percent based on a total 17,507 possible public planting sites, including 12,253 living trees, 80 dead trees, 289 stumps, and 4,885 possible planting sites. "Stocking" is a traditional forestry term used to measure the density and distribution of trees. In this case it means that, of the total number of available planting sites identified in the tree inventory along the public right-of-way, 72 percent currently have a tree or stump present. Note that this value only considers the currently available planting areas along the street right-of-way and parks, and not impervious surfaces that could become planting locations. Moreover, this value does not incorporate potential planting locations in unmaintained areas of parks or other civic spaces. Of the total public trees in the inventory, 345 trees were recommended for removal (based on 2021 inventory). These recommended removals represent a future increase in total number of potential planting sites. An important benchmark in maintaining a sustainable urban forest is to keep it at least 90 percent stocked, such that no more than 10 percent of the existing planting sites remain vacant. The City should make every effort to budget for tree planting in the future to maintain the urban forest at least 90 percent stocked and to continue increasing its canopy. Before committing to enhanced tree planting, the responsibility and resources for post-planting care and long-term maintenance need to be identified.

PUBLIC TREE BENCHMARKS AND COMPARISONS

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Count of Street Trees	7,997 1 tree for every 5 residents (0.20)	1 tree for every 4 residents (0.25) (McPherson, et al. 2016)	The ratio of street trees to residents is impacted by city size, street corridor design, climates, available resources, and other factors.
Count of Park Trees (Maintained Areas)	3,393 1 tree for every 11 residents (0.09)	1 tree for every 9 residents (0.11) (Hauer, et al. 2014)	The ratio of public park trees to residents is impacted by city size, acres of parks and open space, park design, climates, available resources, and other factors.
Count of Public Trees Based on Known Numbers	Street, Vacant Lot, Park: 12,622 Living Trees of the 12,622: 12,333 trees	1 tree for every 2 residents (0.55) Average for cities with 25-50k population: 25,819 street and park trees (Hauer, et al. 2014)	The ratio of public trees to residents is impacted by city size, acres of parks and open space, street and park design, climates, available resources, and other factors. The count of 12,622 trees in Los Banos does not include trees in natural areas or open space.
Street Tree Responsibility	City	17 of 30 cities in the benchmarking research have a population of less than 100k. Of these 17 cities, 10 maintain their street trees (59%) (2021 UFMP Benchmarking)	City responsibility to maintain public trees often correlates with a healthier and safer public tree population though adequate resources in terms of staff and funding are required.
Public Tree Species Richness	168 unique tree species	Mean of 185 species per CA city (Muller 2010)	A diverse urban forest is more resilient to climate change and tree pests and diseases.
Public Tree Size Classes	<u>City Distribution</u> 0-6-inch class: 37% 6-12-inch class: 41% 12-18-inch class: 14% 18-24-inch class: 5% 24-30-inch class: 2% >30-inch class: 1%	<u>Ideal Distribution</u> (Richards, 1983) 0-6-inch class: 40% 6-12-inch class: 25% 12-18-inch class: 15% 18-24-inch class: 10% 24-30-inch class: 6% >30-inch class: 4%	The size class and relative age of the public tree population influences maintenance needs and surges, and informs the levels to which ecosystem benefits are consistent and sustained.
Public Tree Condition	38% in Good Condition	Majority: 43% Fair (Los Banos tree inventory database)	Condition of trees is based on the evaluation by ISA Certified Arborists at the time of the inventory and may change over time.
Risk Tree Management	Count of High, Medium, Low Risk Trees: TBD	City-specific tolerances to risk and protocols to mitigate	A risk tree assessment will provide a pulse on the risk tree management demands.

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Programmed Pruning Cycle	~6 years for City-managed trees (2,000 trees per year)	Population group (25-50k) average cycle for pruning all public trees: 6.4 years (Hauer et al. 2014)	A routine programmed ("proactive") pruning cycle is more effective and efficient. It is estimated that for every 1 tree that is reactively pruned, 3 trees could have been proactively pruned. Industry recommendations and preferences of city urban foresters typically identify an optimal rotation of 5 years.
Future Planting Sites	4,885 <i>possible</i> street tree planting sites	Not all possible sites are feasible or preferable nor do all cities track planting sites in their inventory system.	Not all possible planting sites are feasible or preferable. Additional observations and considerations must be made and guided by a strategic tree planting plan and this UFMP.
Stocking Level	<u>72% Stocked of 17,507 Sites</u> 12,253 Living Trees 80 Dead Trees 289 Stumps 4,885 <i>possible</i> planting sites	36.3% of full stocking for 50 CA cities (McPherson, et al. 2016) Stocking levels of 90% are recommended	Achieving recommended stocking levels without a strategy for maintaining the new trees is detrimental to the long-term success and goals for sustainable use of resources.

RECOMMENDATIONS FOR PUBLIC TREES

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Public Street and Park Trees	Evaluate current public street tree maintenance responsibility.	Currently, it is primarily the City's responsibility to maintain street trees. Surveys and anecdotes have uncovered existing misconceptions of responsibility, along with resource shortages resulting in complications and deferred maintenance of street trees. Deferred maintenance leads to decreased urban forest health, increased costs for maintenance, and increased risk.
	Manage the public street trees to maintain optimal species and age class diversity.	The public street tree population is currently exceeding the genus (<i>Pistacia</i> – 20%; <i>Fraxinus</i> – 20%) and species (Chinese pistache – 20%; narrowleaf ash – 11%; London planetree – 10%) diversity threshold limits of 30-20-10 for the distribution of family, genus, and species of trees (Santamour, 1990). The City should improve the diversity to meet this standard by planting the appropriate tree species, guided by a strategic tree planting plan. The diversity thresholds can be further applied to local-level scales such as neighborhoods and streets rather than simply Citywide to further strengthen the City's urban forest resiliency. Overall, the public street tree population is similar to the ideal distribution (Richards, 1983) though the relative age class that differs greatest from the ideal is the 6-12-inch class with 41% compared to the recommended 25% distribution. Also, the young trees (1-12 inches DBH) and establishing trees (12-18 inches DBH) should be properly maintained and protected to grow into larger specimens to reach the recommended 20% distribution of trees greater than 24 inches DBH. Also, strengthening City tree-related ordinances and policies will protect the larger maturing trees and maintain age class diversity.
	Effectively manage the public street trees to maintain a healthy condition, reduce, minimize or prevent defects, minimize risks, and address maintenance needs.	The City should continue to maintain street trees for which its responsible by adhering to industry standards and best practices. Proper tree protection during construction and routine inventory of public trees can minimize human-caused defects. The City should continue to manage its inventory to prioritize tree maintenance. Consider a more frequent pruning rotation for young trees to structurally train their growth to minimize future costs. Education and resources relating to tree maintenance should continue to be shared with adjacent property owners and developers, among other audiences.
	See "Proactive Pruning" within this table for additional recommendations.	See "Proactive Pruning" within this table for additional recommendations.

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Public Street and Park Trees cont.	Manage the public park trees to improve structure and maintain optimal species and age class diversity.	The City should be planting the appropriate tree species, guided by a strategic tree planting plan to strengthen its resiliency to climate change and tree pests and diseases. Consider a more frequent pruning rotation for young trees in parks to structurally train their growth to minimize future costs.
	Continue to manage and prevent invasive plant species on public park properties.	All City-led plantings should adhere to a recommended tree species list where trees planted are suitable for changing climates and maintaining diversity. Only non-invasive species should be planted. The planting of native species should be considered to maintain habitats that prevent invasives. Also, the CA Native Plant Society list should be considered. As feasible, invasive species should be removed and opportunities for engaging and educating the public should be considered.
	Coordinate the management of trees in the wildland-urban interface (WUI).	Continue to coordinate tree and fire management best practices with the Fire Department in WUI areas. Consider strengthening management strategies to include a combination of improved modeling, research into wildfire risk, fuel reduction in the home ignition zone, use of fire-resistant landscaping and building materials, strategic placement of fuel reduction treatments around the City, and community education regarding wildfire that could lead to policies and mitigation that reduce wildfire risk in the WUI.
	See "Proactive Pruning" within this table for additional recommendations.	See "Proactive Pruning" within this table for additional recommendations.

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Manage Risk Trees	Establish and document risk tree protocols and standards.	Compile, finalize, and document the methods and protocols for monitoring, mitigating, and reducing risk trees using industry standards and best practices. Coordinate the process with City departments.
	Continue to conduct risk tree assessments using industry standards and protocols.	Using risk area maps and the public tree inventory data, conduct risk tree assessments based on the protocols and standards established. Continue to assess tree risk utilizing in-house or contracted professionals for tree and hardscape conflicts.
	Effectively address and mitigate tree risk.	Based on risk tree assessments and protocols, mitigate priority tree risks as funding permits.
Pro-active Pruning	Evaluate the framework for improved street tree maintenance through proactive programmed pruning.	Utilize the studies in the UFMP to implement programmed street tree pruning incrementally. Proactive pruning of street trees on an ideal rotation of 5 to 7 years will reduce long-term costs, sustain associated benefits, and reduce risks.
Future Planting Sites	Analyze growing space and condition by tree species and other variables.	Use the inventory and canopy assessment data to identify priority planting areas on public properties and rights-of-way to increase the stocking level, guided by a strategic tree planting plan.
	Develop a strategy for stocking planting sites aligned with tree canopy cover goals, community desires, among other factors.	To increase tree canopy and address tree equity among other City priorities— such as climate change mitigation— develop a master tree planting plan, planting strategy, or planting initiative. The strategic planting should be informed by the recommendations in this Plan, community and partner input, and other factors.

Urban Forest Function, Benefits, and Services

Introduction

The urban forest plays an important role in supporting and improving the quality of life in communities. A tree's shade and beauty contribute to a community's quality of life and soften the often hard appearance of urban landscapes and streetscapes. When properly maintained, trees provide communities with abundant environmental, economic, and social benefits that far exceed the time and money invested in planting, pruning, protection, and removal.

The trees growing along the public streets constitute a valuable community resource. They provide numerous tangible and intangible benefits such as pollution control, energy reduction, stormwater management, property value increases, wildlife habitat, education opportunities, human health and well-being, and aesthetics.

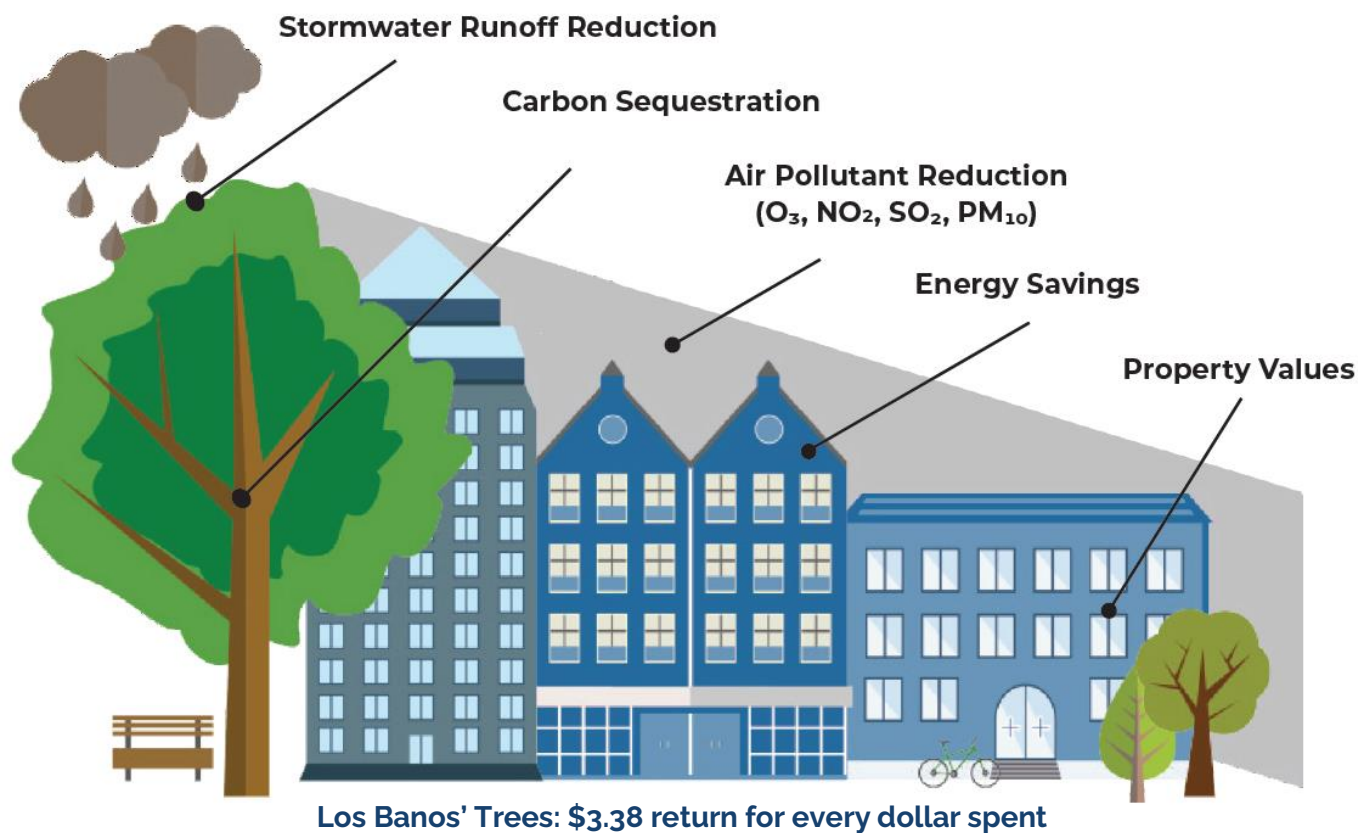


Figure 29. Illustration of the benefits and services provided by public trees

Benefits and Services Defined

Property Value: Shows the tangible and intangible benefits of trees reflected by increases in property values (in dollars).

Stormwater: Presents reductions in annual stormwater runoff due to rainfall interception by trees measured in gallons.

Air Quality: Quantifies the air pollutants (ozone [O₃], nitrogen dioxide [NO₂], sulfur dioxide [SO₂], particulate matter less than 10 micrometers in diameter [PM₁₀]) deposited on tree surfaces, and reduced emissions from power plants (NO₂, PM₁₀, volatile organic compounds [VOC_s], SO₂) due to reduced electricity use in pounds. The potential negative effects of trees on air quality due to biogenic volatile organic compounds (BVOC) emissions is also reported.

Energy: Presents the contribution of the urban forest towards conserving energy in terms of reduced natural gas use in the winter (measured in therms [thm]) and reduced electricity use for air conditioning in the summer (measured in Megawatt-hours [MWh]).

Natural Gas: Monetary increase due to the contribution of the urban forest toward conserving energy in terms of reduced natural gas use in winter.

Therms: Contribution of the urban forest toward conserving energy in terms of reduced natural gas use in winter (measured in therms).

Aesthetic/Other Benefits: Shows the tangible and intangible benefits of trees reflected by increases in property values (in dollars).

Carbon Stored: Tallies all of the carbon dioxide (CO₂) stored in the urban forest over the life of its trees as a result of sequestration. Carbon stored is measured in pounds.

Carbon Sequestered: Presents annual reductions in atmospheric CO₂ due to sequestration by trees and reduced emissions from power plants due to reductions in energy use. This is measured pounds and has been translated to tons for this study. The model

accounts for CO₂ released as trees die and decompose and CO₂ released during the care and maintenance of trees.

Carbon Monetary Benefit: Calculates the dollar value associated with the amount of carbon stored or sequestered by trees based on calculations of the social cost of carbon.

Importance Value (IV): IVs are calculated for species that comprise more than 1 percent of the population. The Streets IV is the mean of three relative values (percentage of total trees, percentage of total leaf area, and percentage of canopy cover) and can range from 0 to 100, with an IV of 100 suggesting total reliance on one species. IVs offer valuable information about a community's reliance on certain species to provide functional benefits. For example, a species might represent 10 percent of a population but have an IV of 25 percent due to its substantial benefits, indicating that the loss of those trees would be more significant than just their population percentage would suggest.

Replacement Value: Replacement values are estimates of the full cost of replacing trees in their current condition, should they be removed for some reason. Replacement values are based on the Council of Tree and Landscape Appraisers (CTLA) Guide for Plant Appraisal, which uses a trunk formula technique.

Overview of Urban Forest Benefits and Services

The quality of life of the citizens in any community depends on the urban forest, as trees make a vital and affordable contribution to the sense of community, pedestrian-friendly neighborhoods, energy savings, and air quality. Trees are one of the few infrastructure investments that grow in value over time. The following data was derived from Alliance for Community Trees.³

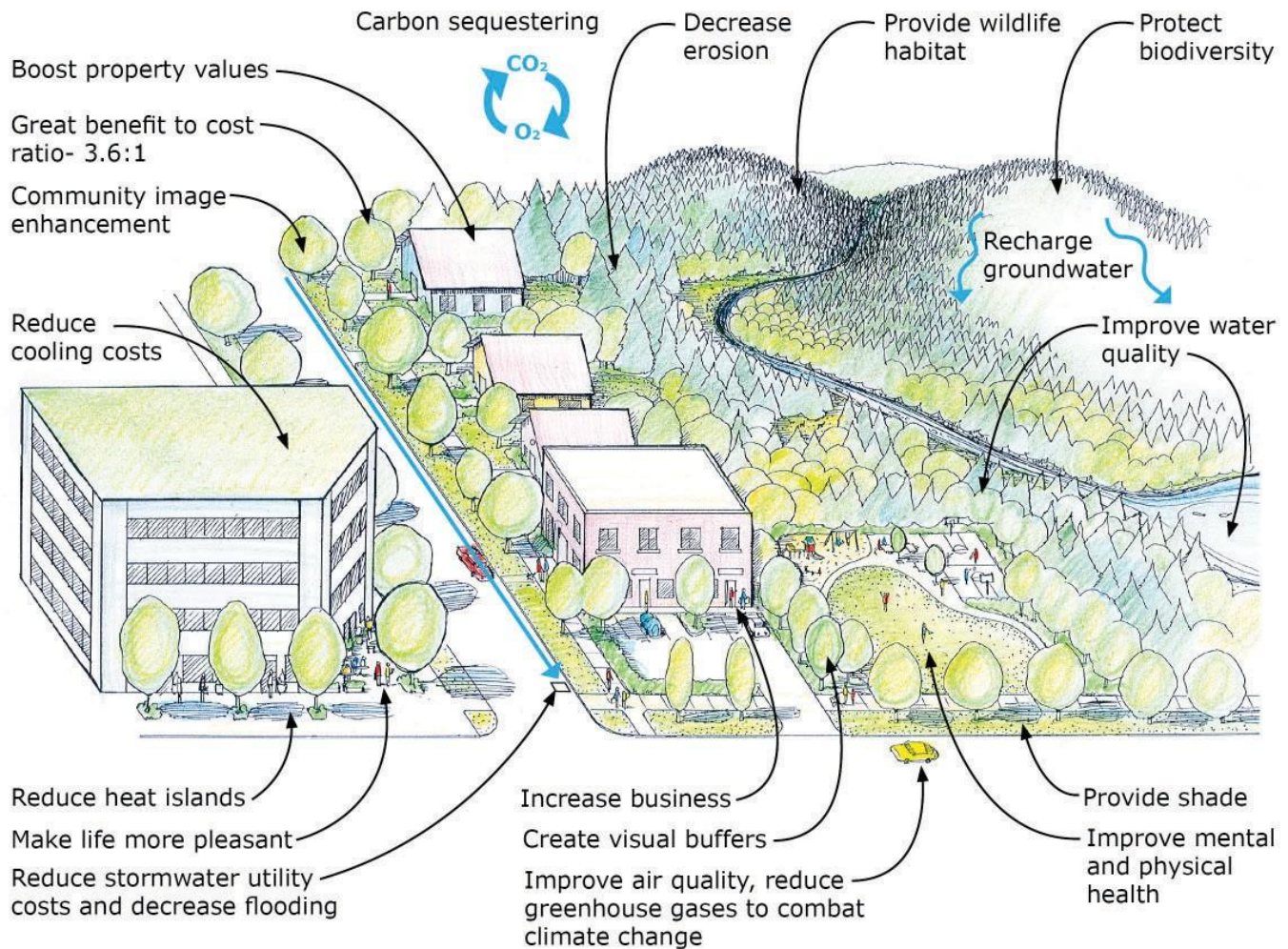


Figure 30. Overview of the ecosystem benefits and services provided by trees in communities

³¹ Alliance for Community Trees. 2011. Benefits of trees and urban forests: A research list. www.actrees.org



REDUCE STRESS AND IMPROVE THE QUALITY OF LIFE

Neighborhoods with generous canopies of trees are good for public health. Greater contact with natural environments correlates with lower levels of stress, improving performance. Students' concentration levels go up when they are able to look out onto a green landscape. Studies show that children with attention deficit disorder function better after activities in green settings. A green environment impacts worker productivity. Workers without views of nature from their desks claimed 23 percent more sick days than workers with views of nature. Residents of areas with the highest levels of greenery were three times as likely to be physically active and 40 percent less likely to be overweight than residents living in the least green settings.



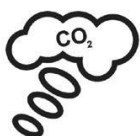
CLEAN THE AIR AND BREATHE EASIER

Shade trees reduce pollution and return oxygen to the atmosphere. In addition to carbon dioxide, trees' leaves or needles absorb pollutants, such as ozone, nitrogen dioxide, sulfur dioxide, and some particulate matter.



SAVE ENERGY AND LOWER ENERGY COSTS FOR BUILDINGS

As natural screens, trees can insulate homes and businesses from extreme temperatures, keep properties cool, and reduce air conditioning utility bills. A 20 percent canopy of deciduous trees over a house result in annual cooling savings of 8 to 18 percent and annual heating savings of 2 to 8 percent. By planting shade trees on sunny exposures, residents and businesses can save up to 50 percent on hot-day energy bills.



POSITIVELY INFLUENCE CLIMATE TO ENSURE SUSTAINABILITY

Trees absorb carbon dioxide and store carbon in wood, which helps to reduce greenhouse gases. Carbon emissions from vehicles, industries, and power plants are a primary contributor to increased air temperatures in metropolitan areas. Trees in the United States store 700 million tons of carbon valued at \$14 billion with an annual carbon sequestration rate of 22.8 million tons per year valued at \$460 million annually.



REDUCE THE NEED FOR STREET MAINTENANCE

Shaded streets last longer and require far less pavement maintenance, reducing long-term costs. Canopy diminishes pavement fatigue, cracking, rutting, and other damage. A study from University of California at Davis found that 20 percent shade cover on a street improves pavement condition by 11 percent, which is a 60 percent savings for resurfacing over 30 years.



RAISE PROPERTY VALUES

Trees are sound investments, for businesses and residents alike, and their value increases as they grow. Sustainable landscapes can increase property values up to 37 percent. The value of trees appreciates over time because the benefits grow as they do. For businesses, trees have added value, including higher revenues. Shoppers seek out leafy promenades that frame storefronts. Research shows that shoppers spend more—between 9 and 12 percent more—on products in tree-lined business districts. A study by Donovan & Butry in 2008 shows trees increase value to the home they reside but also contribute to increased property values of adjacent homes and properties. As an additional benefit, increased property values resulting from trees lead to quicker home sales (Wolf 2007).

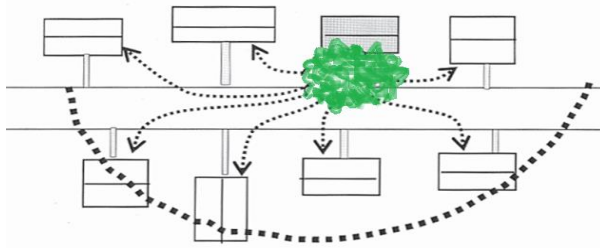


Figure 31. The street tree pictured adds \$7,593 to the price of the house it fronts and \$7,098 to the seven houses within 100 feet, giving a total value of \$14,691. The dotted line represents the tree's 100-ft radius sphere of influence. (Donovan & Butry, 2008)



CONSERVE WATER AND SOIL

A tree's fibrous roots, extending into the soil, are premier pollution filtration and soil erosion prevention systems. Intensely urbanized areas are covered with a large number of impermeable surfaces. In contrast to an impervious hardscape, a healthy urban forest can reduce annual stormwater runoff up to 7 percent. Highly efficient trees also utilize or absorb toxic substances such as lead, zinc, copper, and biological contaminants. One study estimated that eliminating the need for additional local stormwater filtration systems would result in savings exceeding \$2 billion.



COOLER PAVEMENT DIMINISHES URBAN HEAT ISLANDS

Broad canopy trees lower temperatures by shading buildings, asphalt, and concrete. They deflect radiation from the sun and release moisture into the air. The urban heat island effect is the resulting higher temperature of areas dominated by buildings, roads, and sidewalks. Cities are often 5 to 10 degrees (Fahrenheit) hotter than undeveloped areas, because hot pavement and buildings have replaced cool vegetated land. In addition, high temperatures increase the volatility of automobile oil and oil within the asphalt itself, releasing the fumes into the atmosphere. Shade trees can reduce asphalt temperatures by as much as 36 degrees (Fahrenheit), which diminishes the fumes and improves air quality.



PROTECT WILDLIFE AND RESTORE ECOSYSTEMS

Planting and protecting trees can provide habitat for hundreds of birds and small animals. Urbanization and the destruction of valuable ecosystems have led to the decline of many of species. Adding trees, particularly native trees, provides valuable habitat for wildlife.



BUILD SAFE COMMUNITIES AND DECREASE CRIME

Police and crime prevention experts agree that trees and landscaping cut the incidence of theft, vandalism, and violence by enhancing neighborhoods. Thriving trees on well-maintained streets indicate pride of ownership. Public housing residents with nearby trees and natural landscapes reported 25 percent fewer acts of domestic aggression and violence. Apartment buildings with high levels of greenery had 52 percent fewer crimes than those without any trees. Buildings with medium amounts of greenery had 42 percent fewer crimes. Many cities have implemented CPTED (Crime Prevention through Environmental Design) strategies and policies.



CALM TRAFFIC AND MAKE NEIGHBORHOODS SAFER AND QUIETER

People drive more slowly and carefully through tree-lined streets because trees create the illusion of narrower streets. One study found a 46 percent decrease in crash rates across urban arterial and highway sites after landscape improvements were installed. The presence of trees in a suburban landscape reduced the cruising speed of drivers by an average of three miles per hour. Faster drivers and slower drivers both drove at decreased speeds in the presence of trees. Trees reduce noise pollution, buffering as much as half of urban noise. By absorbing sounds, a belt of trees 100 feet wide and 50 feet tall can reduce highway noise by 6 to 10 decibels. Buffers composed of trees and shrubs can reduce 50 percent of noise.

Urban Forest Populations

The services and benefits of trees in the urban and suburban setting were once considered to be unquantifiable. However, by using extensive scientific studies and practical research, these benefits can now be confidently calculated using tree inventory information. Tree benefit values for the City of Los Banos' trees are summarized in this Plan using the findings from the 2021 i-Tree Canopy Assessment, the 2021 public tree inventory software, and calculated using the U.S. Forest Service's i-Tree's Streets and i-Tree Eco applications. The data within Los Banos' tree inventory provide insight into the overall health of the City's public trees and the management activities needed to maintain and increase the benefits of trees into the future.

The 2021 i-Tree Canopy Assessment uses the total acres of existing tree canopy cover to calculate Citywide urban forest benefits and services. The public tree inventory was collected in TreePlotter software in 2021 with built-in calculations for ecosystem services and benefits using the i-Tree research and the National Tree Benefits Calculator. The following sections summarize the benefits and services of these tree populations.

Citywide Urban Forest Benefits and Services

The Citywide urban forest comprised of all trees across the various types of landscapes provide environmental, economic, and social benefits and services. This expansive resource, stretching across public and private boundaries, enhances the quality of life, improves ecosystems, and offers financial savings to the community. The Citywide urban forest is measured by assessing the amount of tree canopy cover when viewed from above. Using the 2021 i-Tree Canopy Assessment, these benefits and services were derived.

Utilizing the research from the U.S. Forest Service i-Tree suite of tools, values were calculated for some of the benefits and functions provided by trees and forests in Los Banos. The urban forest holds millions of dollars of savings in avoided infrastructure costs, pollution reduction, and stored carbon.

Table 12. Summary of the annual benefits provided by the Citywide urban forest

Benefit or Service	Description	Quantity	Value or Savings
Air Quality	Trees produce oxygen, indirectly reduce pollution by lowering air temperatures, and improve public health by reducing air pollutants which cause death and illness.	35 tons	\$12,133
Stormwater and Water Quality	Trees and forests mitigate stormwater runoff which minimizes flood risk, stabilizes soil, reduces sedimentation in streams and riparian land, and absorbs pollutants, thus improving water quality and habitats.	20,000 gallons per canopy acre 107M gallons total	\$132,000
Carbon Storage and Sequestration	Trees accumulate carbon in their biomass; with most species in temperate forests, the rate and amount increase with age.	32k tons C stored 1,260 tons C sequestered	\$5.4M \$210k
TOTAL BENEFITS			\$5.8M

The Citywide urban forest provides over \$5.8 million total in terms of benefits, value, and/or savings. Annually, Los Banos' green asset contributes over \$350,000 (excludes carbon storage values) in value or savings. It should be noted, this study does not account for property value increases, energy savings, increased consumerism, reduced pavement wear, improved human health, structural value, among many others that would likely increase the value of the urban to well over \$200 million (approximately \$1,045 asset value per tree, McPherson, et al. 2017).

Public Street and Park Tree Benefits and Services

A total of 12,333 public trees comprise the inventory completed in 2021. These trees that reside in public parks and rights-of-way were added to the inventory software program and the ecosystem benefits were autocalculated.

Summary of Public Tree Benefits and Services

Table 13. Summary of the annual benefits provided by Los Banos' public trees*

Benefit or Service	Total (\$)	Quantity	\$/Tree	\$/Capita
Property Value	\$1,004,340	12,333 Trees	\$81.44	\$25.81
Stormwater	\$44,659	5,560,170 gallons prevented	\$3.62	\$1.15
Carbon	\$11,639	798,603 pounds C sequestered 1,655,270 pounds C stored 987,727 pounds C avoided	\$0.94	\$0.30
Energy	\$102,249	939,658 kWh saved	\$8.29	\$2.63
Natural Gas	\$13,785	13,598 therms saved	\$1.12	\$0.35
Air Quality	\$68,707	10,154 pounds removed	\$5.57	\$1.77
TOTAL BENEFITS	\$1,245,379		\$100.98	\$32.00
ANNUAL COST	\$368,179		\$29.85	\$9.46
COST : BENEFIT	\$1 : \$3.38 → For every \$1 spent on trees, there is a \$3.38 return on investment			

* Distribution of benefits per tree and per capita based on 12,333 trees and a population of 38,914 people (2019 US Census)

The trees in Los Banos provide value in terms of increased property values, air quality improvements, reduction in stormwater volumes and an improvement in water quality, energy savings from the shade of their canopy and protection from cool winds, and their ability to sequester and store carbon. These values for public trees, originating from research conducted by the U.S. Forest Service, and implemented in i-Tree software, equate to:

Public trees: \$1.2 million total annual ecosystem value

\$81 in annual benefits per tree

\$26 in annual benefits per capita

\$1 : \$3.38 annual cost-benefit ratio

\$213 million Citywide urban forest benefits and value



Cost-Benefit Analysis of Public Trees

Utilizing the arborist's field observations, a maintenance cost analysis was performed for the inventoried trees to provide Los Banos with initial guidance on future tree maintenance. The cost estimates below do not include appraised values, only ecosystem services. They also only provide an annual ratio without increasing return or cumulative benefits calculated. Costs also do not include installation costs or tree care activities like watering, irrigation, stakes/ties, mulching, and/or plant health care activities such as fertilizing or pesticide application. As part of the Plan, a comprehensive budget and urban forestry program review is detailed in the [Management Framework](#) section to provide the City with an accurate depiction of urban forest costs compared to the associated benefits and services. These tables below provide a summary of the costs per tree maintenance activity. Costs were distributed across a recommended 7-year planning horizon and the accumulated total costs are included for City-maintained trees.

Summary of Public Tree Costs

Table 14. Estimated maintenance costs for public trees (data reanalyzed February 2022)

Cost Summary – 12,333 Public Trees				
Activity	1-Year Cost	Per Tree/Year	7-Year Total	Total # of Trees
Routine Tree Pruning	\$227,974	\$30	\$1,595,821	7,611
Training Prune	\$92,742	\$21	\$649,192	4,365
Recommended Removal (with stump removals)	\$29,976	\$87	\$209,829	345
Priority Pruning	\$17,487	\$58	\$122,410	299
TOTAL	\$368,179	\$29	\$2,577,252	12,620

Based on 1,087 trees/year receiving "Routine Tree Pruning", 1,455 trees/year receiving "Training Pruning", 345 trees to be removed in 7 years (including stump removal), and 299 trees for priority pruning within 3 years.

Discussion on Routine Tree Pruning Estimates

For routine tree pruning, the number of trees is based on the total count of public trees that require frequent pruning. Tree species requiring less frequent pruning such as younger trees, aging trees, slow growers, certain species, and trees with a growing form that does not typically violate clearance requirements should be evaluated to finalize the routine pruning regimen. Examples of tree species require frequent or annual pruning include pistache, sweetgum, ash species, camphor, oak species, callery pear, Aleppo pine, eucalyptus species, London planetrees, sycamores, maple species, honeylocust, linden species, cottonwood, among others.

For public trees, the analysis of trees eligible for routine pruning resulted in a total of 1,087 trees recommended for annual pruning.

Discussion on Training Prune

Training prune consists of structural pruning of young and small diameter trees recently planted. Generally, newly planted trees should be lightly pruned according to best practices within three years of planting and revisited annually for approximately six years. For the study above, a 7-year rotation is used for simplicity. By year 5 of the 7-year cycle, the data should be reviewed and analyzed to make adjustments based on the changing tree population.

Final Discussion on the Routine Pruning and Removal Program

Based on the analysis of inventory data, a total of 2,542 public trees should be annually pruned (Routine and Young Tree Training) totaling 11,976 trees in seven years. This equates to a pruning rotation of five years when looking at the total public tree population of 12,333 trees. In summary, applying this tree removal and maintenance regimen would enable the City to achieve the recommended 5-year pruning cycle for public trees. To implement this strategy, \$368,179 needs to be budgeted annually for routine tree pruning (\$227,974), training pruning (\$92,742), recommended and priority removals (\$29,976), and priority pruning (\$17,487).

Cost-Benefit Analysis

The ecosystem benefits results from Table 13 were compared to the estimated costs from Table 14 to form a basic cost-benefit analysis. The results are shown in Table 15 below.

Cost-Benefit Comparison for Public Trees

Table 15. Annual cost-benefit analysis for public trees

	All Trees
Total Annual Costs	\$368,179
Total Annual Ecosystem Benefits	\$1,245,379
Cost : Benefit Ratio	\$1 : \$3.38

Cost-Benefit Analysis Summary

For public trees, the estimated yearly maintenance costs are \$368,179 and the annual benefits provided by those trees equals \$1,245,379. For every \$1 that the City invests in caring for these trees, \$3.38 is returned in benefits to the City.

It should be noted that the TreePlotter software for managing the inventory data utilizes i-Tree's benefit calculations, and the land use types that were identified by the arborists in the field determine the calculations used. Trees in the "Single Family" land use type yield the highest increase in property values according to i-Tree benefits calculations. On the other hand, trees located in the "Park/Vacant/Other" land use type yield the lowest property value benefits, according to i-Tree.

Planting the appropriate tree species and maintaining healthy canopy near or in proximity to buildings and along streets not only provide shade to help reduce energy costs in those buildings, but they also help to lower costs associated with managing stormwater runoff along the streets, reduce noise, filter air pollution, and reduce pavement wear.

URBAN FOREST BENEFITS BENCHMARKS AND COMPARISONS

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Citywide Urban Forest Benefits	\$213,000,000 (annual)	Statewide urban forest benefits: \$8.3B Statewide urban forest asset value: \$181B (McPherson, et al. 2017)	Calculations are based on the U.S. Forest Service's i-Tree research and supporting tools. The \$213M amount is based on the 2017 study by McPherson that shows the 173.2 million trees in CA bring a total asset value of \$181 billion— an average of \$1,065 per tree. Using \$1,065 and an estimated total number of trees in Los Banos of 200,000 the estimated asset value was calculated.
Public Tree Costs	Average management cost per public tree: \$29.85	Average management cost per public tree: \$19 (McPherson, et al. 2016)	Costs are estimated using City and industry averages.
Public Tree Benefits	\$1,200,000 (annual)	\$110.63 per public tree \$29.17 per capita (McPherson, et al. 2016)	The \$1.2M value is based on the tree inventory database's tool using i-Tree research. Benefits and services include energy savings, property values, stormwater reduction, air quality improvements, and carbon services.
Cost-Benefits of Public Trees	\$3.38 returned for every \$1 spent	\$5.82 returned for every \$1 spent (McPherson, et al. 2016)	Costs and benefits are estimated and may fluctuate as the urban forest changes.

RECOMMENDATIONS FOR URBAN FOREST BENEFITS

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Citywide Urban Forest Benefits and Services	Sustain existing urban forest benefits and services by protecting existing trees.	Continue to enforce and monitor tree ordinances, standards, and best practices for public and private trees. Public outreach and education should provide information regarding tree benefits, pest and disease management, and other information to sustain the urban forest.
	Enhance the urban forest benefits and services through strategic planting.	In addition to strategic street tree planting, the planting of trees on public properties should also be conducted and guided by a strategic tree planting plan. Recommendations and guidance for private property owners should also be provided to collectively grow the urban forest and associated benefits and services.
	Educate the public about urban forest benefits and proper private tree management to build support and increase tree stewardship.	Most of the urban forest and available planting space resides on private property (only second to parks and open space). Therefore, an education program for the public that discusses urban forest benefits and proper management will help to protect the valuable resource.
Public Street and Park Tree Benefits and Services	Sustain existing public tree benefits and services by protecting and properly maintaining public trees.	Adherence to and enforcement of the tree ordinances, standards, and best practices during construction projects and maintenance will protect the existing benefits and services provided by the public tree population.
	Enhance the benefits and services provided by street trees by achieving 90% stocking levels in public rights-of-way.	Utilizing a strategic planting plan guided by tree canopy goals, community input, and other factors will effectively grow the public tree population and increase overall stocking levels.
	Educate the public about urban forest benefits and proper tree maintenance to build support and increase tree stewardship.	Maintaining street trees is primarily the City's responsibility though the urban forest is comprised of all trees throughout the City. An education program that informs the public of proper private tree maintenance and the benefits of trees will instill stewardship and a healthier tree population.
	Plant trees that grow into large-canopied specimens where adequate space is available.	Simply achieving improved stocking levels does not infer enhanced benefits and services. The appropriate tree species for changing climates and the given site will increase longevity and maximize benefits and services.
Cost-Benefits	Continually assess the costs and benefits of the urban forest and public tree population to inform management.	Maintaining an inventory of public trees and reassessing Citywide tree canopy cover will provide the data to effectively evaluate benefits and services provided by the resource. As improvements to management are achieved through the implementation of this Plan, associated costs will likely reduce and an evaluation will inform monitoring and adaptive management strategies.



THE

MANAGEMENT
FRAMEWORK



THE MANAGEMENT FRAMEWORK

OVERVIEW

According to the *Structure, function and value of urban forests in California communities* (McPherson, et al. 2017), California's urban forests on average have approximately five trees for every resident in a community. In Los Banos, this translates to nearly 195 thousand trees across landscapes varying from streets and parks, to natural areas and open space, as well as in private yards and parking lots, essentially all trees in the City. The City directly maintains 12,333 public trees along streetscapes, in medians, on parks and public properties, and in backup lots. A large portion of the urban forest is on private property which emphasizes the need for continued outreach and education for a shared commitment to grow and manage a sustainable urban forest. The following sections provide analyses and guidance for the City-managed urban forest population.

CITY PLANNING DOCUMENTS

This section describes the relationship of the Urban Forest Management Plan to other City documents that provide goals and policies relating to the urban forest or influence / impact trees in the City. The main documents that influence citywide environmental policy and programs are the City's 2030 General Plan (2009), Los Banos' Landscape Standards and Specifications (2004), Community Design Standards (2008), and the Parks Master Plan (2020).

Los Banos General Plan

California law requires that every city and county prepare and adopt a long-range comprehensive general plan to guide future development and to identify the community's environmental, social, and economic goals. Los Banos' 2030 General Plan, approved in 2009, is a long-range vision which establishes priorities and goals for the future as it relates to the state-mandated elements including land use, circulation, housing, conservation, open space, noise, and safety.

The city is currently updating the General Plan ("General Plan Update 2040") that will focus on the City's most important issues: economic development, growth management, Downtown, agricultural mitigation, and water supply. In addition, the General Plan will fulfill recent State required updates that have been enacted since the last update.

The Los Banos General Plan is a roadmap to a greater future and this Urban Forest Management Plan provides the framework for addressing sustainability and "greening" the City. The following table summarizes the chapters, goals, and policies that support the urban forest and the opportunities for the Urban Forest Management Plan to support the 2030 General Plan.

Table 16. Goals and policies within the General Plan that are supported by the Urban Forest Management Plan

Chapter	Policy #	Policy/Actions	Discussion
Economic Development	ED-G-3	Make Los Banos an ideal place to do business by fostering a business friendly climate.	Trees encourage consumerism and shade parking lots.
	ED-G-5	Promote Downtown as a cultural and entertainment center to bring people downtown and stimulate business opportunities.	Trees downtown support consumerism by offering shade and improved well-being.
	ED-G-7	Seek and promote particular businesses or economic opportunities that provide needed local goods, services, employment, or those that enhance the City's physical and social well being.	Trees improve the physical and social well-being of residents and visitors.
Land Use	LU-G-1	Promote a sustainable, balanced land use pattern that satisfies existing needs and safeguards future needs of the City.	Strategies for sustainable urban forest management is provided in the UFMP.
	LU-G-3	Ensure that new development provides for infrastructure, schools, parks, neighborhoods, shops, and community facilities in close proximity to residents.	New development should consider the appropriate location, spacing, and selection of trees.
	LU-G-4	Preserve and enhance Los Banos' neighborhood character and small town feel.	Preserving existing healthy trees contributes to a neighborhood's character.
	LU-G-5	Reinforce the City's image by protecting historical resources, strengthening focal points, improving streetscapes and the safety of neighborhoods.	The City's image and improved streetscapes can be supported by appropriate tree design.
	LU-G-6	Promote environmentally sensitive and sustainable design in new development.	Protection of healthy trees during development is critical.
	LU-G-7	Provide for residential development with strong community identities, appropriate and compatible scales of development, identifiable centers and edges and well-defined public spaces for recreation and civic activities	Public spaces with trees can support this policy.
	LU-G-9	Provide for a transition between higher density and lower density residential areas, or require buffers of varying size between residential uses and non-residential uses without restricting pedestrian and bicycle access.	Transitions and buffers consisting of trees can improve visuals and reduce noise while supporting pedestrian and bicycle access.
	LU-G-11	Develop a vibrant, mixed-use Downtown that is the pride of the community.	A vibrant downtown should include street trees.

Circulation	C-G-1	Promote safe and efficient vehicular circulation.	Proper street tree maintenance supports safe vehicular travel.
	C-G-2	Provide a wide variety of transportation alternatives and modes to serve all residents and businesses to enhance the quality of life.	Alternative modes of transportation may include bike lanes and sidewalks where trees should be preserved and added as features.
	C-G-5	Improve the scenic character of transportation corridors in the City.	Transportation corridors can be enhanced with street trees and also help to slow traffic.
	C-G-11	Promote bicycling and walking as alternatives to the automobile.	Bike and walking lanes should consider tree protection and new trees planted.
	C-G-12	Foster practical parking solutions.	Parking solutions should include tree protection and planting requirements and not restrict the space for trees.
Parks, Open Space, and Conservation	POSR-G-1	Establish and maintain a high-quality public park system for Los Banos.	High-quality parks includes proper tree maintenance and a healthy tree population.
	POSR-G-3	Provide...trail system throughout the city, including bikeways, pathways, sidewalks, and other trails that link...parks and recreational facilities, community facilities, public schools, and downtown.	Trees should be included in the design of these systems.
	POSR-G-4	Preserve and maintain open space around the city for future generations.	Preserving trees and proper maintenance is a component of this policy.
	POSR-G-5	Continue to provide public access to public open space to the maximum extent feasible.	Continue to plant and maintain trees in public open space.
	POSR-G-6	Protect rare and endangered species.	Protecting existing trees can protect rare and endangered species and habitats.
	POSR-G-7	Protect and enhance the natural habitat features and open space corridors within and around the Planning Area.	Trees are a vital contributor to habitat protection and enhancement.

	POSR-G-9	Protect the quality of storm water that discharges into areas in and around Los Banos.	Trees reduce stormwater and improve absorption of water into the soil.
	POSR-G-13	Improve air quality to promote public health, safety, and Los Banos' environmental quality.	Trees reduce harmful pollutants and particulate matter through absorption and collection on their biomass.
	POSR-G-15	Assume leadership in efforts to reduce toxic air pollutants and ozone depleting compounds.	Trees reduce harmful pollutants and particulate matter through absorption and collection on their biomass.
Noise	N-G-1	Strive to achieve an acceptable noise environment for the present and future residents of Los Banos.	Trees can serve as sound barriers to reduce noise levels.
Safety	S-G-1	Minimize risks of property damage and personal injury posed by seismic hazards, soil hazards, and erosion.	Properly maintained trees are pruned to manage risk at acceptable levels.
	S-G-2	Protect the community from risks to lives and property posed by flooding and stormwater runoff.	Trees stabilize soil, reduce runoff, and reduce stormwater volumes.
	S-G-3	Protect Los Banos' residents and businesses from potential wildfire and structural fire hazards.	Proper tree selection and maintenance can reduce fire hazards.
	S-G-8	Minimize the risk of personal injury, property damage, and environmental damage from both natural and manmade disasters.	A well maintained urban forest and a program with protocols in place can minimize risk.
	S-G-9	Improve natural disaster response capabilities through a variety of preparedness measures.	A well maintained urban forest and a program with protocols in place can reduce response time.
Public Facilities and Utilities	PFU-G-1	Provide superior educational opportunities for children and all members of the community.	Messaging around the urban forest should be included in this effort.
	PFU-G-2	Provide public and cultural facilities that contribute to Los Banos' positive image, enhance community identity, and meet the civic and social needs of residents.	The urban forest contributes to these elements.
	PFU-G-3	Ensure an adequate supply of fresh water to serve existing and future needs of the city.	Trees improve water quality and improve the rate of absorption into the soil.
	PFU-G-5	Promote the conservation of water within Los Banos.	Planting the right trees that are "water-wise" is an important factor in water conservation.

Los Banos Parks Master Plan

PARKS MASTER PLAN

CITY OF LOS BANOS



OCTOBER 2020



Los Banos' parks and open space are vital components to the Citywide urban forest. The 2020 Los Banos Parks Master Plan is intended to guide the Parks and Recreation Division, Parks and Recreation Commission, and staff in allocating resources over the next 15 years or more and to adapt to changing conditions and population needs. The Parks Master Plan was informed by substantial community input, demographics, and current trends analyses, assessment of parks and facilities, and existing and new policies. The Master Plan describes various types of parks and identifies park facilities and access improvements designed to maintain and improve Los Banos' quality of life for everyone.

A major contributor to that enhanced quality of life is the shade and aesthetics of existing and new trees. The Master Plan provides goals and policies to improve maintenance operations, tree species selection, community engagement, sustainability, and design. Over 430 shade trees are proposed in the Master Plan for various park projects, installations, and renovations. Guidance and recommendations in the Urban Forest Management Plan will support goals and policies of the Parks Master Plan.



Trees in Los Banos' Parks (Source: City of Los Banos Parks Master Plan)

Table 17. Goals and policies within the Parks Master Plan that are supported by the Urban Forest Management Plan

Goal	Policies
Increase capacity to meet future demand (population growth).	Maintain and improve existing facilities, parks, and trails as identified in this Parks Master Plan.
	Look at improving park user satisfaction in City of Los Banos by increasing shade for picnic areas and playgrounds...increasing maintenance staff...
	Establish and maintain a high-quality public park system for Los Banos.
	Involve citizens, especially youths, in maintaining park areas through...park watches...cleanup and repair.
Develop a definitive program for renovation of existing recreation facilities and development of future facilities.	Retrofit existing parks, as appropriate, to reduce maintenance cost and water use, and to improve safety and aesthetics.
Improve connectivity to parks.	Improve the equitable distribution and quality of trail amenities including drinking fountains, trash receptacles, bike racks, dog waste stations, shade trees, and benches.
	When greenways are included in new communities to meet the park acreage requirements, at a minimum, sidewalks and benches shall be installed to connect streets and neighborhoods to parks and other facilities.
Work at achieving sustainable landscapes, parks and facilities.	Pursue the conservation of water in parks and facilities by...replacing high water use landscaping such as decorative turf with drought tolerant and low water-use planting and hardscape materials where appropriate.
	Pursue development of green infrastructure by incorporating pervious surfaces and bio-retention features to recharge and cleanse stormwater runoff.
	Increase shade and the number of trees within the park system.
Expand financial opportunities.	Develop a 15-year capital infrastructure and equipment plan that responsibly plans and guides park needs...
	Encourage volunteerism and community-built projects, such as community gardens, dog parks, and bicycle skill courses.
	Continue to pursue LLDs for operational funding. The Parks and Recreation Division has LLDs...to provide a dedicated funding source related to park development and maintenance.
Address accessibility including park visitors with disabilities.	Identify ADA access needs within and to City parks and make improvements.

Table 18. Proposed tree plantings for park improvements listed in the Parks Master Plan

Location	Number of Shade Trees or Description
7 th Street Ballpark	Install shade trees along 7 th street
Cresthills Park	Install pavers at empty tree well
Jo-Lin Park	Install 40 shade trees
Regency D Park	Install up to 100 shade trees
Skylark Park and Expansion	Install new irrigation, turf, and 40 trees
Vineyard Basin C Park	Install...shade trees
HG Fawcett Canal Trail and Wolfsen Park	Install park amenities such as shade trees...
Rail Trail Extensions	Install 40 shade trees
Oliveira Soccer Park	Install 12 shade trees
Vineyard Basin A Park	Install 25 shade trees
Vineyard Basin B Park	Install 30 shade trees
Dos Amigos Park	Install 4 shade trees
Gardens III Park	Install 6 shade trees
Meadowlands I Park	Install 6 shade trees
Meadowlands II Park	Install...landscaping and trees and mulch with irrigation
Orchard Terrace Park	Install 20 shade trees
Page Avenue Extension	Install 40 shade trees
Presidential Park	Grind and remove stump, install new shade tree
Rancho dos Amigos Greenway Park	Install 20 shade trees
Ranchwood Park	Install 20 shade trees
Regency Tot Lot	Install shade trees
Verona Basin Park	Install 30 shade trees
TOTAL	433+ trees



BENCHMARKS AND COMPARISONS FOR CITY PLANNING DOCUMENTS

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
General Plan	2009 General Plan	Typically, General Plans are updated every 5-10 years.	Goals and policies in the General Plan and the UFMP align.
Climate Plans	None to date	Climate Actions Plans are beginning to include tree planting and preservation as strategies and measures to address climate change.	Goals and policies in a Climate Action Plan and the UFMP should align. The Urban Forestry Program should work closely with departments and partners involved in sustainability, urban heat reduction, resiliency, and climate efforts.
Parks Plans	2020 Parks Master Plan	Parks and recreation plans are beginning to integrate analyses and discussions around tree canopy cover, tree plantings, engagement, and policies for trees in parks and open space.	Goals and policies in the parks plans and the UFMP align. The UFMP provides a summary of the Parks Master Plan's goals and policies that impact or influence the urban forest. Strategies in the UFMP will complement the Parks Master Plan.

RECOMMENDATIONS FOR CITY PLANNING DOCUMENTS

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Los Banos General Plan	Participate in the plan update process to include urban forest management context.	California law requires each county and city in the state develop and adopt a comprehensive plan to guide future actions of a community. Integrating and mainstreaming urban forestry within the General Plan builds support, aligns common goals, leverages resources, and ensures long-lasting impacts.
Parks Master Plan	Improve the Urban Forestry Program by aligning goals and policies of the parks Master Plan with the UFMP.	Trees in parks comprise the urban forest. Implementing the Parks Master Plan will expand this element of the urban forest along with improvements to staffing levels, maintenance, and sustainable landscapes.
Other City Plans	Update standards, specifications, and procedures based on recommendations in the UFMP and changes to resources and the urban forest.	The City's Landscape Standards and Specifications (2004) and Community Design Standards (2008) provide urban forestry-specific standards and best practices. The UFMP makes recommendations to strengthen these standards and best practices and related documents should be updated. Changes to City ordinances and policies should also be reflected in these documents.

CURRENT STRUCTURE FOR MANAGING LOS BANOS' URBAN FOREST

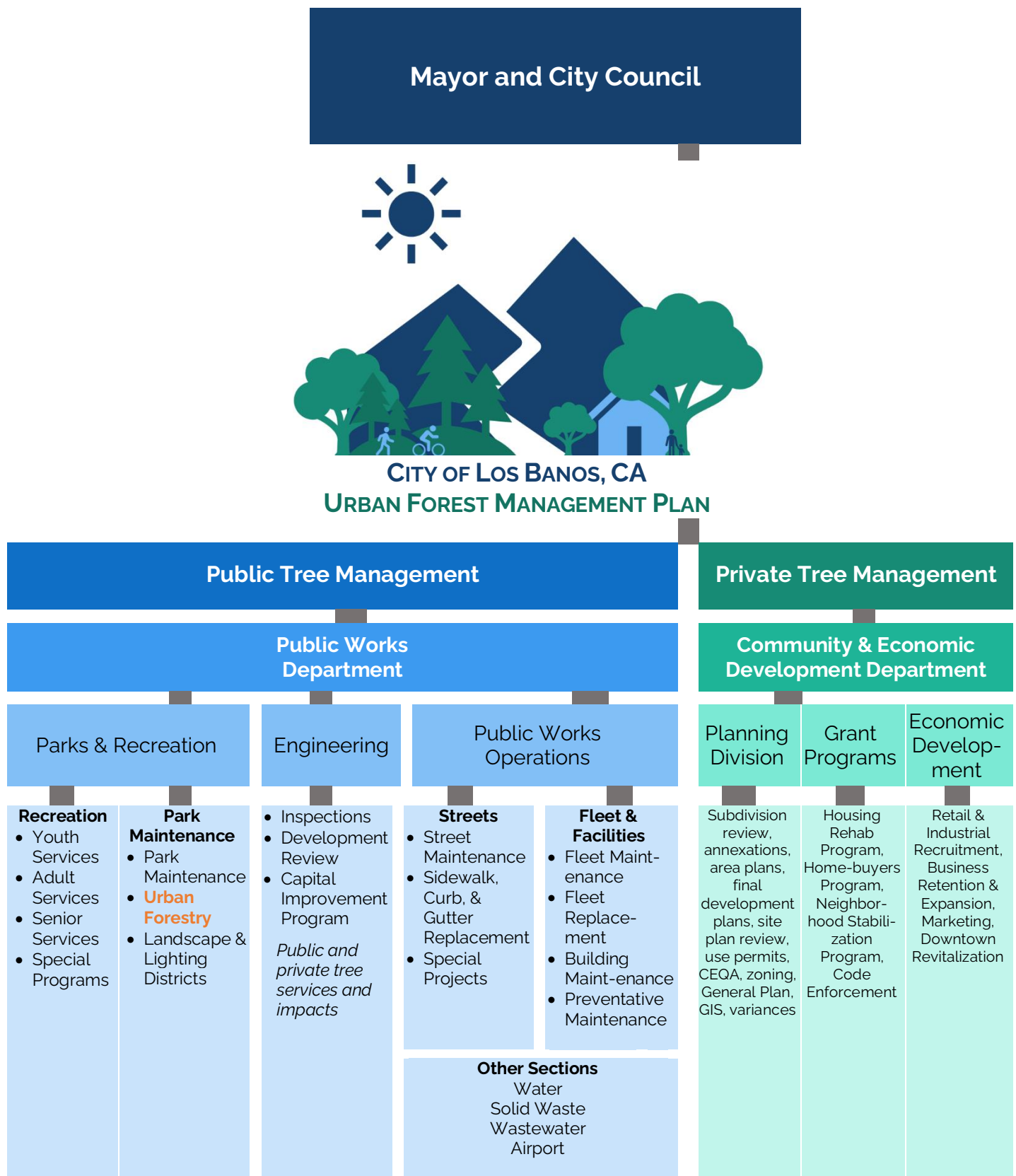


Figure 32. Organizational chart detailing the departments and divisions involved in urban forestry activities

Public Tree Management Structure

The City of Los Banos is responsible for the maintenance, removal, and planting of street trees as well as the pruning of trees for street and sidewalk clearance, and the removal of dead, weak, or hazardous limbs. While pruning conforms to accepted professional standards, street trees are not pruned for aesthetic purposes. Pruning may be done by the adjacent property owner with a permit. The City requires the pruning by permit to adhere to City standards in order to protect the health and vitality of public trees.

The Los Banos Tree Commission serves in an advisory capacity to the Parks & Recreation Commission and to the Public Works Department regarding the importance of trees to the community. The Commission was formed as part of the City's commitment to being a Tree City, USA. It has helped the City be acknowledged as a Tree City USA every year since 1991. The Commission makes recommendations on the planting and maintenance of trees. It also provides recommendations regarding the present and future needs of the City in connection with trees in public spaces, commercial locations, and residential areas. The Tree Commission works closely with the Director and staff of the Public Works Department. The Commission also helps educate community residents on the importance of trees and the proper planting and maintenance of trees.

The City of Los Banos' Public Works Department's Parks and Recreation Division oversees public tree management and other programs and services. The Division is comprised of the Recreation and Park Maintenance Sections. Park Maintenance oversees park maintenance, urban forestry, and landscape & lighting districts. In addition to the Park Maintenance Section, Public Works Operations Division's Streets and Fleet & Facilities Sections play a role in public tree management. For private trees, the Public Works' Engineering Division conducts inspections, development review, and projects as part of the Capital Improvement Program. The Engineering Division and the Community and Economic Development Department's role in urban forestry is summarized in the upcoming section.

Recreation Services

Recreation Services provides a diverse array of offerings and opportunities for all members of the community. Recreation provides several spaces for recreational activity including community centers, recreation halls, sports fields, and 40 parks in the community. Recreation provides administrative support for partner programs and services, fundraisers, community events, and City programs. The Recreation Section supports enhancing shade trees in public areas and retaining the City's Tree City USA status.

Future outlooks and roles for Recreation Services include activities, events, and resources for seniors; work with youth programs; establish best practices for contracts; improve the Community Center overflow parking area; and pursue partnerships.

Engineering Division

The Division is committed to providing quality engineering direction, decisions, and technical support to all City Departments. The Division reviews and inspects public and private projects to ensure City Standards and Specifications are being met. Engineering is also responsible for monitoring state permits and prepares all required annual reports related to those permits.

Future outlooks and roles for the Engineering Division include studying alternatives for supplying quality drinking water, support the Planning Division in the technical review of plans, update the City's Improvement Standards, design and construct Utility Master Plan projects, construct storm drain basins, develop plans relating to traffic, utilities, and parks, and repair manholes.

Street Services of Public Works

Street Services is responsible for the maintenance, repair, and improvements of the City's 123 miles of streets, five miles of alleys, 227 miles of curb and gutter, and 216 miles of sidewalks. Services include

pavement management, concrete improvements, sidewalk maintenance, streetlight maintenance, painting street markings and curb markings, traffic signs and signals, bridges, minor construction, flood control, and traffic surveys.

Future outlooks and roles for Street Services include repairing curbs, gutters, sidewalks, and storm drains; install ADA corners; annual sidewalk surveys; and purchase and implement an asset management system.

Park Maintenance Services

Park Maintenance Services maintains and operates the City's approximately 200+ acres of park, open space, and landscape areas. Park Maintenance provides services and improvements for 14 park buildings and restroom facilities. Maintenance also oversees the landscaping of City median, right-of-way, and planters throughout the City. Park Maintenance is responsible for servicing and improving the City's Urban Forestry Program. This includes the maintenance of designated City-owned street trees and park trees.

Future outlooks and roles for Park Maintenance Services primarily hinges on the implementation of the Urban Forest Management Plan but may include increased shade through tree plantings in parks and green spaces; installation of a dog park; creation of a Parks Maintenance Management Plan; implementation of the Parks Master Plan; development of a Tree Master Plan for planting and maintenance in line with the UFMP; pursuit of green infrastructure grants and funding opportunities; and maintenance of parks and green space while adhering to water restrictions.

Park Maintenance is responsible for all tree-related activities that occur in City parks and properties, including planting, establishment care, pruning, and responding to emergency situations. Parks Maintenance manages up to an estimated 3,400 trees in maintained areas of City parks. The total number of trees and frequency of park users necessitates trees being maintained at an optimal level for the safety of park users. Without an adequate number of professionally trained and certified arborists on staff, Park Maintenance is unable to ensure all park trees are in a safe condition and actively address potential risks before an emergency occurs.

City staff observed the tree population to be aging and declining in population, with many trees experiencing limb or whole tree failure. Park Maintenance supports planting trees and increasing tree canopy cover, however, challenges with space, staffing, and available irrigation sometimes prohibit that from occurring. Another challenge of tree planting in City parks is a lack of coordination on tree placement and species selection during new facility planning and construction. The design and installation of new park facilities is managed outside of Park Maintenance. The process does not require consultation with Park Maintenance staff about how the design will impact existing trees or to make decisions as to what tree species are appropriate for the location. It was stated during interviews with Park Maintenance staff that this level of coordination happens on an ad hoc basis, and in some instances, Park Maintenance staff are not made aware of the pending development project. On some occasions, the lack of coordination resulted in existing trees being removed that could have otherwise been preserved, and inappropriate species being planted at the site. However, these issues are largely avoided when Park Maintenance or the Urban Forestry Program are involved in the development process from the beginning of the project. As such, the development process should be updated to include mandatory review by Park Maintenance staff and professional arborists within Park Maintenance or other divisions at project initiation and before plans are finalized.

The planting of new trees in parks also presents the challenge of how establishment care will occur, and who will be responsible for the tree watering. City parks are a favorite location for tree planting events for City Council offices and corporate groups, many of which are coordinated with the assistance of volunteers. Parks provide a setting to effectively manage volunteers and create a good

volunteer experience. Park Maintenance staff welcome the opportunity to have volunteer groups plant trees in parks, but do not have the capacity to provide establishment care and watering or manage the volunteers and events. Often the care is cost prohibitive to provide automated irrigation to the newly planted trees, and funds are not available to contract out watering. As a result, the group who planted the trees are responsible for tree watering. A newly planted tree in Los Banos will require up to three years (sometimes longer depending on weather) of regular watering to remain healthy and establish its root system. This long-term commitment is usually difficult for a community or corporate group to fund or provide, and eventually the care will drop off. If community members, corporate groups, and elected officials desire to continue to plant trees in City parks for community engagement and volunteer activities, there must be an established watering and maintenance plan before the planting project moves forward. Without a maintenance plan in place, Park Maintenance cannot guarantee trees planted by volunteers will survive through the establishment period.

Private Property Tree Management Structure

The primary limitation of the current structure of Los Banos' departments and divisions is delineating the management of trees on private property to the Community and Economic Development Department (CED). This structure reduces the emphasis and priority of trees due to other competing planning responsibilities, such as the development of zoning and planning policies and amendments, plan review, and enforcement of zoning codes. Despite requiring tree removal permits, CED does not have an ISA Certified Arborist on staff to make science-based decisions about tree-related issues. Arboriculture knowledge and experience is not typically associated with the education and experience of Community and Economic Development planners and engineers.

Community and Economic Development (CED) Department Overview

CED is committed to working with the public, development community, business community, and non-profit organizations to enhance the quality of life in the community; promote safe, attractive, and sustainable development; and facilitate development projects that meet the City's objectives and standards.

The mission of CED is to guide the physical development of the City in a manner that will foster positive social and economic growth, which is consistent with the goals of the General Plan and build a stronger community by planning, promoting, and facilitating economic development; increasing, improving, and preserving existing jobs and creating new ones; working to implement the City's General Plan; and— to as great a degree as possible— working with owners and tenants to increase entrepreneurial opportunity and property values in the community.

CED is committed to developing and implementing programs to support the City's General Plan. The Department promotes sustainable development and encourages quality design and livability of residential neighborhoods, commercial areas, and industrial zones within the City's sphere of influence. CED provides a variety of services to fulfill the objectives of the General Plan, provide efficient permit processing services, and encourage public participation in the land use process. CED is responsible for implementation of Los Banos' General Plan, Zoning Ordinance, adopted specific plans and other associated ordinances. Responsibilities include:

- Responding to public inquiries related to land-use and property development regulations.
- Providing solution-oriented customer service to support economic development opportunities whenever possible.
- Reviewing land-use entitlement applications (e.g. tentative map, conditional use permit, annexation, general plan amendment, site plan review, etc.) for conformance with adopted policies and regulations.

- Administering the California Environmental Quality Act (CEQA) for environmental review related to planning and development proposals.
- Updating and maintaining the General Plan and Zoning Ordinance.
- Administration of the Business License Program.
- Providing staff support for the Planning Commission and the Economic Development Advisory Commission.
- Resolving land-use related violations alongside Code Enforcement.

As noted in departmental interviews, several CED staff expressed this same concern, recognizing arboriculture is outside of their skillset and experience and indicating their preference is to not make decisions on tree-related issues. As a result, the Parks and Recreation Division often weighs in on planning and designs, further stressing staff capacity. This scenario provides a workable short-term solution for including arborist review of planning projects that may be more controversial, but also redirects limited Parks and Recreation Division staff time and resources from managing public space trees. Since this short-term solution redirects Parks and Recreation's attention from public space trees to private space trees, it should not be considered a viable long-term solution for the City to effectively manage trees on private property.

Planning Division

The Planning Division within Community and Economic Development is responsible for tree issues on private property when it relates to the implementation of tree ordinances and tree removal permits. Each of these responsibilities requires the knowledge of an experienced arborist to ensure arboricultural and best management standards, as defined by ISA, are correctly applied. When deciding whether a private property tree removal permit should be approved, Planning Division staff must assess whether the tree is alive or dead, whether it poses a risk to people and property, and if there are alternatives to preserve the tree.



Together, these departments and divisions strive to improve the health, wellness, and quality of life for Los Banos residents by offering a wide variety of programs and services. Through the Park Maintenance Section, over 12,000 public trees are managed, new trees are planted, and long-range planning is applied to the Citywide urban forest comprising 14 percent of Los Banos' land area.

Park Maintenance Funding Structure

To maintain and grow Los Banos' urban forest, Plan goals must be adequately funded to support successful implementation. There are several factors that can be used to determine if the City is funding the Urban Forestry Program to meet established safety and economic goals, while maximizing the environmental services provided by trees. These factors include (1) maintaining trees in a safe condition, (2) adequate staffing to enforce ordinances and implement policies, and (3) managing new tree planting to expand Citywide canopy cover in support of the climate, sustainability, public health, and equity goals. Additionally, as the City's economic conditions change, funding should be thoughtfully allocated to prioritized urban forest management actions so the City can continue to progress towards a sustainable urban forest. Analysis of the City's Urban Forestry Program funding incorporated the use of methods that are based on (1) current program goals, (2) a comparison of funding levels with other municipalities' urban forest management programs, and (3) applicable sustainability principles.

Urban Forestry Program Funding

To develop a sustainable urban forest program sufficient funding is necessary. There is no set standard for what a city will need to invest in managing its tree population to support a sustainable urban forest program. The funding allocation will vary depending on the City's health, safety, and environmental goals.

City budgets to manage trees in the public space vary considerably for per-tree spending, from as low as \$9 (City of Los Banos) to as high as the \$37 per tree average for cities with a population of 25,000 to 50,000 people (Hauer, et al. 2014). Locally, per tree values of over \$100 can be found in cities like Palo Alto (\$119 per tree). The substantial gap in per-tree spending requires further examination to understand if it progresses a City's urban forest program goals and is sufficient to support tasks needed to manage a tree population (i.e., such as maintaining a 5- to 7-year pruning cycle and annually planting trees to increase canopy cover).

In analyzing the current funding levels of Los Banos' Urban Forestry Program, this Plan reviewed the annual budgets for all tree-related work, considered the amount of work completed in those years, and compared funding to other municipal tree budgets. Based on a budget of \$115,000 from fiscal year 2019, and an estimated public tree population of 12,300, the City of Los Banos spends approximately \$9 per tree annually. It should be noted, it is estimated the public open space and natural areas in the City may contain hundreds of thousands of trees though these trees are not actively managed. Tree management in these areas occurs primarily along the wildland-urban interface and trails in the form of storm damage cleanup and removals.

An important factor in determining if funding is sufficient, is understanding whether maintenance practices are supporting program goals and other goals developed in the Plan. Some maintenance practices, such as the frequency with which a newly planted tree is watered, are specific to local climate conditions and annual rain totals in an area. Others, such as maintaining a 5- to 7-year pruning cycle (Miller, et al. 1981 and Hauer et al. 2015) are relatively consistent for all tree management programs. As such, the City's pruning cycle is a useful indicator to understand its funding needs. The [Identifying Optimal Pruning Cycles](#) subsection within the [Urban Forestry Best Practices](#) section details the estimated costs for various pruning cycle scenarios.

Based on the analysis, the City does not currently dedicate enough funds to implement an industry-recommended pruning cycle and may consider options to incrementally increase tree management. As such, current funding does not support additional management actions recommended in this Plan, like proactively maintaining all City trees. If the City were to take on additional management of street trees, one possible avenue to increase funding could come through a special assessment fee, use of the Gas Tax, or tax paid for by residents. To that end, the public survey asked respondents if they

would support additional funding to services provided by the Urban Forestry Program. The results indicate a measure of support for enhanced management— 74 percent support funding to decrease the response time for the City to prune, maintain, and address dead tree removal requests. See the [Engagement to Inform the Plan](#) section for more details.

To make an informed request for increases to the program budget, an analysis of the current funding for the Urban Forestry Program and Parks Tree Maintenance section was completed.

Total UF Budget	Per Capita Budget	Tree Planting and Initial Care Budget	Tree Maintenance Budget	Tree Removal Budget	Management Budget
\$115,000	\$3.63	\$45,000	\$35,000	\$20,000	\$15,000

Table 19. Los Banos Urban Forestry Program budget summary reported for Tree City USA 2019

Trees Planted 2019	Trees Pruned 2019	Trees Removed 2019	Volunteer Time
2,000	2,000	30	1,200

Table 20. Los Banos Urban Forestry Program activity summary reported for Tree City USA 2019

The tables above summarize the Urban Forestry Program budgets and activities as reported to the Arbor Day Foundation for Tree City USA accreditation. Consultations with the City's Parks and Recreation Operations Manager uncovered additional structures and details regarding budgets for tree-related services and programs.

Budgets from Landscape & Lighting Assessment Districts (LLDs) have specific line items and allocations for tree care. Line item (Account) 225 is specifically for tree care and is assigned to a contractor. Parts of Account 221 (Parks Maintenance) are used for tree care, though no more than 5 percent. The majority of funds in 221 are used for irrigation repairs and site improvements. The City often uses Account 221 to buy trees that are planted in parks or rights-of-way.

In the General Fund Maintenance Budget line item that ends in 238, technical services are used for contracted work. A bulk of this is allocated to irrigation repairs, a remainder is for tree care and occasionally smaller projects. Most recently, approximately \$20,000 of this budget for line item 238 is for tree care.

The City commonly contracts tree care for two reasons— 1) It is underneath powerlines. The City does not have staff to conduct tree trimmings when power lines are involved, and 2) tall trees that cannot be reached with the City's current equipment. Examples of these would be the palm trees at Talbott Park.

Recently, a capital project was funded specifically for trees in the amount of \$20,000 for Canal Trail trees. It also included irrigation retro-fitting to allow for future tree planting. As of 2021, 50-100 trees were expected to be planted as part of the project. If approved, in order to fill gaps along the trail.

In 2021, the Urban Forestry Program requested a new stump grinder and aerial boom truck for equipment pending approval as of May 2022.

Workflows, Shared Priorities, and Challenges

In September and October of 2021, the urban forestry consultants met with members of the community to identify existing workflows, measures of success, concerns, priorities, and shared goals and outcomes as it relates to trees in the City. A total of 23 staff or commission members were invited to participate in a five-question survey and participate in follow-up interviews if desired. A total of nine survey responses were received from staff representing the Public Works and the Community and Economic Development departments. In addition, members from the Tree Commission and Parks and Recreation Commission participated. The figure below provides the summary of responses.



Figure 33. Illustration of the responses from the staff and commission member survey

From the survey, it was found the majority serve as advocates for public trees and park improvements and over half are involved with City ordinances and Code enforcement. Over half of the respondents noted the current staffing levels as a challenge, along with needed improvements as it relates to storm response, pest and disease management, climate change mitigation, wildfires, and drought (44 percent). Improved standards, protocols, and budgets were also a challenge noted, each at 44 percent. The respondents noted their top priorities to address in the Plan as Code enforcement to meet the 50 percent shade requirement for improvement projects, replacing dead or dying trees, planting in underserved areas, providing the proper care for trees, addressing tree and utility conflicts, planting the right tree for the site, and providing public education and volunteer events. Respondents would like to see this Plan address staffing (15 percent), community engagement (11 percent), resource shortages (11 percent), training (9 percent), and tree-related data (9 percent). Other desired outcomes include forestry equipment, improved program structure and efficiencies, and long-range goals.

By utilizing the input shared by staff and commission members, along with the benchmarking research, the inventory and canopy analysis, public engagement, and the Urban Forest Audit, this Urban Forest Management Plan provides goals and strategies to address shared concerns and priorities.

BENCHMARKS AND COMPARISONS FOR PROGRAM STRUCTURE

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Form of Government	General Law Council-manager	Statewide: 75% are General Law 2021 Urban Forest Benchmarking of 30 CA Cities: 50% are General Law	The structure and form of government influences programs, services, authority, funding mechanisms, among other characteristics.
Location of Urban Forestry Program	Parks and Recreation Division within the Public Works Department	2021 Urban Forest Benchmarking of 53 CA Cities: 49% have a Tree or Urban Forestry Division 35% are in Public Works (Thompson, et al. 2018)	The planning process to develop the UFMP identified areas for improving efficiencies one of which includes consolidation of urban forestry programs into one work section.
Urban Forestry Program Staffing Levels	<u>1.00 FTEs</u> Parks and Recreation Operations Manager (1.00) 1:12,622 (1 staff for every 12.6k trees) <u>Supporting Divisions:</u> Public Works Street Services CED Planning Division Public Works Engineering	Industry recommends 1 staff for every 10,000 public trees as a baseline. Average for cities with 25-50k populations: 1 staff for every 5,967 public trees. (Hauer, et al. 2014) 70% of CA cities have 0-4 FTEs (Thompson, et al. 2018)	Park Maintenance and other divisions/sections have a role in urban forest management
Funding Structure	~\$115,000 (2021) Primary Source: General Fund	2014 average budget for cities with 25-50k population: \$344k (Hauer, et al. 2014)	The primary source of funds for urban forest management come from the General Fund but other sources include permit/mitigation fees, Landscape and Lighting District, and Capital Improvement Fund, among others.
Urban Forestry Programs	Arbor Day and Earth Day Tree Permits: TBD Count of Heritage Trees: TBD	10 of 32 (31%) CA cities have a free street tree planting program 2 of 32 (6%) CA cities have a cost-share program for street tree maintenance (2021 UFMP Benchmarking)	New programs may emerge and existing programs may expand as a result of implementing this Plan.

RECOMMENDATIONS FOR PROGRAM STRUCTURE

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Program Structure	Establish, document, or strengthen Standard Operating Procedures between City departments and divisions.	Multiple city departments and divisions are involved with trees in the City. Standard Operating Procedures provide agreed upon guidance and workflows to ensure projects and services do not hinder goals and priorities of others.
	Utilize the findings from the UFMP to increase capacity and resources.	The tree inventory data provides the priority maintenance and removals necessary for a safe and sustainable public tree population. The ecosystem benefit analyses provide information that resonates with community members, City Council, and even other City departments. Utilize the summaries provided in the UFMP to build support for increasing staffing levels and the necessary funding for proactive tree care and Citywide urban forest management.
	Consolidate tree-related programs to increase efficiency, capacity, and levels of service.	Tree responsibilities are dispersed across multiple City departments and divisions in a fractured system which contributes to inefficiencies in management. One possibility to streamline tree management is to create a new work section that encompasses all tree management activities within the City. If all tree-related management activities, permitting, enforcement, customer service, and planning decisions were coalesced into one section with added service lines, it would maximize efficiency and productivity. The main benefits are increasing efficiency, changing workplace culture, and the capacity for the manager to assume more responsibility over service lines as needed. Considerations for a new Urban Forestry Division should be explored in the long term.

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Funding Structure	Further study the funding mechanisms most appropriate to support community forest management, and the degree to which residents or the City would generate the funding.	Public survey respondents showed varying opinions on where additional funding should be allocated but the majority support the improved response time by the City for street tree maintenance.
	To fund the proactive pruning for street trees and the necessary equipment and resources, explore the potential to use alternate funding sources.	Alternative funding sources such as the City's portion of the Gas Tax should be explored to support the Urban Forestry Program's staffing levels and levels of service.
	Continue to maintain the tree inventory and program records to justify budget requests.	The necessary resources and staffing to manage the urban forest sustainably should be informed by data derived from tree inventories, public surveys, staff reports, and other sources.
	Acquire and sustain staffing levels that more closely align with industry recommendations and the needs of the City's urban forest and customer service.	Los Banos' total staffing Citywide is below the average for cities in the region. Specific to the Urban Forestry Program, there is a shortage of 150 full-time employees compared to the average when looking at the proportion of public street and park trees to the number of staff. This analysis does not account for the estimated 480,000 trees in natural areas and open space but these trees are not to be managed as intensively as street and park trees.

EXISTING TREE CODE AND REGULATIONS

Tree ordinances are among the tools used by cities striving to attain a healthy, vigorous, and well-managed urban forest. By themselves, however, tree ordinances cannot assure that the trees in and around a community will be improved or even maintained. Tree ordinances simply provide the authorization and standards for management activities. If these activities are not integrated into an overall management strategy, problems are likely to arise. Without an overall strategy, management will be haphazard, inefficient, and ineffective, and the urban forest will suffer. This section provides an overview of the existing ordinances in Los Banos that address trees and the urban forest.

Street Trees

The ordinance that regulates street trees is located in Title 10, Parks and Recreation, Chapter 1: Trees, Shrubs, and Plants within Los Banos Municipal Code. This ordinance addresses planting and removal of trees within public rights-of-way and contains provisions governing maintenance or removal of private trees which pose a hazard to the traveling public.

The trees regulated under this ordinance are defined along with the requirements to adhere to industry standards and best practices. The ordinance also includes the process, criteria, fees, enforcement, and appeals as part of the tree permitting program. Currently, there is no fee for the street tree permit though a tree that is in question or disputed may require an arborist report at the property owner's expense.

In addition, Los Banos' street tree ordinance protects public street trees by defining the fees and course of action for interference with City actions and damage to public trees. And lastly, heritage trees are defined and regulated along and the requirements for tree protection of all trees are detailed.

As part of the Urban Forest Management Plan project, recommended revisions to the ordinance regarding public trees were provided to align with industry standards, best practices, community input, resources available, and the needs of the urban forest.

Private Property Trees

One factor to developing a sustainable urban forest is the extent to which the City can effectively influence the management of trees on private property as most of the urban forest exists on privately owned land. These trees are managed differently than street trees on public property, and are under the purview of the Community and Economic Development Department. The City's methods by which it can influence tree management on private property are a combination of indirect actions, such as community education campaigns, and direct actions, such as city ordinances, policies, and permits. An attractive quality of a robust community education campaign is voluntary participation from private landowners to contribute to reaching environmental and sustainability goals by implementing city standards for tree management. While some private landowners will adopt and implement city tree management standards, it is not reasonable to expect all private landowners to do so, which is the impetus for city ordinances, policies, and permit procedures to further enforce tree management standards on private property.

Private Property Tree Removal

In addition to ordinances for street trees, the City has ordinances that regulate trees and landscaping on private property— primarily in Title 9, Planning and Zoning, Chapter 3: Zoning. The hardscape and landscape requirements are detailed for each zoning type and as part of the Urban Forest Management Plan project, recommended revisions to the ordinance for a sustainable urban forest and smart growth were provided.

BENCHMARKS FOR TREE CODE AND REGULATIONS

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Effectiveness of Ordinances	(2021) Count of permits received: TBD Count permits approved: TBD Count of violations: TBD	• New residential tree planting: 65% effective • New commercial tree planting: 64% effective • Private property tree hazard abatement: 45% effective • Tree preservation during development: 33% effective • Assists tree canopy cover goals: 30% effective (Thompson, et al. 2018).	The count of permits and violations serve as an indicator of ordinance use and effectiveness. Recommendations for updates to tree-related ordinances were provided as part of this Plan.
Tree Removal Fees	There is currently no street tree removal permit fee. Fees for private property permits are established by resolution of the City Council.	3 of 32 CA cities have a fee for street tree permits Average private tree removal permit fee for 32 CA cities is \$364 (\$40 - \$2,599) (2021 UFMP Benchmarking)	Generally, it is recommended not to impart a fee for street tree removal permits but the fee for private property tree removal permits should reflect industry recommendations, regional averages, and City-specific impacts and needs.

RECOMMENDATIONS FOR TREE CODE AND REGULATIONS

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Street Trees	Review and refine the recommended changes to Title 10, Chapter 1 of Los Banos Municipal Code.	Strengthening the foundation of sound policies enables long-term success of the Plan. The process to develop the Plan included a comprehensive review and analysis of existing ordinances, policies, procedures, and guidelines. This evaluation was informed by City staff interviews, benchmarking research of other CA cities, and a cross-examination of Los Banos' regulations to industry standards and best practices. The recommendations for revision to these regulations are provided as a separate study to the Urban Forest Management Plan project.
Private Property Trees	Review and refine the recommended changes to Title 9, Chapter 3 of Los Banos Municipal Code.	Strengthening the foundation of sound policies enables long-term success of the Plan. The process to develop the Plan included a comprehensive review and analysis of existing ordinances, policies, procedures, and guidelines. This evaluation was informed by City staff interviews, benchmarking research of other CA cities, and a cross-examination of Los Banos' regulations to industry standards and best practices. The recommendations for revision to these regulations are provided as a separate study to the Urban Forest Management Plan project.
Landscape Design Standards	Update the City's landscape and improvement standards and specifications as changes to ordinances occur.	As part of the development of the Plan, recommendations for changes to the tree-related ordinances, design standards, and practices were provided. The City should further evaluate the recommendations to amend these policies and regulations that will support the implementation of the Plan.

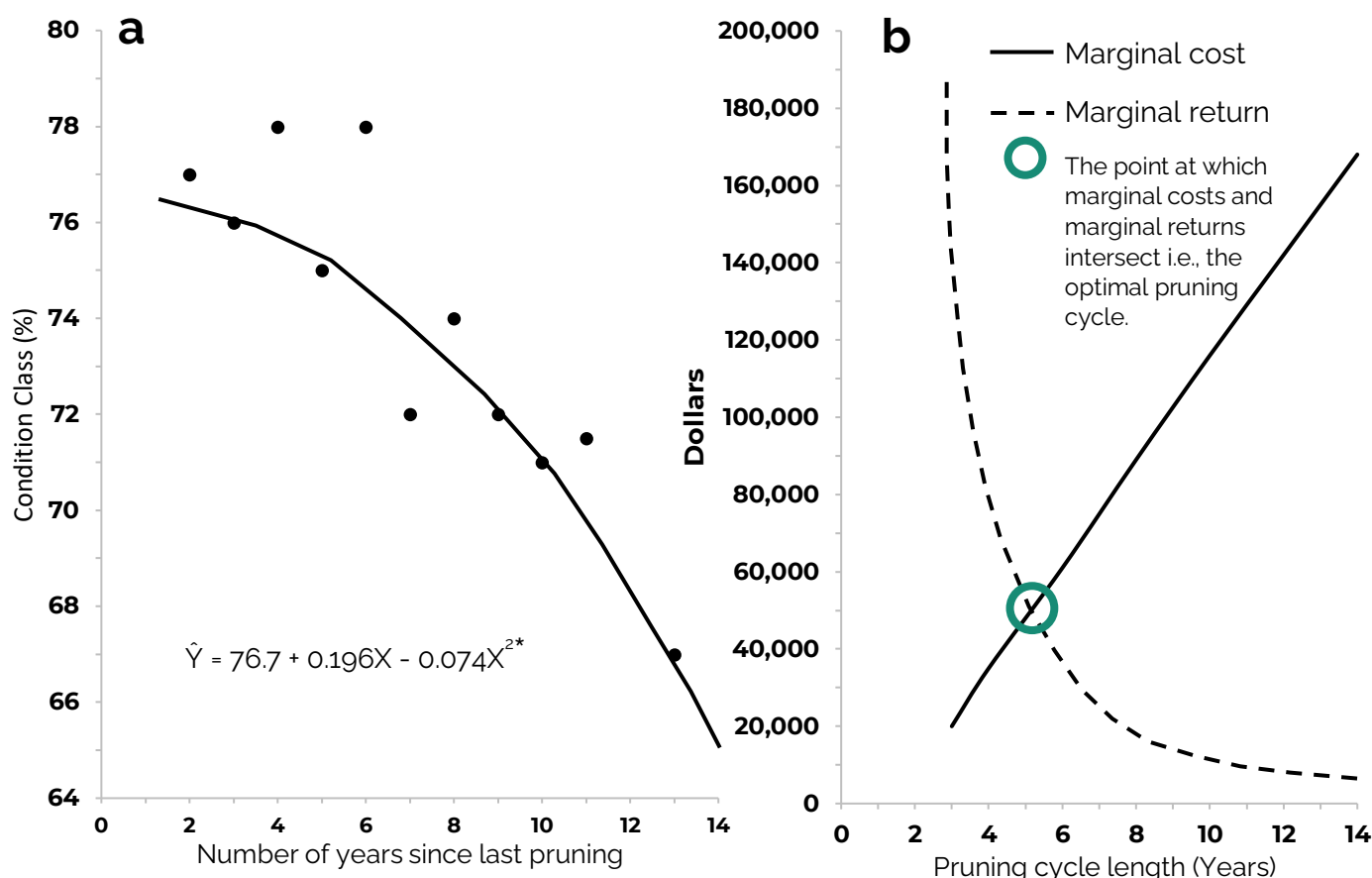
URBAN FORESTRY BEST PRACTICES

Urban forest management priorities should in part be determined by the current maintenance practices and how well they support program goals and the Plan's goals. Some maintenance practices are specific to local climate conditions and number of trees to manage. Others, such as maintaining an optimal pruning cycle are relatively consistent for all tree management programs. As such, the City's current pruning cycle can be used to identify the funding and staffing needs.

Identifying Optimal Pruning Cycles

A study (Miller, et al. 2015⁴) was conducted for Milwaukee, Wisconsin to determine the optimum pruning cycle by comparing the marginal cost of pruning to its marginal return. For example, a portion of Milwaukee was inventoried to record tree condition and calculate tree value. Since condition class influences tree value, the date of last pruning and average condition class for each work unit inventoried was subjected to regression analysis. This analysis determines the relationship between pruning and condition class (see Figure 34 below). Marginal costs were calculated based on the loss of tree value, using condition classes, for each one-year extension of the pruning cycle. Marginal returns are the savings in pruning costs for each one-year extension of the pruning cycle. For Milwaukee, the relationship between marginal cost and return indicates that the optimum pruning cycle for the city is five years, assuming the management goal is to provide the highest-value tree population for dollars expended. This study provides an example of the framework to utilize in Los Banos to address deferred maintenance. City-specific scenarios are provided further in this section.

Figure 34. a) Relationship between pruning cycle length (number of years since last pruning) and condition class rating. Asterisk (*) indicates regression is significant at the 0.05 level. b) Marginal cost (loss of tree value) and marginal return (savings in pruning costs) for pruning cycle lengths. For this study, the optimal pruning cycle is where marginal costs and marginal returns intersect—at 5 years. Figure recreated from Miller and Sylvester (1981). - *The Costs of Maintaining and Not Maintaining the Urban Forest: A Review of the Urban Forestry and Arboriculture Literature* (Jess Vogt, Richard J. Hauer, and Burnell C. Fischer, 2015)

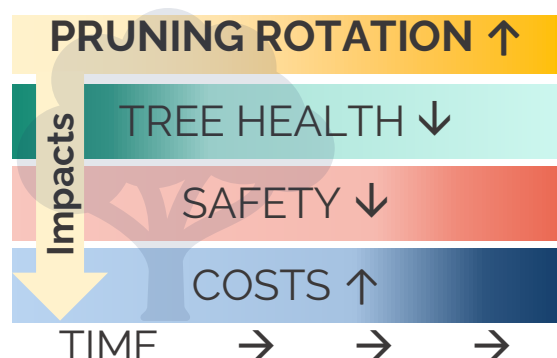


⁴ Miller, R. W., Hauer, R. J., & Werner, L. P. (2015). *Urban Forestry: Planning and Managing Urban Greenspaces*, Third Edition.

An Optimal Pruning Cycle for Los Banos' Public Trees

As illustrated in the 2015 study for Milwaukee (Figure 34), a 5- to 7-year pruning cycle is the optimal intersection of efficiency and safety. If each public tree were to be maintained within a 5- to 7-year window, research shows the trees would be in a safer condition while limiting city expenses. Based on the analysis (Figure 34), a pruning cycle on a shorter timeframe has a higher cost to a city but does not correlate to a proportional increase in safety. Conversely, a longer timeframe lowers costs to a city, but also decreases tree safety.

Figure 35. As the time (years) between street tree pruning increases, tree health and safety decrease and costs increase



In Los Banos, the City is responsible for caring for 7,997 trees along streets, in medians and backup lots, and 3,393 trees in maintained areas of public parks. A total of 943 public trees also exist in vacant lots or areas classified as "other". Historical records show an average count of public trees pruned annually is approximately 2,000 trees of the 12,333 public tree population. This results in an approximate cycle of six years. Maintaining this cycle is or even a reduced cycle of five years is recommended to prevent an accumulation of maintenance needs and added risk. If prolonged deferred maintenance occurs, there is a triple negative effect on costs— it reduces the health and sustainability of the urban forest, it costs the

residents and adjacent property owners as the associated benefits of trees are diminished as tree health declines, and costs the City in terms of increased callouts and liability management.

The following analysis is based on determining what funding may be needed to maintain the entire public tree population on a 5-year pruning cycle, to create a baseline for the City to measure its progression towards sustainable urban forest management.

Based on a market comparison of the costs of program pruning, guidance for implementing programmed pruning is listed for street (and median, backup lot, alley) trees (7,997), vacant lot trees (943), and trees in maintained areas of public parks (3,393). The trees in open space and natural areas and public trees in unmaintained areas of the City are not included in the following study.

Table 21. Current and recommended maintenance regimen for Los Banos' public tree population

Scenario	All Public Trees
Total Public Tree Count (inventoried)	12,622
Total Live Public Trees	12,333
Public Street Trees	7,997
Public Park Trees	3,393
Public Trees in Vacant or "Other" Areas	943
Count of Trees Eligible for Routine Pruning	11,987
Current Cycle (~6 years)	2,000 trees per year
Current Cycle Annual Cost	\$300,000 (est.)
5-Year Cycle	2,400 trees per year
5-Year Cycle Annual Cost	\$360,000 (est.)
Cycle Gap (Current vs. 5-Year Cycle)	400 more trees
Cycle Gap Annual Cost	\$60,000 added cost

*Based on an analysis of the inventory in December 2021 and provided as a coarse summary.

Table 22. Assumptions for estimating the costs to effectively maintain the public tree population

Los Banos Estimate	Industry Average	Lowest Cost Estimate	Highest Cost Estimate
\$150/tree	\$150/tree	\$70.35/tree	\$200/tree
400 more trees	400 more trees	400 more trees	400 more trees
\$60,000 added cost	\$60,000 added cost	\$28,140 added cost	\$80,000 added cost

The tables above provide a summary of the costs to support programmed pruning of the public tree population. It should be noted that there are assumptions to the estimated costs for public tree maintenance. Table 22 above uses the estimated maintenance cost of \$150 per tree based on the City's maintenance budget and the current average number of trees pruned annually (2,000). Also, the market research on costs for street tree maintenance found that the estimates are based on existing grid pruning programs that have been implemented for a number of years. The City of Los Banos largely has not been maintaining street trees in a programmed manner. Therefore, the per tree cost for grid pruning in Los Banos may be greater in the first rotation due to deferred maintenance causing increased maintenance needs and associated time. For this study, the cost estimates detailed above are used and summarized in Table 22 for a recommended 5-year rotational programmed pruning cycle compared to the current ~6-year pruning cycle.

A recommended programmed pruning cycle is typically five to seven years depending on the city's size, number of trees, types of trees, history of programmed pruning, available funding, staffing resources, and other factors. For this study, a rotation of five years is recommended. Based on the local costs and industry estimates, the costs to prune one-fifth of the public tree population would increase by \$60,000. This requires the pruning of 2,400 trees annually— 400 more trees than the current average. In addition to street, median, backup lot, facilities, and trees in maintained areas of parks, trees in unmaintained areas of parks, open space, and natural areas also need to be maintained on occasion. The need for pruning may be due to clearance issues, trail hazards, pest and disease concerns, fire risk reduction, tree risk reduction, or a combination of factors. These trees are not included in the rotational pruning study. It should be noted that the costs associated with programmed pruning do not include the costs for tree removals among other management activities.

This study aims to provide a baseline assessment for consideration of the total potential costs for the City to enhance public tree management to address the detrimental effects of prolonged deferred maintenance. It is not the intended to serve as a formal recommendation in the Plan.

Tree Inventory Best Practices



The City of Los Banos has an inventory of public trees that was completed in 2021. To maintain efficient management, grow a sustainable and resilient urban forest, communicate the benefits of trees, and adapt Plan strategies, the public tree inventory needs to be maintained and updated as changes occur such as maintenance, removals, and plantings. It will be necessary for the City to reassess each public tree to update the condition, size, observations, and maintenance needs that will support and inform urban forest management in the future. In conducting future inventories

of public trees, the City should adhere to the International Society of Arboriculture's Best Management Practices – Tree Inventories, Second Edition (2013) resource that details the standards, practices, and protocols.

Tree Maintenance Best Practices

The following provides an overview of tree maintenance best practices. It is not intended to be an extensive or comprehensive summary of best practices. All tree maintenance practices should follow the American National Standards Institute's (ANSI) A300 Standards (Parts 1-10).

Reasons for Tree Pruning

1. *Pruning for Safety*
Involves removing branches that could fall and cause injury or property damage, trimming branches that interfere with lines of sight on streets or driveways, and removing branches that grow into utility lines. Safety pruning can be largely avoided by carefully choosing species that will not grow beyond the space available to them and have strength and form characteristics that are suited to the site.
2. *Pruning for Health*
Involves removing diseased or insect-infested wood, thinning the crown to increase airflow and reduce some pest problems, and removing crossing and rubbing branches. Pruning can best be used to encourage trees to develop a strong structure and reduce the likelihood of damage during severe weather. Removing broken or damaged limbs encourages wound closure.
3. *Pruning for Form*
Improves the structure of trees and removes branches that are more likely to fail. Branches that are poorly attached may be broken off by wind and accumulation of snow and ice. Branches removed by such natural forces often result in large, ragged wounds that rarely seal.
4. *Pruning for Aesthetics*
Involves enhancing the natural form and character of trees or stimulating flower production. To reduce the need for pruning it is best to consider a tree's natural form. It is very difficult to impose an unnatural form on a tree without a commitment to constant care.

Common Types of Tree Pruning

1. *Crown Cleaning*
Consists of the selective removal of dead, dying, diseased, and weak branches from a tree's crown. No more than 25 percent of the live crown should be removed in any one year, even for young trees.
2. *Crown Thinning*
Primarily for hardwoods, thinning is the selective removal of branches to increase light penetration and air movement throughout the crown of a tree. The intent is to maintain or

develop a tree's structure and form. To avoid unnecessary stress and prevent excessive production of epicormic sprouts, no more than one-quarter of the living crown should be removed at a time. If it is necessary to remove more, it should be done over successive years. Branches with strong U-shaped angles of attachment should be retained. Branches with narrow, V-shaped angles of attachment often form included bark and should be removed.

3. *Crown Raising*

The practice of removing branches from the bottom of the crown of a tree to provide clearance for pedestrians, vehicles, buildings, lines of site, or to develop a clear stem for timber production. After pruning, the ratio of the living crown to total tree height should be at least two-thirds. On young trees temporary branches may be retained along the stem to encourage taper and protect trees from vandalism and sunscald.

4. *Crown Reduction*

Most often used when a tree has grown too large for its permitted space. This method, sometimes called drop crotch pruning, is preferred to topping because it results in a more natural appearance, increases the time before pruning is needed again, and minimizes stress. Crown reduction pruning, a method of last resort, often results in large pruning wounds.

Figure 36. Examples of the types of tree pruning

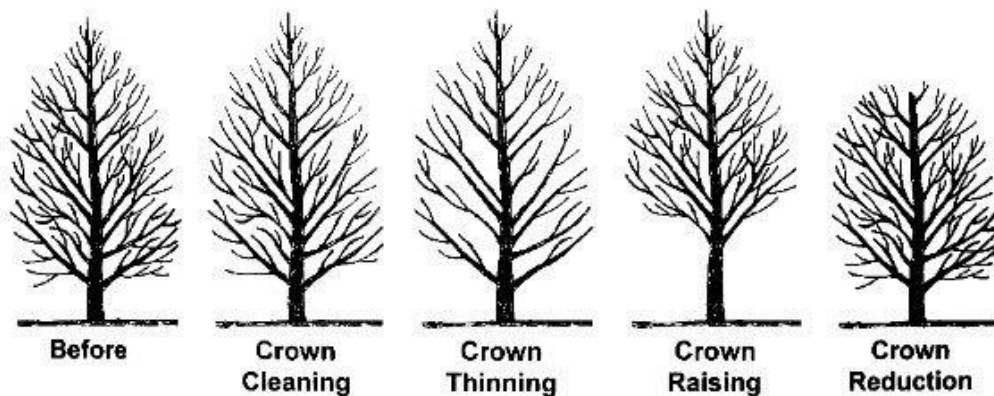
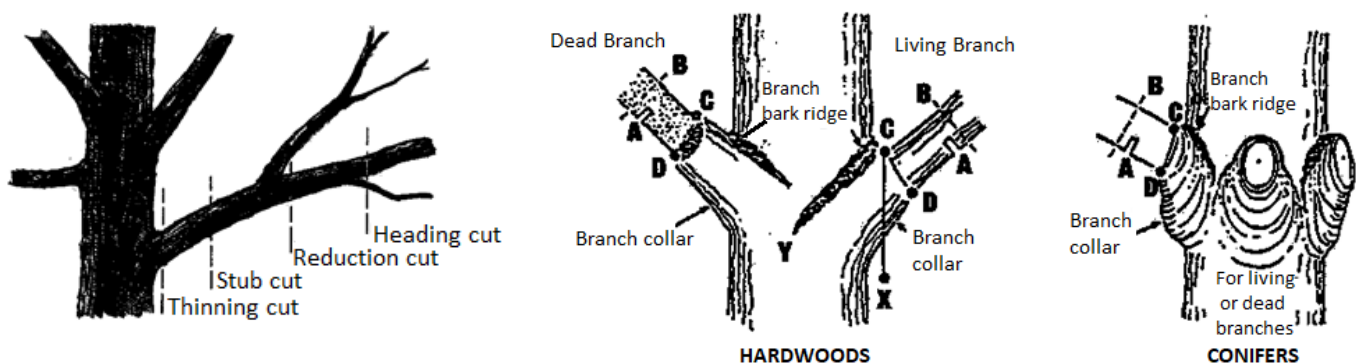


Image source: Arbor Day Foundation

Tree Pruning Cuts

Pruning cuts should be made so that only branch tissue is removed, and stem tissue is not damaged. To find the proper place to cut a branch, look for the branch collar that grows from the stem tissue at the underside of the base of the branch. On the upper surface, there is usually a branch bark ridge that runs parallel to the branch angle, along the stem of the tree. A proper pruning cut does not damage either the branch bark ridge or the branch collar. A proper cut begins just outside the branch bark ridge and angles down away from the stem of the tree, avoiding injury to the branch collar.

Figure 37. Types of pruning cuts and proper branch cutting technique



Natural target pruning properly removes a branch while protecting the branch collar, which is essential for wounds to heal. First cut A, second cut B, and third cut C-D.

Image source: Pennsylvania State University Urban Forestry Extension

Utility Tree Maintenance Best Practices

Utility Tree Pruning Overview

The City should work with the utility companies to ensure proper pruning practices are followed and that open communication between the company, the City, and the public are maintained. The International Society of Arboriculture provides guidelines for maintaining trees near power lines (Best Management Practices – Utility Pruning of Trees, G. Kempter, 2004).

Maintaining power lines free of tree growth is based on a consistent, planned trimming cycle of the utility vegetation management company. This approach improves electric service to all the customers who get their power from that line. A sensible approach to trimming trees means having a thorough maintenance plan that improves the safety and reliability of electric service to residents. Residents and the City staff should not attempt to trim any vegetation growing near or on any overhead power lines.

Utility Tree Maintenance Techniques

1. *Directional Pruning*

Removes entire branches and limbs to the main trunk of the tree and future growth is directed away from the power lines. Reduction cuts are used for removing these branches and limbs and should be pruned properly back to a lateral branch that is at least one-third the diameter of the branch being removed. This allows for good wound closure and protects apical dominance and reduces sprouts. Avoid topping or rounding over trees. This removes more foliage than directional pruning, increases the number of tree wounds, stresses the tree, causes unstable decay, and increases water sprouts.

2. *Right Tree Right Place*

Selecting the right tree for the site can reduce potential safety hazards and improve the reliability of the electric service. Smaller trees near power lines do not need to be excessively pruned and do not lose their natural form.

3. *Recommended Trees*

Trees potentially suitable for planting adjacent to power lines should be shorter and slow growing to prevent clearance issues.

Figure 38. Examples of trees directionally pruned for clearance from power lines



Photo source: Pennsylvania State University Urban Forestry Extension

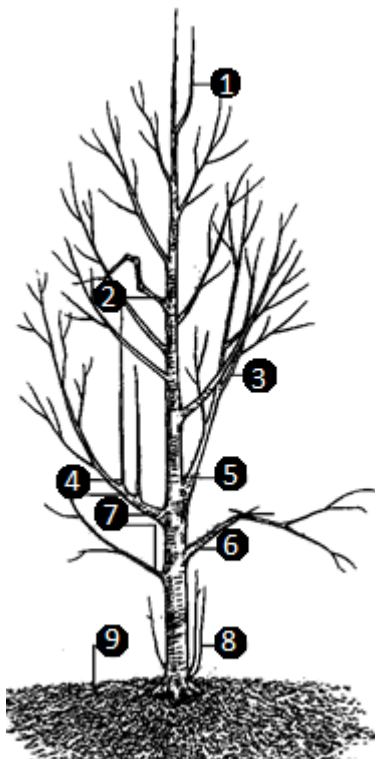
Young Tree Maintenance Best Practices

Proper pruning is essential in developing a tree with a strong structure and desirable form. Trees that receive the appropriate pruning measures while they are young will require less corrective pruning as they mature.

Young Tree Maintenance Techniques

1. *Consider the Natural Form and Desired Growth*
Accentuate the natural branching habit of a tree and correct any structural problems over time, if needed, to not stress the tree.
2. *Pruning in 1-2 Years after Planting*
Prune as little as possible after planting to ensure there are enough temporary branches to produce food for new growth of roots, trunk, and branches. Prune only dead, broken, malformed, or diseased branches. Remove codominant leaders to maintain one dominant trunk. Prune for clearance if absolutely necessary. Keep size of branch removed to less than one inch in diameter.
3. *Pruning 2-3 Years after Planting*
Prune any dead, broken, malformed, or diseased branches. Remove any suckers from the base of the tree. Next, determine the permanent branch structure. Apply the following:
 - ❖ Remove, thin, or cut back any competing leaders.
 - ❖ Remove crossing or rubbing branches, keep the branch that maintains the natural form.
 - ❖ Thin excessively crowded branches but do not lions-tail.
 - ❖ Remove branches with narrow angles between the branch and trunk (consider species).
 - ❖ Remove branches to maintain well-spaced branches along the trunk. Ideal mature trees will have lateral branches that are 18-24 inches apart (depending on species).
 - ❖ Avoid pruning near time of bud break.
 - ❖ Prune flowering trees after flowering.

Figure 39. Example of branches to be pruned for newly planted trees to promote good structure



1. Prune competing leader
2. Prune malformed branches
3. Remove crossing branches
4. Remove water sprouts
5. Remove branches with poor angles
6. Prune broken or damaged branches
7. Prune temporary branches over time
8. Remove suckers
9. Apply 2-3" of mulch

Photo source: Pennsylvania State University Urban Forestry Extension

Tree Planting Best Practices

The following provides an overview of best practices that should be considered and followed before during and after planting trees.

- ❖ Trees to be planted should be selected from an approved tree planting list developed to maintain and enhance species diversity that are suitable for the Los Banos, CA Plant Hardiness Zone and changing climates.
- ❖ Planting material will conform to the latest version of the American Standard for Nursery Stock (American National Standards Institute [ANSI] Z60.1). Trees to be planted should be of standard quality or better, and should be true to name and type of their species variety.
- ❖ Trees should not be planted in tree lawns less than two feet in width or in planting pits less than five feet long by five feet wide.
- ❖ Trees should not be planted within 50 feet of any major intersection, or within 20 feet of a fire hydrant, a driveway, or a pole supporting a light.
- ❖ The burlap and twine from balled-and-burlap trees should be removed from the tree and the tree pit. Wire tree baskets may remain on the root ball, but the top one-third should be clipped and removed from the planting hole.
- ❖ Mulch should be placed around trees in a minimum three-foot circle and three-inch depth to protect trees from lawnmower damage and competition from turf; mulch will be kept away from tree trunks.
- ❖ Newly planted trees should be irrigated weekly during droughts in the growing season for three years.
- ❖ As recommended in the UFMP, an updated tree planting detail should be added to the City's Improvement Standards and Specifications, the City's Landscape Standards and Specifications, and corresponding documents.

Tree Irrigation Considerations and Best Practices

- ❖ Current limiting factor is budget for watering newly planted trees.
- ❖ With dry and increasingly hot summers this is a critical requirement for new tree establishment.
- ❖ Establishing new trees requires four to five years of supplemental irrigation during the summer months.
- ❖ Based on industry estimates, 400 trees currently cost \$100,000, so every 100 new trees planted requires an additional \$25,000.
- ❖ Development of a certain size or where frontage improvements trigger tree planting should be required to install permanent in-ground irrigation systems.

Private Property Tree Management Best Practices

One factor to developing a sustainable urban forest is the extent to which the City can effectively influence the management of trees on private property as most of the urban forest exists on privately-owned land. These private property trees are managed differently than street trees, and are under the purview of the Community and Economic Development Department. The City's methods by which it can influence tree management on private property are a combination of indirect actions, such as community education campaigns, and direct actions, such as City ordinances, policies, and permits. While each method has a different approach to influence private property owners, the goal is the same: to grow and maintain healthy trees on privately-owned land.

An attractive quality of a robust community education campaign is voluntary participation from private landowners to contribute to reaching environmental and sustainability goals by implementing City standards for tree management. While some private landowners will adopt and implement City tree management standards, it is not reasonable to expect all private landowners to do so, which is the impetus for City ordinances, policies, and permit procedures to further enforce tree management standards on private property.

The [Existing Tree Code and Regulations](#) section further details the ordinances and regulations in place for private property trees. This section expands on the community outreach and education element to the indirect actions that the City can implement.

Public Education Regarding Ordinance, Permitting, Programs, and Best Practices

Frequent communications and messaging relating to urban forest management best practices and industry standards keeps the public informed and reminded of the importance of proper tree care. The details regarding private property tree ordinances, regulations, permitting processes, and programs can be shared on the City's website, included as call-out box reminders in the permitting process, added to utility mailings, among other mediums and platforms. It is important to consider the barriers that inhibit public access to information and materials. Strategies to remove barriers include language translations, accommodating vision and hearing impairments, among others. It is recommended the City pursue or strengthen these outreach approaches after implementing portions of this Plan that pertain to updating tree ordinances and regulations.

Additional Best Practices for Urban Forest Management

Pest and Disease Management

A principle to controlling insect pests, invasive plant species, and tree diseases is an innovative strategy known as Integrated Pest Management (IPM), which integrates cultural (growing) practices, monitoring, threshold and life cycle analysis, and chemical application strategies to effectively manage urban forest pest populations in an ecologically-sound manner.

Encourage Naturally Occurring Biological Control

Biological control uses living natural enemies, antagonists, or competitors (biological control agents) to control other living organisms. Examples of naturally occurring biological controls include lady beetles, lacewings, parasitic wasps, predatory mites, spiders, earwigs, insectivorous birds, and bats. By using plants that attract the living organism above, chemical use for preventing and treating tree pests and diseases is minimized.

Use Alternate Plant Species

With tree inventory data that describes the composition of tree species in the urban forest, concentrations of susceptible trees and problematic trees can be thoroughly identified and understood. The information can be utilized to update the palette of trees that are planted by the City to reduce the likelihood of tree pest and disease issues. Some well-known alternate tree species that are resistant to tree pests and diseases include the 'Frontier' elm or Asian elm species that are resistant

to Dutch Elm Disease and powdery mildew resistant cultivars of crapemyrtle. In addition, the City should consider reducing or eliminating the planting of Chinese or European hackberry trees that are prone to honeydew producing hackberry woolly aphid and oak trees should not be planted where oak root fungus is known to exist or propagate.

Use Cultural Practices

Cultural practices discourage pest invasion and some of the practices include good tool sanitation, removing debris and infested plant material from the site, proper watering and fertilizing, growing competitive plants, or using pest resistant tree species. Expanding on the examples, the City should avoid sprinkler irrigation around trees that are susceptible to anthracnose such as Chinese elms and sycamores and avoid irrigation around the trunks of native oaks in the dry season. Thinning out tree canopy can reduce foliar disease problems and pruning trees at certain times of the year can reduce pest problems. For example, to avoid bark beetle infestations, it is recommended to prune pines and elms in the winter. If a disease or insect is spotted in a tree, it can be removed and properly disposed of to potentially reduce the spread. Another example of a pest and disease best practice is to only fertilize trees when absolutely needed. The use of fertilizers can be reduced or eliminated if the appropriate trees for a given site are planted. Lastly, the habitat can be altered to make a site less suitable or compatible for pest development. Examples include planting trees at or above grade to reduce crown rot problems and frequent monitoring and management of trees near specimen coast live oaks where Sudden Oak Death is an issue.

Tree and Infrastructure (Sidewalk) Conflicts

The City should refine and formally adopt the decision checklist and protocols provided in [Appendix C](#) and include alternative solutions in design guidelines and standards. Alternative solutions may offer cost savings in some instances though generally, the City's sidewalk program is underfunded. Primarily, the City maintains and replaces sidewalks and curb and gutters as needed and as funding enables. In most California cities that are not responsible for sidewalk maintenance but offer or would like to offer a cost-share program, funds are generated through a ballot-approved Sales and Use Tax. Sales tax rates for funding sidewalk programs average 0.2 percent. In addition to local funds, state or federal grants exist to support cost-share programs. And though grant funding may be available for sidewalk repair it is not a consistent long-term option. Other funding options or mechanisms include special citywide assessments, bonds, improvement districts, gas tax, or tax incremental financing.

Whenever new development triggers frontage improvements there are opportunities for improved street tree planting and would be an appropriate time to levy enhanced use fees and consider alternative solutions to tree removal or sidewalk replacement. The City should explore these options such as the Sales and Use Tax or the Gas Tax to address sidewalk repair and replacement needs per the Americans with Disabilities Act (ADA) requirements.

Urban Wood Utilization

Trees in the urban environment are part of a continuous cycle. A tree is planted, it grows for a period of time, and then inevitably it declines and must be removed. Historically, tree removal has been considered a negative side of urban forestry. The cost of removing a tree and then disposing of the resulting debris is seen as a burden to homeowners and municipalities alike and creates a gap in the urban tree cycle. Urban wood utilization is a term and practice describing the reuse of wood with the goal of diverting organic waste from landfills where materials decompose and release methane, a greenhouse gas contributing to climate change. Wood biomass from the urban forest is often disposed of rather than put to use in some new manner. To complete the cycle of urban trees there is a need and opportunity to make use of the resulting biomass to keep the carbon in the wood rather than be released into the atmosphere. Good logs can be milled into lumber for furniture, flooring, or kitchenware and lower quality materials can be used as a biofuel to displace fossil-fuel use or composted into quality soil amendments like mulch.

In 2016 California passed SB 1383 to reduce emissions from short-lived climate pollutants which calls for the reduction of organic waste among other requirements. With this bill, organic waste disposal needs to be reduced by 50 percent by 2020 and 75 percent by 2025. Urban wood utilization is one practice to address these requirements and goals, and is in alignment with Los Banos' current climate action and sustainability goals.

Currently, Los Banos does not implement an urban wood utilization program and could explore the financial costs and return on investment to implement a program. In addition to the environmental benefits of carbon storage, urban wood utilization programs contribute to the green economy of Los Banos and can provide employment opportunities throughout the entire process to remove, store, treat, and prepare wood for its second life.

To develop an urban wood utilization or urban wood use program, it is recommended the City start simple and allow the program to evolve. One of the first steps is to inventory the volume of biomass generated annually and identify other local partners that can add to the volume. From the inventory, the City can assess its operational, equipment, personnel, and administrative needs and begin to identify local and regional markets and partners that have a demand or need for the biomass. With this understanding, the program can then establish goals and begin implementation. Additional information and resources are available online and one local example to potentially model is the Sacramento Tree Foundation's Urban Wood Rescue Program (urbanwoodrescue.com). Another example is the urban wood recycling program created by West Coast Arborists, Inc. in partnership with CAL FIRE where urban forest biomass generated from city tree maintenance is recycled (streettreerevival.com).

BENCHMARKS AND COMPARISONS FOR BEST PRACTICES

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Public Tree Pruning Cycles	City-maintained trees: ~6 years	- Recommended 5-year cycle for public trees (Miller, et al. 2015) - Average of 6.6 years for 227 cities (all public trees) - Average of 6.4 years for all public trees in cities with population of 25-50k people (Hauer, et al. 2014)	Research has shown a public tree pruning rotation of 5 years is optimal for efficiency, tree health, and public safety. The City currently prunes an average of 2,000 public trees per year of the 12,333 total living trees suitable for routine pruning. This results in a 6-year cycle. Pruning 2,400 trees per year would equal a 5-year cycle.
Preventative Maintenance Pruning Program	Estimated annual cost to prune 2,400 trees per year is \$360,000. Results in a 5-year cycle.	Industry average cost per tree: \$180 3 trees can be pruned proactively for every 1 tree reactively pruned in terms of time (Wagner, 1970 and field tested by the City of Milwaukee, WI in 2020). 57% of CA cities have a systematic pruning cycle (Thompson, et al. 2018)	Proactive pruning greatly reduces long-term costs, improves the health of the urban forest, and enhances public safety.
Best Practices	- City adheres to ANSI Standards and ISA BMPs. - Standards and BMPs are available to the public. - Standards and BMPs are documented in City Code, policies, and manuals.	Prominent, robust urban forestry programs adhere to ANSI Standards and ISA BMPs.	Adhering to industry standards and best practices ensures urban forest sustainability and appropriate management of tree risk among other vital aspects of an urban forestry program.
Tree Planting Best Practices	- Recommended Master Street Tree List is being updated. - Updated standards and best practices for planting and tree selection.	Most preferred genera for street tree planting in 2016 (Thompson, et al. 2018): <i>Lagerstroemia, Quercus, Pistacia, Platanus, Pyrus, Palm, Lophostemon, Magnolia, Acer, Liquidambar, Ginkgo</i> Preferred nursery stock (Thompson, et al. 2018): 24-inch or greater tree box	Sustainable management includes properly maintaining existing canopy and growing an urban forest that is resilient to climate change, pests and diseases, and other risks. The recommended Master Street Tree List for Los Banos was completed as part of the 2021-2022 urban forest planning project.

RECOMMENDATIONS FOR BEST PRACTICES

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Pruning Cycles	Review and finalize the total costs for a pruning cycle of 5 years for all public street, median, backup lot, facility, and park trees.	Evaluating the costs of an optimal scenario where all public trees are pruned on a recommended cycle provides baseline values for comparison to annual budget requests. For example, an increase of \$60,000 annually for tree maintenance would change the City's current 6-year cycle to the recommended 5-year cycle.
Tree Inventory	Maintain the public tree inventory records.	The City has an online software program for managing its urban forest. The program includes the Citywide public tree inventory data and public-facing features as an online GIS. The tree inventory should be maintained and updated as changes to the tree population occur such as tree plantings, maintenance, removals, service requests, and work orders.
	Update the public tree inventory.	Completing an updated inventory of street and park trees every 5-10 years will ensure management decisions are made with the most recent and accurate information. Consider a reevaluation of potential public planting sites to inform planting strategies tied to canopy goals.
	Analyze the inventory to report on ecosystem benefits and utilize as part of budget planning.	The tree inventory provides data to calculate the associated benefits and services automatically or manually. This information can be used to monitor urban forest performance, adjust management and planting strategies, and connect budget requests to ecosystem service performance.

Tree Maintenance	Implement and adhere to best practices and standards for City-led tree maintenance.	Adhering to the ISA Best Management Practices and ANSI Standards ensures proper management of the urban forest and sets an example for private property owners to follow.
	Share resources and information with the public regarding proper tree maintenance.	The majority of trees comprising the Citywide urban forest are the responsibility of private property owners to maintain. To sustain the urban forest, property owners, tree care companies, and property managers need to be aware of the best practices and standards for tree care.
	Create a registry and requirements for a City-approved Tree Contractor program.	A list of certified arborist-represented companies and those tree care professionals that adhere to industry standards and best practices will support the goals of maintaining the urban forest.
	Maintain and update as needed the tree contractor specifications and requirements.	Continue to inform contractors of tree regulations and standards, maintain contractor specifications, and inspect the completed work.
Utility Tree Maintenance	Regularly meet with utility companies and utility vegetation management companies to ensure best practices are maintained.	Coordination with companies and agencies involved with utility tree pruning will improve communications and outcomes. It will also ensure adherence to best practices as defined in the ISA Best Management Practices – Utility Pruning of Trees (2004).
Young Tree Training	Establish a young tree maintenance plan for all City-led plantings and structurally prune every three years for at least two cycles.	Within the public tree population, a total of 4,365 trees are under six inches in diameter and qualify for young tree pruning. Young tree maintenance improves a tree's structure and reduces future maintenance costs.

Tree Planting and Irrigation	Adhere to industry standards and best practices when planting trees.	The City should update its Standard Detail for tree planting and staking. In addition, choosing quality tree nursery stock for planting is essential to long-term growth and health. The City should continue to adhere to ANSI Z.60.1 Nursery Standards. Development projects should follow the same requirements and trees planted should be inspected to conform with City and industry standards. Align efforts with other city goals such as climate change, water conservation, and sustainability.
	Review and finalize the Master Street Tree List and utilize for all City-led projects and encouraged to private property owners.	As part of the Urban Forest Management Plan project, a draft list of trees recommended for City projects and street trees was developed that contains various attributes for each tree species for making the selection for a desired project. The trees in the list are suitable for Los Banos' current and changing climate and private property owners should be encouraged to utilize the list. The review of the list should include the following considerations: Ensure the total number of species recommended by the City can meet species diversity goals. Prioritize planting trees rated by Water Use Classification of Landscape Species (WUCOLS) as very low and low water users. Identify trees that are not expected to adapt to changing climate conditions and replace them with new suitable species. Make sure there are enough small and medium-sized tree species in the list to provide more options in locations that have limited soil volume.
	Develop Citywide and local species diversity goals by potentially using a three-tiered approach.	<u>Tier 1. Citywide Species Diversity Goal:</u> The City should adopt a goal of having no one species comprise more than 10% of the City tree population and no one genus comprise 20%. This goal will help to ensure that the overall inventory is resilient to threats as it is dispersed across the City. The established goal can then be used to further inform a more nuanced plan for individual neighborhoods or geographic areas of the City. <u>Tier 2. Implement Goal on Neighborhood Scale:</u> The City should determine smaller geographic portions of the City and apply the species diversity goal to those areas. Boundaries could be formed from existing defined neighborhoods, Council Districts, or other set boundaries within the City. This strategy would help to identify what species dominate a specific area and plan for the introduction of new species to provide an additional layer of species diversity and protection from threats. This approach would also necessitate specific planting palettes for each area that factor in the current neighborhood-level species diversity percentages into what species are planted.

		<u>Tier 3. Street Level Diversity:</u> The City should incorporate species diversity on a street or street block level. At this scale, species diversity decisions would include determining whether a street is planted with two or three alternating species, and the extent to which monoculture street plantings would be allowed. The planting palette for individual streets would be formed by decisions made in Tier 2 of the planning process. This tier would not include maintaining the Citywide species diversity goal as continuity and aesthetics are important considerations for developing neighborhood character and would be difficult to achieve with 10 or more species planted on a street.
Best Practices for Private Property Trees	Continue to provide information and enforce tree regulations for trees on private property.	Community education campaigns and direct actions such as City ordinances, policies, and permitting programs are the interfaces between the City, the urban forest, and private property. Sharing of information and enforcing tree regulations ensures the tree canopy on private property is sustained.
Additional Best Practices	Implement an Integrated Pest Management (IPM) program for all City-maintained trees as necessary.	A healthy urban forest provides the greatest return on investment. Effective management of tree pests and diseases requires an integrated approach of monitoring, adequate resources, and various treatment techniques.
	Conduct visual assessments of 15% of the public tree population annually to monitor for pests and diseases.	The public tree inventory data can provide information to establish zones or areas of concern where trees are susceptible to pest and disease outbreaks. To identify possible concerns a routine visual assessment of a portion of the tree population each year can potentially halt an outbreak or identify a new concern. Data should be logged in the City's tree inventory software and used to inform budget requests.
	Provide information and training to the public regarding tree pest and disease signs, symptoms, prevention, and treatment.	Outside of parks, open space, and natural areas, private property has the most trees comprising the urban forest. Education, resources, trainings, and other public engagement can help to grow and manage an urban forest that is resilient to tree pests and diseases.
	Implement best practices to reduce and address tree and sidewalk conflicts.	The Solutions Workbook and Possible Guidelines for Tree and Sidewalk Conflicts appendix to this Plan provides guidance for consistent and transparent evaluation of conflicts with alternative solutions to tree removal or sidewalk replacement.
	Explore the financial costs and return on investment to implement an urban wood utilization program.	In addition to the environmental benefits of carbon storage, urban wood utilization programs contribute to the green economy of Los Banos and can provide employment opportunities throughout the entire process to remove, store, treat, and prepare wood for its second life.

FUNDING BEST PRACTICES

Funding Mechanisms

Urban forests are an essential component of a municipality's infrastructure. Well-managed urban forests boost community livability and build resilience through a myriad of ecosystem services. However, the budgets afforded to urban forestry programs do not always represent this "essential" status and forestry managers often need to work with budgets that are below their needs. Urban forestry budgets are also prone to large swings in need, as is currently being observed in midwest and eastern cities with the emerald ash borer causing spikes in tree removal demand. It can also be difficult to finance singular, capital-intensive projects, like a public tree inventory, that provide critical data for forest planning and management. The general fund has long been the core of urban forestry program funding across the country, and it remains a stable and popular option today (making up 72% of urban forestry funding in 2014, Hauer et al.).

The general fund is also beholden to many other community needs and it is often stretched thin to meet all these demands. The best strategy for overcoming these budgetary challenges is to leverage a variety of sources, both public and private, to supplement allocations from the general fund. A diverse portfolio of funding streams allows urban forestry programs to weather resource restrictions and provide higher levels of service, like advancing from reactive to proactive maintenance cycles and implementing the Urban Forest Management Plan.

Street Tree Fund

According to section 10-1.35 Trees in New Developments in Los Banos' Municipal Code, in lieu of planting replacement trees on new development projects the applicant may pay a fee established by City Council. These fees along with building permit fees received, tree removal mitigation fees, and other fees could all contribute to a Tree Fund.

Special Assessment Districts

Many properties in Los Banos are included in unique special financing districts of different types, especially in newer or redeveloping areas of the City. Currently, the City has a total of 19 districts and intends to levy and collect assessments within districts 1-7 and 9-19 during the fiscal year 2021-2022. These districts are ordinarily initiated by the developer of a property but are approved by City Council. The purposes of these districts may include financing of public improvements, ongoing maintenance and operations, or a combination. In general, these districts either serve to reimburse the developer for public improvements they are required to provide or to augment public facilities and services which might not otherwise be available to most City residents. Most districts obtain their revenue via a property tax, although some may also charge fees or collect assessments. Residential districts have an eventual time limit for debt service, but in some cases they may operate more or less in perpetuity to provide maintenance and/or services.

In Los Banos, several special assessment districts may be considered, including Business Improvement Districts (BIDs), General Improvement Districts (GIDs), Special Improvement Maintenance Districts (SIMDs), and Local Improvement Districts (LIDs). Others include water districts, fire protection districts, sanitation districts, and parks and recreation districts.

Focusing on areas with higher concentrations of street trees or maintenance needs, such as business districts, may capture property owners who are more willing to pay for tree care. This approach may be more politically palatable and could potentially lead to a citywide special assessment district where existing districts could be consolidated and organized into separate benefit zones, each with its own budget.

Requirements for a Comprehensive Public Tree Program

Special assessments are usually calculated per linear foot, based on the idea that benefits to property owners are directly related to street frontage. In some cases, special assessments include additional metrics such as building and/or lot square footage to account for the added benefit associated with larger buildings that have more occupants.

Parcel Tax

A parcel tax is a special tax levied for the provision of special benefits. Revenues from special taxes must be used for the specific purpose for which they are intended, so a parcel tax would create a dedicated funding stream for street trees. Similar to a special assessment, a parcel tax cannot be based on the value of property; however, the amount levied on each parcel does not need to be directly related to the benefits provided. Cities have the flexibility to levy parcel taxes as they see fit, but they are typically based on lot square footage or levied as a flat tax, with the same amount per parcel.

Parcel taxes are designed to encompass entire cities and therefore, are good candidates for a citywide street tree program, as opposed to the district-level approach that often occurs under special assessments. Parcel taxes typically fund more than just street trees. For example, a tree maintenance tax per parcel may include provisions for the maintenance of parks and open space and improvements to recreation facilities.

A parcel tax requires strong public support, as it must be approved by voters, rather than just the majority of property owners, as with a special assessment. Because a parcel tax must be voted on in a general election, rather than via mail-in ballot, it is likely to receive heightened political attention. However, general elections capture the votes of renters, who may be more apt to approve a tax borne by property owners.

Requirements for a Comprehensive Public Tree Program

A parcel tax for urban forestry operations and maintenance (O&M) may be levied as a flat tax, or it may be based on lot size (square footage). This study evaluated the parcel tax amount required to finance a City-operated street tree program according to both approaches.

Los Banos currently has approximately 13,790 parcels Citywide according to the Merced County GIS database. In the case of a flat parcel tax, the City would need to levy approximately \$26.11 per parcel per year to cover the full costs of the public tree maintenance pruning program (11,987 trees on a 5-year cycle, ~\$360,000 per year).

Los Banos' parcels total approximately 381.2 million square feet. To annually fund the preventative maintenance program, a parcel tax levied according to lot size would translate to an annual tax of \$0.0009 per square foot. For a typical 2,500-square foot lot (25 feet wide and 100 feet deep), a parcel tax based on lot size would amount to \$2.36 to fund tree maintenance annually.

Another approach to consider is the average parcel lot area of 27,642 square feet (\$26.11 per year) or classifications of parcels by counts within area (square feet) ranges.

Considerations and adjustments to these numbers must be made for properties with multiple right-of-way trees, HOA-managed trees, and maintenance responsibility stated in plat plans. The City should evaluate and refine these numbers, but the study provides a starting point for funding considerations.

Table 23. Parcel tax options and provisions for Los Banos' Urban Forestry Program

Metric	Public Tree Maintenance Pruning Program (~11,987 trees on a 5-Year Cycle)*
Number of Parcels	13,790 (est.)
Recommended Annual Tree Maintenance Budget	\$360,000 (est.)
Flat Tax (budget by parcel)	\$26.11
Parcel Square Feet (sq. ft.) Total	381,178,927
Tax by Lot Size	\$0.00094
Typical Parcel (2,500 sq. ft.) Annual Tax	\$2.36
Average Parcel Size (sq. ft.)	27,642
Average Parcel Size Annual Tax	\$26.11

Estimates only. Additional analyses are necessary to finalize estimated costs.

General Obligation Bonds

Local governments commonly use General Obligation (GO) bonds to fund the construction and improvement of projects involving real property (e.g., buildings, infrastructure, and parks). GO bonds typically carry low interest rates, making them attractive for capital projects, which may include tree planting. However, funding is available for discrete projects, often over a limited time rather than an extended period. In addition, ongoing maintenance is ineligible for GO bond funding pursuant to federal tax law. California cities may pay debt service from GO bonds through property taxes (in proportion to the estimated value of the goods or transaction concerned), where assessments are based on property value. As a result, the issuance of GO bonds requires majority voter approval.

GO bonds may be a tool for financing the planting of street trees in Los Banos as part of a larger package of capital improvements, as bonds are typically issued for large amounts. For example, voters may approve a Road Repair and Street Safety Bond, with funds designated for streetscape and street safety improvements that included street tree planting. GO bonds may include tree planting among streetscape improvements through street enhancement programs such as "complete streets" programs. However, these bonds may allocate funding for street tree planting to the streets program, rather than the City's Urban Forestry Program. A bond specifically focused on a major street tree planting effort may be appropriate in the future.

Requirements for a Comprehensive Public Tree Program

Because GO bonds only fund capital costs, they could only be used to finance tree planting and establishment activities under a comprehensive city-operated street tree program.

Adjust Gas Tax Appropriations to Fund Urban Forest Management

The City should evaluate the feasibility of utilizing the statewide gas tax and vehicle fees. According to the *Guidelines Relating to Gas Tax Expenditures for Cities and Counties* (2019), funds can be utilized for mowing, tree trimming, and watering within the street right-of-way (page 430 "Maintenance"). The City's budget has a Gas Tax Fund (215) for the construction and maintenance of the street system. The City should evaluate the feasibility of applying funds to risk mitigation and preservation pruning of street trees in the public right-of-way.

Grants

CAL FIRE Urban and Community Forestry Program

The Urban and Community Forestry Program has grant opportunities to fund city tree planting, inventories, urban wood and biomass utilization, blighted urban lands improvements, and innovative nature-based solutions (e.g., planting and managing trees and urban forests) to reduce greenhouse gas emissions. In the 2019-2020 fiscal year, the grant program had an estimated \$10 million available to fund a variety of urban forestry projects California.

California Natural Resources Agency (CNRA) Urban Greening Grant Program

The Urban Greening Grant Program administered by the California Natural Resources Agency (CNRA) aligns with Assembly Bill 32 Global Warming Solutions Act of 2006 and funds projects that reduce greenhouse gas emissions. The competitive grant program, funded by a \$50 million Specified General Fund appropriation, gives priority consideration to projects located within and benefiting disadvantaged communities and addresses climate change through urban greening and urban forestry.

CRNA Environmental Enhancement Mitigation Program

The Environmental Enhancement Mitigation Program was established by legislation in 1989 and later amended in 2013. It encourages projects that will reduce greenhouse gas emissions, improve water use efficiency, reduce the impacts from climate change, and utilize partnerships and collaboration to mitigate the environmental impacts caused by new or modified public transportation facilities. The 2021-2023 funding cycle for the program has approximately \$13.4 million to support urban forestry projects such as tree planting and habitat restoration.

CRNA Urban Flood Protection Grant Program

Created by Proposition 68, the Urban Flood Protection Grant Program focuses on multiple benefit and solution projects in urbanized areas to address flooding and protect people and property. Urban forestry related projects supported by this program include tree planting and establishment care and integrating native landscapes into stormwater management such as bioswales. For the 2020-2021 grant round, the program had a total of \$92.5 million available.

California Strategic Growth Council Affordable Housing and Sustainable Communities (AHSC) Program

The Affordable Housing and Sustainable Communities (AHSC) Program aims to reduce driving by making housing, jobs, and key destinations accessible by walking, biking, and transit. Core components supported by this program include urban forestry projects like vegetated swales, bioretention basins, riparian buffers, shade trees, and parks and open space. These elements are vital components to roadway, sidewalk, and infrastructure projects. There was an estimated \$452 million in 2021 available to localities, program operators, and developers.

California Department of Transportation Active Transportation Program

This program provides funding to encourage increased use of active modes of transportation, such as biking and walking. Trees and other vegetation are significant components of several eligible projects under the Active Transportation Program, including parks, trails, and safe routes to schools. \$440 million will be distributed to project applicants from 2019 to 2023.

Additional Financing Options

Parking Benefit District

Parking Benefit Districts (PBDs) generate revenue within a special district for improvements and services related to streets, streetscapes, and landscapes. Because revenue derives from parking meters, visitors to PBDs fund the majority of improvements. As a result, local governments may create PBDs via ordinance without requiring a vote of property owners, setting them apart from other special assessment districts. Although only commercial areas with parking meters provide revenue, improvements may be implemented beyond PBD boundaries. The ordinance that creates the PBD determines the share of revenue that must be applied to improvements within the district, known as the "local return" portion. A committee of residents, property owners, and business owners advises the local agency administering the PBD on how to expend revenue. Adjustments to City policy regarding the agency receiving excess meter revenue may be required to enable the use of this financing option for a street tree program.

While activities may include street tree planting and maintenance, a PBD is likely to cover other improvements related to neighborhood beautification. It is possible to create a dedicated funding

stream for improvements, including street tree planting, sidewalk maintenance, and the installation of street furniture and light fixtures. This may present an opportunity to finance a portion of Los Banos' public tree maintenance costs; however, this strategy requires additional analysis to determine the likely amount of revenue to be generated for street trees, along with the potential for adding parking meters in new areas of the City.

General Fund

Los Banos' General Fund has historically funded a share of street tree planting, establishment, and maintenance activities through the Capital Improvement Plan (CIP). However, appropriations have not kept pace with the needs of urban forest management to keep it sustainable. Because the General Fund is not a dedicated funding stream with a consistent budget amount, and is subject to changing economic conditions and political support, the General Fund is a volatile funding source. Nonessential services are the first target for cuts when expenditures exceed revenues, and there is no guarantee that one year's appropriations will equal the next, as the City's current funding for public trees demonstrates. Given the current status, reliance on Los Banos' General Fund is not ideal for long-term planning of a program that will require a substantial commitment of resources (e.g., new staff, funding for partners). A mixed General Fund and Special Assessment model is often considered an appropriate compromise but can lead to decreases in General Fund budget allocations over time, as the assessment bears a large share of the burden of maintenance.

Partnerships

A number of opportunities for partnerships exist to help implement a public tree program in Los Banos and cover a portion of the costs. Continued collaboration with the CAL FIRE, regional partners, community groups, and corporations would advance the City's planting agenda, particularly if Urban Forestry Program does not have the resources to conduct all the work.

Many communities across the country partner with local non-profit organizations (NPOs) that conduct tree planting. Based on conclusions from the needs assessment conducted as part of the Plan, a non-profit organization devoted to the planting and stewardship of public and private trees in Los Banos is only beginning to take shape. The Plan provides recommendations and action steps to pursue in an effort to establish additional partners and support from entities such as NPOs.

Public agencies, such as the U.S. Forest Service and regional air quality management districts, may also provide grant funding, although these are typically one-time contributions rather than a sustainable funding source. As an alternative or addition to NPOs and public agencies, corporate partnerships may present an opportunity for financing a share of Los Banos' street tree planting and maintenance activities. Communities often establish adopt-a-tree programs and a corresponding fund that accepts donations for street tree activities, but a formal corporate partnership program could be a component of corporate social responsibility programs, particularly for Los Banos-based businesses. In particular, large goals like increasing the City's tree canopy may attract corporate partners interested in environmental stewardship and a positive public image. Emphasizing the benefits of street trees, such as clean air and water, may expand the pool of funders to areas like public health. For example, large health or fitness corporations may contribute substantial funds for projects and programs that promote increased access to trails for fitness purposes. Development of a corporate partnership program would likely require significant fundraising and outreach efforts on Urban Forestry Program's part and may place the City in competition with NPOs with highly organized fundraising programs based in Los Banos such as conservancies and park foundations. Some funders may prefer to contribute to NPOs, and therefore, it may benefit the City to partner closely with the NPO or support the establishment of an NPO. Ideally, corporate contributions would be consistent so that the City could rely on a sustainable funding stream.

Table 24. Summary of financing options for Los Banos' urban forest

Financing Options	Attributes	Process	Opportunities	Challenges
Feasible Options				
Tree Fund	Building permit fees received, tree removal mitigation fees, and stormwater fees could all contribute to a Tree Fund.	Enforcement of the Code generates monies from restitution. Building permit and stormwater fees would need evaluated and adjusted to accommodate supporting a Tree Fund.	Monitoring Code violations would generate revenue for the Tree Fund. Potential use of funds for tree maintenance. The City is growing and revenue from fees could benefit the Tree Fund.	Forestry staffing levels are inadequate to monitor Code violations. Fees would need evaluated, adjusted, and approved. Funds used for tree maintenance do not directly affect all contributors to the fee programs.
Special Assessment Districts	Special assessment for landscaping, open space improvements, acquisition, and maintenance.	City agency / property owners initiate via petition, City agency administers; based on benefits calculated in engineer's report; >50% of property owners in proposed district must approve via (mail) ballot.	Citywide district possible for all street trees; individual districts more feasible in areas with many trees, high maintenance needs, and/or political support.	Typically funds more than just street trees.
Parcel Tax	Assessment levied independent of property value, can be equal amount per parcel or dependent on lot size.	2/3 of voters (not just property owners) must approve via election ballot.	Tax can be directly related to program costs; maintenance taxes deductible for property owners.	2/3 voter approval; potential competition from other services (e.g., schools); flat tax distributes cost inequitably.
General Obligation (GO) Bond	Low-interest loan for capital projects; repaid by levying tax revenue.	2/3 voter approval required.	Frequently used tool in municipal government.	Funding provided for set period; maintenance ineligible for funding.
Stormwater Utility	A fee to manage stormwater based on impervious area.	A fee from all developed parcels to support the stormwater program.	Trees reduce stormwater volumes. Planting trees could qualify property owners a credit.	An extensive analysis for the appropriate utility fee structure is required.

Additional Options				
Parking Benefit District (PBD)	Revenue from parking meters for a range of right-of-way improvements.	Enacted via local ordinance specifying boundaries, rates, use of funds; City administers with committee input.	No ballot approval required; visitors bear burden over residents.	Typically funds more than trees.
General Fund	City's primary funding pool for wide range of municipal services.	Annual budget via City's legislative process.	History of funding for tree planting and establishment.	Not a guaranteed source of funding; no guaranteed funding amount; funds at risk if budget shortfalls occur.
Partnerships	Non-profits, corporate partners, grant funding; for tree planting and establishment.	Various, depends on city's processes.	Decrease costs, increase capacity, develop a tree steward organization and program.	Union resistance, sustainable funding stream required.
Carbon Offsets	A cap-and-trade program in California creates a cap on greenhouse gas emissions trading options.	The City should be involved in designing project (i.e., tree planting) requirements and tracking.	In California, projects must plant at least 1,000 trees as offset projects to enable the sale of carbon credits.	Many trees (5,000+) must be planted to cover costs of an offset program. Creates two types of street trees, offset program trees require higher oversight. Does not support tree maintenance.
Pest Control Fee	A fee for forestry related services such as pest control and replanting.	A forestry fee specific to pest control added to the public service utility billing as a levy.	Opportunity to offset costs of managing and recovering from tree pests and diseases.	Increased fee may require voter approval. The City must analyze pest control costs to establish the appropriate fee amount.

FUNDING BENCHMARKS AND COMPARISONS

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Budget Allocation	\$3.63 per capita budget \$9.11 per public tree	- Median budget per capita: \$1.25 - Median per tree budget: \$10.00 (Thompson, et al. 2018) - Average per capita budget for 62 CA cities is \$11.16 (2021 UFMP Benchmarking)	Per capita values are based on the budget and human population in 2019. The budget per public tree is based on the 2019 budget and 12,622 public trees.
Primary Funding Source	General Fund	- General Fund for 189 of 300 CA cities (63%) 12% of CA cities use Assessment District funds 8% of CA cities use Gas Tax funds (Thompson, et al. 2018)	Sustainable funding can be achieved through a dedicated and diverse funding stream representative of the urban forest population, customer service, current needs, and future growth.
Total Urban Forestry Budget	\$115,000 (2019) \$3.63 per capita	Palo Alto (2016): \$5.4M (\$80/capita) Sacramento (2016): \$5.3M (\$11/capita) 82% of CA cities need increased funding (Thompson, et al. 2018)	\$115,000 is based on the budget for the Urban Forestry Program directly. It does not include tree maintenance budgets within Park Maintenance and Public Works Street Services divisions.
Tree Planting Budget	\$45,000 (2019)	APWA recommends 14% of total budgets be attributed to tree planting.	Tree planting budgets should support the tree canopy goals adopted as part of this Plan.
Tree Maintenance Budget	\$35,000 (2019)	APWA recommends 30% of total budgets be attributed to tree maintenance.	As reported to the Arbor Day Foundation for Tree City USA accreditation. Tree maintenance budgets should support the maintenance recommendations in this Plan.
Tree Removal Budget	\$20,000 (2019)	APWA recommends 28% of total budgets be attributed to tree removals.	As reported to the Arbor Day Foundation for Tree City USA accreditation. Tree removal budgets should adequately address priority removals based on up-to-date inventory data.
Other Budget	Management Budget: \$15,000 (2019)	APWA recommends 8% of total budgets be attributed to management (staffing) and 20% other (outreach, education, etc.).	As reported to the Arbor Day Foundation for Tree City USA accreditation. Amounts should increase as public demand and interest increases and account for inflation and staff raises.

RECOMMENDATIONS FOR FUNDING

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Funding Mechanisms	Evaluate the potential funding mechanisms for feasibility.	The Plan provides a series of potential and viable mechanisms to fund the Urban Forestry Program. Further analyses by the City should be conducted to identify the preferable and most feasible funding mechanisms.
	Refine the analyses to support implementation of feasible funding mechanisms.	Further studies and analyses should be conducted on the preferable and most feasible funding mechanisms. For example, the use of the Gas Tax Fund (215) should be further evaluated.
	Further evaluate the degree to which the residents and/or the City would support and generate the funding.	Respondents showed varying opinions for how additional funding should be applied to the City's urban forest management program. According to the survey, 79% support using additional funding for green jobs and job training, 74% for faster response time regarding tree maintenance, 67% for more tree planting programs, 66% support funding community programs to plant and maintain trees, 58% for support in covering tree-related damage to hardscapes, and 51% support using funding for environmental education programs. Additional public engagement and education efforts should be undertaken to investigate where public support lies.
	Develop a sustained funding report detailing current and potential funding mechanisms aligned with urban forestry needs.	The report should provide the guidance to effectively implement the feasible funding mechanisms and include a method for evaluating needs to inform adjustments to future budget requests.



COMMUNITY FRAMEWORK FOR ENGAGEMENT

The urban forest is a resource that benefits and belongs to the City's residents. In order to care for it, the passion that is so frequently used to talk about trees can be harnessed to build stewardship around Los Banos' trees. Much of the City's tree canopy is located on either residential, commercial, or industrial land. Thus, success in improving or maintaining tree canopy must include not only the municipal government, but also a populace that understands the value of trees and tree canopy to the community and the environment and how to plant and care for trees.

ENGAGEMENT TO INFORM THE PLAN

Throughout the development of the Urban Forest Management Plan, engagement opportunities and activities were held to gather feedback and input that would inform the vision, goals, and strategies. The engagement sessions began with a project kickoff in March 2021 where information about the planning process was provided along with upcoming engagement events and other project information.

Throughout the planning process, social media messages and updates to the City's website were posted to inform the public of the status and encourage participation in a survey. The public survey was hosted online in June 2021 and closed in July 2021. The survey gathered 43 responses and focused on identifying viewpoints and perceptions relating to the urban forest cover, health, benefits, and programs and gathered input on developing the Plan's goals, strategies, and future programs.



Figure 40. Los Banos' announcement for the public survey

Public Meetings

The social media posts and website updates provided for consistent engagement with the community but public meetings with focus groups are essential to the development of a plan with a shared vision for the urban forest. In November 2021 and February 2022, the Project Team met with Los Banos' Tree Commission to provide an overview of the project, gather insights, and collect feedback on the draft Plan. Once the draft was revised, the Tree Commission provided a recommendation for City Council to adopt the Plan and on November 2, 2022, the Plan was presented to City Council and was officially adopted.

Public Survey

The survey gathered public perceptions of urban forest extent, health, benefits, and services and informed the messaging and information shared throughout the planning period as well as the long-term public engagement strategies.

Based on the 43 responses received, the majority of respondents live in District 4 (35%) and District 2 (30%) of Los Banos (95%), are white non Hispanics (52%) or Hispanic or Latino (38%) ages 35-44 (41%), watered a tree (88%), harvested fruit from a tree (77%), or planted a tree (72%).

These respondents feel trees impact their life (98%) by bringing joy and shade and reducing air pollution and improving air quality as the greatest benefit (77%) followed by improved physical and mental health (74%), and mitigating the effects of climate change (74%).

They feel the most urgent tree related need in their neighborhood is tree planting (58%) and maintenance (19%) and they feel there should be drastically more tree canopy cover (67%) and the canopy health has declined (28%). They support a realistic tree canopy cover goal (86%) with plantings focused in parks (84%), rights-of-way (70%), and schools (67%).

The respondents believe the street trees in the public right of way are owned by the City (52%) and are managed by the Public Works Parks and Recreation Division (50%) and feel the current care and management is fair (46%). 95% of respondents support ordinances that mandate planting and protection during development and feel the street and park trees should be proactively managed i.e., program pruning (95%). They view the primary issue caused by trees is the sidewalk and pavement cracking (67%) and roots damaging underground utilities (51%).

With additional funding, the respondents primarily support more local green jobs and job training (79%), faster City response time to maintain trees (74%), and tree planting programs/giveaways (67%).

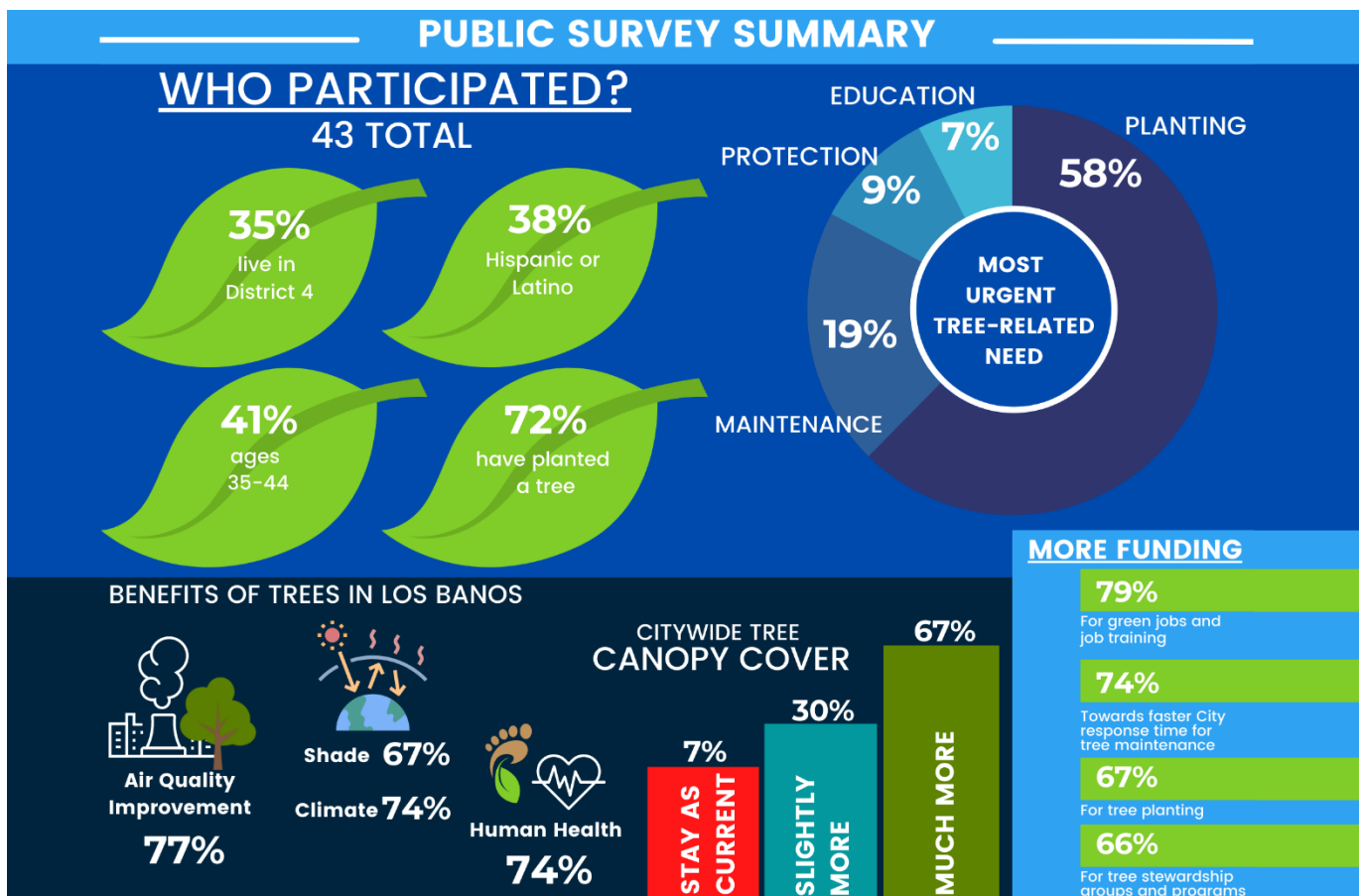


Figure 41. Summary of responses from the public survey to develop Los Banos' Urban Forest Management Plan

ENGAGEMENT TO IMPLEMENT THE PLAN

There are multiple ways to engage the public to improve the care of and expanse of local tree canopy. First, topics or messages must be defined, prioritized, and limited in number. More effective communication occurs through choosing a few strong messages and repeating them over and over. After messages are chosen, avenues of targeted communication to deliver those messages can be determined and implemented. Important topics and messages that should be considered for Los Banos are as follows:

- ❖ **Current Canopy Extent and Value of Los Banos' Trees.** The message should present the current canopy level and benefits the canopy provides. This is typically the first message to send out to the public, as all other messages should connect back to this one. This can also be a way to “roll out” the Urban Forest Management Plan to the public. Include information such as why Los Banos needs tree canopy, what the current canopy level is, and the plans to improve the management of the trees that comprise the canopy. Educating local business owners on the impact that a shady commercial district can have on sales and educating property owners about the impact that trees have on property values are other useful methods for boosting the desire for increased canopy along main thoroughfares and neighborhood streets while also engaging the public. The important value of mature trees could be also highlighted, as people often do not realize that the large tree they have is a value to their property, the community, wildlife, and the environment.
- ❖ **How You Can Get Involved.** What are the next steps you want people to take? The City should decide the answer and insert this “ask” in every outreach piece or effort. The City could organize a tree giveaway (usually saplings) at Arbor Day for people to plant on private property. Or the City could create an Adopt-A-Tree program, whereby residents sign up to take care of a street tree, including providing regular water and mulch. Another option for getting the community involved is to expand the Historical and Heritage Tree Program where residents are encouraged to find and nominate the largest or otherwise significant trees in the City. Lastly, citizens can donate funds or volunteer at a tree planting event.
- ❖ **Tree Threats.** Public and private trees can die, decline, or become safety risks as a result of insect and disease infestation as well as inadequate maintenance. With education, the residents of Los Banos can become aware of the common threats to the tree canopy and what they can do to help. The City should provide education on existing tree pest and disease concerns and what the City is doing about these threats on public land, and options for management on their own land. Since the majority of the trees that comprise the City's urban tree canopy are on private property, it is vital for the City to educate the public on how to detect insect and disease threats, provide information about management and treatment options, and relay the importance of reforestation in the event trees are removed. Informing residents about tree removals and other significant tree work is essential for maintaining the City's relationship with the community. When an established public tree must be removed, the City should continue its current practice of notifying abutting or adjacent property owners of the City's intended course of action.
- ❖ **General Tree Care Education for Property Owners.** There are several actions people take that are detrimental to trees at all stages of life, including improper mulching and pruning. Easy tips and tidbits of information to share with residents for trees on their own properties can help improve tree maintenance and increase tree health and survival rates. Some examples include:
 - Demonstrate how to properly mulch a tree. Too often mulch is placed around tree trunks in a “mulch volcano”, which is extremely detrimental to the tree. A simple message of how to mulch properly can improve tree health and longevity.

- Provide guidance on how and when to prune trees. Incorrect pruning can lead to poor tree structure or wounds that may never heal.
- Explain tree planting and tree care techniques. This could be especially helpful for homeowners who are considering planting a tree in their yard but unsure where to start.
- Explore opportunities for urban agriculture, food forests, community orchards, and fruit gleanings.
- Encourage recycling or composting leaves on-site.

USE MULTIPLE AVENUES OF COMMUNICATION

There are numerous avenues to convey urban forestry messages and accomplishments of the program to the residents, such as:

- ❖ **Social Media.** Social media sites such as Facebook, Instagram, and Twitter can create buzz and promote involvement in the current urban forestry activities occurring locally. To reach even more people, the City should consider coordinating with allied community gardens, non-profits, educational institutions, and business to get messages posted on their social media sites as well.
- ❖ **Website.** The City of Los Banos' website contains urban forestry topics on the Parks and Recreation Division's webpage. Content relating to pruning, tree selection, permits, best practices, and supporting resources is provided though the majority of information is in a separate webpage and PDF. This PDF summarizes the Tree Commission's role among other information though this information should also be incorporated on the City's website. The website should be organized and maintained regularly to make sure information is up to date. Results of the Urban Forest Management Plan should be included in the updates.
- ❖ **Presentations to City leadership and local business and neighborhood groups.** Identify key audiences, partners, and potential champions for the Urban Forestry Program. Making short presentations at regular or special meetings where they are relieves individuals from having to go to yet another meeting in the evenings. Initial outreach could be based on letting the audience know about Los Banos' urban forest and the work called for in this Plan. Be sure to have an "ask" at the end of the presentation. What do you want them to do next? This work often unearths new partners and funding sources that can otherwise go untapped.
- ❖ **Do a survey.** Once a year or at minimum, biannually, create a short online survey to identify urban forestry issues people in Los Banos are concerned or care about. The survey can also be used to gauge reactions to new urban forest management procedures and regulations, and their willingness to participate in volunteer work or to donate funds or other resources. Questions about public trees and tree canopy can be part of the annual public survey.
- ❖ **Cultivate partnerships for communication.** Partnerships can be initiated with organizations that can help promote, enhance, and preserve Los Banos' urban forest. Organizations can include local businesses, local utilities, regional non-profits, homeowner associations, neighborhood associations, and schools and other educational institutions. Other audiences to engage can include youth groups, landscape architect firms, faith-based groups, and nurseries and landscape contractors. Actions that can be taken by each partner should be defined before approaching them for support.
- ❖ **Encourage local campuses to become a Tree Campus USA.** If local campuses were to pursue this distinction and join the City's Tree City USA legacy, then more entities would be supporting Los Banos' urban forest. One standard a campus would need to achieve annually is for students to participate in one or more Service Learning Projects. These projects are intended to provide an opportunity to engage the student population with trees. College students could help the City's Urban Forestry Program perform many tasks, such as tree planting, tree care, and public outreach.

- ❖ **Publish and promote an annual State of the Urban Forest Report.** An annual "State of the Urban Forest Report" can be produced using updated tree inventory data, tree planting statistics, i-Tree tools, and other program information. It should provide information on the number and condition of public trees, as well as maintenance, planting, and management accomplishments. It should also present a summary of the current year's annual work plan and identify emerging issues and budget or resource needs. The [Implementation](#) and [Monitoring Plan](#) sections of this Urban Forest Management Plan provide the recommended metrics and approach for evaluating and reporting on the state of the urban forest.
- ❖ **Add signage to the landscape.** Signs placed in high traffic areas can spark interest in trees and the urban forest. Something as simple as species name or a notable fact about a tree can encourage people to learn more and to get more involved.
- ❖ **Create Story Maps.** The story about Los Banos' urban forest, the programs that manage it, and the community that shapes and benefits from it can be told through maps that illuminate and contextualize the story. Maps are the visual representation of where events happen. As such, maps and stories complement each other, and story maps serve as an integrated presentation. Story maps use geography as a means of organizing and presenting information. They tell the story of a place, event, issue, trend, or pattern in a geographic context. They combine interactive maps with other rich content—text, photos, illustrations, video, and audio—within intuitive user experiences. Content may include the Tree Canopy Assessment, the tree inventory, programs and events, and content from the Urban Forest Management Plan such as tree canopy goals, ecosystem benefits, and the urban forest vision, goals, strategies, and actions.

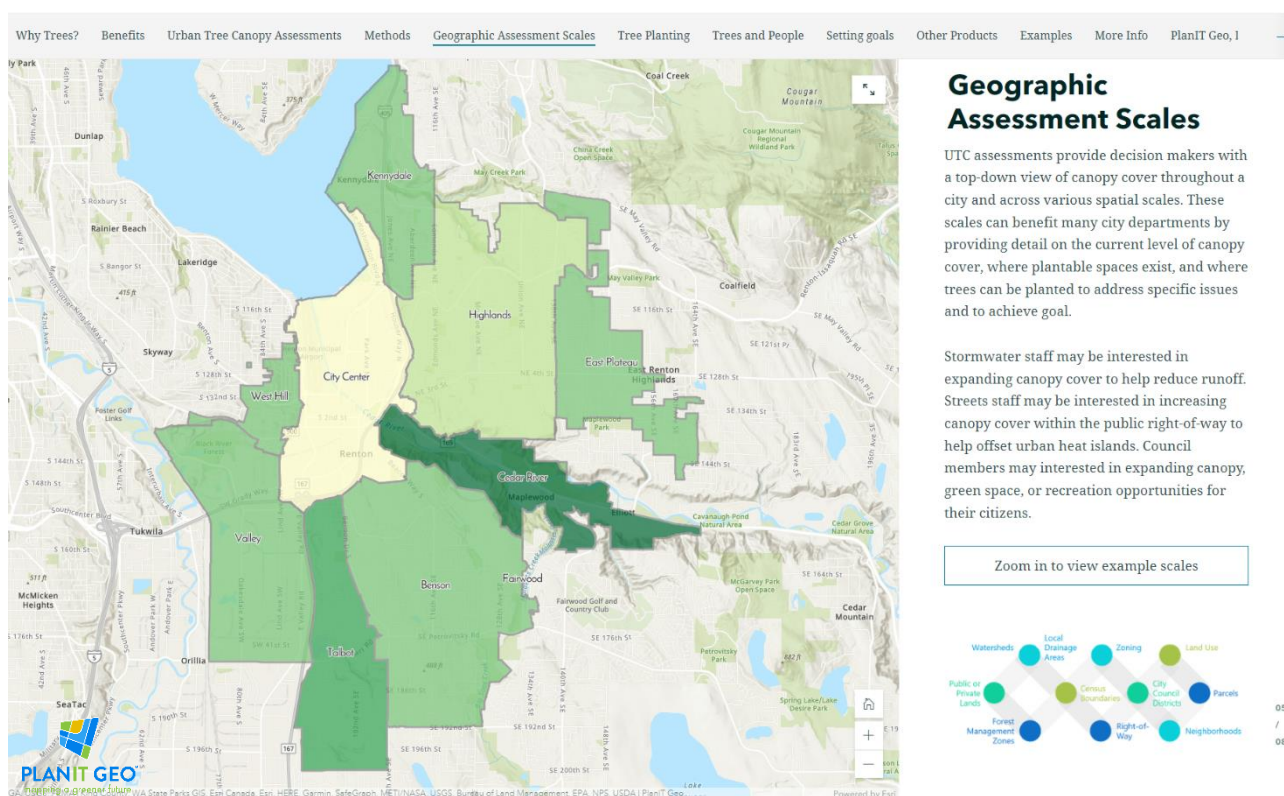


Figure 42. Story maps can visualize urban forest stories, maps, and data for the public

CREATE A VOLUNTEER CORPS

Consider implementing a “Young Tree Care” volunteer program to assist with new tree planting and new tree care such as watering, mulching, and pruning. This type of program is more involved than an “Adopt-A-Tree” program, as the young tree care volunteers are specially trained to care for young trees and to serve as advocates and educators within their networks. As such, this type of program involves initial and continuing training, frequent mentoring, and overall coordination of the process and volunteers. It also provides yet another engagement opportunity and encourages partnership opportunities with a variety of groups, such as neighborhood associations, master gardeners, scout troops, church affiliated groups, youth groups, high school community service programs, and others to accomplish new and young tree care tasks. Often times, local non-profit organizations oversee these types of programs.

Trees to include in a “Young Tree Care” program are generally less than six inches in diameter. These younger trees sometimes have branch structures that can lead to potential problems as the tree ages, such as codominant leaders, multiple limbs attaching at the same point on the trunk or crossing/interfering limbs. If these problems are not corrected, they may worsen as the tree grows, which increases risk and creates potential liability. With direction from City staff or trained professionals in a local non-profit, young tree care volunteers could be trained to carry out the young tree training program. Beyond pruning, young trees need watering and mulching to become established, and may require fertilization and other Plant Health Care (PHC) treatments until they reach maturity. This program can create “tree stewards” for Los Banos and be modeled after similar and successful programs like those found in other municipalities such as the Sacramento Tree Foundation's Tree Stewards or in other states such as Portland's Neighborhood Tree Stewards.

The “tree stewards” or a volunteer corps could also be used to support the urban forest management program in other ways. Volunteers could develop and/or staff Arbor Day and Earth Day events, post and manage tree messages on social media, help update the inventory, and/or locate planting sites in neighborhoods.

EXPLORE PARTNERSHIPS

Establish partnerships to fund and accomplish the young tree training program and some mature tree care activities. For instance, the utility companies may support tree growth regulator applications for trees under their lines; businesses or developers may pay into a fund to “adopt” or maintain trees in parks, commercial areas, and newly built streets; and residents may help water mature street trees during times of drought.

The City should continue to maintain and strengthen partnerships with agencies and organizations that provide technical service and grant opportunities. For example, the CAL FIRE Urban and Community Forestry Program provides urban forestry grants. These partners among many other local, regional, and national partners can support Los Banos in implementing the Urban Forest Management Plan.

Also, a local community organization devoted to trees and people in the City is an essential component and partner to ensure long-term success of the Plan. Organizations such as these can communicate the outcomes of the Plan, coordinate volunteer events, raise funding, increase awareness and provide education and training, among other services and programs that increase the City's capacity. In addition, these local community partners can assist the City in improving its tree equity and environmental justice by being the boots on the ground and listening to local residents. With any community partner involved in urban forestry, it is important the City establish a memorandum of understanding (MOU) or standard operating procedure (SOP) to ensure the partnership is mutually beneficial to both parties, the community, and the urban forest.

PUBLIC EDUCATION



Public education is one of the true keys to reaching the goals of an urban forestry program. Only by educating the public, City officials, developers, and contractors working within City limits will a community be able to achieve urban forest protection and planting goals. Ordinances and guidelines alone will not guarantee success since builders, contractors, and others often have their own priorities and agendas, and trees and ordinances are often nothing more than a nuisance to them.

Cooperation from all concerned parties can be improved by requesting various community stakeholders, such as City Council members and neighborhood groups, to attend educational sessions to learn about the current state of Los Banos' urban forest, plans for urban forest management and planting, and the importance of all of it to the future of the community.

To gain support for Los Banos' Urban Forestry Program, various public outreach campaigns aimed at educating the residents of Los Banos should be established. Where there is understanding and acceptance of the Urban Forestry Program as a whole, there will be increased support for the planting portion of the program. Based on examples of public relations efforts by urban foresters in other communities, the following types of activities are suggested for the City and its local community partners to undertake:

- ❖ Hold a seminar or public meeting to discuss the tree inventory project, its results, and its importance for the City.
- ❖ Develop monthly evening or weekend seminars related to tree care and landscaping; bring in guest experts from various disciplines in the green industry.
- ❖ Write a monthly "Tree Talk" article for local newspapers or social media.
- ❖ Develop a Tree Care door hanger brochure to go to each residence where new trees are planted; educating residents about proper tree care could help eliminate trunk damage and improper mulching and pruning of new trees.
- ❖ The City could start giving away one-gallon tree seedlings to any volunteers who get involved with City projects. This is a great reward and a way to spread the word about trees. Los Banos could capitalize on the idea and attach the same Tree Care door hanger brochure or a different informational brochure to each of these trees.
- ❖ Co-host tree planting programs with the local garden club, local non-profits, or groups.

- ❖ Map the locations of fruit-bearing trees in the City and coordinate with groups that harvest the fruit for homeless and food insecure organizations.
- ❖ Embrace story telling within the urban treescape. Connect the trees to the history of the area through complementary art, placards, or signage. Consider establishing tree walks that highlight some of Los Banos' greatest tree specimens and provides tree identification training. Utilize the public-facing features of the City's tree inventory management software as a platform for engagement and education.
- ❖ Encourage citizen science activities that involve the urban forest. For example, the Nature Conservancy's "Healthy Trees Healthy Cities" app can be used to monitor tree health and check trees for pests. Local professors and non-profit groups that work with citizen science may be able to help plan projects and recruit citizen scientists.
- ❖ Expand the annual Arbor Day celebration to help it become a community tradition. The Arbor Day celebration could be further developed as an all-day Saturday event, preferably held in a popular park/public space setting in the City. Expanding on short programs on planting and pruning trees and including children's programs about trees can help increase public interest in the City's tree programs. Additionally, the City could invite contractors to conduct demonstrations on tree planting, trimming, landscaping, and species selection. Organizers could also set up booths with tree information. Refer to the National Arbor Day Foundation (ArborDay.org) for publications that provide great Arbor Day ideas to assist in planning of this event.

SUPPORT THE CITY'S TREE COMMISSION

Continued support and engagement with the City's Tree Commission is one method for Los Banos to sustain the Urban Forestry Program and increase community engagement. The powers and responsibilities of the Tree Commission are based on California statutes and are assumed by the City. By empowering the Tree Commission, Los Banos can place the responsibility for important community decisions in the hands of volunteers with designated powers. The Tree Commission is a crucial element in developing broad-based support for community trees and ensuring long-term success and growth of Los Banos' Urban Forestry Program.

Review Responsibilities of the Tree Commission

The Tree Commission should reflect the values and standards of the community and should help champion an urban forestry effort. The City should evaluate the Tree Commission's current and potential roles as they relate to Los Banos' urban forest. Some example roles and responsibilities commonly found in tree commissions include the following:

- ❖ Reduce involvement of a municipal council for tree-related matters.
- ❖ Administer tree removal appeals processes.
- ❖ Advise community leaders and staff on administering the urban forest.
- ❖ Stimulate and organize tree planting and maintenance.
- ❖ Participate in the Historical and Heritage Trees Program.
- ❖ Support urban forest projects such as inventories, management plans, and ordinances.
- ❖ Settle community disputes caused by tree removal, planting, or maintenance.

ENVIRONMENTAL JUSTICE

The equitable distribution of resources is a key driver of environmental justice. This Urban Forest Management Plan aims to grow the urban forest and address the fact that existing canopy resources and associated benefits are unequally distributed. Urban tree canopy expansion and maintenance requires a financial investment on the part of the City, primarily from tax dollars. As a result, tree canopy coverage tends to be larger and more established in wealthier neighborhoods, and tree canopies are often less than ideal in communities that are economically disadvantaged. Along with funding, community support for the urban forest and this Plan are necessary to succeed. Communication should begin months before a tree planting starts and should build trust between the entity spearheading the tree plantings and the community the tree planting is taking place in. Connecting with trusted community leaders to introduce the idea of an expanded tree canopy, holding outreach events at an earlier stage in the plan, and taking local opinion into account when it comes to tree species selection can develop a partnership, rooted in trust, with the area's residents. But a big part of keeping that trust is staying consistent through action. Following up with these communities to hear and address any concerns while consistently maintaining the new plantings will help ensure a fully developed urban forest. The framework of the Urban Forest Management Plan guarantees the presence of environmental justice principles in Los Banos' Urban Forestry Program.

The tree planting initiatives and Citywide tree canopy cover goals to be finalized by the City will address community equity and environmental justice by identifying areas in most need of tree canopy cover, tree plantings, and urban forestry services. And, as the City expands its network of partners, all populations within a neighborhood will be better represented.

SUPPORT OR ESTABLISH A CITY VOLUNTEER COORDINATOR

To streamline community education and engagement across the City's programs and projects that influence the natural environment (i.e., Urban Forestry, sustainability, recycling, among others) and to achieve goals of the Urban Forest Management Plan, a volunteer coordinator should be supported with partnerships, organizations, the Tree Commission, and adjunct staff support. The management of volunteers, events, messaging, partnerships, and programs will build support for the Urban Forestry Program through volunteers and ensure all demographics and cultures have an equal opportunity to experience and discuss the City's urban forest.

COMMUNITY ENGAGEMENT SUMMARY

Outreach and engagement with the community of Los Banos begins with clear messaging and information gathered from the Urban Forest Management Plan. To make a greater impact and to fully recognize all communities in Los Banos, it is recommended the City identify a local non-profit community organization with a mission that supports the urban forest. In addition to a community partner, the Tree Commission adds capacity and creates more advocates for the Urban Forestry Program. Lastly, a community of tree stewards that are trained in tree planting and post-planting care will increase Urban Forestry Program capacity and build support for long-lasting impacts.

COMMUNITY BENCHMARKS AND COMPARISONS

ATTRIBUTE	LOS BANOS, CA	COMPARISON	CONSIDERATIONS
Public Perception (2021 Survey)	• 43 survey responses • 35% live in District 4 • 41% ages 35-44 • 88% have watered a tree • 72% have planted a tree • 77% view shade and air quality improvements as the greatest benefit of trees, followed by human health (74%), and climate change (74%) • 58% feel they need more trees in their neighborhood • 67% expressed concerns about trees and hardscape conflicts • 67% feel there should be drastically more canopy cover • 28% feel the health of canopy has declined • 86% support a realistic canopy goal • 84% prefer plantings in parks, 70% in rights-of-way, 67% at schools • 46% view public tree care is fair • 95% support ordinances that mandate planting and protection during development • 95% feel the public trees should be proactively managed • 79% would like to see more funding go towards green jobs and training, 74% to more tree maintenance, and 67% to tree planting.	Conduct biannual public surveys to measure change in viewpoints, interests, and concerns.	Frequent assessments of community viewpoints, perceptions, and ideas regarding the urban forest and associated programs informs management strategies and fosters stewardship in a community.
Tree Commissions	Established	52% of CA cities do not have a Tree Commission (TC) 48% of TC's lead Arbor Day events, 41% address appeals, 42% involved with policy work, and 48% advocate/promote urban forestry	A Tree Commission increases capacity and provides the framework and authority for tree related matters in a city. Source for Tree Commission statistics: Thompson, et al. 2018
Volunteer Civic Groups	In development	64% of CA cities utilize volunteer groups (Thompson, et al. 2018)	Volunteer groups increase a program's capacity and builds a community of stewards committed to the urban forest.

RECOMMENDATIONS FOR COMMUNITY ENGAGEMENT

SECTION	RECOMMENDED ACTION	KEY CONSIDERATIONS
Engagement to Implement the Plan	Establish consistent messaging and implement an outreach and education program as a Citywide coordinated effort.	A team of City staff and stakeholders should be organized to monitor Plan implementation. To support the Plan, a community outreach strategy should be developed that defines the audiences, approaches, timing, materials, and other considerations to effectively communicate to all communities and demographics.
Multiple Avenues of Communication	Remove barriers that prevent access to information by implementing outreach and education on multiple platforms to reach all demographics and cultures in the City.	Utilize local community partners to identify the existing barriers to information and align efforts to address these within the community outreach strategy.
Volunteer Corps or Tree Stewards Program	Support in a technical capacity the creation of a local tree stewards program.	Consider the framework of the Sierra Club San Francisco Bay's Tree Team for Oakland, CA with volunteer-led tree planting and pruning. In 2008, the Oakland City Council reduced funding to the city's Tree Division and suspended routine tree-plantings, so the Sierra Club's SF Bay Chapter began to plant trees with volunteers where homeowners would take care of them. As of January 2021, over 2,000 trees have been planted, many of them in communities rated as "environmentally disadvantaged" by CalEnviroScreen3.0.
Partnerships	Strengthen community and regional partners that represent all neighborhoods and demographics in the City.	Consider the technical and funding support from CAL FIRE, Non-Profit Organizations, federal agencies, regional organizations, and other conventional and non-conventional partners. Identify shared goals, opportunities to leverage resources, and strategies that are guided by an MOU or similar.
Education	Coordinate with partners to host and support educational activities.	Activities may include articles, seminars, trainings, workshops, events, virtual sessions, and other mediums and channels that reach Los Banos' diverse population.
Tree Commission	Evaluate the guidance provided to support the City's Tree Commission.	As part of the planning process, guidelines for supporting the Tree Commission were provided. Continue to inform and engage members of the commission and ensure all members of the community are represented.
Environmental Justice	Utilize partnerships and surveys to address environmental justice concerns and adapt strategies as needed.	Establishing or strengthening partnerships that represent all neighborhoods, communities, demographics, and cultures ensure the urban forest provides benefits and services to all.
Volunteer Coordinator	Support volunteer coordination by collaborating on events.	A volunteer coordinator with specific guidance for urban forestry engagement can promote various events to build community stewardship.

An aerial photograph of a suburban neighborhood. A canal runs diagonally from the top left towards the bottom left. To the right of the canal is a wide, light-colored dirt or gravel area. Further right is a paved road lined with numerous green trees. To the right of the road are several houses with red-tiled roofs, some with swimming pools, and solar panels on the roofs. The overall scene depicts a typical suburban environment with a focus on greenery and water management.

URBAN FOREST MANAGEMENT AND SUSTAINABILITY GOALS

URBAN FOREST MANAGEMENT AND SUSTAINABILITY GOALS

Trees are an integral part of the community and the ecological systems in which they exist. They provide significant economic, social, and ecological benefits, such as carbon sequestration, reduction of urban heat islands, energy savings, reduction of stormwater runoff, improvement of water quality, enhancement of human health and wellness, and increase the value of properties. Planting and maintaining trees help Los Banos become more sustainable and reduce the negative impacts on the ecosystem from urban development. Trees are as necessary as water, infrastructure, and energy to sustaining healthy communities. The health of the urban forest is directly linked to the health of the community.

Through research, staff interviews, data analyses, benchmarking research, community engagement, and urban forest auditing, the City identified six specific goals with each having several strategic actions to accomplish the goals. Lastly, the actions include specific and measurable targets to guide planning, implementation, and evaluations. An interactive worksheet detailing the goals, strategies, and actions was developed to support this Plan. The worksheet includes a total of 15 unique attributes that can be filtered and sorted to inform implementation strategies. For example, each action can be sorted by priority and level of funding required.

The [Analysis of Los Banos' Urban Forest, Management Framework](#), and [Community Framework for Engagement](#) sections provide the context, discussions, and recommendations that led to the development of the goal framework. In addition, an extensive review of the policies within Los Banos' General Plan was completed to align City planning efforts. The Urban Forest Management Plan actions address many of the policies within the General Plan, demonstrating effectiveness, efficiency, resourcefulness, and support this urban forestry plan offers to the City's principles and policies.

LOS BANOS' URBAN FOREST VISION

Our City's trees, forests, and other natural resources are recognized as integral to sustaining life and health for all City residents. A healthy, thriving, and sustainable urban forest is a community priority, to be thoughtfully managed and cared for by partnerships between the City and its residents to maximize public safety and benefits that include a thriving ecosystem, vibrant economy, and livable communities shared by all who live, work, and play in Los Banos.

GUIDING PRINCIPLES

Program Efficiencies and Fair Policies Long-lasting improvements to the urban forest are achieved with improved levels of service and sound policies, protocols, and standards.

Health and Sustainability The urban forest grows sustainably through Best Management Practices and shared commitments.

Preservation and Resiliency Continuous process of long-range planning and management enhances and protects the urban forest for future generations.

Community Engagement The growth and management of the urban forest is informed by education and engagement that is equitable, inclusive, diverse, and transparent.

Green Asset Management Trees are vital components of the community to be thoughtfully managed.

PRIMARY GOALS FOR LOS BANOS' URBAN FOREST

Tree Management Policy

Urban forest policies are the foundation for preserving the environmental benefits, management, and the character of Los Banos' urban forest.

Capacity, Training, and Authority

Los Banos has the capacity and expertise to provide optimal levels of service for sound urban forest management.

Budget and Funding

City resources enable comprehensive urban forest management for the preservation and enhancement of tree benefits.

Assessments and Planning

A thorough understanding of the urban forest ensures data-driven decisions, sustainable and comprehensive planning, and amplified tree benefits.

Community Engagement

Sustainable urban forest management and equity is achieved through a partnership with the City and its residents resulting in improved well-being, human health, and local economies.

Green Asset Management

Los Banos proactively manages the public trees, continues to grow and expand a healthy canopy, effectively mitigates storm damage, maintains public safety, and optimizes urban forest benefits.

The following pages provide the strategic actions to support each respective goal. To view additional information regarding the actions along with the supporting targets, see [Appendix E](#).

STRATEGIC ACTIONS TO ACHIEVE URBAN FORESTRY GOALS

GOAL A: Tree Management Policy

Urban forest policies are the foundation for preserving the environmental benefits, management, and the character of Los Banos' urban forest.

Actions

MP.01 Refine and finalize the Master Street Tree List and update the City standards and specifications for improvements and landscape to detail the appropriate trees for public tree plantings and the planting detail.

MP.02 Align resources and planning efforts across City departments and partners to meet common goals and improve efficiencies. Tree managing staff should engage in City department planning such as updates to the City's General Plan, Parks Master Plan, and plans for climate change, greenhouse gas reductions, sustainability, and human health.

MP.03 Prepare a formal document to recommend changes to tree-related code, ordinances, standards (i.e., Landscape Standards), Standard Operating Procedures, and best practices based on recommendations and priorities described in [Appendix F](#).

MP.04 Establish tiers of achievable tree canopy goals and tree planting targets Citywide, by zoning or land use type, neighborhood, and/or district. Use the UFMP as guidance. At minimum, adopt a no-net-loss policy for public trees. Update these after completion of the high-resolution UTC assessment in 2030.

MP.05 Consolidate tree-related policies, guidelines, best practices, standards, and information into a tree manual for planners, developers, homeowners, HOAs, and tree care companies.

GOAL B: Capacity, Training, and Authority

Los Banos has the capacity and expertise to provide optimal levels of service for sound urban forest management.

Actions

CT.01 Establish an urban forestry working group with regular meetings to monitor progress of implementing actions. Finalize lead implementers.

CT.02 Evaluate the roles and responsibilities of the Tree Commission to align with goals and actions in the UFMP.

CT.03 Ensure tree-related operations are represented or conducted by staff with industry credentials such as International Society of Arboriculture (ISA) Certified Arborist and Tree Risk Assessment Qualification (TRAQ) either directly through the department or supporting department.

CT.04 Stay current with industry research, science, and technology through various platforms. An example includes management of current and potential exotic tree pest and disease threats.

CT.05 Determine the necessary staff required to adequately manage tree hazards and debris within the public rights-of-way, effectively plant trees aligned with canopy goals, provide post-planting care, and enforce tree ordinances (i.e., shade requirements, mitigation plantings, replacement plantings).

GOAL C: Budget and Funding

City resources enable comprehensive urban forest management for the preservation and enhancement of tree benefits.

Actions

BF.01 Continue to seek and acquire funding and technical assistance from agencies and organizations such as the CAL FIRE, U.S. Forest Service, University Extension Services, and others.

BF.02 Use the data from the Assessments and Plans actions (i.e., tree maintenance needs, tree planting needs, ecosystem services) to support budget and funding increases aligned with resource needs and actions in the UFMP.

BF.03 Develop an annual education and training budget for tree management staff that supports attending CEU accrediting seminars, workshops, and conferences each year. Consider the Tree Care Industry Association's Certified Treecare Safety Professional accreditation.

BF.04 Based on the exploration of funding opportunities provided in the UFMP, develop a sustained funding report that details the opportunities and approaches for sustained, dedicated, and diversified funding. An example includes a pest control fee or alternative uses of the Gas Tax.

BF.05 Establish a dedicated, sustained funding source beyond the current departmental budget for urban forestry operations to increase the level of service to meet the community's high standards.

GOAL D: Assessments and Planning

A thorough understanding of the urban forest ensures data-driven decisions, sustainable and comprehensive planning, and amplified tree benefits.

Actions

AP.01 Maintain an inventory of public trees and update as maintenance, removals, and new plantings occur. Encourage partners to manage a current inventory of utility trees.

AP.02 Quantify the ecosystem benefits and appropriate appraisal values of public trees to conduct a cost-benefit analyses of public trees. This informs management priorities, program structure, and raises public awareness of the urban forest benefits.

AP.03 Complete an urban forest audit using similar criteria as the 2021 audit completed for the UFMP to evaluate improvements in urban forest management and adapt strategies.

AP.04 Strengthen storm and disaster preparations, mitigations, and recovery strategies, protocols, and mechanisms.

AP.05 Complete a comprehensive high-resolution Urban Tree Canopy (UTC) Assessment using industry recommended protocols to establish a baseline metric from which urban forest improvements can be measured.

AP.06 Evaluate the recommendations provided in the UFMP to further strengthen the Urban Forestry Program, the tree resource, and the community framework.

GOAL E: Community Engagement

Sustainable urban forest management and equity is achieved through a partnership with the City and its residents resulting in improved well-being, human health, and local economies.

Actions

CE.01 Develop a community outreach strategy with clear and consistent language using information from the UFMP. Include updates and a dedicated page on the City's website. Coordinate the strategy as a Citywide initiative rather than a departmental effort.

CE.02 Continue to receive Arbor Day Tree City USA designation. Strive to achieve Arbor Day Growth Awards and Sterling status after 10 Growth Awards.

CE.03 Conduct biannual community surveys to gauge public viewpoints and receive feedback on implementation of the UFMP and program success. Prioritize citizen feedback/requests and update the City website with frequently asked questions and additional resources.

CE.04 Continue to strengthen partnerships with civic groups, non-profit organizations, Homeowners' Associations, volunteers, institutions, internal, City Council, neighborhoods, improvement districts, and non-conventional organizations aligned with goals of the UFMP. Support volunteer events and develop strategies to remove barriers to participation for all community members.

CE.05 Provide education and workshops to the public about tree maintenance responsibilities, permitting, species selection, and proper young tree care as funding allows. Also provide information regarding unauthorized tree plantings, invasives, and management of volunteer trees. At minimum, share this information quarterly on social media, the City's website, and other communication platforms. Align these efforts with Action CE.01 for a community outreach strategy.

GOAL F: Green Asset Management

Los Banos proactively manages the public trees, continues to grow and expand a healthy canopy, effectively mitigates storm damage, maintains public safety, and optimizes urban forest benefits.

Actions

GA.01 Prioritize young and large tree maintenance, removals, and risk tree assessments based on updated inventory data and resources. Update the maintenance regimen (number of public trees pruned annually) by evaluating inventory data, program structure, available resources, and demands.

GA.02 Coordinate with other City departments to maximize the number of trees planted through Capital Improvement Programs and stormwater management projects. Establish procedures for replacing damaged trees during infrastructure replacement projects.

GA.03 Develop a more strategic approach to tree species and site selection using the Master Street Tree List (2022 UFMP) to ensure the resilience and optimize ecosystem service provision of Los Banos' urban forest. Plant and grow a diverse urban forest with species representing no more than 10% of the public tree population.

GA.04 Use Citywide tree inventory data and best available science for long-term planning and management of existing and future tree pests and diseases impacting the City's urban forest. Consider new research and guidance such as the 5% tree genera diversity rule (Ball, 2015).

GA.05 Use the results of an updated high-resolution Urban Tree Canopy (UTC) Assessment to prioritize tree plantings based on low existing tree cover and enhancing benefits provided by trees.

Acronyms (as presented in the actions): UFMP = Urban Forest Management Plan (2022); UTC = Urban Tree Canopy (Assessment); HOAs = Homeowners Associations; TRAQ = Tree Risk Assessment Qualification (ISA); CAL FIRE = California Department of Forestry and Fire Protection; U.S. = United States (of America); CEU = Continuing Education Units; USA = United States of America

RECOMMENDATIONS SUMMARY TABLES

URBAN FOREST ANALYSIS

Urban Tree Canopy

Section	Recommended Action	Key Considerations
Urban Tree Canopy	Conduct finer scale analyses of tree canopy cover and possible planting space.	The urban tree canopy (UTC) assessment identifies areas where it may be possible to plant trees to increase tree canopy cover. Additional analyses would separate the possible planting areas into what is feasible and of highest priority.
	Refine the recommended tree canopy cover goals and priority planting areas.	By identifying the feasible and most desired areas for planting trees, potential stakeholders, policy changes, and necessary resources, the City and partners can refine the short- and long-term tree canopy cover goals and planting targets.
	Continue to assess tree canopy cover change.	The urban tree canopy cover and other land cover types such as possible planting area and impervious area should continually be assessed on at least a 5-year basis to monitor canopy gains and losses and inform strategy changes.
Tree Equity	Conduct finer scale analyses of tree equity.	The Tree Equity Score Tool provides an analysis of tree canopy cover equity by U.S. Census Block Group. Additional analyses of tree equity by neighborhood or land use provides a finer depiction of tree canopy disparities and opportunities.
	Use the tree equity analysis to support canopy goal setting and priority planting areas.	Tree canopy cover goals should be based on an amalgamation of City and stakeholder priorities and themes— tree equity should be one of the highest tiers for consideration in setting goals.
	Continue to assess tree equity and adjust strategies.	Similar to tree canopy cover change analyses, the change in tree equity on small- and large-scales should continually be measured to inform strategy updates.

Urban Tree Canopy (continued)

Section	Recommended Action	Key Considerations
Urban Forest Threats	Manage the urban forest to mitigate and reduce the effects of climate change.	Maintaining tree health and growing an urban forest that addresses climate change impacts should be guided by short- and long-term canopy goals. Tree plantings can address critical impacts such as increased surface temperatures. Management of open space and natural areas especially within the wildland-urban interface can reduce fire risks.
	Assess and manage tree pests and diseases.	Maintain an inventory of the public tree population by noting tree pests and diseases and reinventory trees on an appropriate cycle. Analyze the composition of the urban forest for susceptibility and inform the public of common tree pest and disease signs, symptoms, and treatment options.
	Strengthen and enforce sound tree regulations.	Tree canopy data, recommendations in the Plan, among other sources of data will provide valuable information to effectively strengthen tree-related policies and regulations to minimize the impact of development pressures on the urban forest. Long-range planning should consider sustaining and maximizing the associated benefits provided by the urban forest while accommodating smart growth.

Public Trees

Section	Recommended Action	Key Considerations
Public Street and Park Trees	Evaluate current public street tree maintenance responsibility.	Currently, it is primarily the City's responsibility to maintain street trees. Surveys and anecdotes have uncovered existing misconceptions of responsibility, along with resource shortages resulting in complications and deferred maintenance of street trees. Deferred maintenance leads to decreased urban forest health, increased costs for maintenance, and increased risk.
	Manage the public street trees to maintain optimal species and age class diversity.	The public street tree population is currently exceeding the genus (<i>Pistacia</i> – 20%; <i>Fraxinus</i> – 20%) and species (Chinese pistache – 20%; narrowleaf ash – 11%; London planetree – 10%) diversity threshold limits of 30-20-10 for the distribution of family, genus, and species of trees (Santamour, 1990). The City should improve the diversity to meet this standard by planting the appropriate tree species, guided by a strategic tree planting plan. The diversity thresholds can be further applied to local-level scales such as neighborhoods and streets rather than simply Citywide to further strengthen the City's urban forest resiliency. Overall, the public street tree population is similar to the ideal distribution (Richards, 1983) though the relative age class that differs greatest from the ideal is the 6-12-inch class with 41% compared to the recommended 25% distribution. Also, the young trees (1-12 inches DBH) and establishing trees (12-18 inches DBH) should be properly maintained and protected to grow into larger specimens to reach the recommended 20% distribution of trees greater than 24 inches DBH. Also, strengthening City tree-related ordinances and policies will protect the larger maturing trees and maintain age class diversity.
	Effectively manage the public street trees to maintain a healthy condition, reduce, minimize or prevent defects, minimize risks, and address maintenance needs.	The City should continue to maintain street trees for which its responsible by adhering to industry standards and best practices. Proper tree protection during construction and routine inventory of public trees can minimize human-caused defects. The City should continue to manage its inventory to prioritize tree maintenance. Consider a more frequent pruning rotation for young trees to structurally train their growth to minimize future costs. Education and resources relating to tree maintenance should continue to be shared with adjacent property owners and developers, among other audiences.
	See "Proactive Pruning" within this table for additional recommendations.	See "Proactive Pruning" within this table for additional recommendations.

Public Trees (continued)

Section	Recommended Action	Key Considerations
Public Street and Park Trees cont.	Manage the public park trees to improve structure and maintain optimal species and age class diversity.	The City should be planting the appropriate tree species, guided by a strategic tree planting plan to strengthen its resiliency to climate change and tree pests and diseases. Consider a more frequent pruning rotation for young trees in parks to structurally train their growth to minimize future costs.
	Continue to manage and prevent invasive plant species on public park properties.	All City-led plantings should adhere to a recommended tree species list where trees planted are suitable for changing climates and maintaining diversity. Only non-invasive species should be planted. The planting of native species should be considered to maintain habitats that prevent invasives. Also, the CA Native Plant Society list should be considered. As feasible, invasive species should be removed and opportunities for engaging and educating the public should be considered.
	Coordinate the management of trees in the wildland-urban interface (WUI).	Continue to coordinate tree and fire management best practices with the Fire Department in WUI areas. Consider strengthening management strategies to include a combination of improved modeling, research into wildfire risk, fuel reduction in the home ignition zone, use of fire-resistant landscaping and building materials, strategic placement of fuel reduction treatments around the City, and community education regarding wildfire that could lead to policies and mitigation that reduce wildfire risk in the WUI.
	See "Proactive Pruning" within this table for additional recommendations.	See "Proactive Pruning" within this table for additional recommendations.

Public Trees (continued)

Section	Recommended Action	Key Considerations
Manage Risk Trees	Establish and document risk tree protocols and standards.	Compile, finalize, and document the methods and protocols for monitoring, mitigating, and reducing risk trees using industry standards and best practices. Coordinate the process with City departments.
	Continue to conduct risk tree assessments using industry standards and protocols.	Using risk area maps and the public tree inventory data, conduct risk tree assessments based on the protocols and standards established. Continue to assess tree risk utilizing in-house or contracted professionals for tree and hardscape conflicts.
	Effectively address and mitigate tree risk.	Based on risk tree assessments and protocols, mitigate priority tree risks as funding permits.
Proactive Pruning	Evaluate the framework for improved street tree maintenance through proactive programmed pruning.	Utilize the studies in the UFMP to implement programmed street tree pruning incrementally. Proactive pruning of street trees on an ideal rotation of 5 to 7 years will reduce long-term costs, sustain associated benefits, and reduce risks.
Future Planting Sites	Analyze growing space and condition by tree species and other variables.	Use the inventory and canopy assessment data to identify priority planting areas on public properties and rights-of-way to increase the stocking level, guided by a strategic tree planting plan.
	Develop a strategy for stocking planting sites aligned with tree canopy cover goals, community desires, among other factors.	To increase tree canopy and address tree equity among other City priorities— such as climate change mitigation— develop a master tree planting plan, planting strategy, or planting initiative. The strategic planting should be informed by the recommendations in this Plan, community and partner input, and other factors.

Urban Forest Benefits

Section	Recommended Action	Key Considerations
Citywide Urban Forest Benefits and Services	Sustain existing urban forest benefits and services by protecting existing trees.	Continue to enforce and monitor tree ordinances, standards, and best practices for public and private trees. Public outreach and education should provide information regarding tree benefits, pest and disease management, and other information to sustain the urban forest.
	Enhance the urban forest benefits and services through strategic planting.	In addition to strategic street tree planting, the planting of trees on public properties should also be conducted and guided by a strategic tree planting plan. Recommendations and guidance for private property owners should also be provided to collectively grow the urban forest and associated benefits and services.
	Educate the public about urban forest benefits and proper private tree management to build support and increase tree stewardship.	Most of the urban forest and available planting space resides on private property (only second to parks and open space). Therefore, an education program for the public that discusses urban forest benefits and proper management will help to protect the valuable resource.
Public Street and Park Tree Benefits and Services	Sustain existing public tree benefits and services by protecting and properly maintaining public trees.	Adherence to and enforcement of the tree ordinances, standards, and best practices during construction projects and maintenance will protect the existing benefits and services provided by the public tree population.
	Enhance the benefits and services provided by street trees by achieving 90% stocking levels in public rights-of-way.	Utilizing a strategic planting plan guided by tree canopy goals, community input, and other factors will effectively grow the public tree population and increase overall stocking levels.
	Educate the public about urban forest benefits and proper tree maintenance to build support and increase tree stewardship.	Maintaining street trees is primarily the City's responsibility though the urban forest is comprised of all trees throughout the City. An education program that informs the public of proper private tree maintenance and the benefits of trees will instill stewardship and a healthier tree population.
	Plant trees that grow into large-canopied specimens where adequate space is available.	Simply achieving improved stocking levels does not infer enhanced benefits and services. The appropriate tree species for changing climates and the given site will increase longevity and maximize benefits and services.
Cost-Benefits	Continually assess the costs and benefits of the urban forest and public tree population to inform management.	Maintaining an inventory of public trees and reassessing Citywide tree canopy cover will provide the data to effectively evaluate benefits and services provided by the resource. As improvements to management are achieved through the implementation of this Plan, associated costs will likely reduce and an evaluation will inform monitoring and adaptive management strategies.

MANAGEMENT FRAMEWORK

City Planning Documents

Section	Recommended Action	Key Considerations
Los Banos General Plan	Participate in the plan update process to include urban forest management context.	California law requires each county and city in the state develop and adopt a comprehensive plan to guide future actions of a community. Integrating and mainstreaming urban forestry within the General Plan builds support, aligns common goals, leverages resources, and ensures long-lasting impacts.
Parks Master Plan	Improve the Urban Forestry Program by aligning goals and policies of the parks Master Plan with the UFMP.	Trees in parks comprise the urban forest. Implementing the Parks Master Plan will expand this element of the urban forest along with improvements to staffing levels, maintenance, and sustainable landscapes.
Other City Plans	Update standards, specifications, and procedures based on recommendations in the UFMP and changes to resources and the urban forest.	The City's Landscape Standards and Specifications (2004) and Community Design Standards (2008) provide urban forestry-specific standards and best practices. The UFMP makes recommendations to strengthen these standards and best practices and related documents should be updated. Changes to City ordinances and policies should also be reflected in these documents.

Program Structure and Funding

Section	Recommended Action	Key Considerations
Program Structure	Establish, document, or strengthen Standard Operating Procedures between City departments and divisions.	Multiple city departments and divisions are involved with trees in the City. Standard Operating Procedures provide agreed upon guidance and workflows to ensure projects and services do not hinder goals and priorities of others.
	Utilize the findings from the UFMP to increase capacity and resources.	The tree inventory data provides the priority maintenance and removals necessary for a safe and sustainable public tree population. The ecosystem benefit analyses provide information that resonates with community members, City Council, and even other City departments. Utilize the summaries provided in the UFMP to build support for increasing staffing levels and the necessary funding for proactive tree care and Citywide urban forest management.
	Consolidate tree-related programs to increase efficiency, capacity, and levels of service.	Tree responsibilities are dispersed across multiple City departments and divisions in a fractured system which contributes to inefficiencies in management. One possibility to streamline tree management is to create a new work section that encompasses all tree management activities within the City. If all tree-related management activities, permitting, enforcement, customer service, and planning decisions were coalesced into one section with added service lines, it would maximize efficiency and productivity. The main benefits are increasing efficiency, changing workplace culture, and the capacity for the manager to assume more responsibility over service lines as needed. Considerations for a new Urban Forestry Division should be explored in the long term.

Program Structure and Funding (continued)

Section	Recommended Action	Key Considerations
Funding Structure	Further study the funding mechanisms most appropriate to support community forest management, and the degree to which residents or the City would generate the funding.	Public survey respondents showed varying opinions on where additional funding should be allocated but the majority support the improved response time by the City for street tree maintenance.
	To fund the proactive pruning for street trees and the necessary equipment and resources, explore the potential to use alternate funding sources.	Alternative funding sources such as the City's portion of the Gas Tax should be explored to support the Urban Forestry Program's staffing levels and levels of service.
	Continue to maintain the tree inventory and program records to justify budget requests.	The necessary resources and staffing to manage the urban forest sustainably should be informed by data derived from tree inventories, public surveys, staff reports, and other sources.
	Acquire and sustain staffing levels that more closely align with industry recommendations and the needs of the City's urban forest and customer service.	Los Banos' total staffing Citywide is below the average for cities in the region. Specific to the Urban Forestry Program, there is a shortage of 1.50 full-time employees compared to the average when looking at the proportion of public street and park trees to the number of staff. This analysis does not account for the estimated 480,000 trees in natural areas and open space but these trees are not to be managed as intensively as street and park trees.

Tree Code and Regulations

Section	Recommended Action	Key Considerations
Street Trees	Review and refine the recommended changes to Title 10, Chapter 1 of Los Banos Municipal Code.	Strengthening the foundation of sound policies enables long-term success of the Plan. The process to develop the Plan included a comprehensive review and analysis of existing ordinances, policies, procedures, and guidelines. This evaluation was informed by City staff interviews, benchmarking research of other CA cities, and a cross-examination of Los Banos' regulations to industry standards and best practices. The recommendations for revision to these regulations are provided as a separate study to the Urban Forest Management Plan project.
Private Property Trees	Review and refine the recommended changes to Title 9, Chapter 3 of Los Banos Municipal Code.	Strengthening the foundation of sound policies enables long-term success of the Plan. The process to develop the Plan included a comprehensive review and analysis of existing ordinances, policies, procedures, and guidelines. This evaluation was informed by City staff interviews, benchmarking research of other CA cities, and a cross-examination of Los Banos' regulations to industry standards and best practices. The recommendations for revision to these regulations are provided as a separate study to the Urban Forest Management Plan project.
Landscape Design Standards	Update the City's landscape and improvement standards and specifications as changes to ordinances occur.	As part of the development of the Plan, recommendations for changes to the tree-related ordinances, design standards, and practices were provided. The City should further evaluate the recommendations to amend these policies and regulations that will support the implementation of the Plan.

Best Practices

Section	Recommended Action	Key Considerations
Pruning Cycles	Review and finalize the total costs for a pruning cycle of 5 years for all public street, median, backup lot, facility, and park trees.	Evaluating the costs of an optimal scenario where all public trees are pruned on a recommended cycle provides baseline values for comparison to annual budget requests. For example, an increase of \$60,000 annually for tree maintenance would change the City's current 6-year cycle to the recommended 5-year cycle.
Tree Inventory	Update the public tree inventory.	Completing an updated inventory of street and park trees every 5-10 years will ensure management decisions are made with the most recent and accurate information. Consider a reevaluation of potential public planting sites to inform planting strategies tied to canopy goals.
	Analyze the inventory to report on ecosystem benefits and utilize as part of budget planning.	The tree inventory provides data to calculate the associated benefits and services automatically or manually. This information can be used to monitor urban forest performance, adjust management and planting strategies, and connect budget requests to ecosystem service performance.
	Update the public tree inventory.	Completing an updated inventory of street and park trees every 5-10 years will ensure management decisions are made with the most recent and accurate information. Consider a reevaluation of potential public planting sites to inform planting strategies tied to canopy goals.

Best Practices (continued)

Section	Recommended Action	Key Considerations
Tree Maintenance	Implement and adhere to best practices and standards for City-led tree maintenance.	Adhering to the ISA Best Management Practices and ANSI Standards ensures proper management of the urban forest and sets an example for private property owners to follow.
	Share resources and information with the public regarding proper tree maintenance.	The majority of trees comprising the Citywide urban forest are the responsibility of private property owners to maintain. To sustain the urban forest, property owners, tree care companies, and property managers need to be aware of the best practices and standards for tree care.
	Create a registry and requirements for a City-approved Tree Contractor program.	A list of certified arborist-represented companies and those tree care professionals that adhere to industry standards and best practices will support the goals of maintaining the urban forest.
	Maintain and update as needed the tree contractor specifications and requirements.	Continue to inform contractors of tree regulations and standards, maintain contractor specifications, and inspect the completed work.
Utility Tree Maintenance	Regularly meet with utility companies and utility vegetation management companies to ensure best practices are maintained.	Coordination with companies and agencies involved with utility tree pruning will improve communications and outcomes. It will also ensure adherence to best practices as defined in the ISA Best Management Practices – Utility Pruning of Trees (2004).
Young Tree Training	Establish a young tree maintenance plan for all City-led plantings and structurally prune every three years for at least two cycles.	Within the public tree population, a total of 4,365 trees are under six inches in diameter and qualify for young tree pruning. Young tree maintenance improves a tree's structure and reduces future maintenance costs.

Best Practices (continued)

Section	Recommended Action	Key Considerations
Tree Planting and Irrigation	Adhere to industry standards and best practices when planting trees.	The City should update its Standard Detail for tree planting and staking. In addition, choosing quality tree nursery stock for planting is essential to long-term growth and health. The City should continue to adhere to ANSI Z.60.1 Nursery Standards. Development projects should follow the same requirements and trees planted should be inspected to conform with City and industry standards. Align efforts with other city goals such as climate change, water conservation, and sustainability.
	Review and finalize the Master Street Tree List and utilize for all City-led projects and encouraged to private property owners.	As part of the Urban Forest Management Plan project, a draft list of trees recommended for City projects and street trees was developed that contains various attributes for each tree species for making the selection for a desired project. The trees in the list are suitable for Los Banos' current and changing climate and private property owners should be encouraged to utilize the list. The review of the list should include the following considerations: Ensure the total number of species recommended by the City can meet species diversity goals. Prioritize planting trees rated by Water Use Classification of Landscape Species (WUCOLS) as very low and low water users. Identify trees that are not expected to adapt to changing climate conditions and replace them with new suitable species. Make sure there are enough small and medium-sized tree species in the list to provide more options in locations that have limited soil volume.

Best Practices (continued)

Section	Recommended Action	Key Considerations
Tree Planting and Irrigation (cont.)	Develop Citywide and local species diversity goals by potentially using a three-tiered approach.	<u>Tier 1. Citywide Species Diversity Goal:</u> The City should adopt a goal of having no one species comprise more than 10% of the City tree population and no one genus comprise 20%. This goal will help to ensure that the overall inventory is resilient to threats as it is dispersed across the City. The established goal can then be used to further inform a more nuanced plan for individual neighborhoods or geographic areas of the City. <u>Tier 2. Implement Goal on Neighborhood Scale:</u> The City should determine smaller geographic portions of the City and apply the species diversity goal to those areas. Boundaries could be formed from existing defined neighborhoods, Council Districts, or other set boundaries within the City. This strategy would help to identify what species dominate a specific area and plan for the introduction of new species to provide an additional layer of species diversity and protection from threats. This approach would also necessitate specific planting palettes for each area that factor in the current neighborhood-level species diversity percentages into what species are planted. <u>Tier 3. Street Level Diversity:</u> The City should incorporate species diversity on a street or street block level. At this scale, species diversity decisions would include determining whether a street is planted with two or three alternating species, and the extent to which monoculture street plantings would be allowed. The planting palette for individual streets would be formed by decisions made in Tier 2 of the planning process. This tier would not include maintaining the Citywide species diversity goal as continuity and aesthetics are important considerations for developing neighborhood character and would be difficult to achieve with 10 or more species planted on a street.
Best Practices for Private Property Trees	Continue to provide information and enforce tree regulations for trees on private property.	Community education campaigns and direct actions such as City ordinances, policies, and permitting programs are the interfaces between the City, the urban forest, and private property. Sharing of information and enforcing tree regulations ensures the tree canopy on private property is sustained.

Best Practices (continued)

Section	Recommended Action	Key Considerations
Additional Best Practices	Implement an Integrated Pest Management (IPM) program for all City-maintained trees as necessary.	A healthy urban forest provides the greatest return on investment. Effective management of tree pests and diseases requires an integrated approach of monitoring, adequate resources, and various treatment techniques.
	Conduct visual assessments of 15% of the public tree population annually to monitor for pests and diseases.	The public tree inventory data can provide information to establish zones or areas of concern where trees are susceptible to pest and disease outbreaks. To identify possible concerns a routine visual assessment of a portion of the tree population each year can potentially halt an outbreak or identify a new concern. Data should be logged in the City's tree inventory software and used to inform budget requests.
	Provide information and training to the public regarding tree pest and disease signs, symptoms, prevention, and treatment.	Outside of parks, open space, and natural areas, private property has the most trees comprising the urban forest. Education, resources, trainings, and other public engagement can help to grow and manage an urban forest that is resilient to tree pests and diseases.
	Implement best practices to reduce and address tree and sidewalk conflicts.	The Solutions Workbook and Possible Guidelines for Tree and Sidewalk Conflicts appendix to this Plan provides guidance for consistent and transparent evaluation of conflicts with alternative solutions to tree removal or sidewalk replacement.
	Explore the financial costs and return on investment to implement an urban wood utilization program.	In addition to the environmental benefits of carbon storage, urban wood utilization programs contribute to the green economy of Los Banos and can provide employment opportunities throughout the entire process to remove, store, treat, and prepare wood for its second life.

Funding		
Section	Recommended Action	Key Considerations
Funding Mechanisms	Evaluate the potential funding mechanisms for feasibility.	The Plan provides a series of potential and viable mechanisms to fund the Urban Forestry Program. Further analyses by the City should be conducted to identify the preferable and most feasible funding mechanisms.
	Refine the analyses to support implementation of feasible funding mechanisms.	Further studies and analyses should be conducted on the preferable and most feasible funding mechanisms. For example, the use of the Gas Tax Fund (215) should be further evaluated.
	Further evaluate the degree to which the residents and/or the City would support and generate the funding.	Respondents showed varying opinions for how additional funding should be applied to the City's urban forest management program. According to the survey, 79% support using additional funding for green jobs and job training, 74% for faster response time regarding tree maintenance, 67% for more tree planting programs, 66% support funding community programs to plant and maintain trees, 58% for support in covering tree-related damage to hardscapes, and 51% support using funding for environmental education programs. Additional public engagement and education efforts should be undertaken to investigate where public support lies.
	Develop a sustained funding report detailing current and potential funding mechanisms aligned with urban forestry needs.	The report should provide the guidance to effectively implement the feasible funding mechanisms and include a method for evaluating needs to inform adjustments to future budget requests.

COMMUNITY FRAMEWORK

Community Engagement

Section	Recommended Action	Key Considerations
Engage-ment to Implement the Plan	Establish consistent messaging and implement an outreach and education program as a Citywide coordinated effort.	A team of City staff and stakeholders should be organized to monitor Plan implementation. To support the Plan, a community outreach strategy should be developed that defines the audiences, approaches, timing, materials, and other considerations to effectively communicate to all communities and demographics.
Multiple Avenues of Communi-cation	Remove barriers that prevent access to information by implementing outreach and education on multiple platforms to reach all demographics and cultures in the City.	Utilize local community partners to identify the existing barriers to information and align efforts to address these within the community outreach strategy.
Volunteer Corps or Tree Stewards Program	Support in a technical capacity the creation of a local tree stewards program.	Consider the framework of the Sierra Club San Francisco Bay's Tree Team for Oakland, CA with volunteer-led tree planting and pruning. In 2008, the Oakland City Council reduced funding to the city's Tree Division and suspended routine tree-plantings, so the Sierra Club's SF Bay Chapter began to plant trees with volunteers where homeowners would take care of them. As of January 2021, over 2,000 trees have been planted, many of them in communities rated as "environmentally disadvantaged" by CalEnviroScreen3.0.

Community Engagement (continued)

Section	Recommended Action	Key Considerations
Partner- ships	Strengthen community and regional partners that represent all neighborhoods and demographics in the City.	Consider the technical and funding support from CAL FIRE, Non-Profit Organizations, federal agencies, regional organizations, and other conventional and non-conventional partners. Identify shared goals, opportunities to leverage resources, and strategies that are guided by an MOU or similar.
Education	Coordinate with partners to host and support educational activities.	Activities may include articles, seminars, trainings, workshops, events, virtual sessions, and other mediums and channels that reach Los Banos' diverse population.
Tree Commis- sion	Evaluate the guidance provided to support the City's Tree Commission.	As part of the planning process, guidelines for supporting the Tree Commission were provided. Continue to inform and engage members of the commission and ensure all members of the community are represented.
Environ- mental Justice	Utilize partnerships and surveys to address environmental justice concerns and adapt strategies as needed.	Establishing or strengthening partnerships that represent all neighborhoods, communities, demographics, and cultures ensure the urban forest provides benefits and services to all.
Volunteer Coord- inator	Support volunteer coordination by collaborating on events.	A volunteer coordinator with specific guidance for urban forestry engagement can promote various events to build community stewardship.

IMPLEMENTATION PLAN

The framework of the goals and actions in the Urban Forest Management Plan provides the City of Los Banos with the means to measure progress and adapt to an everchanging environment and availability of resources. Each of the goals align with the U.S. Forest Service's Urban Forest Audit System and the actions are intended to guide the City towards improvements in ranking for each of the 130 elements within the 11 categories of urban forest management. As actions are implemented, the City may conduct new iterations of the Urban Forest Audit to gauge success, evaluate progress, and adjust accordingly. View the [Evaluate](#) section of the Monitoring Plan for more information.

As part of the project, an interactive worksheet of goals, actions, and targets was provided to enable the City's implementers to sort actions by order, priority, effort, goal theme, implementation year, and other action attributes. It is recommended the City establish an urban forestry working group to manage Plan implementation and monitoring. This team should coordinate the implementation of actions with the respective partners or collaborators. For the Plan, actions were provided by goal theme though the City may find it advantageous to view the actions by recommended order, priority, level of effort, or target year.

Based on the assessment of Los Banos' urban forest resource, the programs that manage it, and the community that shapes and benefits from it, the following implementation schedule is recommended. Implementing the Plan in this manner will effectively and efficiently address the City's shared challenges and priorities using the resources available. As the Plan progresses, more resources will become available to implement the longer term actions.

IMPLEMENTATION SUMMARY

Goal and Action Key

GOAL A: Tree Management Policy	GOAL B: Capacity, Training, and Authority	GOAL C: Budget and Funding	GOAL D: Assessments and Planning	GOAL E: Community Engagement	GOAL F: Green Asset Management
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Ongoing

AP.01	Maintain an inventory of public trees and update as maintenance, removals, and new plantings occur. Encourage partners to manage a current inventory of utility trees. (2022 start)
CE.02	Continue to receive Arbor Day Tree City USA designation. Strive to achieve Arbor Day Growth Awards and Sterling status after 10 Growth Awards. (2022 start)
CE.04	Continue to strengthen partnerships with civic groups, non-profit organizations, Homeowners' Associations, volunteers, institutions, internal, City Council, neighborhoods, improvement districts, and non-conventional organizations aligned with goals of the UFMP. Support volunteer events and develop strategies to remove barriers to participation for all community members. (2022 start)
CE.05	Provide education and workshops to the public about tree maintenance responsibilities, permitting, species selection, and proper young tree care as funding allows. Also provide information regarding unauthorized tree plantings, invasives, and management of volunteer trees. At minimum, share this information quarterly on social media, the City's website, and other communication platforms. Align these efforts with Action CE.01 for a community outreach strategy. (2022 start)

CT.04	Stay current with industry research, science, and technology through various platforms. An example includes management of current and potential exotic tree pest and disease threats. (2022 start)
GA.01	Prioritize young and large tree maintenance, removals, and risk tree assessments based on updated inventory data and resources. Update the maintenance regimen (number of public trees pruned annually) by evaluating inventory data, program structure, available resources, and demands. (2022 start)
GA.04	Use Citywide tree inventory data and best available science for long-term planning and management of existing and future tree pests and diseases impacting the City's urban forest. Consider new research and guidance such as the 5% tree genera diversity rule (Ball, 2015). (2022 start)
BF.01	Continue to seek and acquire funding and technical assistance from agencies and organizations such as the CAL FIRE, U.S. Forest Service, University Extension Services, and others. (2023 start)
GA.02	Coordinate with other City departments to maximize the number of trees planted through Capital Improvement Programs and stormwater management projects. Establish procedures for replacing damaged trees during infrastructure replacement projects. (2023 start)
MP.02	Align resources and planning efforts across City departments and partners to meet common goals and improve efficiencies. Tree managing staff should engage in City department planning such as updates to the City's General Plan, Parks Master Plan, and plans for climate change, greenhouse gas reductions, sustainability, and human health. (2023 start)
AP.02	Quantify the ecosystem benefits and appropriate appraisal values of public trees to conduct a cost-benefit analyses of public trees. This informs management priorities, program structure, and raises public awareness of the urban forest benefits. (2023 start)
CE.03	Conduct biannual community surveys to gauge public viewpoints and receive feedback on implementation of the UFMP and program success. Prioritize citizen feedback/requests and update the City website with frequently asked questions and additional resources. (2023 start)
AP.03	Complete an urban forest audit using similar criteria as the 2021 audit completed for the UFMP to evaluate improvements in urban forest management and adapt strategies. (2023 start)
BF.02	Use the data from the Assessments and Plans actions (i.e., tree maintenance needs, tree planting needs, ecosystem services) to support budget and funding increases aligned with resource needs and actions in the UFMP. (2024 start)
BF.03	Develop an annual education and training budget for tree management staff that supports attending CEU accrediting seminars, workshops, and conferences each year. Consider the Tree Care Industry Association's Certified Treecare Safety Professional accreditation. (2024 start)

Years 1-2

CT.01	Establish an urban forestry working group with regular meetings to monitor progress of implementing actions. Finalize lead implementers.
CE.01	Develop a community outreach strategy with clear and consistent language using information from the UFMP. Include updates and a dedicated page on the City's website. Coordinate the strategy as a Citywide initiative rather than a departmental effort.
MP.01	Refine and finalize the Master Street Tree List and update the City standards and specifications for improvements and landscape to detail the appropriate trees for public tree plantings and the planting detail.

Years 3-5

CT.02	Evaluate the roles and responsibilities of the Tree Commission to align with goals and actions in the UFMP.
MP.03	Prepare a formal document to recommend changes to tree-related code, ordinances, standards (i.e., Landscape Standards), Standard Operating Procedures, and best practices based on recommendations and priorities described in Appendix F .
BF.04	Based on the exploration of funding opportunities provided in the UFMP, develop a sustained funding report that details the opportunities and approaches for sustained, dedicated, and diversified funding. An example includes a pest control fee or alternative uses of the Gas Tax.
CT.05	Determine the necessary staff required to adequately manage tree hazards and debris within the public rights-of-way, effectively plant trees aligned with canopy goals, provide post-planting care, and enforce tree ordinances (i.e., shade requirements, mitigation plantings, replacement plantings).

Years 6-10

AP.04	Strengthen storm and disaster preparations, mitigations, and recovery strategies, protocols, and mechanisms.
AP.05	Complete a comprehensive high-resolution Urban Tree Canopy (UTC) Assessment using industry recommended protocols to establish a baseline metric from which urban forest improvements can be measured.
MP.05	Consolidate tree-related policies, guidelines, best practices, standards, and information into a tree manual for planners, developers, homeowners, HOAs, and tree care companies.
GA.05	Use the results of an updated high-resolution Urban Tree Canopy (UTC) Assessment to prioritize tree plantings based on low existing tree cover and enhancing benefits provided by trees.

Years 11+

BF.05	Establish a dedicated, sustained funding source beyond the current departmental budget for urban forestry operations to increase the level of service to meet the community's high standards.
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MONITORING PLAN

This Urban Forest Management Plan will be updated and revised periodically to reflect changes in the urban forest resource structure and function, to incorporate changes in industry standards, to consider community response, and to measure the progress of the urban forest partners in implementing the recommendations and reaching the established goals. This process should be overseen by an urban forestry working group consisting of City staff and stakeholders (see Action CT.01) using the Evaluate, Monitor, Report, and Revise methodology.

Knowing how the City of Los Banos and its partners are doing will require a continual process of evaluation. This section presents examples of how to monitor, analyze, and revise the Plan, which will keep stakeholders informed of the status of the Urban Forestry Program. To monitor progress toward implementing the Plan recommendations, an evaluation similar to the U.S. Forest Service's Urban Forest Audit (details below in the [Evaluate](#) section) conducted to develop the initial Plan should be completed. This evaluation will identify progress and shortfalls compared to the baseline audit.

In addition, a report card could be created based on outcomes of the audit and distributed to the public every two to three years. This will measure the progress toward implementing the Plan actions. The [Report](#) section provides a suggested structure to measure and report success toward accomplishing each goal. Other indicators to measure progress may need to be developed to ensure a thorough and accurate evaluation.

Figure 43. Summary of the Plan implementation and monitoring process



EVALUATE



The U.S. Forest Service's Urban Forest Audit System provides a framework for routine evaluations of the urban forest, the programs that manage it, and the community that shapes and benefits from it. The deliverables to this Urban Forest Management Plan project include guidance for completing an update to the audit completed in 2021 to develop the Plan. This audit system consists of 11 categories of urban forest management, sustainability, and community. Within the 11 categories are approximately 130 subcategories or elements. Each element was ranked or scored based on the consultants' evaluations in 2021 for the Urban Forest Management Plan. It is recommended the City's urban forestry working group (or similar) complete a bi-annual audit to inform any alterations to actions and strategies.

About the Urban Forest Audit

The primary objectives of the audit are defined by the Urban Forest Audit System authors and adapted by the City's urban forestry consulting team to engage the full spectrum of the organizations' management team, provide program direction that increases the level of professionalism in management, conduct a gap analysis of management practices and the health of urban forests, provide strategic direction to improve the health of the urban forest, and optimize management for environmental justice and equitable distribution of resources.

Table 25. Categories for evaluation using the U.S. Forest Service's Urban Forest Audit System

- 1) Management Policy and Ordinances
- 2) Professional Capacity and Training
- 3) Funding and Accounting
- 4) Decision and Management Authority
- 5) Inventories
- 6) Urban Forest Management Plans
- 7) Risk Management
- 8) Disaster Planning
- 9) Standards and Best Management Practices
- 10) Community
- 11) Green Asset Evaluation (Observed Outcomes)

Urban Forest Audit Process

The process of analyzing the urban forest involved extensive information and document gathering and research to identify policies, practices, programs, and standards pertaining to categories of urban forest sustainability and management as defined by Clark et al. (1997), Kenney et al. (2011), and the Forest Service. The categories are listed in the table above.

Each category has a series of subcategories pertaining to the specific category. As an example, the subcategories listed on the right are in the Management Policy and Ordinances category:

Table 26. List of subcategories within the Management Policy and Ordinances category of the audit

- ❖ 1.01) Climate Change (Sustainability)
- ❖ 1.02) No Net Loss
- ❖ 1.03) Risk Management
- ❖ 1.04) Tree Canopy Goals
- ❖ 1.05) Tree Protection
- ❖ 1.06) Utility
- ❖ 1.07) Human Health
- ❖ 1.08) Wildlife Diversity/Habitat/Protection
- ❖ 1.09) Performance Monitoring
- ❖ 1.10) Private Tree Ordinances
- ❖ 1.11) Public Tree Ordinances
- ❖ 1.12) Development Standards
- ❖ 1.13) High-Conservation Value Forests
- ❖ 1.14) Urban Interface (WUI)

All available documents and plans were reviewed and tallied in the audit worksheet as part of the information discovery phase. Based on the evaluation of the documents and outcomes of all planning processes (i.e., research, City staff interviews, urban forest benchmarks, data analyses, and community engagement) each subcategory within the 11 categories was "ranked" using the following system:

- 0) Not Practiced - Component doesn't exist or is not practiced; 0 points
- 1) In Development - Component is in development as part of or aside from this Plan; 1 point
- 2) Adopted Practice - Component is routinely practiced; 2 points
- 3) Exceeds Adopted Practice - The component is exceeded; 3 points

The points were then totaled for an overall rating to provide a summary of the City's level of achieving each category of urban forest management and sustainability.

Urban Forest Audit Results for Los Banos

Table 27. Outcomes of the urban forest audit completed in 2021 for Los Banos' Urban Forest Management Plan

#	Category	SOC* (% Achieved)	Base** (% Achieved)	Overall Rating	Overall (% Achieved)
1	Management Policy, Ordinances	75%	50%	18	64%
2	Professional Capacity and Training	50%	NA	8	50%
3	Funding and Accounting	75%	NA	4	33%
4	Decision, Management Authority	100%	100%	8	100%
5	Inventories	NA	31%	11	42%
6	Urban Forest Management Plans	NA	42%	13	54%
7	Risk Management	67%	100%	11	61%
8	Disaster Planning	NA	50%	4	29%
9	Standards and BMPs***	75%	69%	37	62%
10	Community	100%	NA	21	75%
11	Green Asset Evaluation	NA	NA	17	85%
TOTAL		77%	63%	152	60%

*Standard of Care (SOC) elements represent the minimum group of urban forestry management "best practices" that a municipality should consider for implementation. SOC refers to the degree of prudence and caution required of an individual who is under a duty of care (i.e., legal obligation of the controlling authority, owner, or manager) to minimize risk. Neither state, regional, nor national minimum management components have been established for SOC but these are interim recommendations for consideration. (NA = not applicable)

**Base Practices (BP) elements represent additional urban forest management activities or components that may effectively expand a program beyond the SOC group (see footnote above). These elements are typically precursors to other "non-core" elements in the category. (NA = not applicable)

***Best Management Practices (BMPs)

Urban Forest Audit Summary Discussion

The main purpose of the urban forest audit is to apply the research and findings gathered throughout the planning effort to inform the Plan's goals, strategies, and actions. This audit or "gap analysis" enables the Urban Forestry Program to control different aspects of its program with data. This gap analysis identified the shortcomings that the Urban Forestry Program should overcome and by quantifying them, the program can make improvements. It also enables effective monitoring of Plan strategies in that the audit categories and elements can be revisited at key intervals in the Plan implementation process to measure progress and adapt strategies accordingly. For the comprehensive evaluation of all subcategories within the Urban Forest Audit, see [Appendix D](#).

The information provided in the table above describes the current conditions of Los Banos' urban forest, the programs that manage it, and the community framework. As recommended in the Plan's monitoring methods, the City should use this framework to evaluate implementation progress, report successes, and inform changes to Plan actions. Many of the urban forest audit elements were given a rating of "In Development" as they previously did not exist but are addressed in this Urban Forest Management Plan. This means that the City is already well underway in advancing its program and its Urban Forest Audit score.

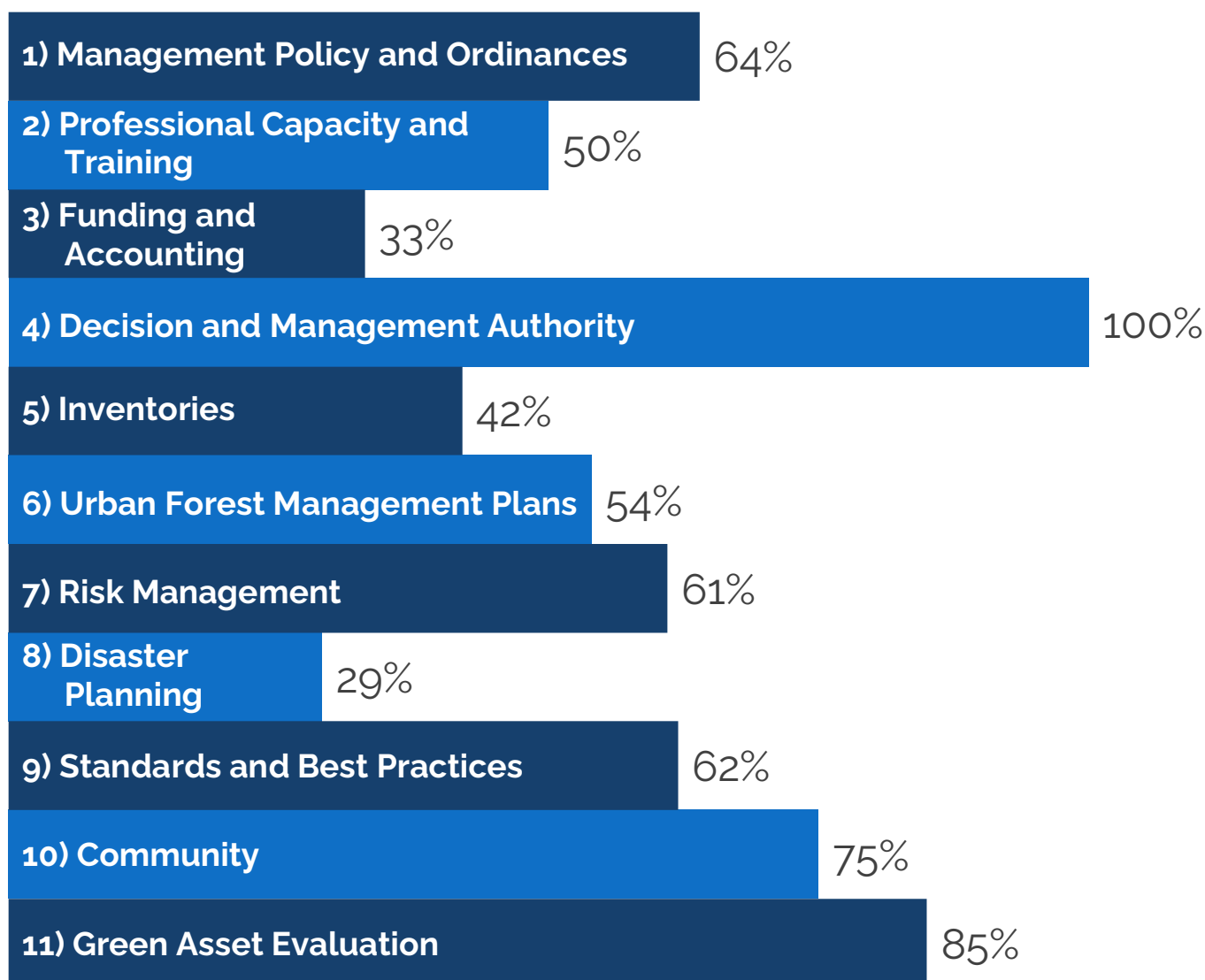


Figure 44. Summary of the 2021 Urban Forest Audit for Los Banos' Plan

Interpreting the Urban Forest Audit Scores

The Urban Forest Audit System should serve as a baseline assessment from which progress can be measured and strategies can be adjusted using an adaptive management approach. Overall, Los Banos scored a 60 out of 100 based on the consultants' evaluation. The scores resulting from the evaluation are informative but should not be considered a definitive assessment or a reason for excessive action due to a currently low score or inaction due to a high score. The following provides an interpretation of the scores for the City to consider when implementing the Plan's corresponding actions.

Management Policy and Ordinances

Table 28. Interpretation of the 2021 Urban Forest Audit scores

Category	Implications
Management Policy and Ordinances	STRENGTHS: The City scored relatively average in this category due to the existing tree ordinances and development standards. As part of the UFMP, a canopy assessment was completed and canopy goals were drafted to support a "no net loss" approach to urban forest canopy management.
Rating of 64%	OPPORTUNITIES: Enhanced tree protection and enforcement in the right-of-way and on private property will support a "no net loss" strategy for retaining the benefits of urban forests. Appropriate levels of public and private tree ordinances as well as a strengthened Heritage Tree Program would advance Los Banos in this category. Also, the City should explore planning options for climate mitigation and adaptation aligned with sustainability efforts and goals.
Professional Capacity and Training	STRENGTHS: Staff have industry certifications, qualifications, and training.
Rating of 50%	OPPORTUNITIES: Los Banos scored low in this category since a formal Urban Forestry Program or Division does not exist and there are arborist certifications needed for supporting staff. Also, current staff operate outside of their respective job duties and responsibilities and staffing levels are below adequate. Restructuring the Urban Forestry Program for efficiency is a critical first step in improving this score, meeting customer service demands, and managing a sustainable urban forest.
Funding and Accounting	STRENGTHS: Urban forestry is budgeted annually.
Rating of 33%	OPPORTUNITIES: Based on benchmarking research, Los Banos is below regional averages in terms of budget per public tree (\$9.11 compared to \$37.35 for cities with similar population size). A diversified, sustainable, and dedicated funding source is needed. Los Banos has a strong network of engaged community residents who are in support of reallocating resources for urban forestry and provide tree stewardship support (i.e., young tree training).
Decision and Management Authority	STRENGTHS: Los Banos has a Tree Commission and the Urban Forestry Program has authority over day-to-day activity. The staff closely engage with other City divisions and sections. The City scored high in this category since the audit only contains four subcategories but can be expanded as described in the opportunities below.
Rating of 100%	OPPORTUNITIES: If Los Banos were to consolidate all tree related services into a single work section or division and update corresponding operating procedures, the City would elevate in this category and be able to implement all actions in the Plan.

Category	Implications
Inventories	STRENGTHS: Los Banos has a comprehensive public tree inventory (2021) and an assessment of Citywide urban tree canopy cover completed in 2022. The data is used to inform management and prioritize tree planting and preservation for environmental justice and equity.
Rating of 42%	OPPORTUNITIES: The City should support in a technical capacity the inventory of trees private property trees including campuses and corporations. In addition, a sample survey of trees in open space and natural areas would provide data to support sustainable urban forest management. The City should maintain these inventories and conduct reassessments of tree canopy cover every 5 to 10 years to monitor change, track canopy goals, and adapt strategies. Before reassessment, it is recommended the City conduct a high-resolution urban tree canopy assessment for more accurate analyses of tree canopy cover and priority planting areas.
Urban Forest Management Plans	STRENGTHS: Tracking and reporting of urban forest management activities, this Plan, and urban forestry referenced in the General Plan resulted in higher scores for certain elements within this category.
Rating of 54%	OPPORTUNITIES: Plans for other landscapes comprising the urban forest such as open space, grounds on public facilities, campus/university trees, and green stormwater management, is an opportunity for Los Banos. Implementation of this Plan will increase the rating as will plans for private trees and enhanced street tree strategic planning such as a street tree planting plan.
Risk Management	STRENGTHS: Staff trained in tree risk assessments and standard of care adopted. The City completed a comprehensive public tree inventory in 2021 to inform management strategies.
Rating of 61%	OPPORTUNITIES: Additional internal technical support for assessing trees questioned for removal would improve the efficiency, effectiveness, resourcefulness, and appeal of City operations. A maintained inventory of trees in public rights-of-way is necessary to identify, monitor, plan, prioritize, and mitigate risk. The inventories detail Los Banos' vulnerabilities to tree pests and diseases, climate change impacts, storm events, invasive species, and the natural or premature senescence of trees. The Plan provides recommendations for implementing risk management standards and best practices.
Disaster Planning	STRENGTHS: The City's maintenance staff addresses downed trees and limbs and collaborates when extensive response is needed.
Rating of 29%	OPPORTUNITIES: Primarily, a multi-faceted disaster plan for public trees is needed.

Category	Implications
Standards, and Best Practices Rating of 62%	STRENGTHS: Los Banos has an average rating for this category due to the tree ordinances, landscape and improvement standards and specifications, General Plan, and informational fliers. OPPORTUNITIES: The City should review, refine, and adopt the recommended changes to tree-related ordinances, policies, and standards provided in the Plan. Updates to these regulations would support tree preservation and provide a strong and fair foundation from which long-term results can be achieved such as canopy goals and sustainability.
Community Rating of 75%	STRENGTHS: Los Banos is a Tree City USA city, demonstrating the value placed on urban forests. This Plan included a public survey and has engaged the public in community meetings and social media posts. The Urban Forestry Program has a successful Heritage Trees Program, permitting program, and a growing network of partners. The City conducts Arbor Day events, engages the public through social media, website, and other platforms, addresses service requests, and works closely with community partners. OPPORTUNITIES: Continue to utilize the City's website, address the concerns and questions posed in the survey and meetings, conduct outreach to the public based on survey feedback, establish a recognition program by sector for exemplary urban forest considerations, address underserved areas as identified in the canopy and tree equity assessments, and facilitate more trainings both internally and for the public. Align efforts with ongoing initiatives relating to climate change and sustainability and garner community partnerships that represent the diverse population in the City. Continue to engage with the Tree Commission to increase capacity, provide support for urban forest advocacy, and support community engagement. Lastly, the City should utilize local non-profit organizations that support urban forestry goals.
Green Asset Evaluation Rating of 85%	STRENGTHS: The public tree population is diverse with 168 unique tree species, relatively young (78% in the 1-12-inch size class), and mostly in good condition (38%). OPPORTUNITIES: This category is for documenting observed outcomes and improvements which will occur as this Plan is implemented and the comprehensive public tree inventory is maintained. The updates to tree-related ordinances and design standards will likely contribute to urban forest health, preservation, and growth. Currently, Chinese pistache comprise 20% of the public tree population and narrowleaf ash make up 11%. London planetrees are currently at 10%. Each of these three tree species are at or above the recommended threshold of 10% for species. In addition, the <i>Pistacia</i> (pistache) and <i>Fraxinus</i> (ash) genera are at the genus threshold of 20%. Also, the top ten most common tree species comprise 71% of the entire public tree population. These are examples of current vulnerabilities that should continue to be monitored and addressed by implementing the Plan.

MONITOR



Measuring accomplishment of the actions will require ongoing analysis. The outcomes of the Urban Forest Audit System in the [Evaluate](#) section can be used to monitor change over time. These benchmark values should be tracked, and a state of the urban forest report should be prepared and distributed to the public every 2 to 5 years. Analysis may include an updated public tree inventory, i-Tree benefits analyses, or urban tree canopy assessments. The state of the urban forest report should include the benchmark values as reported in the Plan and the Urban Forest Audit System as of 2021, so that the City can measure and compare changes to the urban forest. The report should reflect changes to the audit system that are measured.

The following table provides a summary of the benchmark values that can be used to monitor and report on Plan progress.



Primary Urban Forest Benchmark Values to Measure Plan Progress

Table 29. Los Banos' primary urban forest benchmark values to measure Plan progress

URBAN TREE CANOPY (UTC) COVER (2021)	
Tree Equity Score (2022)	Unknown
UTC	14% (USFS i-Tree Canopy)
Short-term Canopy Goal	15% by 2025 (875 trees/year)
Long-term Canopy Goals	20% by 2040 (875 trees/year)
	25% by 2050 (875 trees/year)
	30% by 2065 (875 trees/year)
Total Trees to Reach Canopy Goals	38,500 trees by 2065
City-led Tree Plantings to Reach Goals	50% of total trees required (440/year)
PUBLIC TREE COUNTS (2021)	
Total Public Trees (alive, dead, or stumps)	12,622
Total Live Public Trees	12,333
Total Public Street Trees	7,997
Total Vacant Lot or "Other" Trees	943
Total Park Trees (maintained areas only)	3,393
Total Public Open Space Trees	Unknown
TREE BENEFITS	
Citywide (UTC Assessment)	2021: \$213 million (total)
Inventoried Public Trees	2021: \$1.2 million (annual)
Cost : Benefit of Public Trees	1:3.38 → for every \$1 spent, \$3.38 return
TREE AND BUDGET DISTRIBUTION (2021)	
Public Trees (street and park) per Capita	0.31
Budget per Capita	\$3.63
Budget per Public Tree (street/park)	\$9.11
Urban Forestry Program FTEs	1.00
Total Public Trees per Staff	12,333 trees for every 1.0 FTE
Total FTEs Managing Public Trees	9.0 FTE (1,370 trees for every 1.0 FTE)
MANAGEMENT ACTIVITIES (2019)	
Public Trees Pruned (street and park)	2,000
Public Trees Removed	30
Public Trees Planted	2,000
Permits Received, Trees Inspected	TBD
Number of Volunteers and/or Hours	1,200 hours
URBAN FOREST AUDIT SYSTEM (TOTAL SCORE OF 2021): 60%	
Management Policy and Ordinances	64%
Professional Capacity and Training	50%
Funding and Accounting	33%
Decision and Management Authority	100%
Inventories	42%
Urban Forest Management Plans	54%
Risk Management	61%
Disaster Planning	29%
Standards and Best Management Practices	62%
Community	75%
Green Asset Evaluation	85%
PUBLIC PERCEPTION (2021)	
Health of the urban forest in the past 10 years	28% feel the health has declined
Management of the urban forest in the past 10 years	46% feel public trees are managed fairly
Amount of urban tree canopy cover	86% support increasing canopy cover

REPORT



Based on the evaluation of Plan implementation progress, the City's urban forestry working group (or similar) should track, record, and report on the metrics described below that are measures or indicators of success for each goal and supporting actions. Note, the series of urban forestry goals detailed below are not listed in any particular priority or order.

Table 30. Evaluation, monitoring, and reporting techniques to achieve the urban forestry goals

A	TREE MANAGEMENT POLICY (MP): Urban forest policies are the foundation for preserving the environmental benefits, management, and the character of Los Banos' urban forest. ❖ List all City and partner-led planning efforts. ❖ Describe related planning efforts. ❖ Communicate Citywide canopy goals and local planting targets. ❖ List recommended changes to City Code, policies, and manuals. ❖ Summarize a list of plans in which urban forestry is integrated. ❖ Distribute the Master Street Tree List to city staff, partners, and residents. ❖ Summarize updates made to tree-related ordinances, policies, and standards. ❖ Report the number of permits received and approved. ❖ Report the number of trees inspected. ❖ Report the number of trees in the Historical/Heritage Tree Program. ❖ List audit score and actions/targets achieved, ongoing, and not started.
B	CAPACITY, TRAINING, AND AUTHORITY (CT): Los Banos has the capacity and expertise to provide optimal levels of service for sound urban forest management. ❖ List the team members assembled to implement and monitor the Plan. ❖ List the existing staff and supporting departments and partners. ❖ Summarize the roles, responsibilities, and programs of the Tree Commission. ❖ Describe existing and needed certifications, qualifications, and training. ❖ Provide a count of the number of trainings completed. ❖ Report the proportion of public trees to tree management staff. ❖ Report the number of volunteers and volunteer hours. ❖ Describe changes in levels of service based on citizen service requests. ❖ Report the number of unattended tree maintenance and service requests. ❖ List audit score and actions/targets achieved, ongoing, and not started.
C	BUDGET AND FUNDING (BF): City resources enable comprehensive urban forest management for the preservation and enhancement of tree benefits. ❖ Report the proportion of public trees to tree management staff. ❖ Report the proportion of budget to the total public tree population. ❖ Report the proportion of public trees to the City population. ❖ Report the number of volunteers and volunteer hours. ❖ List the unfunded urban forestry needs. ❖ Report the budget, partner funding, permit revenue, and donations. ❖ List audit score and actions/targets achieved, ongoing, and not started.

D

ASSESSMENTS AND PLANNING (AP):

A thorough understanding of the urban forest ensures data-driven decisions, sustainable and comprehensive planning, and amplified tree benefits.

- ❖ Report the number of trees inventoried.
- ❖ Report the number of public trees planted, pruned, and removed.
- ❖ Report the number of trees assessed for risk.
- ❖ Report the value of the entire urban forest and public tree population.
- ❖ Report the urban forest audit score and future audit scores.
- ❖ Report the condition, structure, and diversity of public trees.
- ❖ Provide a summary of existing tree canopy cover Citywide and locally.
- ❖ List the priority planting areas, canopy goals, and recommended species.
- ❖ Report the assessment and planning efforts of partners.
- ❖ Describe the high-value conservation and preservation areas.
- ❖ List audit score and actions/targets achieved, ongoing, and not started.

E

COMMUNITY ENGAGEMENT (CE):

Sustainable urban forest management and equity is achieved through a partnership with the City and its residents resulting in improved well-being, human health, and local economies.

- ❖ List the existing and potential outreach platforms and initiatives.
- ❖ List existing and potential partners.
- ❖ Report the number of planting events and trees planted.
- ❖ Report the history/count of Tree City USA and supporting awards.
- ❖ Report the number of volunteers, events, and volunteer hours.
- ❖ Report the number of city residents reached through messaging.
- ❖ Report on the website user traffic.
- ❖ Report the number of private tree plantings as feasible.
- ❖ Report the number of trainings, workshops, and attendees.
- ❖ Report the results of public surveys.
- ❖ Recognize exemplary urban forest stewards.
- ❖ Report on the activities of the Tree Commission.
- ❖ Report the activities of local partners as feasible.
- ❖ List audit score and actions/targets achieved, ongoing, and not started.

F

GREEN ASSET MANAGEMENT (GA):

Los Banos proactively manages the public trees, continues to grow and expand a healthy canopy, effectively mitigates storm damage, maintains public safety, and optimizes urban forest benefits.

- ❖ Report the number of public trees pruned, removed, and planted.
- ❖ Report on the public tree pruning rotation (i.e., number of years).
- ❖ Provide a map of the trees prioritized for programmed pruning.
- ❖ Report the number of trees managed for pests and diseases.
- ❖ Provide an estimate on the amount of invasive plant species managed.
- ❖ Report the number of trees planted to address tree equity, climate change.
- ❖ Report the number of mitigation plantings.
- ❖ Count the number of introduced tree species to combat climate change.
- ❖ Report progress towards canopy goals and tree planting targets.
- ❖ Provide a map of priority planting areas for upcoming year.
- ❖ Report the volume of woody biomass utilized.
- ❖ List audit score and actions/targets achieved, ongoing, and not started.

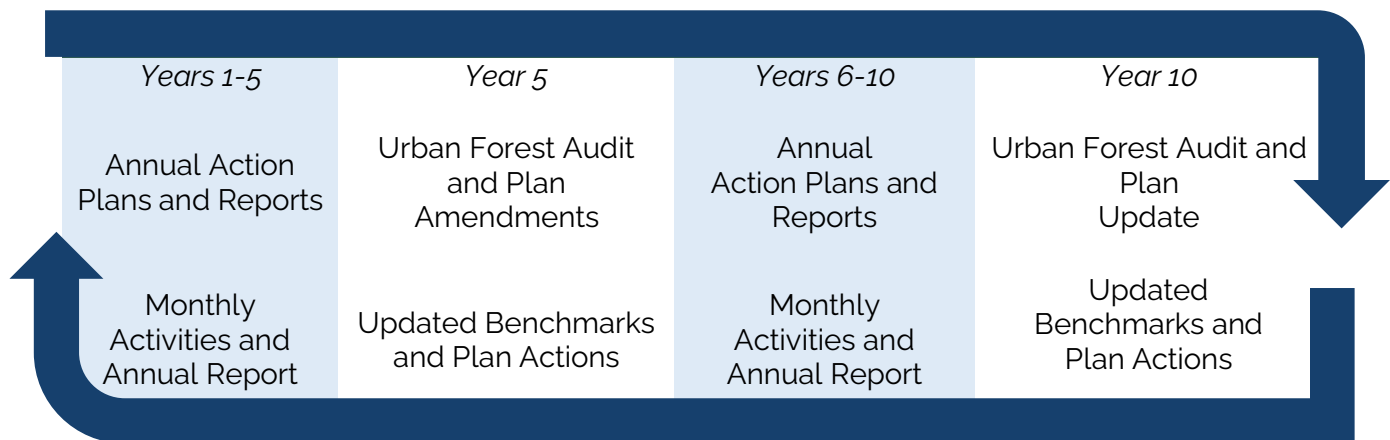
REVISE

ADAPT & REVISE



Completion of this Plan is a critical step towards meeting the vision for Los Banos' urban forest. Continual monitoring, analysis, and reporting will help to keep urban forest partners involved and focused on accomplishing the actions. Plans are typically revised every 10 to 15 years; hence, the Plan will need formal revision to respond and adapt to changes as they develop. Formal revision of the Plan should coincide with the update of the City's General Plan, Parks Master Plan, climate/sustainability plans, and other relevant planning efforts. Recommendations and goals of each should be compared. Revisions to the Plan should occur with major events, such as newly discovered pests or diseases, changes in program budget and resources, or significant changes to industry standards or legal codes.

Figure 45. Example of the plan implementation, evaluation, and revision process



Applying the Urban Forest Audit to Revise the Plan

The Urban Forest Audit can serve as the tool for the City to effectively Evaluate, Monitor, Report, and Revise the Plan as part of the implementation and monitoring protocols. As found in the 2021 Urban Forest Audit completed to develop the Plan, there are areas of urban forest management where the City is performing at a high level and other areas where improvements are needed. The strategies and actions in the Plan address both these strengths and challenges. The following summarizes the relationship of the Plan's actions to the categories in the Urban Forest Audit. Each action in the Plan includes a reference to the Audit's category and subcategory (see [Appendix D](#)).

Table 31. Summary count of the evaluations completed in the 2021 Urban Forest Audit

Ranking	Count	%	% of Total
1) In Development	52	20%	40%
2) Adopted Common Practice	50	39%	39%
0) Not Practiced	27	0%	21%
Category Total	129	60%	100%

Out of the nearly 130 elements (or subcategories) within the Audit, the majority (52 elements or 40%) ranked "1) In Development" followed by 50 (39%) elements ranked as "2) Adopted Common Practice". Most of the elements given the "In Development" ranking were a result of the outcomes from the Urban Forest Management Plan or the strategic actions within the Plan to be implemented.

Table 32. Urban Forest Audit scores applied to the Plan's actions

Ranking	Rating	UFMP Goal*	Corresponding Actions
Management Policy and Ordinances	85%	Goal A	Actions recommending revision to tree-related ordinances
Professional Capacity and Training	75%	Goal B	Actions recommending program structure and staffing levels, training
Funding and Accounting	62%	Goal B Goal C	Actions recommending budget analyses and needs
Decision and Management Authority	29%	Goal B	Actions recommending program structure and staffing levels
Inventories	61%	Goal D	Actions recommending maintaining inventories
Urban Forest Management Plans	54%	Goal D	Actions recommending strategic planning
Risk Management	42%	Goal D Goal F	Actions recommending assessments and maintenance
Disaster Planning	100%	Goal D Goal F	Actions recommending strategic planning
Standards and BMPs	33%	Goal A Goal F	Actions recommending revisions to ordinances and standards
Community	50%	Goal E	Actions recommending community engagement
Green Asset Evaluation	64%	Goal F	Actions recommending proper planting and maintained inventory
Category Total	60%		

*Goal A: Tree Management Policy; Goal B: Capacity, Training, and Authority; Goal C: Budget and Funding; Goal D: Assessments and Plans; Goal E: Community Engagement; Goal F: Green Asset Management

As the Plan is being implemented, the status or score of the categories within the audit will change. The [implementation worksheet](#) provided as part of the Plan includes a reference to the audit category and element to effectively reevaluate and adjust strategies and actions for the revisions to the Plan.

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APPENDICES

APPENDIX A. REFERENCES 2a

A list of the resources and studies utilized in developing the Plan listed in order presented.

APPENDIX B. RECOMMENDED MASTER STREET TREE LIST 4a

A list of the trees to consider in new planting or tree replacement projects. Desired trees can be selected based on 30 unique attributes for each tree. This appendix provides a summary of the list of trees. For the complete list, utilize the interactive worksheet provided as part of the UFMP.

APPENDIX C. SIDEWALK SOLUTIONS WORKBOOK 8a

A decision checklist and solutions kit for consideration in dealing with tree and hardscape conflicts. Supports tree preservation and canopy goals along with City ADA requirements.

APPENDIX D. 2021 URBAN FOREST AUDIT RESULTS 19a

To inform the development of the Plan's goals and strategic actions, the U.S. Forest Service's Urban Forest Sustainability and Management Audit System was implemented. This evaluation or audit identifies the City's urban forest management strengths and opportunities and provides a framework for monitoring Plan implementation and success.

APPENDIX E. INTERACTIVE STRATEGY AND ACTION WORKSHEET 30a

An excerpt from the interactive worksheet provided as part of the planning project to enable real-time planning and prioritization of strategies and actions to implement the Plan.

APPENDIX F. TREE ORDINANCE RECOMMENDATIONS 43a

Recommendations for revision and addition to existing tree related ordinances based on urban forest needs, City staff input, public feedback, benchmarking research, industry standards, and urban forestry consultant expertise.

APPENDIX A. REFERENCES

- Kellert, S.R., Wilson, E.O. 1993. *The Biophilia Hypothesis*. Island Press, Washington, DC. 484 pp. (UFMP Page VII)
- McPherson, G.E., 2017. The structure, function and value of urban forests in California communities. *Urban Forestry & Urban Greening* 28 (2017) 43-53. (UFMP Page VII, Page 20)
- Clark, J.M., Matheny, N.P., Cross, G., Wake, V. 1997. A Model of Urban Forest Sustainability. *Journal of Arboriculture* 23(1). 14 pp. (UFMP Page XIII, Page 151)
- J. Wolch et al 2005. Parks and Park Funding in Los Angeles: An Equity-Mapping Analysis, *Urban Geography*, 26:1, 4-35 (UFMP Page 6)
- American Forests, 2020. What is the Urban Heat Island Effect? www.americanforests.org. Accessed October 2021. (UFMP Page 11)
- Schoennagel T., Balch J.K., Brenkert-Smith H., Dennison P.E., Harvey B.J., Krawchuk M.A., Mietkiewicz N., Morgan P., Moritz M.A., Rasker R. (2017). Adapt to more wildfire in western North American forests as climate changes. *Proceedings of the National Academy of Sciences of the United States of America*. 113, 4582–4590. (UFMP Page 12)
- Kramer, H.A., Mockrin, M.H., Alexandre, P.M., Radeloff, V.C. (2019). High wildfire damage in interface communities in California. *International Journal of Wildland Fire* 2019, 28, 641-650. (UFMP Page 12)
- Campbell, F.T. and S.E. Schlarbaum. 2013. *Fading Forests III American Forests: What Choice Will We Make?* The Nature Conservancy, Arlington, VA, and the University of Tennessee, Knoxville, TN. (UFMP Page 14)
- Leahy, I. (2017). Why We No Longer Recommend a 40 Percent Urban Tree Canopy Goal. *American Forests*, americanforests.org. Accessed July 2021. (UFMP Page 20)
- Locke, D.H. et al. "Prioritizing Preferable Locations for Increasing Urban Tree Canopy in New York City", *Cities and the Environment*, Volume 3, Issue 1, Article 4. 2010. (UFMP Page 24)
- Hauer R. J. and Peterson W. D. 2014. *Municipal Tree Care and Management in the United States: A 2014 Urban & Community Forestry Census of Tree Activities*. Special Publication 16-1, College of Natural Resources, University of Wisconsin – Stevens Point. 71 pp. (UFMP Page 25)
- Richards, N. A. 1983. "Diversity and Stability in a Street Tree Population." *Urban Ecology* 7(2):159–171. (UFMP Page 29)
- Richards, N.A. 1993. Reasonable guidelines for street tree diversity. *Journal of Arboriculture* 19:344–349. (UFMP Page 29)
- Santamour, F.S., 1990. Trees for urban planting: diversity, uniformity and common sense. Paper Presented at the Proceedings of the 7th Conference of the Metropolitan Tree Improvement Alliance. (UFMP Page 40)
- McPherson, G.E., 2016. Structure, function and value of street trees in California, USA. *Urban Forestry & Urban Greening* 17 (2016) 104-115. (UFMP Page 43)
- Muller, R.N., Bornstein, C., 2010. Maintaining the diversity of California's municipal forests. *Journal of Arboriculture*. 36, 18. (UFMP Page 43)

- Donovan, G.H., Butry, D.T., 2009. The value of shade: estimating the effect of urban trees on summertime electricity use. *Energy Build.* 41, 662–668. (UFMP Page 52)
- Wolf, K.L. August 2007. City Trees and Property Values. *Arborist News* 16, 4: 34-36. (UFMP Page 52)
- Miller, R. W., Hauer, R. J., & Werner, L. P. (2015). *Urban Forestry: Planning and Managing Urban Greenspaces*, Third Edition (UFMP Page 74, Page 83)
- Thompson, R.P., Reimer, J.L. (2018). The State of Urban and Community Forestry in California. Status in 2016 and trends since 1988. Urban Forest Ecosystems Institute, California Polytechnic State University, San Luis Obispo. Supported by CAL FIRE Urban and Community Forestry Program, Technical Report No.15, October 2018. (UFMP Page 77)
- Kempton, G.P. 2004. Best Management Practices – Utility Pruning of Trees. International Society of Arboriculture. (UFMP Page 88)
- Wagner, J.F. 1970. Time study of tree trimming. pp 97–101. In: *Proceedings of the 46th International Shade Tree Conference*. (UFMP Page 94)

APPENDIX B. MASTER STREET TREE LIST

A master list detailing the appropriate trees to grow the City's urban forest was developed based on the existing tree lists, the analysis of the inventory data, climate change impacts, and the trees necessary to be resilient and sustainable. The table below details the 24 attributes assigned to each recommended tree and the following list is paraphrased for presentation in the Plan. The comprehensive interactive tree list was provided to the Urban Forestry Program as a separate worksheet and document.

Table 33. Summary of attributes collected for the recommended Master Street Tree List

Tree Type	Recommended Distance from Building(s)	Climate ready urban trees for Central Valley cities
Common Name	Climate Resilient?	NEW Street Tree List?
Scientific Name	Native or Naturalized to Region?*	NEW Parkway / Accent / Median Tree?
Size (Height x Width) in feet	Primary Function(s)	Downtown Consideration (for 3-5' planting width)?
Size Class	Soil/Site Preference	Limit Planting (at or near 10% of total public tree population)
Features	Exists on Previous List?	Description
(Likely) <u>Not Suitable</u> for Accent Corners & Medians?	Tree Fresno Selection	Concern(s)
Planting Strip Width (3 - 8.5 feet, with and without overhead wires)	Sister Climate City (Riverside, CA in 60 years) Tree? *With consultation from an expert	Street Tree Not For Narrow Space? (<3 feet space)

Proposed Street Tree List

Table 34. Proposed street trees (predominantly large statured)

Street Trees (Proposed)		
Scientific Name	Common Name	Planting Width
<i>Acer macrophyllum</i>	Bigleaf Maple	6+ feet
<i>Acer rubrum</i> 'October Glory'	October Glory Red Maple	4+ feet
<i>Aesculus californica</i>	California Buckeye	6+ feet
<i>Cedrus deodara</i>	Deodar Cedar	4+ feet
<i>Celtis laevigata</i>	Sugarberry	4+ feet
<i>Celtis reticulata</i>	Netleaf Hackberry	4+ feet
<i>Chionanthus retusus</i>	Chinese Fringetree	4+ feet
<i>Chitalpa tashkentensis</i> 'Pink Dawn'	Chitalpa	4+ feet
<i>Ginkgo biloba</i> 'Autumn Gold'	Autumn Gold Ginkgo Biloba	4+ feet
<i>Ginkgo biloba</i> 'Fairmont'	Fairmont Ginkgo Biloba	4+ feet
<i>Ginkgo biloba</i> 'Golden Girl'	Golden Girl Ginkgo Biloba	4+ feet
<i>Gleditsia triacanthos</i> 'Christie'	Halka® Honeylocust	4+ feet
<i>Gleditsia triacanthos</i> 'Shademaster'	Shademaster Honeylocust	4+ feet
<i>Gleditsia triacanthos</i> 'Skycole'	Skyline® Honeylocust	4+ feet
<i>Gymnocladus dioicus</i>	Kentucky Coffeetree	6+ feet
<i>Gymnocladus dioicus</i> 'Espresso-JFS'	Espresso™ Kentucky Coffeetree	6+ feet
<i>Gymnocladus dioicus</i> 'UMNSynergy'	True North™ Kentucky Coffeetree	6+ feet
<i>Koelreuteria paniculata</i>	Goldenrain Tree	4+ feet
<i>Liriodendron tulipifera</i>	Tulip Tree	4+ feet
<i>Magnolia grandiflora</i> 'Russet'	Russet Magnolia	4+ feet
<i>Magnolia grandiflora</i> 'St. Mary'	St. Mary Magnolia	4+ feet
<i>Nyssa sylvatica</i>	Sourgum	4+ feet
<i>Nyssa sylvatica</i> 'JFS-PN Legacy1'	Gum Drop® Tupelo	4+ feet
<i>Pinus canariensis</i>	Canary Island pine	6+ feet
<i>Pinus pinea</i>	Italian Stone Pine	4+ feet
<i>Pistachia chinensis</i>	Chinese Pistache	6+ feet
<i>Pistachia chinensis</i> 'Keith Davey'	Keith Davey Chinese Pistache	6+ feet
<i>Pistachia x</i> 'Red Push'	Red Push Pistache	6+ feet
<i>Platanus racemosa</i>	California sycamore	6+ feet
<i>Platanus racemosa</i> 'Roberts'	Roberts California sycamore	6+ feet
<i>Platanus x acerifolia</i> 'Bloodgood'	Bloodgood London Planetree	6+ feet
<i>Platanus x acerifolia</i> 'Columbia'	Columbia London Planetree	6+ feet
<i>Platanus x acerifolia</i> 'Liberty'	Liberty London Planetree	6+ feet
<i>Platanus x acerifolia</i> 'Morton Circle'	Exclamation™ London Planetree	6+ feet
<i>Platanus x acerifolia</i> 'Yarwood'	Yarwood London Planetree	6+ feet
<i>Podocarpus gracilior</i>	Fern Pine	4+ feet
<i>Prunus ceracifera</i> 'Atropurpurea'	Purpleleaf Plum 'Atropurpurea'	3+ feet
<i>Quercus x morehus</i>	Oracle Oak	6+ feet
<i>Quercus agrifolia</i>	Coast Live Oak	6+ feet
<i>Quercus canbyi</i>	Canby Oak	6+ feet
<i>Quercus chrysolepis</i>	Canyon Live Oak	6+ feet
<i>Quercus coccinea</i>	Scarlet Oak	6+ feet
<i>Quercus douglasii</i>	Blue Oak	6+ feet

Street Trees (Proposed) - Continued		
Scientific Name	Common Name	Planting Width
<i>Quercus fusiformis</i>	Escarpment Live Oak	6+ feet
<i>Quercus hypoleucoides</i>	Silverleaf Oak	6+ feet
<i>Quercus ilex</i>	Holly Oak	6+ feet
<i>Quercus kelloggii</i>	California Black Oak	6+ feet
<i>Quercus lobata</i>	Valley Oak	6+ feet
<i>Quercus polymorpha</i>	Monterrey Oak	6+ feet
<i>Quercus suber</i>	Cork Oak	6+ feet
<i>Quercus virginiana</i> var. <i>geminata</i>	Southern Live Oak 'Heritage'	6+ feet
<i>Quercus wislizenii</i>	Interior Live Oak	6+ feet
<i>Taxodium distichum</i>	Bald Cypress	6+ feet
<i>Taxodium distichum</i> 'Mickelson'	Shawnee Brave® Bald Cypress	6+ feet
<i>Tilia americana</i>	American Linden	4+ feet
<i>Tilia americana</i> 'Redmond'	Redmond American Linden	4+ feet
<i>Tilia cordata</i> 'PNI 6025'	Greenspire® Littleleaf Linden	4+ feet
<i>Tilia</i> 'Harvest Gold'	Harvest Gold Littleleaf Linden	4+ feet
<i>Ulmus americana</i> 'Princeton'	Princeton American Elm	6+ feet
<i>Ulmus</i> 'Morton'	Accolade® Elm	6+ feet
<i>Ulmus parvifolia</i>	Chinese Elm	6+ feet
<i>Ulmus parvifolia</i> 'Allee'	Allee Chinese elm	6+ feet
<i>Ulmus</i> 'Patriot'	Patriot Elm	6+ feet
<i>Ulmus propinqua</i> 'JFS-Bierbach'	Emerald Sunshine® Elm	6+ feet
<i>Zelkova serrata</i> 'Green Vase'	Green Vase® Japanese Zelkova	4+ feet
<i>Zelkova serrata</i> 'JFS-KW1'	City Sprite® Japanese Zelkova	4+ feet
<i>Zelkova serrata</i> 'Schmidtlow'	Wireless® Japanese Zelkova	4+ feet
<i>Zelkova serrata</i> 'Village Green'	Village Green® Sawleaf Zelkova	4+ feet

Proposed Parkway, Accent, and Median Trees List

Table 35. Proposed parkway, accent, and median trees (predominantly medium to small statured)

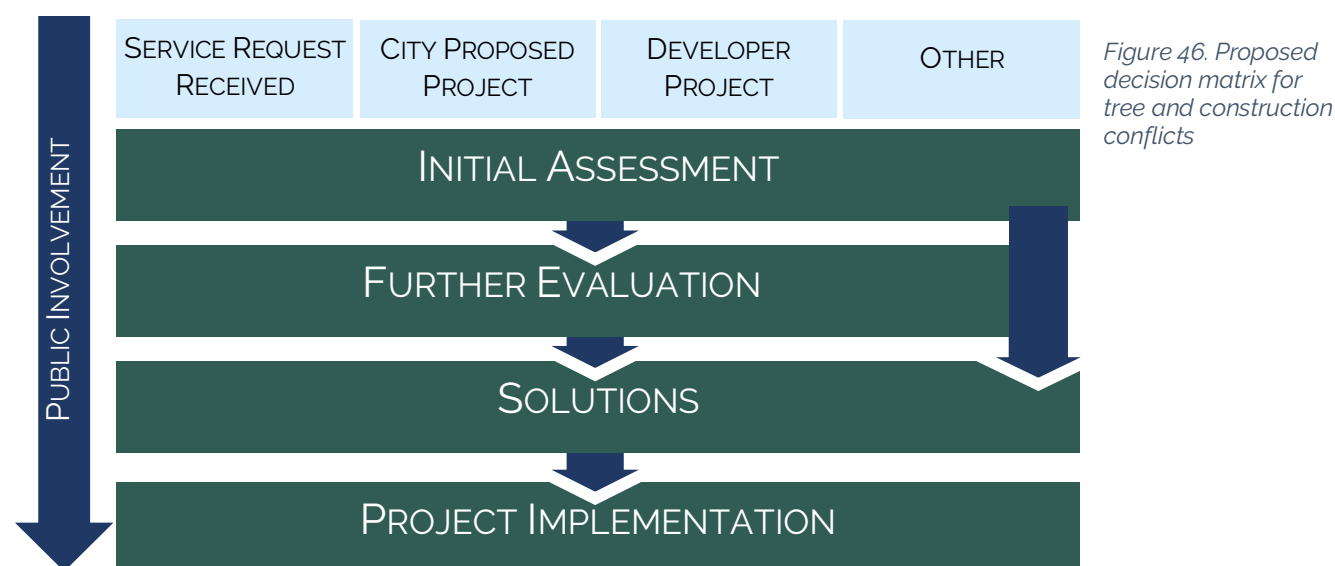
Parkway/Accent/Median Trees (Proposed)		
Scientific Name	Common Name	Planting Width
<i>Acacia aneura</i>	Mulga	3+ feet
<i>Acer palmatum</i>	Japanese Maple	3+ feet
<i>Arbutus unedo</i>	Strawberry Tree	3+ feet
<i>Arbutus unedo</i> 'Marina'	Marina Strawberry Tree	3+ feet
<i>Cercis canadensis</i>	Eastern Redbud	3+ feet
<i>Cercis canadensis</i> 'Forest Pansy'	Forest Pansy Redbud	3+ feet
<i>Cercis canadensis</i> 'Oklahoma'	Western Redbud 'Oklahoma'	3+ feet
<i>Cercis reniformis</i> 'Oklahoma'	Oklahoma Redbud	3+ feet
<i>Chilopsis linearis</i> 'Bubba'	Desert Willow	3+ feet
<i>Cotinus coggygia</i> 'Royal Purple'	Smoke tree	3+ feet
<i>Crataegus phaenopyrum</i>	Washington Hawthorn	3+ feet
<i>Eriobotrya deflexa</i>	Bronze loquat	3+ feet
<i>Ginkgo biloba</i> 'Autumn Gold'	Autumn Gold Ginkgo Biloba	4+ feet
<i>Ginkgo biloba</i> 'Fairmont'	Fairmont Ginkgo Biloba	4+ feet
<i>Ginkgo biloba</i> 'Golden Girl'	Golden Girl Ginkgo Biloba	4+ feet
<i>Heteromeles arbutifolia</i>	Toyon	3+ feet
<i>Juniperus scopulorum</i> 'Wichita Blue'	Wichita blue Juniper	3+ feet
<i>Lagerstroemia</i> 'Muskogee'	Muskogee Crape Myrtle	3+ feet
<i>Lagerstroemia</i> 'Natchez'	Natchez Crape Myrtle	3+ feet
<i>Lagerstroemia</i> 'Tuscarora'	Tuscarora Crape Myrtle	3+ feet
<i>Malus floribunda</i> spp	Flowering Crabapple	3+ feet
<i>Parkinsonia aculeata</i>	Mexican palo verde	3+ feet
<i>Prosopis pubescens</i>	Screwbean mesquite	3+ feet
<i>Prunus ceracifera</i> 'Atropurpurea'	Purpleleaf Plum 'Atropurpurea'	3+ feet
<i>Prunus ilicifolia</i> ssp. <i>Ilcifolia</i>	Hollyleaf cherry	3+ feet
<i>Prunus serrulata</i> spp	Flowering Cherry	3+ feet
<i>Raphiolepis indica</i> 'Majestic Beauty'	Indian Hawthorn 'Majestic Beauty'	3+ feet
<i>Rhus lancea</i>	African sumac	3+ feet
<i>Vitex agnus-castus</i>	Chaste tree	3+ feet
<i>Zelkova serrata</i> 'JFS-KW1'	City Sprite® Japanese Zelkova	4+ feet
<i>Ziziphus jujube</i>	Chinese Date	3+ feet

APPENDIX C. SOLUTIONS WORKBOOK AND POSSIBLE GUIDELINES FOR TREE AND SIDEWALK CONFLICTS

Decision Matrix

The development of Los Banos' Urban Forest Management Plan identified the need to clarify the decision process to address tree and sidewalk or construction conflicts. A clear decision matrix can help to reduce inter- and inner-department uncertainty and establish or adhere to consistency and fairness. The City's departments have standard operating procedures and checklists for evaluating conflicts at a project site, but these traditionally have not been available to the public. To make the decision process around the retention or removal of trees more transparent and consistent, a clarified process, decision matrix, and solution toolkit should be developed to highlight the key decision points.

Proposed Decision Matrix for Tree and Construction/Sidewalk Conflicts



Initial Assessment

The following applies to tree removal requests and proposed projects.

The initial assessment of trees, sidewalks (or other infrastructure), and site at the service request location or project location provides consistency and predictability by collecting the appropriate information. It is recommended to have the Urban Forestry Program involved in the initial assessment process and/or a City staff member with an International Society of Arboriculture Certified Arborist accreditation.

- Tree Preservation Potential. What is the tree quality or health, and is it worth preserving? Is the tree designated as a significant tree or Historical/Heritage Tree?
- Tree Mitigation Exploration. If the request to remove the tree is a result of infrastructure damage and the tree exhibits poor health or vigor, can the tree's health or vigor be mitigated by any means other than removal?
- Public Safety Risk. Is the tree a potential hazard that cannot be mitigated by any means other than removal? This includes any tree or tree part that poses a high risk of damage to persons or property located in public places. Use the International Society of Arboriculture's tree risk evaluation standards.

- Initial Assessment Timing. It is recommended that the initial assessment be conducted within 3-4 weeks of receiving a service request for removal. If the assessment is required due to a proposed project, the assessment should occur no later than 30% design or equivalent of design effort.
- Tracking. Consider tracking service requests in the City's asset software or similar program.
- For an example Initial Assessment Checklist, see the Example Initial Assessment Checklist further below.

Initial Tree Decision

If the tree removal request was made due to the condition of the tree or other reason not relating to the damage or impediment of infrastructure such as sidewalk, the Urban Forester or representative may conduct the initial tree decision. If infrastructure is part of the assessment and/or the tree removal request was initiated for a proposed project, the City Engineer or appropriate staff should also be part of the initial tree decision. The appropriate staff will visit the tree and/or proposed project location and assess the tree (and sidewalk, if applicable) conditions. The following actions will result from the assessment:

- Remove Tree. The tree removal request was made not as a result of the tree impacting or damaging infrastructure and the tree is identified as unhealthy or unsafe with no remediation possible.
 - Remove the tree and consider the "no net loss" policy of replacing the tree. Some cities implement a 2:1 replacement to removal ratio. The replacement policy should be based on City Code. Replacement of trees can occur on site, same street, or City-approved location. A fee in-lieu should also be considered as an option as described in City Code.
 - Removal of the tree should be prioritized based on other work orders, the risk assessment of the tree, and other factors.
 - The service request, decision, work order, tree information, and tree removal information should be tracked in the City's asset software or similar program.
- Retain Tree. Based on the assessment, the tree is not in decline or the issues can be remediated. Alternatively, if the tree in question is designated as a Historical/Heritage Tree or significant tree, the tree may be preserved depending on the tree condition and presence of hazards or risks as described in the City policies and manuals.
 - Document the decision, inform the property owner or project developer.
 - Conduct the remediation activity to the tree if needed.
 - Prioritize and track this information in the asset software or similar program.
 - Conduct follow-ups with the property owner and monitor the tree if necessary.
- Remove Tree and Replace Sidewalk. The service request or proposed project identifies a tree that is causing sidewalk conflicts and the tree has been deemed unhealthy and no remediation is possible. The City should reference City Code as to what is defined as unhealthy or hazardous.
 - Remove the tree and consider the "no net loss" policy of replacing the tree. Some cities implement a 2:1 replacement to removal ratio. The requirement to replace the tree will be the City and Urban Forester's discretion. The replacement policy should be based on City Code. Replacement of trees can occur on site, same street, or City-approved location. A fee in-lieu should also be considered as an option as described in City Code.
 - Removal of the tree should be prioritized based on other work orders, the risk assessment of the tree, and other factors.
 - The service request, decision, work order, tree information, and tree removal information should be tracked in the City's tree inventory software or similar program.

- Replace the sidewalk using appropriate design standards and materials and consider designing according to standards that will protect any replacement trees and provide ample soil volume and root space for the new or existing trees.
- Retain Tree and Maintain Sidewalk. A tree in question is in conflict with infrastructure and the assessment determined that the tree is to be retained and the infrastructure (i.e., sidewalk) is to be corrected. The sidewalk will be of standard width and a tree pit of standard width (at minimum) can be installed or retained.
 - Coordinate with Public Works the timing and approach for maintaining the sidewalk. Be sure to consider alternative sidewalk amendments such as width reduction, alternative materials, among other solutions.
 - If any root pruning is needed to amend the sidewalk, the Urban Forester and/or a Certified Arborist hired by the City should evaluate to determine the appropriate root pruning, branch pruning, soil amendments, and other maintenance required.
 - Documentation in City's asset software as stated before is recommended.
- Evaluate Tree and/or Sidewalk Further. During the initial tree decision, it is not appropriate for extensive explorations of pavement, soils, or tree root systems. There are limitations to the initial assessment and decision. The purpose of the initial assessment is to identify where these future actions are required so that the appropriate schedule and funding can be determined.
 - Documentation in City's asset software as stated before is recommended.

Further Evaluation

The team conducting further evaluation may include an arborist, landscape architect, engineer, or other professionals with expertise relevant to the project details and situation. In addition to collecting information about the trees and infrastructure (i.e., sidewalk) the following additional items may be considered:

Level of impact, future risks, cost/benefit, anticipated sidewalk maintenance if the tree is kept, public/environmental benefit, community values, policy guidance, neighborhood context, historic districts, planned construction, funding forecasts.

Solutions

The following best practices and approaches are provided as examples. The City should review and update these as new or improved practices and materials emerge.

- If Tree Removed, Obtain Valuation. If the tree must be removed, the City should provide guidelines to replace the removed tree. Guidelines should be based on City Code. Ideally, the tree would be replaced at the same location if the site is suitable for trees in the first place. If not possible, the City should have a procedure in place for the relocation of replacement trees.
- If Tree is Retained, Determine Management Approach. Since the initial assessment offered the opportunity to closely examine the tree and the site, future management approaches and decisions should be discussed and documented. These include future tree replacement species for when the tree does over mature and decline or conduct corrective actions to provide clearance for pedestrians, vehicles, utilities, and signs.
- Identify Potential Sidewalk Solutions. The [Alternative Solutions Toolkit Overview](#) section provides information and resources regarding sidewalk solution options. Information gathered during the initial assessment and subsequent site visits will support the selection of options that should be presented to City staff to ensure goals of sidewalk repair and tree preservation are kept.
- Identify Opportunities to Improve Conditions for New Trees. When trees are planted by the City, the appropriate tree species for the location should be determined and the City should adhere to best practices in site and tree pit preparation to provide enough soil volume to

support tree root growth and minimize future pavement damage by roots. If a tree is being planted at or near where the tree removal request was made, an evaluation of why the request was made should be considered. This may include such things as inadequate soil volume, insufficient growing space, tree leaf litter, messy fruit, poor structure, allergies, screening of shade-intolerant garden or landscape vegetation, or a combination of factors.

Project Implementation

Whether the sidewalk repair is occurring at a location where the tree is retained or removed, the sidewalk must adhere to the Americans with Disabilities Act (ADA) requirements and City standards and is the responsibility of the City. Tree repaving projects, curb and gutter repairs, and other Capital Projects should also adhere to this evaluation process. All matters relating to the removal or remediation of the tree will be conducted by the City unless the responsibility of tree maintenance in public rights-of-way changes. Regarding tree maintenance, mitigation, or removal, the City should involve the public by:

- Providing a public notice prior to the initial tree assessment.
- Share the results of the initial assessment.
- Share the solution decision.

EXAMPLE INITIAL ASSESSMENT CHECKLIST

[CITY LOGO]

[City of #####] Trees and Sidewalks Operations Plan Initial Street Tree and Sidewalk Assessment Checklist

DATE

Prepared By:

The purpose of this document is to outline **INITIAL ASSESSMENT** for locations where sidewalk work is located within the dripline of an existing street tree.

<i>Project Location/Address</i>	
<i>Tree Species/Diameter</i>	
<i>Street Classification/Type</i>	
<i>Tree Asset Inventory ID</i>	
<i>Sidewalk Segment #</i>	
<i>Is this assessment along a corridor project?</i>	

An **[ENGINEER]** and **[ARBORIST]** will look at the site and assess the condition of the sidewalk and the tree.

If the tree has the following characteristics, it should be removed/replaced pursuant to SMC 15.43.030 (C): The City's policy is to retain and preserve street trees whenever possible. Accordingly, street tree removal shall not be permitted unless the Director determines that a street tree:

1. Is a hazardous tree;
2. Poses a public safety hazard;
3. Is in such a condition of poor health or poor vigor that removal is justified; or
4. Cannot be successfully retained, due to public or private construction or development conflicts.

Initial Assessment

1. Is the tree healthy and worthy of preservation?

- ☐ Yes
☐ No

Describe: _____

2. Poor Health – Is this tree in a condition of poor health or poor vigor that cannot be mitigated by any means other than removal?

- ☐ Yes
☐ No

Describe: _____

3. Hazardous Tree— Defined in [CITY CODE CITATION] any tree or tree part that poses a high risk of damage to persons using, or property located in the public place, as determined by the [AUTHORITY] according to the tree hazard evaluation standards established by the International Society of Arboriculture.

- ☐ Yes
☐ No

Describe: _____

4. Minimum Standards—Is there enough space for a [6 foot wide sidewalk and a 5 foot wide] planting strip?

☐ Yes

☐ No

Describe: _____

5. Public Safety Hazard—Does the tree present a public safety hazard that cannot be mitigated by any means other than removal?

- Does the tree location obstruct the visibility for pedestrians, cyclists, and/or cars at an intersection?
- Is the tree impacting a curb ramp such that it no longer meets City of [CITY] ADA requirements?
- Is the tree potentially impacting private property?

☐ Yes

☐ No

Use this space to draw a sketch of the location. Identify existing clearances from nearby infrastructure.

Recommendation for this tree:

☐ **–Remove Tree / Replace Sidewalk**

A tree is identified to be removed if it is not healthy or if it is hazardous as identified in the Street Tree Ordinance.

☐ **–Keep Tree and Maintain Sidewalk**

A tree will be kept and the sidewalk will be maintained if a sidewalk of standard width and a tree pit of standard width (at a minimum) can be installed or retained around a healthy tree.

☐ **–Evaluate Sidewalk and/or Tree Further**

[DEPARTMENT] views trees and sidewalks as important public infrastructure assets. [DEPARTMENT] intends to keep healthy trees and have accessible sidewalks. If standard widths cannot be met then [DEPARTMENT] will take the time and resources to evaluate if alternative approaches (such as sidewalk width reduction, alternative sidewalk materials, adjustments to the tree pit and/or tree root pruning) can be used to retain a tree and provide an accessible sidewalk at problem locations.

NEXT STEPS

If Tree is REMOVED –Replace the removed tree with the minimum 2:1 replacement ratio. Identify if the replacement trees can be located in the same location or on the same street as the removed tree. If not, replacements should be planted as close to the removal as geographically feasible. Identify the estimated cost to remove the tree(s), repair the sidewalk, and plant replacement trees.

If Tree is KEPT –Estimate the cost of the sidewalk repair that would achieve the desired lifecycle for the repair. Estimate sidewalk and tree maintenance needs/costs and any maintenance to the tree that is being retained (e.g., root pruning, branch pruning, soil amendments).

If EVALUATE Further – Use Tree and Sidewalk Evaluation Form (IN DEVELOPMENT) and/or the tree risk assessment should follow ISA TRAQ guidelines: <http://www.isa-arbor.com/education/onlineresources/basicreeriskassessmentform.aspx>

Arborist	Engineer
Title	Title
Date	Date

Alternative Solutions Toolkit Overview

MATERIAL

Paving and Other Surface Materials

These materials can be used to create a walkable surface or to delineate space for people and/or the tree.

DESIGN

Infrastructure-Based Design Solutions

These design considerations can be employed to support a tree and/or sidewalk.

ROOT

Rootzone-Based Materials

These tools can support tree health and guide tree growth below ground.

TREE

Tree-Based Solutions

These solutions are focused on tree selection and tree maintenance.

Table 36. Description of possible alternative solutions for tree and construction conflicts

TOOL TYPE	TOOLS	PROACTIVE	RESPONSIVE	COST*				EXPECTED USEFUL LIFE					
				\$	\$\$	\$\$\$	\$\$\$\$	Month	Year	Decade	Century		
MATERIAL	PAVING AND OTHER SURFACE MATERIALS												
	Asphalt	P	R	\$-\$\$\$				M	Y	D	C		
	Expansion Joints	P	R	\$				M	Y	D	C		
	Pavers	P	R	\$\$-\$\$\$				M	Y	D	C		
	Pervious Concrete	P	R	\$\$\$-\$\$\$\$				M	Y	D	C		
	Reinforced or Thicker Slab	P	R	\$\$-\$\$\$				M	Y	D	C		
	Rockery / Wall	P	R	\$\$-\$\$\$\$				M	Y	D	C		
	Beveling	P	R	\$-\$\$				M	Y	D	C		
	Porous Asphalt	P	R	\$-\$\$\$				M	Y	D	C		
	Shims	P	R	\$				M	Y	D	C		
	Tree Guards and Tree Rails	P	R	\$\$-\$\$\$				M	Y	D	C		
	Decomposed Granite	P	R	\$-\$\$				M	Y	D	C		
Mudjacking (Concrete Leveling)	P	R	\$\$-\$\$\$\$				M	Y	D	C			
DESIGN	INFRASTRUCTURE-BASED DESIGN SOLUTIONS												
	Monolithic Sidewalk	P	R	\$\$\$				M	Y	D	C		
	Pavement Thickness	P	R	\$\$\$				M	Y	D	C		
	Tree Pit Sizing	P	R	\$				M	Y	D	C		
	Bridging	P	R	\$\$\$\$				M	Y	D	C		
	Curb Bulbs	P	R	\$\$\$-\$\$\$\$				M	Y	D	C		
	Curb Realignment	P	R	\$\$\$-\$\$\$\$				M	Y	D	C		
	Curving or Offset Sidewalk	P	R	\$\$-\$\$\$				M	Y	D	C		
	Easement	P	R	\$-\$\$\$				M	Y	D	C		
	Suspended Pavement Systems	P	R	\$\$\$-\$\$\$\$				M	Y	D	C		
	Lowered Sites	P	R	\$\$\$-\$\$\$\$				M	Y	D	C		
	Soil Volume	P	R	\$-\$\$\$				M	Y	D	C		

TOOL TYPE	TOOLS	PROACTIVE	RESPONSIVE	COST*	EXPECTED USEFUL LIFE			
					Month	Year	Decade	Century
ROOT	ROOTZONE-BASED MATERIALS							
	Mulch	P	R	\$	M	Y	D	C
	Root Barriers	P	R	\$	M	Y	D	C
	Continuous Trenches	P	R	\$\$\$	M	Y	D	C
	Foam Underlay	P	R	\$-\$	M	Y	D	C
	Modified Gravel Layer	P	R	\$	M	Y	D	C
	Root Paths	P	R	\$-\$	M	Y	D	C
	Soil Modification	P	R	\$-\$	M	Y	D	C
	Steel Plates	P	R	\$\$-\$\$\$	M	Y	D	C
	Structural Soils	P	R	\$\$-\$\$\$	M	Y	D	C
	Subsurface Aeration / Irrigation	P	R	\$	M	Y	D	C
TREE	TREE-BASED SOLUTIONS							
	City Forestry Street Tree List	P	R	\$	M	Y	D	C
	Corrective Pruning	P	R	\$-\$	M	Y	D	C
	Root Pruning	P	R	\$-\$	M	Y	D	C

*General cost notes:

- Sidewalk material costs, when given in linear feet, assume 6-foot sidewalk width
- Costs are planning-level costs and will vary for actual construction
- Costs do not include design, permitting, or other "soft" costs
- Costs not included in tool costs but which would be necessary with use of some solutions include:
 - Drainage structure and connection
 - Curb ramps

Figure 47. Example of alternative solutions for tree and construction conflicts

ASPHALT



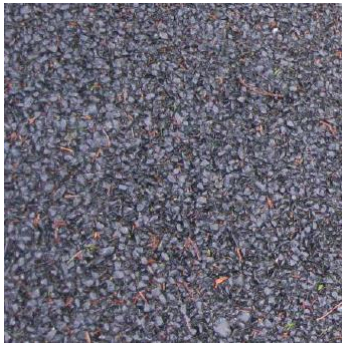
JOINTS



PAVERS/RUBBER



PERVIOUS CONCRETE



DECOMPOSED GRANITE



MUDJACKING



BRIDGING



BULBOUTS



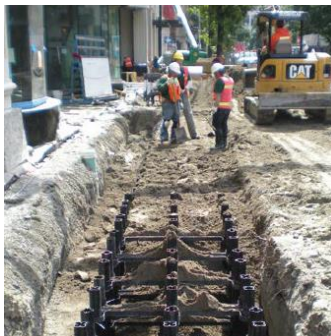
CURB REALIGNMENT



EASEMENT



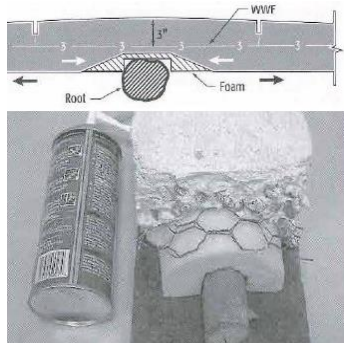
SUSPENDED PAVEMENT



ROOT BARRIERS



FOAM UNDERLAY



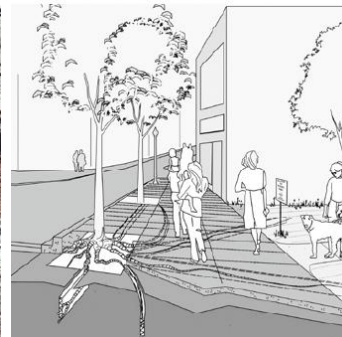
MOD. GRAVEL LAYER



STRUCTURAL SOILS



ROOT PATHS



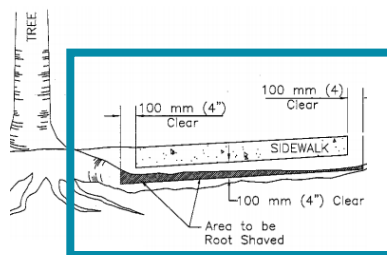
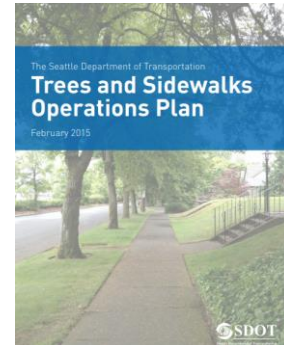
CORRECTIVE PRUNING



ROOT PRUNING



ROOT SHAVING


Source of Material
Examples & Images:


APPENDIX D. 2021 URBAN FOREST AUDIT RESULTS

Urban Forest Audit Scoring Key

Not Practiced (0)	In Development (1)	Adopted Practice (2)
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Table 37. Results of the 2021 Urban Forest Audit

Management Policy

Category	Component Evaluated	Description or Criteria for Evaluation
1.00	Approved Policy Statements	Written policy statements approved by a governing body.
1.01	Climate Change (Sustainability)	Also referred to as Sustainability. With reference to urban trees. Addresses the long-term health and productivity of the natural resource.
1.02	No Net Loss	Can refer to trees, basal area, or canopy.
1.03	Risk Management	Should reference: ANSI A300 Part 9, ISA BMP, and prioritization funding mechanisms.
1.04	Tree Canopy Goals	Overall community/campus goal, or by designated "zone".
1.05	Tree Protection	Construction and/or landscape maintenance.
1.06	Utility	Utility pruning, planting, and installation policy (e.g. boring vs. trenching).
1.07	Human Health – Physical & Psychological	Recognizes and addresses the human health benefits of the natural resource (e.g., exercise, air quality, stress management, shade). Could also include Urban Heat Island (UHI) policies.
1.08	Wildlife Diversity/Habitat/Protection	Mammals, birds, or reptiles.
1.09	Performance Monitoring	Recognizes the annual or biennial calculation of metrics (e.g. some component of ecosystem services) for the purpose of tracking management performance.
1.10	Ordinance (Private)	Tree protection and management for trees on private property.
1.11	Ordinance (Public)	Tree protection and management for public trees.
1.12	Development Standards	US Green Building Council's LEED® rating systems (or similar internationally) LEED v4 BD+C (Sustainable Sites) LEED 4 ND (Neighborhood Pattern & Design, Green Infrastructure) ASLA's SITES® Rating System
1.13	High-Conservation Value Forests	Programs or policies for identification, acquisition, and/or protection of groups of trees or forests that provide unique public benefits.
1.14	Urban Interface (WUI)	Programs or policies that improve management of the urban interface for fire and/or invasive species.

Capacity and Training

Category	Component Evaluated	Description or Criteria for Evaluation
2.00	Professional Management	Provision for professional consultation.
2.01	Certified Arborist - Staff	International Society of Arboriculture
2.02	Certified Arborist - Contracted	International Society of Arboriculture
2.03	Certified Arborist - Other Resource	International Society of Arboriculture
2.04	Other Professional - Advising/directing UF management	This could be a professional in an allied field like Landscape Architecture.
2.05	Municipal Forestry Institute	Graduate of Society of Municipal Arborist's MFI program or similar
2.06	USFS Urban Forestry Institute or similar	Attendance at USFS UFI or similar
2.07	Campus/city arborist – ISA CA instructor for CEUs	Arborist routinely provides ISA CEU presentations/workshops.
2.08	Tree Board University or similar	On-line training modules from Oregon U&CF for Tree Board/Advisory Council or similar
2.09	Organizational Communications	Process, procedures, and protocol for cross-professional communications within the organization (all departments "touching" trees).

Funding and Accounting

Category	Component Evaluated	Description or Criteria for Evaluation
3.00	Urban Forestry Budget	
3.01	Budgeted Annually	Budget authorized/required for tree board, tree maintenance, and/or tree planting.
3.02	Contingency Budget Process	A protocol is in place to prioritize urban forestry management activities during budget shortfalls; e.g. during times of limited funding for: ¹⁾ risk management, ²⁾ young tree care, ³⁾ mulching.
3.03	Funding Calculated from Community Attribute	Budget in terms of per capita, per tree, or for performance (e.g. per tree weighted by size class or age).
3.04	Funding Based on Performance Monitoring	Budget connected with/based on ecosystem service (ES) monitoring and performance.
3.05	Urban Forestry Line Item	Is the budget specific to urban forest management?
3.06	Green Asset Accounting	Maintain green infrastructure data in the "unaudited supplementary disclosure of an entity's comprehensive annual financial report (CAFR)". GASB 34 implementation for municipalities.

Authority

Category	Component Evaluated	Description or Criteria for Evaluation
4.00	Authority	
4.01	Urban Forest Manager	Professional urban forest manager with authority over the program and day-to-day activity. Including designated budget line item.
4.02	Staff Authority	Designated staff with authority over the program and day-to-day activity. Including designated line item.
4.03	Communication Protocol	Established protocol and mechanism(s) for communication among all members of the urban forest management "community" in your municipality or organization (e.g. manager, department under control, advisory board, finance, field operations, public, NGOs, business community, developers).
4.04	Tree Board, Commission, or Advisory Council	Establishes a board for public participation (advisory or with authority).

Inventories

Category	Component Evaluated	Description or Criteria for Evaluation
5.00	Inventories and Assessments	
5.01	Canopy Inventory (UTC)	Periodic (≤ 5 year) canopy inventory and assessment. Public & private.
5.02	Ecosystem Services	Recent (≤ 5 year) ecosystem services (ES) inventory & assessment? Public: 100% or street trees; Public & Private: Sample; or Campus. Or, are ES calculated annually or biennially based on partial re-inventory and projected growth as a monitoring tool.
5.03	Public Trees ↓	↓ Evaluate below ↓
5.04	Street Trees	Is there a recent (5 year) inventory?
5.05	Parks/Riparian Areas	Is there a recent (5 year) inventory?
5.06	Other Public Trees	Public facility landscaped areas, Industrial parks, green space.
5.07	Continuous inventory on a cycle (≤ 5 years; i.e. panel)	Partial re-inventory to support continuous forest inventory, growth projections, and the calculation of ecosystem services for the purpose of long-term monitoring of urban forest management performance (e.g. carbon or leaf surface).
5.08	Private Trees ↓	↓ Evaluate below ↓
5.09	Campus (Educational)	Is there a recent (5 year) inventory?
5.10	Corporate	Is there a recent (5 year) inventory?
5.11	Other Private Property	Is there a recent (5 year) inventory?
5.12	Continuous inventory on a cycle (≤ 5 years; i.e. panel), inventory software	Partial re-inventory to support continuous forest inventory, growth projections, and the calculation of ecosystem services for the purpose of long-term monitoring of urban forest management performance (e.g. carbon or leaf surface).
5.13	Green Stormwater Infrastructure (GSI)	BMP stormwater mitigation practices and locations (e.g. Washington DC)
5.14	Spatial	Inventory data includes Lat/Long (i.e. GIS). Should address the spatial relationship between the natural resource and people (i.e. residents, visitors, activities) that would help manage the resource for benefits associated with proximity (air quality, recreation, stress mitigation, improved educational opportunity).
5.15	Maintenance and Planting Records Maintained	Planting details (nursery, species, size, cost, contractor, etc.) maintained with inventory or as separate database or recordkeeping system. Also pruning and removal histories.

Plans

Category	Component Evaluated	Description or Criteria for Evaluation
6.00	Management Planning Activities	
6.01	Annual Maintenance Calendar	An annual calendar that defines typical activity by season. To support scheduling.
6.02	Public Trees ↓	↓ Evaluate below ↓
6.03	Street Tree Management	Is there a recent (5 year) plan for street trees?
6.04	Parks/Riparian Area Management	Is there a recent (5 year) plan ?
6.05	Other Public Trees	Public facility landscaped areas, Industrial parks, green space.
6.06	Private Trees ↓	↓ Evaluate below ↓
6.07	Campus (Educational)	Is there a recent (5 year) plan for Campus trees?
6.08	Corporate	Is there a recent (5 year) plan?
6.09	Other Private Property	Is there a recent (5 year) plan?
6.10	Green Infrastructure	Is there a plan for green infrastructure (i.e. nodes & linkages)? Large-scale projects.
6.11	Other Written Plans	Other natural resource plans (e.g. tree canopy). May be a component of another plan.
6.12	Tree Planting	Is there a recent (3 year) tree planting plan?). May be a component of another plan.
6.13	UF as Part of a Comprehensive Plan	Is any UF management plan referenced in the comprehensive plan (i.e. county or municipality) or master plan (i.e. Campus)?
6.14	Urban Forest Planning and Management Criteria and Performance Indicators	Criteria and indicators based on <i>A Model of Urban Forest Sustainability</i> (Clark, J.R., Matheny, N.P., Cross, G., and Wake, V. 1997 <i>Journal of Arboriculture</i> .) or on work of W.A. Kenney, P.J.E. van Wassenae, and A.L. Satel in <i>Criteria and indicators for strategic urban forest planning and management</i> . (2011)

Risk Management

Category	Component Evaluated	Description or Criteria for Evaluation
7.00	Risk Management Activities	
7.01	TRAQ Attained	At least one staff or consultant is TRAQ.
7.02	Annual Level 1 (ANSI A300 Part 9 & ISA BMP)	All trees in high occupancy areas visited annually.
7.03	Mitigation Prioritization	A protocol for prioritizing mitigation following Level 1 and Level 2 assessments. Reflects the controlling agency's threshold for risk.
7.04	Occupancy Areas Mapped	Has TRAQ staff/consultant discussed/mapped occupancy levels with controlling authority?
7.05	Recordkeeping, Reporting, and Communications	A process has been put in place to maintain records on requests, inspections, evaluations, and mitigation of risk; and on the communications among the managers related to those risk assessments.
7.06	Standard of Care Adopted	Controlling authority has adopted a Standard of Care (SOC) or risk management policy.
7.07	Tree Risk Specification	Is there a written specification that meets requirements of ANSI A300 (Part 9)? And, has it been discussed with the controlling authority with relevance to the controlling authority's threshold for acceptable risk?
7.08	Urban Tree Risk Management	The community has prepared and follows a comprehensive program for urban tree risk management.
7.09	Invasive Management	Plan to address and manage invasive: plants, insects, and disease.

Disaster Planning

Category	Component Evaluated	Description or Criteria for Evaluation
8.00	Disaster Planning Activities	
8.01	Response/Recovery Mechanism	Staff knowledge of the municipality's protocol for requesting disaster resources through the county or state with access to mutual aid and EMAC.
8.02	Urban Forestry as part of the County Disaster Plan	The UF plan (8.3) is incorporated into the county/municipal disaster plan; specifically in reference to debris management and risk mitigation.
8.03	Urban Forestry Disaster Plan	A separate/specific plan within the urban forestry management program (i.e. who to call, priorities).
8.04	Pre-disaster Contracts	Contracts are in place for critical needs.
8.05	Mitigation Plan	A mitigation plan has been developed for pre-disaster, recovery, and post-disaster.
8.06	EMAC Mission Ready Packages (MRP)	Municipality has published disaster resources with state EM and participates in inter-state Mutual Aid to support Urban Forest Strike Teams (UFST).
8.07	Urban Forest Strike Team	Participation in the UFST project.

Standards and Best Management Practices

Category	Component Evaluated	Description or Criteria for Evaluation
9.00	ANSI Standard & BMP Activities	
9.01	ANSI Standards	Reference and adherence to ANSI Standards for arboricultural practices (A300), safety (Z133), or Nursery Stock (ANSI Z60.1) (any or all).
9.02	Ages/Diameter Distribution	Specific management for the development of an age-diverse tree population
9.03	Arborist Standards	Standards of practice for arborists (i.e. Certification).
9.04	Best Management Practices (BMPs)	Establishes or references tree maintenance BMPs (i.e. written comprehensive standards & standards).
9.05	Fertilization and Mulching	Fertilization or mulching standards required for conserved & planted trees.
9.06	Lightning Protection Systems	BMP written to the ANSI A300 Standard.
9.07	Planting	Planting and transplanting standards required/specified.
9.08	Pruning	Pruning standards required for conserved & planted trees.
9.09	Removal	Infrastructure damage, stump grinding, etc.
9.10	Support Systems (Guying and Bracing)	BMP written to the ANSI A300 Standard.
9.11	Tree Risk	Tree risk assessment procedures; ISA BMP or equivalent.
9.12	Construction Management Standards	Written standards for: tree protection, trenching/boring in CRZs, pre-construction mulching, root or limb pruning, watering (any or all).
9.13	Design Standards	Standards for design that specifically require trees; standards for tree placement (i.e. location), soil treatment, and/or drainage.
9.14	Genus/Species Diversity	Suggests or requires diversity of plant material.
9.15	Green Stormwater Infrastructure (GSI)	BMPs for site level GI practices like rain gardens and swales. Small-scale projects.
9.16	Inventory Data Collection	Community has adopted or developed applicable standards for local urban tree inventory data collection to support QA/QC.
9.17	Minimum Planting Volume	Minimum required root zone volume.

Standards and Best Management Practices (continued)

Category	Component Evaluated	Description or Criteria for Evaluation
9.00	ANSI Standard & BMP Activities	
9.18	Minimum Tree Size	Minimum caliper for tree replacements, and/or minimum size of existing trees to receive tree density or canopy credit.
9.19	Root Protection Zone (CRZ)	Defines adequate root protection zone; Critical Root Zone (CRZ).
9.20	Safety	Safety logs, trainings, reference to ANSI Z133 Safety Standard
9.21	Topping	Prohibits topping or other internodal cuts (public & private).
9.22	Tree Species List	Identifies and publishes a list of the most desirable, recommended, and/or preferred species (may include native and non-native species); alternatively, a list of species prohibited.
9.23	Tree Quality Standards	Written standards for tree selection at nursery in addition to Z60.1.
9.24	Utility Right-of-Way (ROW) Management	Requirements for planting, pruning, and/or removal of trees within a utility ROW.
9.25	Urban Agriculture	Enabled urban food forestry practices.
9.26	Wood Utilization	Larger diameter material is processed for wood products.
9.27	Third-party forest products certification compliance	Examples: American Tree Farm System (ATFS), Forest Stewardship Council™ (FSC®)
9.28	Energy generation	Local or regional use of chips or other woody debris for co-generation facilities.
9.29	Composting of Leaf and/or Other Woody Debris	Leaves and small woody debris are captured and used on-site or processed by someone by composting for reuse.
9.30	Watering Standards	

Community

Category	Component Evaluated	Description or Criteria for Evaluation
10.00	Activities that Build Community	
10.01	Social Media Website or Similar	Does your community/campus use social media platforms or similar to document and publicize your urban forestry program, activity, or events?
10.02	Education	The urban forest is used as an educational laboratory for class activity; Kids in the Woods, PLT, high school, or college level.
10.03	Private Property Tree Program	Does your community sponsor this program locally?
10.04	Public-facing Tree Inventory and Management Software	Public access to the community tree resource via an on-line mapping program (i.e. any Web Map Service; WMS).
10.05	Public Perception	Is public management consistent with private property requirements for tree protections and care? Does the Campus/public tree management reflect neighborhood norms?
10.06	Recognition Programs	Programs that raise awareness of trees or that use trees to connect the community to significant events or activities.
10.07	Arbor Day Celebration	Whether or not associated with Tree City USA.
10.08	Arboretum designation	Internal or third party arboretum designation.
10.09	Significant trees	For example: size, history.
10.10	Memorial/Honorarium	Tree planting or tree care programs than honor/memorialize individuals, organizations, or events.
10.11	Social Media	Does your community/campus make use of Twitter, Facebook, Blogs for internal or external outreach?
10.12	Active Communications	Press releases, regular news articles (print), "State of the Urban Forest" reports, periodic analysis of threats and opportunities.
10.13	Tree Care	Are volunteers trained and used for basic tree care (e.g. mulching, pruning, planting).
10.14	Tree Campus USA®, Tree City USA®, Tree Line USA®	Community/campus meets current qualifications for any of these programs.
10.15	Volunteer Opportunities	Ad hoc or scheduled. Any/all age groups. Tree Campus USA student activities.

Green Asset Evaluation

Category	Component Evaluated	Description or Criteria for Evaluation
11.00	Observed Outcomes (Activity, Health)	
11.01	Deadwood	Look for evidence of periodic or ad-hoc deadwood removal (i.e. lack of dead limbs $\geq 2"$ in the trees or on the ground).
11.02	Genus Diversity	No genera exceed 20% of population; make specific observations for <i>Acer</i> , <i>Quercus</i> , <i>Fraxinus</i> , <i>Ulmus</i> and other local species of concern.
11.03	Mature Tree Care	Mature trees are retained in the landscape, and are of acceptable risk; i.e. veteran tree management.
11.04	Mulching	Evidence of adequate (i.e. spatial extent, depth, and material) roots zone mulching for all age classes.
11.05	Planting Site Volume Optimization	Are species & sites matched for optimization of above ground canopy; right tree in the right spot concept.
11.06	Rooting Volume Optimization	Are species & sites matched for optimization for below ground rooting volume; right tree in the right spot concept.
11.07	Species Diversity	No species/cultivars exceed 10% of population; make specific observations for <i>Acer</i> , <i>Quercus</i> , <i>Fraxinus</i> , <i>Ulmus</i> and other local genera of concern. Also evaluate the role of regionally local native species.
11.08	Soil Compaction	Observe evidence of soil compaction by users or staff during maintenance. Include "desire" lines and construction activity at time of evaluation.
11.09	Tree Health	Rate the overall tree health in all size (age) classes; look for crown dieback, decay, foliage density & color.
11.10	Young Tree Pruning	Look for evidence of periodic (e.g. every 3 years to year 9) structural pruning (e.g. subordination cuts, dominant central leader, co-dominant stems lower than 20').

APPENDIX E. INTERACTIVE GOAL AND ACTION WORKSHEET

Framework of Plan Actions

Action #	Urban Forest Management Plan Action	Order	Priority	Effort	Timeframe	Target Calendar Year	Lead & Collaborator(s)	Co-Benefits*	Audit Category / Element Reference
Goal, strategy, and action number. Cell is color-coded to match the goal reference color	The action statement	The recommended overall order of implementation	1-3 ranking of action importance indicated by cell color (3 cells = highest priority)	1-3 ranking of resources required indicated by cell color (3 cells = highest level of effort)	Ranges from 1-2, 3-5, 5-10, 10-20, or 20+ years to implement the action	Year to begin or complete the action	PRD = Parks and Recreation Division; PWD = Public Works Engineering or Operations Division; CED = Community & Economic Development Department	C = Community, E = Equity, H = Human Health, N = Natural Environment. First in order = greatest	Reference to the audit completed to develop the Plan for action monitoring. Bold references indicate highest impact

Table 38. Description of attributes in the action tables

Framework of Plan Targets

ACTION TARGET 1	ACTION TARGET 2	ACTION TARGET 3	Key Issue(s) or Consideration(s)	Cost/Time Implications (\$-\$\$\$\$)	Potential Funding Mechanism
Supporting target leading to final target aligned with action "target year" and desired outcome	Supporting target leading to final target aligned with action "target year" and desired outcome	A target in bold font is the primary target to measure success of implementing the corresponding action	A statement to build support for implementing the respective action	\$-\$\$\$\$ scale with the greater number "\$" the greater cost implications	Existing and potential sources to fund the respective action

Table 39. Description of attributes in the targets tables

Acronyms

UTC = Urban Tree Canopy (Assessment); HOAs = Homeowners Associations; UFMP = Urban Forest Management Plan (2022); TRAQ = Tree Risk Assessment Qualification; CAL FIRE = California Department of Forestry and Fire Protection Urban Forestry Program; U.S. = United States (of America); CEU = Continuing Education Unit; RFP = Request for Proposal; USA = United States of America

Los Banos Urban Forest Management Plan Actions and Targets

Table 40. Los Banos Urban Forest Management Plan actions and targets

Action #	Urban Forest Management Plan Action	Order	Priority	Effort	Time-frame	Lead & Collaborator(s)	Co-Benefits	Audit Reference
MP.01	Refine and finalize the Master Street Tree List and update the City standards and specifications for improvements and landscape to detail the appropriate trees for public tree plantings and the planting detail.	9			2023	PRD, PWD, CED	C, N	1.01, 1.08, 1.10 - 1.12 , 6.12, 7.09, 9.02, 9.07, 9.13 , 9.14, 9.22 , 10.12, 11.02, 11.05 - 11.07, 11.10
MP.02	Align resources and planning efforts across City departments and partners to meet common goals and improve efficiencies. Tree managing staff should engage in City department planning such as updates to the City's General Plan, Parks Master Plan, and plans for climate change, greenhouse gas reductions, sustainability, and human health.	11			2023, Annually	PRD, PWD, CED	N, H, E, C	1.01, 1.02, 1.04 , 1.12, 2.09, 4.03 , 6.12, 7.05 , 9.13
MP.03	Prepare a formal document to recommend changes to tree-related code, ordinances, standards (i.e., Landscape Standards), Standard Operating Procedures, and best practices based on recommendations and priorities described in Appendix F .	17			2024	PRD, PWD, CED	N, C	1.02, 1.05, 1.06, 1.10 - 1.14, 4.03, 7.05, 9.01, 9.03, 9.04, 9.12, 9.13
MP.04	Establish tiers of achievable tree canopy goals and tree planting targets Citywide, by zoning or land use type, neighborhood, and/or district. Use the UFMP as guidance. At minimum, adopt a no-net-loss policy for public trees. Update these after completion of the high-resolution UTC assessment in 2030.	24			2027, 2032	PRD, PWD, CED	N, C, E, H	1.01 , 1.02 , 1.04 , 3.03, 5.01 , 5.14, 6.12
MP.05	Consolidate tree-related policies, guidelines, best practices, standards, and information into a tree manual for planners, developers, homeowners, HOAs, and tree care companies.	28			2030	PRD, PWD, CED	C, N	1.04, 1.05 , 1.10 - 1.13, 9.01 - 9.30, 10.02 , 10.09, 10.12

PRD = Parks and Recreation Division; PWD = Public Works Engineering or Operations Division; CED = Community and Economic Development Department; C = Community; N = Natural Environment; E = Equity; H = Human Health

ACTION TARGET 1	ACTION TARGET 2	ACTION TARGET 3	Key Issue(s) or Consideration(s)	Cost / Time	Potential Funding Mechanism
Draft tree list is reviewed (Year 1)	Master Street Tree List is adopted (Year 2)	All City-led plantings adhere to the Master Street Tree List (Year 5)	Planting the appropriate tree species ensures maximum benefits, urban forest sustainability, and resiliency.	\$\$	N/A
All entities, resources, and planning efforts identified (Year 2)	Regular meetings between departments and partners improves outcomes and efficiencies (Year 5)	Goals of participating partners are achieved (Year 40)	Partnerships and coordination enable efficient achievement of shared goals.	\$\$\$	Grant, General Fund
Recommendations in the UFMP are refined (Year 2)	A document is prepared detailing necessary amendments (Year 2)	Changes to Code and ordinances approved and enacted (Year 3)	Effective ordinances ensure long-term urban forest sustainability.	\$\$	N/A
Guidance in the UFMP and the i-Canopy assessment are used to finalize canopy goals (Year 5)	A high-resolution tree canopy assessment is completed (Year 8). Canopy goals and planting priorities are updated (Year 10)	Achievement of local and Citywide canopy goals (Year 40)	Equal access to green spaces and an equitable distribution of tree canopy provides social, economic, and environmental benefits.	\$\$\$	Grant
Updates to Code, manuals, standards, and policies are completed (Year 3)	A draft manual is prepared for each sector (Year 8)	Manuals are prepared and distributed to all sectors (Year 9)	A well managed urban forest is sustainable, resilient, lower risk, and beneficial.	\$\$\$	Grant, General Fund

Action #	Urban Forest Management Plan Action	Order	Priority	Effort	Time-frame	Lead & Collaborator(s)	Co-Benefits	Audit Reference
CT.01	Establish an urban forestry working group with regular meetings to monitor progress of implementing actions. Finalize lead implementers.	1			2022	PRD	N, C, E, H	1.01 - 11.10
CT.02	Evaluate the roles and responsibilities of the Tree Commission to align with goals and actions in the UFMP.	18			2024	PRD	N, C	4.04
CT.03	Ensure tree-related operations are represented or conducted by staff with industry credentials such as International Society of Arboriculture (ISA) Certified Arborist and Tree Risk Assessment Qualification (TRAQ) either directly through the department or supporting department.	25			2027, Annually	PRD, PWD, CED	N	2.01 - 2.03
CT.04	Stay current with industry research, science, and technology through various platforms. An example includes management of current and potential exotic tree pest and disease threats.	2			2022, Annually	PRD, PWD, CED	N	1.01 - 11.10
CT.05	Determine the necessary staff required to adequately manage tree hazards and debris within the public rights-of-way, effectively plant trees aligned with canopy goals, provide post-planting care, and enforce tree ordinances (i.e., shade requirements, mitigation plantings, replacement plantings via a "Landscape Inspector").	22			2026	PRD	N, C, E, H	2.01, 4.02, 7.01 - 7.09, 9.20, 11.01, 11.03, 11.04, 11.09, 11.10

PRD = Parks and Recreation Division; PWD = Public Works Engineering or Operations Division; CED = Community and Economic Development Department; C = Community; N = Natural Environment; E = Equity; H = Human Health

ACTION TARGET 1	ACTION TARGET 2	ACTION TARGET 3	Key Issue(s) or Consideration(s)	Cost / Time	Potential Funding Mechanism
Potential departments, partners, and sectors necessary for implementation of the UFMP identified (Year 1)	All necessary members join the workgroup (Year 1)	Meeting framework and responsibilities established (Year 1)	Coordinating implementation of the UFMP enables success.	\$	N/A
Analyze current responsibilities and charters (Year 2)	The goals for the urban forest and the Tree Commission are aligned (Year 3)	The needs of the urban forest, the programs, and the community are met (Year 40)	A city with a board or committee devoted to the urban forest enables cohesive planning, increased capacity, and shared success.	\$	N/A
Required certifications and qualifications for tree management staff identified (Year 3)	Staff maintain certifications, qualifications, and licenses (Year 6)	Staff maintain certifications, qualifications, and licenses (Year 6-40)	Staff training reduces costs and improves production, safety, levels of service, and the urban forest.	\$\$	N/A
A framework for acquiring necessary information is established (Year 1)	Budgets secured for appropriate trainings (Year 5)	Tree management staff attend relevant conferences, webinars, and trainings (Year 2-40)	Long-term planning and management of a sustainable urban forest requires continual research and practice.	\$\$	Grant, General Fund
An analysis of the tree inventory and UFMP provides the recommended staffing levels (Year 3)	A budget proposal is prepared detailing the necessary staff (Year 5)	The City has the staff and resources to manage the public tree population on a recommended rotation (Year 10)	A well managed urban forest is sustainable, resilient, lower risk, and beneficial.	\$\$\$	Landscape and Lighting Districts

Action #	Urban Forest Management Plan Action	Order	Priority	Effort	Time-frame	Lead & Collaborator(s)	Co-Benefits	Audit Reference
BF.01	Continue to seek and acquire funding and technical assistance from agencies and organizations such as the CAL FIRE, U.S. Forest Service, University Extension Services, and others.	16			2023, Annually	PRD	N, C	3.01 - 3.06
BF.02	Use the data from the Assessments and Plans actions (i.e., tree maintenance needs, tree planting needs, ecosystem services) to support budget and funding increases aligned with resource needs and actions in the UFMP.	19			2024, Annually	PRD	N, C, E	3.01, 3.03 - 3.06
BF.03	Develop an annual education and training budget for tree management staff that supports attending CEU accrediting seminars, workshops, and conferences each year. Consider the Tree Care Industry Association's Certified Treecare Safety Professional accreditation.	20			2024, Annually	PRD	N, C	2.01 - 2.03, 2.05, 2.06, 2.08, 3.01
BF.04	Based on the exploration of funding opportunities provided in the UFMP, develop a sustained funding report that details the opportunities and approaches for sustained, dedicated, and diversified funding. An example includes a pest control fee or alternative uses of the Gas Tax.	21			2025	PRD	N, C, E	3.01 - 3.06
BF.05	Establish a dedicated, sustained funding source beyond the current departmental budget for urban forestry operations to increase the level of service to meet the community's high standards.	31			2040	PRD	N, C, E, H	3.01 - 3.06

PRD = Parks and Recreation Division; PWD = Public Works Engineering or Operations Division; CED = Community and Economic Development Department; C = Community; N = Natural Environment; E = Equity; H = Human Health

ACTION TARGET 1	ACTION TARGET 2	ACTION TARGET 3	Key Issue(s) or Consideration(s)	Cost / Time	Potential Funding Mechanism
Resources of partners are utilized (Year 1)	Grant application submitted and approved for a project such as tree planting, planning, inventory (Year 2)	Grant application submitted and approved for a project such as tree planting, planning, inventory (Year 3)	Diverse funding achieves long-term UFMP goals.	\$\$	N/A
Tree inventory data and supporting information is utilized to establish annual budget (Year 3)	Tree inventory data and supporting information is utilized to establish annual budget (Year 4)	The program budget reflects the needs identified in the tree inventory, canopy assessment, and other resources (Year 20-40)	A budget should represent the needs of the urban forest, the staff to manage it, and the people living among it.	\$\$\$\$	N/A
An assessment of training needs supports budget planning (Year 3)	All tree management staff retain certifications, licenses, and qualifications (Year 6)	All staff associated with urban forest management are certified and/or appropriately trained (Year 6-40)	Staff training reduces costs and improves production, safety, levels of service, and working environment.	\$\$	Grant, Tree Fund
The feasibility of funding mechanisms provided in the UFMP are further refined and strategies are developed (Year 2)	The sustained funding report is completed (Year 4)	Strategies in the sustained funding report are implemented (Year 4-40)	A strategic approach to funding urban forest management is essential to long-term success.	\$	General Fund
Tree inventory and canopy data along with supporting information is utilized to identify any budget shortfalls (Year 10)	Strategies in the sustained funding report are fully implemented (Year 20)	A dedicated, sustained funding source is established that represents the needs of the urban forest, service levels, and community (Year 40)	Funding that is diversified, sustained, and dedicated will enable long-term success.	\$\$\$\$	N/A

Action #	Urban Forest Management Plan Action	Order	Priority	Effort	Time-frame	Lead & Collaborator(s)	Co-Benefits	Audit Reference
AP.01	Maintain an inventory of public trees and update as maintenance, removals, and new plantings occur. Encourage partners to manage a current inventory of utility trees.	3			2022, Annually	PRD	N, C	5.04 - 5.07, 5.15
AP.02	Quantify the ecosystem benefits and appropriate appraisal values of public trees to conduct a cost-benefit analyses of public trees. This informs management priorities, program structure, and raises public awareness of the urban forest benefits.	15			2023, Bi-Annually	PRD	N, C, H	1.07, 3.03, 5.02
AP.03	Complete an urban forest audit using similar criteria as the 2021 audit completed for the UFMP to evaluate improvements in urban forest management and adapt strategies.	13			2023, Bi-Annually	PRD, PWD, CED	N, C, E, H	1.01 - 11.10
AP.04	Strengthen storm and disaster preparations, mitigations, and recovery strategies, protocols, and mechanisms.	27			2028	PRD, PWD, CED	C, H, N	8.01 - 8.07
AP.05	Complete a comprehensive high-resolution Urban Tree Canopy (UTC) Assessment using industry recommended protocols to establish a baseline metric from which urban forest improvements can be measured.	29			2030	PRD	E, N	1.02, 1.04, 5.01, 5.14, 6.12, 11.02, 11.07
AP.06	Evaluate the recommendations provided in the UFMP to further strengthen the Urban Forestry Program, the tree resource, and the community framework.	26			2027, Annually	PRD, PWD, CED	N, C	1.01 - 11.10

PRD = Parks and Recreation Division; PWD = Public Works Engineering or Operations Division; CED = Community and Economic Development Department; C = Community; N = Natural Environment; E = Equity; H = Human Health

ACTION TARGET 1	ACTION TARGET 2	ACTION TARGET 3	Key Issue(s) or Consideration(s)	Cost / Time	Potential Funding Mechanism
Database updated to reflect changes to the public tree population (Year 1)	All public trees are reinventoried (Year 9)	All public trees are inventoried on a 10-year cycle and the data remains current (Year 40)	Inventories inform maintenance, resource needs, planting, and ecosystem benefits.	\$\$	Grant, General Fund
The public tree inventory is current to the extent possible (Year 1)	The ecosystem services and benefits of the public tree population is understood (Year 2)	Ecosystem services and benefits of the public tree population are routinely updated based on inventory data and industry research (Year 4)	An understanding of benefits, services, and value can be conveyed to the public and inform management.	\$	General Fund
A team to complete the updated audit is established (Year 1)	The first City-led urban forest audit is completed (Year 2)	An urban forest audit is routinely conducted every two years (Year 4-40)	Evaluations enable adaptive management.	\$\$	General Fund
Resources to support storm and disaster management are gathered (Year 4)	Changes to storm and disaster procedures are drafted (Year 6)	Procedures for urban forest and storm/disaster management is formalized in a written document (Year 7)	Preparation, response, and recovery is essential to a sustainable urban forest and public health.	\$\$\$	Grant, General Fund
A budget is prepared and approved for the UTC (Year 6)	An RFP is prepared and consultant selected to complete a UTC (Year 8)	An updated UTC is completed (Year 9) and reassessed every 5-10 years (Year 14-40)	An updated assessment of canopy gains and losses informs policy and management and offers a baseline to establish new goals.	\$\$	Grant, General Fund
The interactive recommendations worksheet is reviewed by the working group (Year 5)	The UFMP implementation and monitoring plan informs gaps and necessary changes to strategies (Year 7)	The recommendations provided in the UFMP are implemented to support the long-term vision for the urban forest (Year 40)	Goals and actions are supported by recommendations developed for each section of the UFMP.	\$\$\$	General Fund

Action #	Urban Forest Management Plan Action	Order	Priority	Effort	Time-frame	Lead & Collaborator(s)	Co-Benefits	Audit Reference
CE.01	Develop a community outreach strategy with clear and consistent language using information from the UFMP. Include updates and a dedicated page on the City's website. Coordinate the strategy as a Citywide initiative rather than a departmental effort.	10			2023	PRD, PWD, CED	C, E, N	10.01, 10.02 , 10.05, 10.11 , 10.12 , 10.15
CE.02	Continue to receive Arbor Day Tree City USA designation. Strive to achieve Arbor Day Growth Awards and Sterling status after 10 Growth Awards.	4			2022, Annually	PRD	N, C	10.05 - 10.07 , 10.14 , 10.15
CE.03	Conduct biannual community surveys to gauge public viewpoints and receive feedback on implementation of the UFMP and program success. Prioritize citizen feedback/requests and update the City website with frequently asked questions and additional resources.	14			2023, Annually	PRD	C, E, N	10.05 , 10.12
CE.04	Continue to strengthen partnerships with civic groups, non-profit organizations, Homeowners' Associations, volunteers, institutions, internal, City Council, neighborhoods, improvement districts, and non-conventional organizations aligned with goals of the UFMP. Support volunteer events and develop strategies to remove barriers to participation for all community members.	7			2022, Annually	PRD, PWD, CED	C	10.02, 10.03 , 10.15
CE.05	Provide education and workshops to the public about tree maintenance responsibilities, permitting, species selection, and proper young tree care as funding allows. Also provide information regarding unauthorized tree plantings, invasives, and management of volunteer trees. At minimum, share this information quarterly on social media, the City's website, and other communication platforms. Align these efforts with Action CE.01 for a community outreach strategy.	8			2022, Annually	PRD, PWD, CED	C, N	10.02 , 10.05, 10.11 - 10.13, 10.15 , 11.01, 11.03, 11.09, 11.10

PRD = Parks and Recreation Division; PWD = Public Works Engineering or Operations Division; CED = Community and Economic Development Department; C = Community; N = Natural Environment; E = Equity; H = Human Health

ACTION TARGET 1	ACTION TARGET 2	ACTION TARGET 3	Key Issue(s) or Consideration(s)	Cost / Time	Potential Funding Mechanism
Information from the UFMP is compiled and outreach strategies are drafted (Year 1)	UFMP outreach strategies are coordinated with other City departments and efforts (Year 2)	A community outreach plan clearly defines the messaging and approaches (Year 2)	Consistent messaging resonates with the audience.	\$\$	Grant, Tree Fund
Receive Tree City USA recognition (Year 1)	Receive Tree City USA and Growth Award recognition annually (Year 5)	Receive Tree City USA recognition and Sterling status (Year 5-40)	A city must demonstrate that it cares about its urban forest and manages it as a priority.	\$\$	Grant, Tree Fund, General Fund
Survey responses from the UFMP project are examined and addressed (Year 1)	An online survey is launched to gather input and feedback (Year 2)	An online survey is launched bi-annually and feedback is received from all neighborhoods, demographics, and cultures (Year 4-40)	Gathering feedback and input from the community informs future strategies, messaging, and resource needs.	\$\$	Grant, General Fund
A network of existing and potential partners is identified using the UFMP and community outreach plan (Year 1)	A diverse network of partners exists with clear communications and roles defined (Year 5)	A diverse network of partners exists representing all City neighborhoods, demographics, and cultures (Year 20-40)	Partnerships enable efficient achievement of shared goals.	\$\$\$	Grant, Tree Fund
Information is gathered and aligned with the community outreach strategy (Year 1)	Community members reached and engaged increases by 25% (Year 10)	Observations show a decrease in tree malpractices on viewable private property (Year 20-40)	Readily available information raises awareness and increases support to achieve common goals.	\$\$\$	Grant, Tree Fund, General Fund

Action #	Urban Forest Management Plan Action	Order	Priority	Effort	Time-frame	Lead & Collaborator(s)	Co-Benefits	Audit Reference
GA.01	Prioritize young and large tree maintenance, removals, and risk tree assessments based on updated inventory data and resources. Update the maintenance regimen (number of public trees pruned annually) by evaluating inventory data, program structure, available resources, and demands.	5			2022, Annually	PRD	N, C, H	11.01, 11.03, 11.09, 11.10
GA.02	Coordinate with other City departments to maximize the number of trees planted through Capital Improvement Programs and stormwater management projects. Establish procedures for replacing damaged trees during infrastructure replacement projects.	12			2023, Annually	PRD, PWD, CED	N, H, E	1.02, 1.04 , 2.09, 4.03 , 6.10, 6.12
GA.03	Develop a more strategic approach to tree species and site selection using the Master Street Tree List (2022 UFMP) to ensure the resilience and optimize ecosystem service provision of Los Banos' urban forest. Plant and grow a diverse urban forest with species representing no more than 10% of the public tree population.	23			2026, 2042	PRD, PWD, CED	N, H	1.01, 1.02, 1.04, 9.14, 9.22, 11.05, 11.06 , 11.09
GA.04	Use Citywide tree inventory data and best available science for long-term planning and management of existing and future tree pests and diseases impacting the City's urban forest. Consider new research and guidance such as the 5% tree genera diversity rule (Ball, 2015).	6			2022, Annually	PRD	N, H	7.09, 11.09
GA.05	Use the results of an updated high-resolution Urban Tree Canopy (UTC) Assessment to prioritize tree plantings based on low existing tree cover and enhancing benefits provided by trees.	30			2031	PRD	N, E, C, H	1.01, 1.02, 1.04 , 6.12

PRD = Parks and Recreation Division; PWD = Public Works Engineering or Operations Division; CED = Community and Economic Development Department; C = Community; N = Natural Environment; E = Equity; H = Human Health

ACTION TARGET 1	ACTION TARGET 2	ACTION TARGET 3	Key Issue(s) or Consideration(s)	Cost / Time	Potential Funding Mechanism
Service requests and maintenance continue to be prioritized by the Urban Forestry Program (Year 1)	Service requests and routine maintenance continue to be prioritized by the Urban Forestry Program (Year 2)	All public young trees receive proper training and established trees are maintained on a recommended rotation (Year 10-40)	Priorities enable appropriate management within the confines of resources.	\$\$\$	General Fund, Grant
Regular meetings to identify opportunities to collaborate (Year 2)	Trees effectively integrated into all City projects where feasible (Year 10)	A shared commitment achieves local and Citywide tree canopy goals (Year 40)	Partnerships and coordination enable efficient achievement of shared goals.	\$\$	General Fund, Grant
An analysis of the tree inventory and UFMP informs changes to the tree species planting palette (Year 2)	Tree planting aligns with canopy, resiliency, and ecosystem services goals (Year 5)	The urban forest is sustainable, resilient, and equitable (Year 40)	A diverse urban forest is resilient to tree pests and diseases and climate change but must be planted according to tree and site requirements, timing, and desired function.	\$\$\$	Grant, General Fund
Tree inventory data is analyzed and cross-examined with industry research (Year 4)	Plans for tree planting, pest and disease management, and sustainability are developed (Year 10)	The urban forest is sustainable, resilient, and equitable (Year 40)	A well managed urban forest is sustainable, resilient, lower risk, and beneficial.	\$\$\$	General Fund
Scope of Work established (Year 7)	RFP released and consultant selected (Year 8)	UTC completed, canopy goals are updated, and tree plantings are prioritized (Year 10)	Equal access to green spaces and an equitable distribution of tree canopy provides social, economic, and environmental benefits.	\$\$	General Fund, Grant

APPENDIX F. TREE ORDINANCE RECOMMENDATIONS

TITLE 10 PARKS AND RECREATION

CHAPTER 1 TREES, SHRUBS, AND PLANTS

Sec. 10-1.01 Title and purpose.

- (a) This chapter shall be known as the “Tree Regulations” and may be cited as such. Purpose. Title 10 is adopted to acknowledge that the City of Los Banos City Council finds that:
- (1) Street trees are of economic, environmental, and aesthetic importance to the City.
 - (2) The City requires the planting of street trees as part of subdivision developments and along major streets to enhance the character of the City.
 - (3) Street trees directly benefit the City residents by:
 - (i) Reducing erosion of the top soil by breaking the summer winds;
 - (ii) Reducing air pollution by the production oxygen from carbon dioxide;
 - (iii) Increasing property values;
 - (iv) Maintaining the ecological balance of the area;
 - (v) Providing shade and buffering the noise and glare; and
 - (vi) Providing energy conservation by the reduction of summer temperatures;
 - (vii) Mitigating and adapting the effects of climate change; and
 - (viii) Improving overall human health and well-being.
 - (4) The health and safety and general welfare of the citizens will best be served by regulating the removal, severe pruning, topping and planting of street trees and encouraging the reforestation of areas in which street trees have been removed.
 - (5) There is a need for a comprehensive plan for the selection and protection of Historical and Heritage Trees in the City of Los Banos. (§ 1, Ord. 1085, eff. December 5, 2008)
 - (6) Requirements and regulations within this ordinance are measures in place for the city to adopt a “no net loss” policy around the extent of the city’s urban forest tree canopy cover.
 - (7) The City of Los Banos strives to align goals, analyses, and policies around tree canopy cover, tree plantings, and climate mitigation strategies in the 2022 Urban Forest Management Plan, the 2009 General Plan and planned update, and the 2020 Parks Master Plan

Sec. 10-1.02 Definitions.

For the purpose of this chapter, the words listed in this section shall have the meaning set forth in this section.

Words used or defined in one tense or form shall include other tenses and derivative forms. Words in the singular number shall include the plural number and words in the plural number shall include the singular number. The masculine gender shall include the feminine, and the feminine gender shall include the masculine, this shall be extended to apply to partnerships, firms, and corporations or other similar entities. The words “shall” and “must” are mandatory. The word “may” is permissive. The word “person” includes individuals, firms, corporations, associations, trusts, and any other similar entities. The word “Los Banos” refers to the City of Los Banos. The word “jurisdiction” includes all public lands and rights-of-way included within the corporate limits of the City of Los Banos.

The following terms shall have the meanings herein ascribed to them:

- “Arterial” shall mean heavy traffic carrying streets of Los Banos that function to move intra-city and inter-city traffic.
- “City arborist” shall mean City Employee or Contracted Company hired by the City that is an expert in the cultivation and care of trees.
- “Collector street” shall mean streets whose primary function is to collect traffic from an area and move it to a major thoroughfare or arterial while also providing substantial service to abutting land use.

- “Commission” refers to the Parks and Recreation Commission of the City of Los Banos.
- “Community development department” refers to the Planning Department of the City of Los Banos.
- “Community forest” shall mean those trees and shrubs located within municipal limits.
- “Council” refers to the Los Banos City Council.
- “Director” refers to the Director of Public Works.
- “Director of Public Works” refers to the Director of the Public Works Department of the City of Los Banos.
- “Drip line” shall mean the protected zone of the tree. The drip line is the outer most location of the tree’s branches perpendicular to the ground surface. Also referred to as the Tree Protection Zone, the Root Protection Zone, or the Critical Root Zone.
- “Graft union” shall mean the place on the stem of a plant where the bud is joined to the rootstock or trunk. It is usually indicated by a slight swelling.
- “Landscape Standards” shall mean standards of landscape design for the City of Los Banos.
- “Landscape Standards for the City of Los Banos” shall mean policy stated in Ordinance No. 1059 Section 10-2.04 of the City of Los Banos Municipal Code.
- “Landscaping” shall mean primarily the planting of vegetation of all types and shall also include as secondary accents the installation of exterior decoration, furniture, sculpture or structures, retaining walls, water features, including on-premises monument signs, and flagpoles, the preservation and enhancement of land forms and natural land features, the location and construction of aesthetically pleasing and functional approaches for structures, roadways, pedestrian ways, and enclosures, and the enhancement of the environment for human habitation by climate control, air movement, pollution control, and aesthetics.
- “Local street” see Collector Street.
- “Los Banos” shall mean the City of Los Banos, California.
- “Municipal Code” shall mean the City of Los Banos Municipal Code as compiled and amended or any subsequent code of this City.
- Owner. The word “owner” shall mean the legal owner of real property fronting on any street of the City, and any lessee of such owner.
- “Parks and Recreation Operations Manager” refers to the Parks and Recreation Operations Manager of the City of Los Banos.
- “Planning Director” refers to the Director of Planning for the City of Los Banos.
- “Plant” shall mean any multi-cellular organism of the kingdom Plantae characteristically containing chloroplasts, having cellulose walls, lacking power of locomotion and reproducing by seeds or spores.
- “Planting easement” refers to the portion of land made available as a public easement for the purpose of planting and maintaining City street trees.
- “Public lands” shall mean those lands owned by the City of Los Banos.
- “Public places” shall include all grounds owned by the City.
- “Public street” shall mean and include all roads, streets, avenues, boulevards, alleys, parkways, and other public right-of-way, or any portion thereof, of the City.
- “Public trees” shall mean those trees located on public lands.
- “Recreation Commission” shall mean those members appointed to establish policies, regulations and standards to protect the community forest in Los Banos, California.
- “Rights-of-way” shall mean those lands in the public ownership along public roads or easements.
- “Shrub” shall mean a low woody perennial plant usually having several major branches.
- “Shrubbery” shall mean an area where a number of shrubs are planted.
- “Street” shall mean and include all roads, streets, avenues, boulevards, alleys, parkways, and other public rights-of-way, or any portion thereof, of the City.
- “Street Tree Easement” shall mean a strip of land identified on a tract map, parcel map, or other instrument for the planting of street trees.

- “Tree” shall mean a perennial woody plant having a main trunk and usually a distinct crown. (§ 1, Ord. 1085, eff. December 5, 2008)
- “Tree Protection Zone” shall mean the protected zone of the tree where, at minimum, extends to the tree’s drip line. The drip line is the outer most location of the tree’s branches perpendicular to the ground surface. Also referred to as the Tree Protection Zone, the Root Protection Zone, or the Critical Root Zone.

Sec. 10-1.03 Maintenance of trees within the public right-of-way and street tree easements.

The City of Los Banos shall have the right to plant, prune, maintain and remove trees, plants and shrubs within the lines of all streets, alleys, avenues, squares, parkways, public rights-of-way, street tree easements and public grounds, as may be necessary to ~~insure~~ ensure public safety or to preserve or enhance the symmetry and aesthetics of such public grounds ~~or to address sustainability, climate change impacts, and tree canopy cover expansion~~. The City may remove or cause to be removed any tree or part thereof which is in an unsafe condition or which by reason of its nature is injurious to electric power lines, gas lines, water lines or other public improvements or is infected with any injurious fungus, insect or pest.

The Public Works Director shall have the power to designate the kind or variety of trees, shrubs, and plants to be planted upon any street, park, pleasure ground, boulevard, alley, public right-of-way or public place in the City subject to the supervision of the City Manager; provided, however, the owners of property fronting on any street, alley, or public place may petition the Council that such trees, shrubs, or plants shall be a certain kind or variety. The decision of the City Council shall be final. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.04 Requests for permits to prune, maintain or remove trees within the public right-of-way and street tree easements.

No person shall cut, trim, prune, plant, remove, injure, or interfere with any tree, shrub, or plant upon any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easements or public place in the City without a permit issued by the Public Works Director [~~“Director”~~]. ~~The permitted authority must be accredited by the International Society of Arboriculture as a Certified Arborist~~. The Public Works Director is hereby authorized to grant such permit ~~in his~~ with the Director’s discretion and, where necessary, subject to the condition that the removed tree be replaced by an official tree meeting the specifications of the City. No such permit shall be valid for a longer period than thirty (30) days after its date of issuance.

- (a) Planting street trees. A permit shall be obtained from the Director by any person proposing to plant or set out any tree on any parkway or street right-of-way that is not a part of an approved landscape plan, meeting current City Standards.
 - (1) The application required herein shall state the number of trees to be planted or set out, the location, grade, and variety of each tree, the method of planting and such other information as the Director may require.
 - (2) The Director shall issue the permit upon finding that the proposed species, location and method of planning are consistent with the requirements of this chapter and will not be injurious to the curbs, gutters and sidewalks or to the surrounding neighborhood.
- (b) Root pruning and removal. No person shall ~~cut~~ roots, prune ~~branches~~, transplant or remove any tree on public property or within the City right-of-way without first filing an application and procuring a permit to do so from the Director.
 - (1) Any root pruning, tree pruning, transplanting, or removing of street trees and other trees in the public right-of-way shall be done by a Certified Arborist (or other qualified individual) as approved by the Director. For tree removals, an arborist report shall be prepared by a Certified Arborist, Consulting Arborist, or other qualified individual as approved by the Director to determine the basis for removal.
 - (2) A person may not remove a street tree except:
 - (i) When authorized by a street tree permit; or
 - (ii) By an approved development plan; or

- (iii) When part of a building or planning project; or
- (iv) When a private tree is a hazard or nuisance to the public as determined by the Director; or
- (v) When authorized by the Director in an emergency.
- (3) A person removing a street tree must timely grind the stump to 24 inches below grade or remove it, and repair any damage to right-of-way improvements caused by the grinding or removal. A person must obtain an encroachment permit before making any repairs to right-of-way improvements.
- (4) The street tree removed must be timely replaced for a “no net loss” approach if the site is deemed viable for a replacement tree as determined by the Director.
 - (i) Street trees shall have a minimum soil volume as follows: 600 cubic feet for small trees, 1,000 cubic feet for medium trees, 1,500 cubic feet for large trees.
- (5) The Director may issue a nonemergency street tree permit to remove a street tree when one or more of the following criteria is clearly met:
 - (i) The tree poses a substantial hazard to people or property and cannot otherwise be feasibly restored to a safe condition.
 - (ii) The tree is dead, dying or has a short life expectancy.
 - (iii) The tree is seriously diseased and cannot be feasibly restored.
 - (iv) The tree is part of a group that is overcrowded and removal would contribute to the health and vigor of nearby trees whose preservation is more desirable. To qualify for this criterion, the tree must have any combination of two (2) of the following traits, characteristics, or conditions:
 - (A) Phototropic lean – significant lean and/or stem curvature caused by a tree reaching for sunlight;
 - (B) Death of lower branches due to competition with other trees;
 - (C) Allelopathy – chemical inhibition of growth and development of one plant by another;
 - (D) Proximity trees are within the dripline of the tree in question for removal;
 - (E) Dead or dying and declining vigor;
 - (F) Infested with tree pests and/or disease.
 - (v) The tree has extensively damaged a utility (sewer, water main, power lines, etc.) or is significantly interfering with overhead utilities and the problem cannot be remedied by other reasonable means including appropriate pruning.
 - (vi) Prior to a decision on tree removal of a tree that has extensively damaged concrete, preventative measures (such as deep-watering and root pruning) must be applied or considered for the tree, and preservation methods as defined by the Director must be pursued. If it is determined that damage cannot be repaired without removal of the tree, the removal may be approved. A request to remove a street tree due to damaged hardscape or infrastructure cannot be considered or approved unless repair or replacement of the hardscape or infrastructure is planned.
 - (vii) The tree has been damaged to an extent that it cannot be feasibly restored.
- (6) A person desiring to remove a street tree must state in detail the grounds for removal on the permit application.
- (c) Tree trimming. No person shall prune or trim, cut off or perform any work on a single occasion or cumulatively over a three (3) year period, affecting twenty-five (25%) percent or more of the crown of any tree on public property or within the City right-of-way without first filing an application and procuring a permit to do so from the Director.
 - (1) The pruning of street trees must comply with the pruning standards prescribed by the current version of Tree Pruning Guidelines, published by the International Society of Arboriculture, American National Standards Institute (ANSI) A300 Pruning Standards, or such other standards or methods as expressly authorized in writing by the Director.
 - (2) Notwithstanding subsection (c) of this section, topping of street trees is prohibited unless specifically authorized in writing by the Director based on clear evidence of extraordinary circumstances justifying topping in the particular situation.
- (d) No fee shall be charged for any permit issued pursuant to this subsection.
- (e) Permit issuance. The Director shall issue the permit upon finding that the proposed action is necessary to protect the curb, gutter, or sidewalk or to protect public health and safety and that the proposed action is found to be in conformance with industry standards for the care and maintenance of trees, shrubs, and plants. The Director may issue the permit if the proposed removal or trimming is found to be consistent with the purposes of this chapter. The Director may condition any permit for removal of a street tree, granted pursuant to this section, so as to require the permittee to replace the street tree.

- (f) Time of performance. All work performed on street trees pursuant to a permit issued by the Director under this section shall be done within thirty (30) days from the issuance of said permit or within such longer period as the Director shall specify.
- (g) This permit requirement proposed by this section is not satisfied by approval of other City departments or under City contracts.
- (h) The Director may issue permits to Public Utilities not to exceed one year of work undertaken by the utility pursuant to a comprehensive program if related activities are approved by the Director. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.05 Request to maintain public utilities within the public right-of-way that may require the cutting or trimming of trees.

It shall be the duty and responsibility of any public utility installing or maintaining any overhead wire or underground pipes or conduit in the vicinity of a parkway strip, to obtain permission from the Director before performing any maintenance on said wires, pipes or conduits, which would cause injury to street trees. Such public utilities shall in no way injure, cut roots, deface, prune or scar any street tree until their plans and procedures have been approved by the Director and a permit issued. The entity may file for permission from the Director by a written request. Such request shall describe the work desired to be done and it shall be within the discretion of the Director to require a written agreement upon the part of the petitioner to pay the cost thereof and to do such work in the way stipulated by the Director before the issuance of any permit under this chapter. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.06 Permits required for utility companies to prune, maintain or remove trees in the public right-of-way and street tree easements.

Any person, firm, or corporation maintaining any overhead wires or any pipes or underground conduits along or across any street, park, pleasure ground, boulevard, alley, public right-of-way or public place in the City or owning any property abutting upon any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place in the City shall obtain a permit to prune, maintain or remove a street tree within the public right-of-way. It shall be within the discretion of the Public Works Director to require a written agreement upon the part of the petitioner to pay the costs of such work and to do such work in the way stipulated by the Public Works Director before the issuance of any permit therefore. (§ 1, Ord. 1085, eff. December 5, 2008)

- (a) The pruning of street trees for the clearance of any overhead wires or any pipes or underground conduits along or across any street, park, pleasure ground, boulevard, alley, public right-of-way or public place in the City or owning any property abutting any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place in the City must comply with the pruning standards prescribed by the current version of Tree Pruning Guidelines, published by the International Society of Arboriculture, American National Standards Institute (ANSI) A300 Pruning Standards, or such other standards or methods as expressly authorized in writing by the Director.
- (b) Notwithstanding subsection (c) of this section, topping of street trees is prohibited unless specifically authorized in writing by the Director based on clear evidence of extraordinary circumstances justifying topping in the particular situation.

Sec. 10-1.07 Property owner requirements to maintain private trees that may affect the public right-of-way or the community forest.

- (a) Any person, firm, or corporation owning or occupying real property bordering on any street where trees have branches, limbs, trunks or other parts projecting into the public right-of-way shall prune such trees or keep them trimmed in such a manner that they will not obstruct or shade streetlights, obstruct or interfere with the passage of pedestrians on sidewalks, obstruct the vision of traffic signs or obstruct the views of any street or alley intersection according to the current version of Tree Pruning Guidelines, published by the International

Society of Arboriculture, American National Standards Institute (ANSI) A300 Pruning Standards, or such other standards or methods as expressly authorized in writing by the Director.

- (b) Any person owning or occupying real property bordering on any street, park or other public property, on which there may be trees that are diseased or insect infested, shall remove, spray or treat any such trees in a manner that will not infect or damage nearby public vegetation or cause harm to the community or citizens therein. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.08 Protection of trees during building construction, repairs, or removal.

During the erection, repair, alteration, or removal of any building, house, or structure in the City no person in charge of such work shall leave any tree, shrub, or plant in any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place in the City in the vicinity of such building or structure without such good and sufficient guards or protectors as shall prevent injuries to such tree, shrub, or plant arising out of or by reason of such erection, repair, alteration, or removal. **Protection and operation around existing trees during building construction, repairs, or removal shall adhere to the American National Standards Institute's (ANSI) A300 Construction Management Standard (Part 5).**

For the purpose of safeguarding trees during construction, the following conditions shall apply:

- (a) Damage to any tree during construction shall be immediately reported to the Director by any person causing such damage, the responsible contractor, or the owner of the site and such persons shall be required to treat the tree for such damages as specified by the Director;
- (b) Oil, gasoline, chemicals and other construction materials or equipment which might be harmful to trees shall not be stored under the drip line or upslope of the tree(s);
- (c) Drains shall be installed according to City specifications so as to avoid harm to the tree due to excess watering;
- (d) Cutting and filling around the base of the tree shall be done only after consultation with the Director and then only to the extent authorized. The Director may require professional consultation, at the applicant's cost, to make appropriate determinations;
- (e) No paint thinner, paint, plaster or other liquid or solid excess or waste construction materials or waste water shall be dumped on the ground or into any grate between the drip line and the base of the tree or uphill from any tree where such substance might reach the roots through a leaching process;
- (f) Tree protection fences (minimum three (3') foot high visibility fence with metal posts at minimum every ten (10') feet) shall be installed at the drip line to prevent compaction and injury to a tree's surface roots to prevent exposing the trees to disease causing organisms. **Fences shall include signage stating the purpose of the fence is to delineate the tree protection zone;**
- (g) Wherever cuts are made in the ground near the roots of a tree, appropriate measures **according to ANSI A300 – Part 8 2020 Root Management Standard shall** be taken to prevent exposed soil from drying out and causing damage thereto. All cuts within the drip line of a tree are to be made by hand (no backhoes or graders);
- (h) Trimming cuts one inch in diameter and over must be covered at the time the cuts are made with a tree seal pruning compound approved by the Director. All root pruning is to be done by hand. (§ 1, Ord. 1085, eff. December 5, 2008)
- (i) **If a person removes and/or damages a tree— as defined in this section (Sec. 10-1.08)— without authorization, the person and the adjoining property owner shall be jointly and severally liable for restitution, as determined by the Public Works Director. The restitution required by this subsection shall be determined in accordance with the standards for mitigation below.**
 - (1) **Replacements for trees removed shall, if reasonably possible, provide total beneficial attributes at least equivalent to those of the tree(s) to be replaced. For example, when replacing a tree whose principal beneficial attribute is aesthetic, the replacement tree(s) should provide equivalent aesthetic quality in terms of size, height, location and other beneficial aesthetic attributes.**
 - (2) **Subject to the provisions of subsection (e) of this section, replacement trees shall generally be planted on the same lot as were the trees removed, and the species and location of the replacement tree(s) shall be approved by the Public Works Director.**

- (3) When the value of a tree must be established to apply the provisions of this section, such value shall be calculated by the Public Works Director in accordance with the latest edition of the Guide for Plant Appraisal as prepared by the Council of Tree and Landscape Appraisers or a similar successor resource.
- (4) When, because of lot size, configuration or development, or size, age or other characteristics of the tree to be replaced, it is not reasonably possible to provide an equivalent on-site replacement tree or trees, replacement equivalency may be established, at the discretion of the city, using one or a combination of the following standards:
 - (i) The total DBH of the replacement tree(s) is at least equal to the DBH of the tree(s) to be replaced, and the replacement tree(s) will at maturity be similar in size and character to the tree(s) to be replaced.
 - (ii) The total value of the replacement tree(s), or cash payment to the city in lieu of replacement, or a combination of the total value of the replacement tree(s) plus such cash payment is at least equal to the value of the tree(s) to be replaced.
- (5) Notwithstanding any other provision of this section, in the case of removal of a tree from a public street right-of-way or easement, the city may require mitigation to be made entirely by cash payment.
- (6) Replacement trees shall be planted in accordance with standard details that are on file and available for review and/or as authorized by the Public Works Director.
- (7) The mitigation required by this section may be waived or reduced in the following circumstances:
 - (i) Removal of the tree has a beneficial effect on the city's urban forest;
 - (ii) The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal; or
 - (iii) Following an unauthorized tree removal, the Public Works Director determines that removal would have been authorized had timely application been made. The burden of proving that removal would have been authorized is on the person(s) responsible for mitigation.
- (8) When a cash payment is received, the city shall use the proceeds as follows:
 - (i) To plant or upgrade street trees throughout the city;
 - (ii) To beautify or enhance public places, including parks and open spaces, by the planting of trees;
 - (iii) To fund any administrative activity directly related to the advertising, promotion and execution of the provisions of this chapter as well as any other activities that will benefit the city's urban forest; or
 - (iv) To proactively prune or remedy public street trees deemed a priority by the Public Works Director to maintain public safety and urban forest health and sustainability.
- (e) The administrative penalty amount that may be imposed for violation of Section Sec. 10-1.08 shall be as set forth in this subsection.
 - (1) A person damaging a street tree is subject to a fine in the amount of:
 - (2) Two hundred fifty dollars for the first offense;
 - (3) Seven hundred fifty dollars for the second offense; and
 - (4) One thousand dollars for the third and subsequent offenses; or
 - (5) A person who damages a street tree either knowingly or with intent to injure a tree is subject to a fine in the amount of \$1,000 for each offense.
 - (6) The penalties listed above are separate from any costs, fees, or fines associated with tree replacements, tree mitigation, arborist reports, and fee in lieu (Sec. 10-1.08.i.iv.2).

Sec. 10-1.09 The designation and protection of heritage trees.

The following standards shall govern the treatment of Heritage Trees.

- (a) Purpose. The purpose of these regulations is to protect certain trees in order to preserve cultural heritage, maintain and enhance the scenic beauty of the community, to provide shade, improve air quality, assist in abating soil and slope erosion and preserve and enhance property values, thus promoting the public health, safety and welfare.
- (b) Applicability. These regulations regulate the maintenance and removal of trees that are sited on private property.
- (c) Heritage Tree defined. As used in this section "Heritage Tree" means, upon nomination by any person and with the written consent of the property owner(s), any tree or group of trees recommended by the Parks and

Recreation Commission and identified by City Council resolution upon a finding that the tree or group of trees is:

- (1) Of historic value because of its association with a place, building, natural feature or event of local, regional, national or historic significance; or
- (2) Identified on any historic or cultural resources survey as a significant feature of a landmark, historic site or historic district; or
- (3) Representative of a significant period of the City's growth or development and was the result of a planting dedicated by citizens, civic groups or the City; or
- (4) Identified because of its age, beauty, and/or uniqueness, especially if representative of a species that has significance in natural history and/or ecology; or
- (5) The tree provides vital wildlife habitat for endangered or protected species; or
- (6) The tree is a native tree or a tree of exceptional adaptability to the Los Banos area which has a special significance to the community; or
- (7) Any other factor causing the tree to have a special and important significance to the community as determined by the Public Works Director.

After City Council approval of a Heritage Tree designation, the City Clerk shall notify the property owner(s) in writing. A listing of trees so designated as a Heritage Tree, including the specific locations thereof, shall be kept by the Public Works and Planning Departments. Once designated, a Heritage Tree shall be subject to the provisions of this section unless removed from the list of Heritage Trees by action of the City Council. The City Council may remove a tree from the list upon its own motion or upon written request by the property owner.

- (d) Maintenance and preservation of Heritage Trees. Any person who owns, controls, has custody or possession of any real property within the City shall use reasonable efforts to maintain and preserve all Heritage Trees located thereon in a state of good health pursuant to the provisions of this section. Failure to do so shall constitute a violation of this section. Any person who conducts any grading, excavation, demolition or construction activity on property shall do so in such a manner as to not threaten the health or viability or cause the removal of any Heritage Tree. Any work performed within a radius of ten (10) times the diameter of the tree from the center of the trunk (i.e., the tree protection zone) shall require submittal of a tree protection plan for review and approval by the Director of Public Works or designee prior to issuance of any permit for grading or construction. The tree protection plan shall be prepared by a certified arborist and shall address issues related to protective fencing and protective techniques to minimize impacts associated with grading, excavation, demolition and construction and shall be in alignment with the American National Standards Institute's (ANSI) A300 Construction Management Standard (Part 5). The Director of Public Works or designee may impose conditions on any City permit to assure compliance with this section.
- (e) Removal and major pruning of Heritage Trees prohibited. It is unlawful for any person to remove, or cause to be removed any Heritage Tree from any parcel of property in the City, or prune more than one-fourth (1/4) of the branches or roots within a twelve (12) month period, without obtaining a permit; provided, that in case of emergency, when a tree is imminently hazardous or dangerous to life or property, it may be removed by order of the Police Chief, Fire Chief, the Director of Public Works or their respective designees. Any person who vandalizes, grievously mutilates, destroys or unbalances a Heritage Tree without a permit or beyond the scope of an approved permit shall be in violation of this section.
- (f) Tree permit required. Any person desiring to remove one or more Heritage Trees or perform major pruning shall apply for a permit pursuant to procedures established by the Director of Public Works and shall pay a fee established by the City Council. It is the joint responsibility of the property owner and party removing the Heritage Tree or trees, or portions thereof to obtain the permit. The Director of Public Works or designee may only issue a permit for the removal or major pruning of a Heritage Tree if he or she determines there is good cause for such action. In determining whether there is good cause, the Director of Public Works or designee shall give consideration to the following:
 - (1) The condition of the tree or trees with respect to disease, danger of falling, proximity to existing or proposed structures and interference with utility services;

- (2) The necessity to remove the tree or trees in order to construct proposed improvements to the property;
- (3) The topography of the land and the effect of the removal of the tree on erosion, soil retention and diversion or increased flow of surface waters;
- (4) The long-term value of the species under consideration, particularly lifespan and growth rate;
- (5) The ecological value of the tree or group of trees, such as food, nesting, habitat, protection and shade for wildlife or other plant species;
- (6) The number, size, species, age distribution and location of existing trees in the area and the effect the removal would have upon shade, privacy impact and scenic beauty;
- (7) The number of trees the particular parcel can adequately support according to good arboricultural practices;
- (8) The availability of reasonable and feasible alternatives that would allow for the preservation of the tree(s).
- (g) Hearings and appeals. Hearings and appeals of the decision of the Public Works Director or designee shall be conducted in the same manner as provided by Sections 9-3.2226 through 9-3.2228.
- (h) Exceptions. Tree permits are not required and trees may be removed in compliance with the provisions of this section under the following provisions:
 - (1) Removal of any tree on private property not classified or listed as a Heritage Tree;
 - (2) Routine maintenance, including trimming of street trees and trimming of trees on private property by a utility company licensed by the Public Utilities Commission to maintain required clearances around utility installations;
 - (3) Emergency circumstances, if personal injury or property damage is eminently threatened in the sole judgment of the Public Works Director, Planning Director, Police Chief, Fire Chief, or City Manager;
 - (4) Removal of a Heritage Tree that is dead or so diseased or damaged that it is no longer viable, as determined by the Public Works Director.
- (i) Heritage Tree protection guidelines. Development proposals shall protect and preserve Heritage Trees to the fullest extent possible. Care shall be exercised by all individuals, builders, contractors and others working near protected trees so that no damage occurs to such trees. The following measures shall be used to preserve and protect the health of trees to remain, relocated trees and new trees planted to replace those removed.
 - (1) All trees to be saved shall be enclosed by a construction barrier placed around the protected zone of the tree **as defined in the City's Landscape Standards and Specifications**, including, but not limited to, chain link fencing or other material acceptable to the Public Works Director, prior to the issuance of any grading or building permit and prior to the commencement of work. Barriers are to remain intact until construction is complete and may not be removed without the written consent of the Planning Director. **Fences shall include signage stating the purpose of the fence is to delineate the tree protection zone.**
 - (i) **Protected zone of the tree shall be, at minimum, the extent of the tree's drip line. The drip line is the outer most location of the tree's branches perpendicular to the ground surface. Also referred to as the Tree Protection Zone, the Root Protection Zone, or the Critical Root Zone.**
 - (2) When proposed development or other site work is to encroach into the protected zone of a tree, special measures shall be incorporated **and approved by the Public Works Director** to allow for safe and healthy conditions for protected trees.
 - (3) Any excavation, cutting, filling, paving or construction of the existing ground surface within the protected zone of a tree shall be ~~minimized~~ **prevented by reasonable measures determined by the Public Works Director**. No adverse significant change in existing ground level shall occur within the drip line of a protected tree.
 - (4) Development proposals shall be configured to retain as many Heritage and significant trees as possible.
 - (5) Construction equipment and material shall not be stored within tree protection areas. No oil, gas, chemicals or other substances that may be harmful to trees shall be stored or dumped within the protected zone or any other location on the site from which such substances might enter the protected zone.
 - (6) Trenching within the protected zone of trees shall be avoided wherever possible. Trenching for utilities shall avoid major roots and, if avoidance is impractical, tunnels shall be made below roots. Trenching is to

be consolidated to serve as many units as possible. Trenching within the protected zone shall be done by hand to minimize impacts.

- (7) Additional measures may be imposed by the Public Works Director to protect and preserve the health of the trees to remain, relocated trees and new trees planted to replace those that are removed.
- (j) Enforcement—Remedies for violation. In addition to all other remedies set forth in this code or otherwise provided by law, the following remedies shall be available to the City for violation of this section:
 - (1) Civil penalties.
 - (a) As part of a civil action brought by the City, a court may assess against any person who commits, allows, or maintains a violation of any provision of this section a civil penalty in an amount not to exceed Five Thousand and No/100ths (\$5,000.00) Dollars per violation.
 - (b) Where the violation has resulted in damage, mutilation, disfigurement, or removal of a tree, whether through vandalism, improper pruning, or other actions, the civil penalty shall be in an amount not to exceed ~~Five~~ **Ten** Thousand and No/100ths (~~\$5,000.00~~) Dollars per tree, or the replacement value of each such tree, whichever amount is higher. Such amount shall be payable to the City. Replacement value for the purposes of this section shall be determined utilizing the most recent edition of the “Guide for Plant Appraisal,” published by the Council of Tree and Landscape Appraisers.
 - (2) Injunctive relief. A civil action may be commenced to abate, enjoin, or otherwise compel the cessation of such violation.
 - (3) Costs. In any civil action brought pursuant to this section in which the City prevails, the court shall award to the City all costs of investigation and preparation for trial, the costs of trial, reasonable expenses including administrative costs incurred in prosecuting the action, and reasonable attorney fees. (§ 1, Ord. 1091, eff. May 21, 2010)

Sec. 10-1.10 Interference with City employees while conducting tree planting or maintenance.

No person shall interfere with the Public Works Director or persons acting under his/~~her~~ authority while engaged in planting, mulching, pruning, trimming, spraying, treating, or removing any tree, shrub, or plant in any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place in the City or in the removal of any stone, cement, or other substance from about the trunk of any tree, shrub, or plant in any such street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.11 The placement of deleterious substances on or around trees in the public right-of-way.

No person shall cause, authorize, or procure any brine water, oil, liquid, dye, or other substance deleterious to tree life to lie, leak, pour, flow, or drip upon or into the soil about the base of any tree, shrub, or plant in any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place in the City or onto any sidewalk, road, or pavement within the City at a point from which such substance may be lying upon or flowing, dripping, or seeping into such soil to injure such tree, shrub, or plant or to otherwise harm or kill any such tree, shrub, or plant. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.12 Impeding free access of water to trees in the public right-of-way.

No person without the approval of the Public Works Director shall place or maintain any stone, cement, or other substance so that it shall impede the free access of water or air to the roots of any tree, shrub, or plant in any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place in the City. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.13 The attachment of wires, ropes, signs, and other devices to public trees.

No person, without the permission of the City Manager and Public Works Director, shall attach or keep attached to any tree, shrub, or plant in any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or other public place in the City, or to the guard or stake intended for the protection thereof, any wire, rope, sign, or other device whatsoever. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.14 Building construction necessitating trimming or removal: Permits required: Conditions: Payment of costs.

When the erection, repair, alteration, or removal of any building, house, or structure necessitates the trimming, pruning, or removal of any tree, shrub, or plant on any street, park, pleasure ground, alley, public right-of-way, street tree easement or other public place in the City, except any trimming, pruning, or removal required by the construction of a residential driveway, it shall be within the discretion of the Public Works Director to refuse permission to do such work. Applications for permits to trim, prune, or remove any tree or plant on any of such places for such reasons shall be filed with the Public Works Director at least three (3) business days prior to the time of doing such work. The Public Works Director may stipulate the conditions upon which any trimming, pruning, or removal may be done and may require the applicant to enter into an agreement whereby the applicant shall agree to pay all costs incurred for any inspections, labor, equipment, or services deemed necessary by the Public Works Director. (§ 1, Ord. 1085, eff. December 5, 2008) **Tree pruning shall adhere to the current version of Tree Pruning Guidelines, published by the International Society of Arboriculture, American National Standards Institute (ANSI) A300 Pruning Standards, or such other standards or methods as expressly authorized in writing by the Director.**

Protection and operation around existing trees during building construction, repairs, or removal shall adhere to the American National Standards Institute's (ANSI) A300 Construction Management Standard (Part 5) or other standards or methods as expressly authorized in writing by the Director.

Sec. 10-1.15 Traffic visibility obstructions due to over grown foliage.

- (a) Inspections. The Public Works Director may inspect any tree, shrub, or plant upon any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place in the City or on any private property, which tree, shrub, or plant overhangs or projects into any street, park, pleasure ground, boulevard, alley, or public place in the City, to determine whether the same, or any part thereof, is in such condition as to constitute a hazard or an impediment to the progress or vision of anyone traveling on such street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place.
- (b) Trimming or removal: Notices of intent. The Public Works Director may cause the same or such parts thereof, as are hazardous or an impediment to be trimmed or removed so as to remedy such condition. However, no such tree, shrub, or plant standing on any private property shall be cut down or removed unless ten (10) days' notice in writing of such intention shall be given by the Public Works Director to the owner, occupant, or agent of the property upon which such described condition exists.
- (c) Trimming or removal: Objections. If the owner, occupant, or agent of such private property, within seven (7) days after the receipt of such notice, files his objection to such removal with the Public Works Director, such tree, shrub, or plant shall not be cut down or removed unless the Public Works Director shall give such owner, occupant, or agent a reasonable opportunity to be heard in support of such objection.
- (d) Trimming or removal: Objections: Overruling. If such objection shall not be sustained, the Public Works Director shall thereafter approve in writing the cutting down or removal of such hazardous tree, plant, or shrub.
- (e) Liability. The provisions of this section shall not be deemed to impose any liability upon the City or its officers or employees nor relieve the owner of any private property from the duty to keep any tree, shrub, or plant upon his/her property or under his/her control in such a condition as to prevent it from constituting a hazard or an

impediment to travel or vision upon any street, park, pleasure ground, boulevard, alley, public right-of-way, street tree easement or public place within the City. (§ 1, Ord. 1085, eff. December 5, 2008)

- (f) Procedure. **Tree pruning to remediate visibility obstructions determined by Director inspection shall adhere to the current version of Tree Pruning Guidelines, published by the International Society of Arboriculture, American National Standards Institute (ANSI) A300 Pruning Standards, or such other standards or methods as expressly authorized in writing by the Director.**

Sec. 10-1.16 Public nuisances on public or private property: Declaration.

All trees or shrubs growing in the City, which trees or shrubs are infested or infected with parasites or insect pests and which, unless exterminated, may spread to and injure or destroy the trees and shrubs of an entire community or neighborhood, are hereby declared to be public nuisances. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.17 Public nuisances on public or private property: Abatement: Duty of property owners.

It shall be the duty of each and every owner of real property upon which such a nuisance exists, as set forth in Section 10-1.16 of this chapter, to abate, or cause the nuisance to be abated, without delay, by the extermination of such parasites or insect pests from all such infested trees or shrubs growing on such property. The duty of abating such public nuisances and exterminating such parasites and insect pests infecting trees or shrubs on or near the boundary line of adjoining private properties shall be upon the respective owners of such trees or shrubs; as such ownership is determined by the provisions of Sections 833 and 834 of the Civil Code of the State. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.18 Public nuisances on public or private property: Abatement by property owners: Methods.

Such nuisances, as set forth in Section 10-1.16 of this chapter, shall be abated by spraying the infected trees or shrubs with an insecticide or fungicide or by other treatment, as the particular case may require, so as to completely exterminate such parasites or insect pests from the trees or shrubs affected; provided, however, whenever any tree or shrub is found to be in such bad condition from the infection of parasites or insect pests that, in the opinion of the Public Works Director, it is impossible to save the tree or shrub, the owner of the land on which such tree or shrub is growing shall completely destroy the same by removal. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.19 Public nuisances on private property: Abatement by owners: Notices to abate.

Whenever the Public Works Director shall find any trees or shrubs growing upon private property, which trees or shrubs are so infected or infested with parasites or insect pests that, unless they are exterminated, they may spread to and injure or destroy other trees or shrubs in the neighborhood, the Public Works Director shall give notice to the owner that unless such nuisance is abated without delay by the extermination of such parasites or insect pests, the exterminating work will be done by the City, and the expense thereof shall be assessed upon the lots and lands from which such parasites or insect pests are exterminated. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.20 Public nuisances on private property: Abatement by owners: Notices to abate: Form.

The notice required by the provisions of Section 10-1.19 of this chapter shall be substantially in the following form:

Notice to Destroy Tree Pests

Notice is hereby given, pursuant to the provisions of Chapter 1 of Title 10 of the Los Banos Municipal Code, that certain trees and shrubs on property assessed to you in the City of Los Banos are infested or infected with parasites or insect pests which should be exterminated by spraying them with a chemical solution to be designated by the Public Works Director of the City of Los Banos, or by trimming such trees and shrubs, or by otherwise exterminating such parasites or insect pests, as directed by the Public Works Director; otherwise such parasites or pests may spread to and injure or destroy other trees or shrubs in the neighborhood, and that such condition constitutes a public nuisance. You are hereby notified to exterminate such parasites or insect pests without delay; otherwise the work of exterminating them and abating such nuisance will be done by the undersigned, in which case the expense thereof will be assessed upon your property and will constitute a lien thereupon until paid, and, unless paid as provided in said Chapter 1 of Title 10, will be placed upon the next tax roll upon which general City taxes are collected and collected in the manner and form and under the applicable provisions of the tax laws. You are further notified to appear before the City Council of the City of Los Banos at its meeting on _____, 20_____, at 7:00 p.m. in the Council Chambers in the City Hall, Los Banos, California, and show cause, if any you have, why such nuisance should not be found to exist and the same ordered abated, as provided in said Chapter 1 of Title 10.

Dated _____, 20_____

Public Works Director of the City of Los Banos

(§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.21 Public nuisances on private property: Abatement by owners: Notices to abate: Service and posting.

The Public Works Director shall mail a copy of the notice required by the provisions of Section 10-1.19 of this chapter, with all blanks properly filled, to each and every owner of real property, on which such a nuisance exists, whose name and address appear on the last equalized assessment roll. If the name and address of such owner do not appear on the assessment roll or are not otherwise known to the Public Works Director he shall cause a copy of the notice to be conspicuously posted on the property affected. The notices so posted shall be substantially the same as the notices served by mail. The mailing or posting of such notices shall be done and completed at least ten (10) days before the time fixed for the hearing set forth in the notice. The failure of any property owner to receive such notice shall not deprive the City Council from proceedings nor affect in any manner the validity of any of the proceedings taken, or to be taken, or of any assessment levied pursuant to the provisions of this chapter. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.22 Public nuisances on private property: Abatement by owners: Notices to abate: Affidavits.

Upon giving the notice as set forth in Section 10-1.21 of this chapter, the Public Works Director shall make and file with the City Clerk his/her affidavit stating the existence of the nuisance and that in each and every case the owner of real property having trees or shrubs thereon infected with parasites or insect pests was notified by mail or by posting the notices required by the provisions of this chapter. A copy of the form of notice so mailed or posted

shall be annexed to the affidavit, together with a list of all properties on which such infested trees or shrubs have been declared to be a nuisance. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.23 Public nuisances on private property: Abatement by City: Council orders.

The Public Works Director shall attend the hearing set by the Council pursuant to the provisions of Section 10-1.20 of this chapter and report on any other matters desired by the Council concerning such nuisances. Thereupon, if satisfied that such nuisances exist, the Council shall by resolution find such nuisances to exist and order the Public Works Director to proceed with the work of abating the nuisances pursuant to the provisions of this chapter. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.24 Public nuisances on private property: Abatement by owners: Methods.

Any owner of real property on which any trees or shrubs are infected or infested may cause such parasites or insect pests to be exterminated; provided, however, in all such cases the work shall be done to the satisfaction of the Public Works Director and shall be undertaken prior to the time his/her assistants arrive to do the work. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.25 Public nuisances on private property: Abatement by City: Reports of costs.

When the work ordered by the Council pursuant to the provisions of Section 10-1.23 of this chapter is done by the Public Works Director, he shall keep an account of the costs of abating such nuisances upon each separate lot or parcel of land and shall embody such account in a report and assessment list to the Council which he shall file with the City Clerk. Such report and assessment list shall refer to each separate lot or parcel of land by a description sufficient to identify it and shall state separately the cost of exterminating such parasites or insect pests on each lot or parcel of land. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.26 Public nuisances on private property: Abatement by City: Reports of costs: Notices.

The Public Works Director shall post a copy of the report and assessment list required by the provisions of Section 10-1.25 of this chapter near the entrance door to the City Hall, together with a notice of filing the same and of the time and place when and where it will be submitted to the Council for hearing and confirmation at least ten (10) days before the day fixed therein. The Public Works Director shall also mail or post copies of such notice to all the owners of property on which such nuisance was abated in the manner, for the time, and with like effect, and file with the City Clerk an affidavit thereof as set forth in Sections 10-1.21 and 10-1.22 of this chapter. Such notices shall be substantially in the following form:

Notice of Filing Report and Assessment List For Exterminating Tree Pests and of Hearing Thereon

Notice is hereby given that the Public Works Director of the City of Los Banos has filed with the City Clerk of said City a report and assessment list covering the cost of exterminating parasites and insect pests from trees and shrubs growing on private property in said City, a copy of which is posted near the entrance door to the City Hall. Your property is assessed therein in the sum of \$_____

Notice is further given that on the _____ Day of _____, 20_____, at 7:00 p.m. in the Council Chambers in said City Hall said report and assessment list will be presented to the City Council of said City for consideration and confirmation, and any and all persons interested having any objections to said report and assessment list, or to any other matter contained therein or relating thereto, may appear at said time and place and be heard. Notice is

further given that you may pay said assessment at the office of the City Clerk at any time before 5:00 p.m., August 31, 20_____, and, if not paid before that time, it will be entered against your property on the City tax roll.

Dated _____, 20_____

Public Works Director of the City of Los Banos

(§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.27 Public nuisances on private property: Abatement by City: Reports of costs: Hearings.

The owners and all other persons interested in any work done pursuant to the provisions of Section 10-1.23 of this chapter, or in the assessment made for such work, who feel aggrieved by any act or determination of the Public Works Director in relation thereto, or who claim that the work was not performed in a good and workmanlike manner, or who claim that any portion of the work, for any reason, was omitted or illegally included, or who have any objections to the correctness of the assessment or other act or determination or proceeding of the Public Works Director, may appear before the Council at the time and place set forth in the notice required by the provisions of Section 10-1.26 of this chapter and be heard. Following such hearing the Council may remedy and correct any error and revise and correct any of the acts or determinations of the Public Works Director relating to such work, and may amend, alter, modify, or correct the assessment in such manner as to the Council shall seem just, and may require the work to be completed according to its directions. All the decisions and determinations of the Council following such hearing shall be final and conclusive. The assessment, when confirmed, shall become and remain a lien upon the properties stated therein until paid. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.28 Public nuisances on private property: Abatement by City: Assessments for costs: Payment.

Any property owner may, at any time prior to 5:00 p.m. of August 31, following the doing of the work pursuant to the provisions of Section 10-1.23 of this chapter, pay the amount assessed against his/her property at the office of the Public Works Director, and the lien thereof against the property affected shall be released. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.29 Public nuisances on private property: Abatement by City: Assessments for costs: Collection with taxes.

After August 31 following the completion of the work pursuant to the provisions of Section 10-1.23 of this chapter the Chief Financial Officer shall enter and extend the amounts of the assessments made for such work and remaining unpaid against the respective lots or parcels of land on the City tax roll, and the Tax Collector shall include the sums on the bills for such taxes. Thereafter such amounts shall be collected at the same time and in the same manner as general City taxes are collected and shall be subject to the same penalties and the same procedure and sale in the event of delinquency. All laws applicable to the levy, collection, and enforcement of City taxes shall be applicable to such special assessments. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.30 City of Los Banos Standards of Landscape Design and implementation.

The Public Works Director shall prepare and recommend, and the City Council shall adopt by resolution a comprehensive plan for the planting and maintaining of trees within public streets of the City, which plan shall be designated as the Standards of Landscape Design. Said plan shall include those public streets identified in Section 10-1.02 which, in the Commission's judgment, bear a relationship to the purposes of this chapter. The plan shall be

so prepared that all appropriate public streets may be included in the plan. The plan shall consist of a written statement, maps, and such detailed designs as may be appropriate, setting forth or depicting the following:

- (a) The specific types of trees to be planted and maintained, including their desirable spacing and location;
- (b) The identification of those existing trees which should be retained;
- (c) The identification of those trees which may constitute a hazard or public nuisance, and which may require substantial maintenance or removal. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.31 City of Los Banos master list of approved street trees for planting in the public right-of-way and street tree easements.

The Parks and Recreation Department with the assistance of the Director of Public Works shall prepare, recommend and maintain a master street tree list enumerating the species of shade and ornamental trees permitted to be planted on public property. The master street tree list shall be submitted to the Parks and Recreation Commission which shall make a final recommendation to the City Council. The City Council shall adopt this by a resolution. A master list of trees that are suitable for implementing the, City of Los Banos Landscape Standards, and for the planting of trees within all other public streets not included in the comprehensive plan. The master list shall be prepared and adopted within three (3) months after the adoption of the ordinance codified in this section. In preparing and amending the master list, the Director shall consult with persons who, by reason of training and experience, have expertise in the selection, planning, planting, and maintenance of trees that are well suited to local climatic and soil conditions. Upon its adoption, the list shall be known as the master list of trees, and shall be placed on file in the office of the City Clerk and the offices of the Director of Public Works, and the Director of Planning, and shall thereafter be the official master list. Revisions or changes to the master list may be made in the same manner described hereinabove for the preparation, adoption, and filing of the original master list. The Master Street Tree List may be reviewed annually by the Director of Public Works and the Parks and Recreation Commission. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.32 Conformance.

All trees hereinafter planted within a public street within the City shall conform as to type, species, spacing, and location as prescribed by the comprehensive street tree plan, if applicable, or by the master list of trees. Projects requiring approval of the City Planning Department or City Planning Commission under provisions of site plan review as prescribed by the City's Zoning Ordinance shall conform to the requirements of this section. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.33 Liability.

Nothing contained in the ordinance codified in Sections 10-1.01 through 10-1.35 shall be deemed to impose any liability upon the City, its officers or employees, nor to relieve any private property owner from the duty to avoid violating any of the applicable provisions of the ordinance codified in Sections 10-1.01, 10-1.01.05 and 10-1.26 through 10-1.31. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.34 Enforcement.

The Director of Public Works is hereby charged with the responsibility for the enforcement of the ordinance codified in Sections 10-1.01 through 10-1.35, and may serve notice to any person in violation thereof or institute legal proceedings as may be required, and the City Attorney is hereby authorized to institute appropriate proceedings to that end. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.35 Trees in new developments.

- (a) Residential subdivisions. Developers of residential dwelling units shall be required to plant two (2) street trees per every lot, and where this is not possible due to lot configuration, a separate location within the subdivision may be designated to allow compliance or an in-lieu fee established by **City Council** resolution paid by the developer to fulfill this requirement approved by the Director of Public Works, (four (4) trees where space permits on corner lots) prior to the final inspection.
- (b) Commercial and industrial developments shall comply with the standards set forth in the City of Los Banos Landscape Standards.
- (c) A tree inspection fee is required for all residential and commercial developments. The fees shall be determined by City Council resolution.
- (d) Tree mixture. Landscape plans shall encourage a mixture of tree types **for street trees based on the City's Master Street Tree List (Sec. 10-1.31) and mixtures based on the Master Street Tree List are encouraged on private property.**
- (e) Planting of trees. Planting of trees in the City shall be in accordance with standards recommended by the City of Los Banos Landscape Standards **[including tree species, minimum tree box size, minimum tree caliper, and tree nursery quality among others].**
- (f) Tree maintenance. Trees shall be maintained in good health, and shall not be trimmed or pruned to reduce the natural height or overall crown of the tree except as necessary for the health of the tree and public safety in accordance with accepted arboricultural practices, or as may otherwise be approved by the City of Los Banos Parks Department. Dead or seriously diseased trees shall be replaced with comparable and compatible specimen from the City approved tree list.
- (g) Landscape for commercial projects shall be subject to annual inspections. Commercial Developments shall enter into an agreement with the City at the time of development that the landscape shall be maintained in substantial conformance with the approved landscape plan as determined by the Director of Public Works. It shall be the responsibility of the Public Works Director to enforce the agreement. (§ 1, Ord. 1085, eff. December 5, 2008)

Sec. 10-1.36 Wildland Fuels Management Requirements (Wildland Urban Interface, WUI)

- (a) **Pruning of dead limbs.** In fire-prone zones, large trees shall not be allowed to have limbs overlap another tree and shall be pruned of dead limbs to a height of up to ten feet (10') above the ground. Tree clusters may be allowed if sufficient clear area is provided and approved.
- (b) **Clearance of tree branches to structures or appurtenances.** In fire-prone zones, tree branches shall not extend over or under the roof or eaves, and shall not be within fifteen feet (15') of a deck or similar combustible projection, wood burning appliance or chimney.
- (c) In fire-prone zones, no hazardous brush or trees shall be allowed within fifteen feet (15') of the main structure or significant accessory structure. Conifers or other similarly combustible plants shall not be planted under soffit vents.
Exception: Designated historic or specimen trees are allowed to remain. This allowance is made regardless of the trees' proximity to structures or the roofline, provided the trees conform to the following:
 - (1) Trees are estimated to be a minimum of twenty (20) years old or have at least a six (6) inch caliper and,
 - (2) Trees do not have any ladder fuel within ten (10) lateral feet of their canopy and,
 - (3) Trees must be irrigated on an approved automatic irrigation system and,
 - (4) Only one (1) tree is allowed in every thirty (30) feet of lateral distance between canopies.
- (d) In fire-prone zones, existing trees and significant vegetation shall be maintained in open space areas unless an alternate landscaping plan for such areas is submitted and approved or unless planned active recreational activities would conflict with existing vegetation. In case of conflicts with planned activities, the design should maintain a balance, as determined by the city, where it maximizes active recreation opportunities while trying to maintain the most important elements of native vegetation.
- (e) Fire resistive plants are highly encouraged in fire-prone zones.

TITLE 9 PLANNING AND ZONING

CHAPTER 3 ZONING

ARTICLE 4. PLANNED DEVELOPMENT DISTRICT (P-D)

Sec. 9-3.412 Coverage and open space (P-D).

The allowable coverage, including buildings, driveways, parking areas, sidewalks, and patios, in the Planned Development District shall be approved under the final development plan but shall not exceed the following, with the remaining area devoted to landscaped open areas, yards, and outdoor recreation, such as swimming pools and tennis courts:

- (a) Residential coverage shall not exceed ~~seventy~~ **sixty** (70~~60~~%) percent.
- (b) Commercial and industrial coverage shall not exceed ninety (90%) percent. (§ 2, Ord. 673, eff. February 6, 1981, as amended by § 16, Ord. 1095, eff. November 20, 2010)
- (c) **Replacement trees shall be planted by the responsible party for the trees approved for removal by the Public Works Director. (The private property protected trees are part of a recommended ordinance per the 2022 Urban Forest Management Plan.) The replacement tree schedule and framework are as follows:**
 - (1) **For each authorized tree removed, a replacement tree shall be planted with appropriate and necessary soil volume at the planting site as determined by the Public Works Director (600 cubic feet for small trees, 1,000 cubic feet for medium trees, 1,500 cubic feet for large trees). The replacement tree box for each mitigation planting on all lots except for single-family lots less than 10,000 square feet shall be according to the following criteria:**
 - **A tree 0-10" removed requires 1 (one) 24" box (1.25 – 2.0" caliper replacement)**
 - **A tree 11-14" removed requires 1 (one) 30" box (1.5 – 2.5" caliper replacement)**
 - **A tree 15-20" removed requires 1 (one) 36" box (2.5 – 3.0" caliper replacement)**
 - **A tree 21-24" removed requires 1 (one) 42" box (3.0 – 4.0" caliper replacement)**
 - **A tree greater than 24" removed requires 1 (one) 48" box (3.5 – 5.5" caliper replacement)**
 - **Source: ANSI Z60.1**
 - **If it is not reasonably possible to provide an equivalent on-site replacement tree(s) based on the Public Works Director's review and decision, an in-lieu fee shall be paid at the time of Building Permit issuance for the protected trees proposed to be removed. The in-lieu fee for each tree removed equals the per-unit cost to the City for the replacement tree box established by the City's last award of a contract following a competitive bid for such work, plus the City administrative and service cost as hours defined by the Public Works Director, and labor costs based on an approximate determined by the Public Works Director. Mitigation replacement trees are in addition to trees normally proposed for specific projects and do not include "street trees". Clearly indicate/identify "mitigation replacement trees" graphically on plan or indicate in Plant Palette.**
 - For a single-family lot less than 10,000 square feet, a 24-inch tree box replacement tree shall be planted, of a species and in a location approved by the person or entity imposing mitigation requirements under this chapter.**
 - (2) **Replacement requirements for trees removed from a lot which is the subject of a development project application shall be imposed in addition to any requirement for planting trees that would otherwise be imposed as a condition of project approval.**
 - (3) **Replacement trees shall be planted in accordance with standard details that are on file with the city. Specific attention should be given to utility encroachment.**
 - (d) **The mitigation required by this section may be waived or reduced in the following circumstances:**
 - (1) **Removal of the tree has a beneficial effect on the city's urban forest; or**
 - (2) **The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal.**

ARTICLE 6. LOW DENSITY RESIDENTIAL DISTRICT (R-1)

Sec. 9-3.607 Building site coverage (R-1).

Not more than ~~seventy~~ **forty** (~~70~~**40**%) percent of the total lot area shall be devoted to main and accessory building areas, parking areas, driveways and patios, the remaining ~~thirty~~ **sixty** (~~30~~**60**%) percent shall be devoted to landscaping, lawns and outdoor recreational facilities (i.e., swimming pools). (§ 4.21, Ord. 342, as amended by § 32, Ord. 1095, eff. November 20, 2010)

(a) Replacement trees shall be planted by the responsible party for the trees approved for removal by the Public Works Director. ~~(The private property protected trees are part of a recommended ordinance per the 2022 Urban Forest Management Plan.)~~ The replacement tree schedule and framework are as follows:

- (1) For each authorized tree removed, a replacement tree shall be planted with appropriate and necessary soil volume at the planting site as determined by the Public Works Director (600 cubic feet for small trees, 1,000 cubic feet for medium trees, 1,500 cubic feet for large trees). The replacement tree box for each mitigation planting on all lots except for single-family lots less than 10,000 square feet shall be according to the following criteria:
 - A tree 0-10" removed requires 1 (one) 24" box (1.25 – 2.0" caliper replacement)
 - A tree 11-14" removed requires 1 (one) 30" box (1.5 – 2.5" caliper replacement)
 - A tree 15-20" removed requires 1 (one) 36" box (2.5 – 3.0" caliper replacement)
 - A tree 21-24" removed requires 1 (one) 42" box (3.0 – 4.0" caliper replacement)
 - A tree greater than 24" removed requires 1 (one) 48" box (3.5 – 5.5" caliper replacement)
 - Source: ANSI Z60.1
 - If it is not reasonably possible to provide an equivalent on-site replacement tree(s) based on the Public Works Director's review and decision, an in-lieu fee shall be paid at the time of Building Permit issuance for the protected trees proposed to be removed. The in-lieu fee for each tree removed equals the per-unit cost to the City for the replacement tree box established by the City's last award of a contract following a competitive bid for such work, plus the City administrative and service cost as hours defined by the Public Works Director, and labor costs based on an approximate determined by the Public Works Director. Mitigation replacement trees are in addition to trees normally proposed for specific projects and do not include "street trees". Clearly indicate/identify "mitigation replacement trees" graphically on plan or indicate in Plant Palette.

For a single-family lot less than 10,000 square feet, a 24-inch tree box replacement ~~tree~~ shall be planted, of a species and in a location approved by the person or entity imposing mitigation requirements under this chapter.

- (2) Replacement requirements for trees removed from a lot which is the subject of a development project application shall be imposed in addition to any requirement for planting trees that would otherwise be imposed as a condition of project approval.
 - (3) Replacement trees shall be planted in accordance with standard details that are on file with the city. Specific attention should be given to utility encroachment.
- (b) The mitigation required by this section may be waived or reduced in the following circumstances:
- (1) Removal of the tree has a beneficial effect on the city's urban forest; or
 - (2) The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal.

ARTICLE 7. MEDIUM DENSITY RESIDENTIAL DISTRICT (R-2)

Sec. 9-3.707 Lot coverage and density (R-2).

Not more than ~~seventy fifty~~ (70~~50~~%) percent of the total lot area shall be devoted to main and accessory building areas, parking areas, driveways and patios, the remaining ~~thirty 50~~ (30~~50~~%) percent shall be devoted to landscaping, lawns and outdoor recreational facilities (i.e., swimming pools). (§ 4.22, Ord. 342, as amended by § 2, Ord. 345; and § 45, Ord. 1095, eff. November 20, 2010)

(a) Replacement trees shall be planted by the responsible party for the trees approved for removal by the Public Works Director. (The private property protected trees are part of a recommended ordinance per the 2022 Urban Forest Management Plan.) The replacement tree schedule and framework are as follows:

- (1) For each authorized tree removed, a replacement tree shall be planted with appropriate and necessary soil volume at the planting site as determined by the Public Works Director (600 cubic feet for small trees, 1,000 cubic feet for medium trees, 1,500 cubic feet for large trees). The replacement tree box for each mitigation planting on all lots except for single-family lots less than 10,000 square feet shall be according to the following criteria:
 - A tree 0-10" removed requires 1 (one) 24" box (1.25 – 2.0" caliper replacement)
 - A tree 11-14" removed requires 1 (one) 30" box (1.5 – 2.5" caliper replacement)
 - A tree 15-20" removed requires 1 (one) 36" box (2.5 – 3.0" caliper replacement)
 - A tree 21-24" removed requires 1 (one) 42" box (3.0 – 4.0" caliper replacement)
 - A tree greater than 24" removed requires 1 (one) 48" box (3.5 – 5.5" caliper replacement)
 - Source: ANSI Z60.1
 - If it is not reasonably possible to provide an equivalent on-site replacement tree(s) based on the Public Works Director's review and decision, an in-lieu fee shall be paid at the time of Building Permit issuance for the protected trees proposed to be removed. The in-lieu fee for each tree removed equals the per-unit cost to the City for the replacement tree box established by the City's last award of a contract following a competitive bid for such work, plus the City administrative and service cost as hours defined by the Public Works Director, and labor costs based on an approximate determined by the Public Works Director. Mitigation replacement trees are in addition to trees normally proposed for specific projects and do not include "street trees". Clearly indicate/identify "mitigation replacement trees" graphically on plan or indicate in Plant Palette.

For a single-family lot less than 10,000 square feet, a 24-inch tree box replacement tree shall be planted, of a species and in a location approved by the person or entity imposing mitigation requirements under this chapter.

- (2) Replacement requirements for trees removed from a lot which is the subject of a development project application shall be imposed in addition to any requirement for planting trees that would otherwise be imposed as a condition of project approval.
 - (3) Replacement trees shall be planted in accordance with standard details that are on file with the city. Specific attention should be given to utility encroachment.
- (b) The mitigation required by this section may be waived or reduced in the following circumstances:
- (1) Removal of the tree has a beneficial effect on the city's urban forest; or
 - (2) The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal.

ARTICLE 8. HIGH DENSITY RESIDENTIAL DISTRICT (R-3)

Sec. 9-3.807 Lot coverage (R-3).

Not more than ~~seventy six~~ **sixty** (70~~60~~%) percent of the total lot area of a lot in the High Density Residential District shall be devoted to main and accessory building areas, parking areas, driveways, and patios. The remaining ~~thirty four~~ **forty** (30~~40~~%) percent of the total lot area shall be devoted to landscaping, lawns, and outdoor recreational facilities incidental to residential developments, such as swimming pools, tennis courts, putting greens. (§ 4.23, Ord. 342, as amended by § 57, Ord. 1095, eff. November 20, 2010)

Sec. 9-3.811 Development standards (R-3).

All developments in the High Density Residential District shall comply with the following standards:

- (a) All required open areas shall be landscaped and maintained in accordance with an approved detailed landscape plan;
- (b) Prior to the submission of the development plans to the Commission, the owner or representative shall confer with the Planning Department concerning the necessity for a runoff study of the area to be developed. If such a study is considered necessary, it shall be filed with the City Engineer for his or her approval;
- (c) All trash and garbage collection areas shall be surrounded on at least three (3) sides by a five (5') foot block wall and shall have adequate access for collection vehicles; and
- (d) All points of vehicular access to and from off-street parking areas, driveways, and public rights-of-way shall be approved by the Planning Department. (§ 4.23, Ord. 342, as amended by § 62, Ord. 1095, eff. November 20, 2010)
- (e) **Replacement trees shall be planted by the responsible party for the trees approved for removal by the Public Works Director. (The private property protected trees are part of a recommended ordinance per the 2022 Urban Forest Management Plan.) The replacement tree schedule and framework are as follows:**
 - (1) **For each authorized tree removed, a replacement tree shall be planted with appropriate and necessary soil volume at the planting site as determined by the Public Works Director (600 cubic feet for small trees, 1,000 cubic feet for medium trees, 1,500 cubic feet for large trees). The replacement tree box for each mitigation planting on all lots except for single-family lots less than 10,000 square feet shall be according to the following criteria:**
 - **A tree 0-10" removed requires 1 (one) 24" box (1.25 – 2.0" caliper replacement)**
 - **A tree 11-14" removed requires 1 (one) 30" box (1.5 – 2.5" caliper replacement)**
 - **A tree 15-20" removed requires 1 (one) 36" box (2.5 – 3.0" caliper replacement)**
 - **A tree 21-24" removed requires 1 (one) 42" box (3.0 – 4.0" caliper replacement)**
 - **A tree greater than 24" removed requires 1 (one) 48" box (3.5 – 5.5" caliper replacement)**
 - **Source: ANSI Z60.1**
 - **If it is not reasonably possible to provide an equivalent on-site replacement tree(s) based on the Public Works Director's review and decision, an in-lieu fee shall be paid at the time of Building Permit issuance for the protected trees proposed to be removed. The in-lieu fee for each tree removed equals the per-unit cost to the City for the replacement tree box established by the City's last award of a contract following a competitive bid for such work, plus the City administrative and service cost as hours defined by the Public Works Director, and labor costs based on an approximate determined by the Public Works Director. Mitigation replacement trees are in addition to trees normally proposed for specific projects and do not include "street trees". Clearly indicate/identify "mitigation replacement trees" graphically on plan or indicate in Plant Palette.**
 - For a single-family lot less than 10,000 square feet, a 24-inch tree box replacement tree shall be planted, of a species and in a location approved by the person or entity imposing mitigation requirements under this chapter.**
 - (2) **Replacement requirements for trees removed from a lot which is the subject of a development project application shall be imposed in addition to any requirement for planting trees that would otherwise be imposed as a condition of project approval.**
 - (3) **Replacement trees shall be planted in accordance with standard details that are on file with the city. Specific attention should be given to utility encroachment.**

- (f) The mitigation required by this section may be waived or reduced in the following circumstances:
- (1) Removal of the tree has a beneficial effect on the city's urban forest; or
 - (2) The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal.

The following shall apply to:

ARTICLE 9. MIXED USE (M-X)

ARTICLE 10. PROFESSIONAL OFFICE (P-O)

ARTICLE 11. NEIGHBORHOOD COMMERCIAL DISTRICT (C-N)

ARTICLE 12. GENERAL COMMERCIAL DISTRICT (C-1)

ARTICLE 14. LIGHT INDUSTRIAL DISTRICT (L-I)

ARTICLE 15. GENERAL INDUSTRIAL DISTRICT (I)

ARTICLE 17. MOBILE HOME SUBDIVISIONS: DEVELOPMENT STANDARDS

- (a) Replacement trees shall be planted by the responsible party for the trees approved for removal by the Public Works Director. (The private property protected trees are part of a recommended ordinance per the 2022 Urban Forest Management Plan.) The replacement tree schedule and framework are as follows:
- (1) For each authorized tree removed, a replacement tree shall be planted with appropriate and necessary soil volume at the planting site as determined by the Public Works Director (600 cubic feet for small trees, 1,000 cubic feet for medium trees, 1,500 cubic feet for large trees). The replacement tree box for each mitigation planting on all lots except for single-family lots less than 10,000 square feet shall be according to the following criteria:
 - A tree 0-10" removed requires 1 (one) 24" box (1.25 – 2.0" caliper replacement)
 - A tree 11-14" removed requires 1 (one) 30" box (1.5 – 2.5" caliper replacement)
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 - A tree greater than 24" removed requires 1 (one) 48" box (3.5 – 5.5" caliper replacement)
 - Source: ANSI Z60.1
 - If it is not reasonably possible to provide an equivalent on-site replacement tree(s) based on the Public Works Director's review and decision, an in-lieu fee shall be paid at the time of Building Permit issuance for the protected trees proposed to be removed. The in-lieu fee for each tree removed equals the per-unit cost to the City for the replacement tree box established by the City's last award of a contract following a competitive bid for such work, plus the City administrative and service cost as hours defined by the Public Works Director, and labor costs based on an approximate determined by the Public Works Director. Mitigation replacement trees are in addition to trees normally proposed for specific projects and do not include "street trees". Clearly indicate/identify "mitigation replacement trees" graphically on plan or indicate in Plant Palette.
- For a single-family lot less than 10,000 square feet, a 24-inch tree box replacement tree shall be planted, of a species and in a location approved by the person or entity imposing mitigation requirements under this chapter.
- (2) Replacement requirements for trees removed from a lot which is the subject of a development project application shall be imposed in addition to any requirement for planting trees that would otherwise be imposed as a condition of project approval.
 - (3) Replacement trees shall be planted in accordance with standard details that are on file with the city. Specific attention should be given to utility encroachment.
- (b) The mitigation required by this section may be waived or reduced in the following circumstances:
- (1) Removal of the tree has a beneficial effect on the city's urban forest; or
 - (2) The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal.

ARTICLE 44. ACCESSORY STRUCTURES IN RESIDENTIAL R-1 AND R-2 ZONING DISTRICTS

Sec. 9-3.4404 General requirements.

Except as otherwise specifically set forth in Section 9-3.4405 all accessory buildings or structures in the R-1 and R-2 residential zoning districts within the City are subject to the following standards.

(a) Lot coverage. A single accessory building or structure shall not occupy more than thirty (30%) percent of the required rear yard area, nor shall all such accessory buildings or structures collectively occupy more than fifty (50%) percent of the required rear yard area. The required rear yard area is defined as that area of the property between the rear property line and the required rear yard setback line for the principal residential dwelling. The total coverage for all buildings, including the principal residential dwelling, and all accessory buildings or structures, parking areas, driveways and patios shall not exceed ~~seventy~~ **forty to sixty (40-60%)** percent of the entire lot **depending on the residential district density level described in Sec. 9-3.607, Sec. 9-3.707, Sec. 9-3.807, respectively.** Back and side yard patio covers, front yard and back yard landscape features, swimming pools, and play equipment, shall not be included in the lot coverage calculations.

ARTICLE 20. OFF-STREET PARKING

PART 1. GENERAL PROVISIONS

Nonresidential (commercial, industrial, assembly, church, and other nonresidential uses) developments shall provide as part of the overall site landscape plan a minimum fifty (50%) percent shade tree canopy coverage as counted entirely on the subject site for designated parking lots and related areas, to be installed prior to occupancy. Parking lots and related areas shall be shaded at fifty (50%) percent shade coverage with tree canopies within five (5) years of issuance of building permit. **(Do the Landscape Standards provide the guidance on the trees and canopy coverage? The Landscape Plan Review Procedure document states on page 1, #5: “An inspection by the City will be performed after a 1-year maintenance period from the date of the final inspection. Landscape maintenance assessments will be conducted each year thereafter, or as considered necessary, by the City.” Who completes/approves the inspections (arborist, landscape architect, engineer, etc.)? How effective are they (how often do they result in new plantings)? Is the canopy measured at the 5-year mark to determine if additional plantings are required to meet the 50% shade tree canopy coverage requirement?)** Development of such canopies shall be in accordance with City of Los Banos parking lot shading standards **defined in the (amended) City of Los Banos Landscape Standards and Specifications** and master parking lot shade tree list. Parking lot shading standards and master parking lot shade tree list shall be adopted by the Los Banos Parks and Recreation Commission and approved by the Los Banos City Council. Such changes and/or modifications to the parking lot shading standards and master parking lot shade tree list may be implemented through a resolution by the Los Banos City Council, as recommended by the Los Banos Parks and Recreation Commission. (§ 3, Ord. 916, eff. April 19, 1997, as amended by § 1, Ord. 1049, eff. October 20, 2006, and § 180, Ord. 1095, eff. November 20, 2010).

ARTICLE 23. APPLICATION PROCESSING, SITE PLAN REVIEW PROCEDURE, ADMINISTRATIVE PERMITS, USE PERMITS, VARIANCES AND APPEALS

PART 2. SITE PLAN REVIEW

Sec. 9-3.2319 Project submittals.

(b) Plans and drawings to be submitted. In addition to meeting all of the other application requirements of this Code, projects subject to site plan review shall be required to have the following materials submitted to the Community Development Department:

(1) A site plan, drawn to scale, showing the parcel dimensions, proposed location, size and height of proposed and existing structures and other improvements including, where appropriate, driveways, fences and walls (their

location, height and materials), landscaped areas, off-street parking and loading areas, pedestrian walks, signing, lighting, storage areas, loading spaces. The site plan shall indicate the locations of off-street parking areas, including entrances and exits, and the direction of traffic flow into and out of off-street parking areas. The site plan shall indicate street dedication and improvements.

(2) A landscape plan, drawn to scale, showing the locations of existing trees proposed to be removed and proposed to be retained on the site and showing conformance to the City's shade canopy requirements; the location and design of landscaped areas and the varieties and sizes of plant materials to be planted therein; and other landscape features, including sprinkler and irrigation systems in compliance with the City's applicable landscaping codes and regulations.

(i) **Arborist Report Requirements:** An assessment and report of existing trees on the proposed site shall be reviewed and completed by a Certified Arborist accredited by the International Society of Arboriculture (ISA) to include the following:

- a. An assessment of trees within the proposed project area.
- b. Identification of trees to be preserved and removed based on the plans provided by the developer.
- c. Calculation of the Appraisal Value (*Guide for Plan Appraisal, 10th Edition, Revised* from the Council of Tree and Landscape Appraisers) and replacement mitigation, per the City of Los Banos ordinance.
- d. Guidelines for tree preservation during the design, construction, and maintenance phases of development.
- e. A Tree Preservation Plan for trees to be preserved.

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PROPOSED TREE PROTECTION ORDINANCE

###.### Trees subject to or exempt from permit requirements.

(a) Permit or Other Authorization Required for Protected Trees on Private Property and Private Street Trees Other Than Heritage Trees. A protected tree is a native tree, and/or a tree of exceptional adaptability to the Los Banos area, and/or as determined by the Public Works Director, and/or having a DBH of sixteen (16) inches or more (unless it is a native tree, a tree on a vacant or undeveloped lot, and/or located on a developed lot which is the subject of a contemplated or pending application for a development project).

(1) Trees of exceptional adaptability to the Los Banos area as defined by the Public Works Director based on current implications of climate change.

(b) A permit is required for any tree that is located on a City-approved development where the tree was required, or the tree was preserved.

(c) A permit or other authorization conferred in accordance with this chapter is required to remove, damage or relocate a protected tree on any type of private property in any location (i.e., forward and back/rear facing lines) ~~tree~~ if it is:

- (1) A tree having a DBH of six (6) inches or more and located on a vacant or underdeveloped lot;
- (2) A tree having a DBH of six (6) inches or more and located on a developed lot which is the subject of a contemplated or pending application for a development project;
- (3) A native tree or tree of exceptional adaptability to the Los Banos area having a DBH of six (6) inches or more;
- (4) A tree having a DBH of sixteen (16) inches or more (includes private backyard, rear-facing, and back-facing trees);
- (5) A tree that was required by the city to be planted or retained as mitigation for the removal of a tree;
- (6) A tree planted or retained as a condition of any city-conferred development project approval, including approvals conferred prior to adoption of this chapter; or
- (7) One of six or more trees of the same species that are located on the same lot and that each have six (6) or more inches in DBH.

(d) Permit or Other Authorization Required for All Heritage Trees. Authorization conferred in accordance with this chapter is required to remove, damage or relocate any landmark tree, whether privately or publicly owned.

(e) Trees Exempt from Permit Requirements. Except as provided in this subsection (c), no permit or other authorization conferred in accordance with this chapter and no mitigation is required to remove, damage or relocate a private tree if it is:

- (1) A container tree;
- (2) A fruit or nut tree of a species grown for commercial food production, except a black walnut or olive tree; or
- (3) A private tree or a heritage tree removed or damaged under emergency circumstances as follows:
 - (A) The tree has been damaged by storms, floods, earthquakes, or by any other cause; and a city official has determined that its immediate removal or further damage is necessary to protect persons from imminent personal injury or to prevent imminent and substantial damage to property;
 - (B) When immediate removal or damage is determined to be necessary by fire department personnel actively engaged in fighting a fire; or

(C) When immediate removal or damage is determined by the Public Works Director to be necessary to protect persons from imminent personal injury or to prevent imminent and substantial damage to property; or

(4) A tree, other than a heritage tree, removed or damaged by a public utility to the extent that such removal or damage is necessary for building or maintaining the public utility's facilities.

Standards for mitigation of authorized removal of private protected trees.

(a) When a private protected tree's removal is authorized in accordance with this chapter, mitigation shall be required as follows:

(1) For each authorized tree removed, a replacement tree shall be planted with appropriate and necessary soil volume at the planting site as determined by the Public Works Director (600 cubic feet for small trees, 1,000 cubic feet for medium trees, 1,500 cubic feet for large trees). The replacement tree box for each mitigation planting on all lots except for single-family lots less than 10,000 square feet shall be according to the following criteria:

- A tree 0-10" removed requires 1 (one) 24" box (1.25 – 2.0" caliper replacement)
- A tree 11-14" removed requires 1 (one) 30" box (1.5 – 2.5" caliper replacement)
- A tree 15-20" removed requires 1 (one) 36" box (2.5 – 3.0" caliper replacement)
- A tree 21-24" removed requires 1 (one) 42" box (3.0 – 4.0" caliper replacement)
- A tree greater than 24" removed requires 1 (one) 48" box (3.5 – 5.5" caliper replacement)
 - Source: ANSI Z60.1
- If it is not reasonably possible to provide an equivalent on-site replacement tree(s) based on the Public Works Director's review and decision, an in-lieu fee shall be paid at the time of Building Permit issuance for the protected trees proposed to be removed. The in-lieu fee for each tree removed equals the per-unit cost to the City for the replacement tree box established by the City's last award of a contract following a competitive bid for such work, plus the City administrative and service cost as hours defined by the Public Works Director, and labor costs based on an approximate determined by the Public Works Director. Mitigation replacement trees are in addition to trees normally proposed for specific projects and do not include "street trees". Clearly indicate/identify "mitigation replacement trees" graphically on plan or indicate in Plant Palette.

For a single-family lot less than 10,000 square feet, a 24-inch tree box replacement tree shall be planted, of a species and in a location approved by the person or entity imposing mitigation requirements under this chapter.

(2) Replacement requirements for trees removed from a lot which is the subject of a development project application shall be imposed in addition to any requirement for planting trees that would otherwise be imposed as a condition of project approval.

(3) Replacement trees shall be planted in accordance with standard details that are on file with the city. Specific attention should be given to utility encroachment.

(b) The mitigation required by this section may be waived or reduced in the following circumstances:

- (1) Removal of the tree has a beneficial effect on the city's urban forest; or
- (2) The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal.

Standards for mitigation of unauthorized removal of private protected trees.

Requirements for mitigation of unauthorized removal of private protected trees shall be imposed in accordance with the following policies and standards:

(a) Replacements for trees removed shall, if reasonably possible, provide total beneficial attributes at least equivalent to those of the tree(s) to be replaced. For example, when replacing a tree whose principal beneficial

attribute is aesthetic, the replacement tree(s) should provide equivalent aesthetic quality in terms of size, height, location and other beneficial aesthetic attributes.

(b) Replacement requirements for trees removed from a lot that is the subject of a development project application shall be imposed in addition to any requirement for planting trees that would otherwise be required or imposed as a condition of project approval.

(c) Subject to the provisions of subsection (e) of this section, replacement trees shall generally be planted on the same lot as were the trees removed, and the species and location of the replacement tree(s) shall be approved by the Public Works Director.

(d) When the value of a tree must be established to apply the provisions of this section, such value shall be calculated by the Public Works Director in accordance with the latest edition of the Guide for Plant Appraisal as prepared by the Council of Tree and Landscape Appraisers or a similar successor resource.

(e) When, because of lot size, configuration or development, or size, age or other characteristics of the tree to be replaced, it is not reasonably possible to provide an equivalent on-site replacement tree or trees, replacement equivalency may be established, at the discretion of the city, using one or a combination of the following standards:

- (1) The total DBH of the replacement tree(s) is at least equal to the DBH of the tree(s) to be replaced, and the replacement tree(s) will at maturity be similar in size and character to the tree(s) to be replaced.
- (2) The total value of the replacement tree(s), or cash payment to the city in lieu of replacement, or a combination of the total value of the replacement tree(s) plus such cash payment is at least equal to the value of the tree(s) to be replaced.

(f) Notwithstanding any other provision of this section, in the case of removal of a tree from a vacant or underdeveloped lot, the city may require mitigation to be made entirely by cash payment. In such cases, if an application for a development project for the lot is filed within 120 days of the date of such payment and if the project is completed within two years of such date, the cash payment may be used to reimburse the project applicant for on-site tree replacement meeting the requirements of this section.

(g) Replacement trees shall be planted in accordance with standard details that are on file and available for review in the engineering division of the city and/or as authorized by the Public Works Director.

(h) The mitigation required by this section may be waived or reduced in the following circumstances:

- (1) Removal of the tree has a beneficial effect on the city's urban forest;
- (2) The cost of mitigation is disproportionately large when contrasted to the loss to the city's urban forest caused by tree removal; or
- (3) Following an unauthorized tree removal, the Public Works Director determines that removal would have been authorized had timely application been made. The burden of proving that removal would have been authorized is on the person(s) responsible for mitigation.

LOS BANOS, CA

URBAN FOREST MANAGEMENT PLAN

NOVEMBER 2022



City of
Los Banos
At the Crossroads of California



PlanITGeo
developers of TreePlotter

