



Parks & Recreation Commission Meeting Agenda

February 9, 2026
5:30 PM – Regular Meeting
Council Chambers
400 N. Douty St.

CALL TO ORDER:

ROLL CALL:

INVOCATION:

To be led by Commissioner Rodriguez.

FLAG SALUTE:

PUBLIC COMMENT:

This is the time for citizens to comment on subject matters not on the agenda and that are within the jurisdiction of the Commission. This is also the public's opportunity to request an item from the Consent Calendar be pulled for discussion purposes or to comment on any item on the agenda. A maximum of three minutes is allowed for each speaker. Please begin your comments by stating your name and providing your city of residence.

CONSENT CALENDAR:

Consent Calendar items are considered routine and will be enacted in one motion. There will be no separate discussion of these matters unless a request is made and then the item will be removed from the Consent Calendar to be discussed and voted upon by a separate motion.

- A. Approval of the December 8, 2025 Meeting Minutes.

DIVISION UPDATES:

- A. Sports Complex Updates
- B. Parks Updates
- C. Marketing/Sponsorship Updates
- D. Events and Program Updates
- E. Directors Updates

GENERAL BUSINESS:

- A. Tree Permit Request - 1821 Easy St
- B. Update on the establishment of a Parks and Recreation Foundation

C. Urban Forest Master Plan Recommendation

FUTURE AGENDA ITEMS:

ADJOURNMENT:



AGENDA STAFF REPORT

MEETING DATE: 2/9/2026

AGENDA SECTION: CONSENT CALENDAR

SUBJECT:

Approval of the December 8, 2025 Meeting Minutes.

RECOMMENDATION:

Recommendation:

Recommended Motion:

BACKGROUND:

FISCAL IMPACT:

ATTACHMENTS:

1. December 2025 Minutes



**Parks & Recreation Commission Regular Meeting
Minutes**

**December 8, 2025 5:30 PM
Council Chambers
400 N. Douty St.**

CALL TO ORDER:

Chair Blackwell called the meeting to order at 5:30 PM.

ROLL CALL:

Present:	Absent:
Parks and Recreation Commissioner Joseph Castaneda Parks and Recreation Commissioner Carolyn Hudgins Parks and Recreation Commissioner Gregory Kelley Parks and Recreation Commissioner Judy Scott Parks and Recreation Commissioner Sheldon Blackwell	

INVOCATION:

To be led by Commissioner Rodriguez.

Invocation was led by Commissioner Rodriguez.

FLAG SALUTE:

Flag salute was led by Chair Blackwell.

PUBLIC COMMENT:

This is the time for citizens to comment on subject matters not on the agenda and that are within the jurisdiction of the Commission. This is also the public's opportunity to request an item from the Consent Calendar be pulled for discussion purposes or to comment on any item on the agenda. A maximum of three minutes is allowed for each speaker. Please begin your comments by stating your name and providing your city of residence

Sharieta Thomas, City of Hanford resident, from Restore180 is interested in securing community garden plots.

CONSENT CALENDAR:

Consent Calendar items are considered routine and will be enacted in one motion. There will be no separate discussion of these matters unless a request is made and then the item will be removed from the Consent Calendar to be discussed and voted upon by a separate motion.

A. Approval of the August 11, 2025 Meeting Minutes.

Motion to Approve

RESULT: (UNANIMOUS)

MOVER: Parks and Recreation Commissioner Joseph Castaneda

SECONDER: Parks and Recreation Commissioner Gregory Kelley
AYES: Joseph Castaneda, Carolyn Hudgins, Gregory Kelley, Judy Scott, Sheldon Blackwell

B. Approval of the September 8, 2025 Meeting Minutes.

Motion to Approve

RESULT: **Passed (UNANIMOUS)**
MOVER: Parks and Recreation Commissioner Joseph Castaneda
SECONDER: Parks and Recreation Commissioner Gregory Kelley
AYES: Joseph Castaneda, Carolyn Hudgins, Gregory Kelley, Judy Scott, Sheldon Blackwell

DIVISION UPDATES:

A. Sports Complex Updates

Recreation Manager Adam Ramos provided the Sports Complex updates.

- Four November Tournaments
- Leveled Harris Ball Park field
- Adult Toys 4 Kids Tournament held on Friday, December 12th. Over 300 toys donated for the Longfield Toy Giveaway.

All questions were addressed by Recreation Manager Adam Ramos.

B. Parks Updates

Parks Manager Levi Winebrenner provided the Parks updates.

Projects/ Updates:

- 3 Weeks of Winter Wonderland prep
- Parade Route prep- trees, grates, planter bubbles
- Began Measure H Projects – Drinking fountain replacements
- Base duties
- Helping Hands Scheduled 12/13/2025 Industrial Park –south of town
- Johnson Attendance Before and After new playground 2023- 15K, 2025-10.7K
- Park attendance and trends for 2025

Parks Manager Winebrenner addressed all questions.

C. Marketing/Sponsorship Updates

Recreation Coordinator Brittany Parreira provided the Marketing & Sponsorship updates.

- Christmas Parade Marketing Plan - Goal \$2,000 in sponsorships with \$10,500 secured.
- Winter Wonderland Marketing Plan - Goal \$75,000 in sponsorship with \$82,500 cash and \$127,500 total including cash, naming rights & trade.
- 44 total sponsors

Brittany Parreira addressed all questions and comments.

D. Events and Program Updates

Recreation Manager Adam Ramos provided the Events and Programs Updates.

Parade Attendance: 10,500 with the new parade route.

Had 10 food trucks throughout the route.
Amazing feedback from the community,
“The Plaza” was a success, Univision and La Buena partnership

3 Winners were selected for:

- Best in Show: Riverdale Assembly of God
- Judges Choice: Central Valley Meat Co.
- Theme Choice: St. Rose McCarthy School
- Winter Camp sold out.
- Special days/nights at Winter Wonderland: Santa Paws, Superhero Breakfast, Princess breakfast, Grinch Night, Tuesday Special, and Storytime with Santa
- Longfield Toy Giveaway - December 20 - Free to all
- Program Coordinator Update
- Plunge Repair update: in procurement

Recreation Manager Adam Ramos addressed all questions and comments.

E. Directors Updates

Director Albert provided the Directors Updates.

- Heroes Park Design Update
- Hidden Valley Park environmental update
- Urban Forestry Grant Update: Contracts with Fonseca and West Coast Arborist
- YAC Concession Stand update

Director Albert addressed all questions and comments.

GENERAL BUSINESS:

A. Tree Permit Request - 1203 Mary St

Parks Manager Winebrenner presented the Tree Permit Request at 1203 Mary St.

Motion to Approve Tree Permit Request.

RESULT:	Passed (UNANIMOUS)
MOVER:	Parks and Recreation Commissioner Joseph Castaneda
SECONDER:	Parks and Recreation Commissioner Judy Scott
AYES:	Joseph Castaneda, Carolyn Hudgins, Gregory Kelley, Judy Scott, sheldon Blackwell

B. Tree Permit Request - 508 Park St

Parks Manager Winebrenner presented the Tree Permit Request at 508 Park St.

Motion to Approve Tree Permit Request

RESULT:	Passed (UNANIMOUS)
MOVER:	Parks and Recreation Commissioner Joseph Castaneda
SECONDER:	Parks and Recreation Commissioner Gregory Kelley
AYES:	Joseph Castaneda, Carolyn Hudgins, Gregory Kelley, Judy Scott, sheldon Blackwell

FUTURE AGENDA ITEMS:

ADJOURNMENT:

Chair Blackwell adjourned the meeting at 6:50 PM.



AGENDA STAFF REPORT

MEETING DATE: 2/9/2026

AGENDA SECTION: DIVISION UPDATES

SUBJECT:

Sports Complex Updates

RECOMMENDATION:

Recommendation:

Recommended Motion:

BACKGROUND:

FISCAL IMPACT:

ATTACHMENTS:

None



AGENDA STAFF REPORT

MEETING DATE: 2/9/2026	AGENDA SECTION: DIVISION UPDATES
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SUBJECT:

Parks Updates

RECOMMENDATION:

Recommendation:

Recommended Motion:

BACKGROUND:**FISCAL IMPACT:****ATTACHMENTS:**

1. Parks updates 2.26



HANFORD

CALIFORNIA

PARKS MONTHLY UPDATE

Parks & Recreation Commission February 2026

Presented by Alvin Dias, Public Works Deputy Director

Updates

Projects/ Updates:

- Winter Wonderland Close out repairs
 - Main line melted
 - Removed and redistributed the sand
 - Prepping for replacement sod
 - Repairs to irrigation system
- YAC repairs, upgrade, preseason work
 - Floated and aerated Rotary park
 - Final touches at YAC baseball diamonds DG, etc
 - Light repairs at football/basin area
 - Power returned to YAC baseball.
- Helping Hands
 - Feb 14, Civic Park, 8:00 am – 12:00 pm
 - Jan Canceled



Questions or Comments?





AGENDA STAFF REPORT

MEETING DATE: 2/9/2026

AGENDA SECTION: DIVISION UPDATES

SUBJECT:

Marketing/Sponsorship Updates

RECOMMENDATION:

Recommendation:

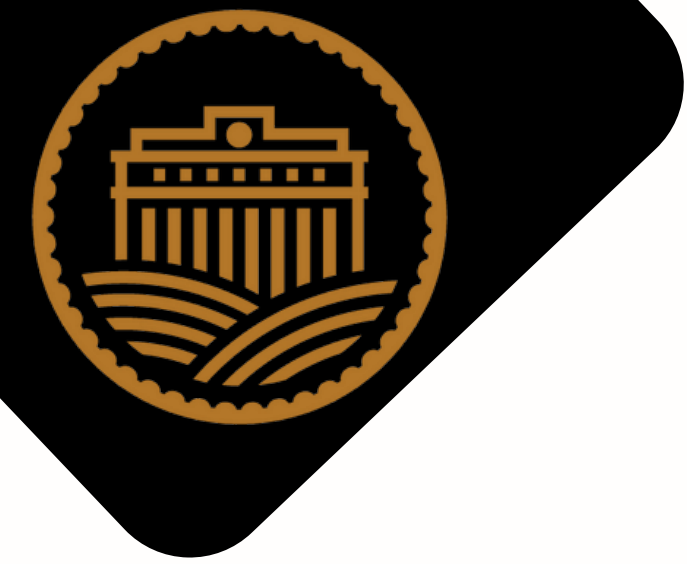
Recommended Motion:

BACKGROUND:

FISCAL IMPACT:

ATTACHMENTS:

1. Feb Marketing Update



MARKETING & SPONSORSHIP UPDATE

February 9, 2026

LITTLE KICKERS

INDOOR SOCCER PROGRAM

Marketing Plan

- Facebook and Instagram Post Organic
- Flyers
- Press Releases
- Registration-Full *(30 Spots)*



Little Kickers INDOOR SOCCER PROGRAM (SPRING)

Get your little ones moving and having fun! Little Kickers is a beginner-friendly indoor soccer program designed especially for 3–4 year olds. Kids will learn basic soccer skills through fun games and activities in a safe, supportive environment.

 March 4 – April 1, 2026
(Wednesdays, 5 weeks)
At 5:30pm–6:30pm

 Civic Auditorium
(Indoor Program)

COST: \$40 PER CHILD

**REGISTRATION
NOW OPEN** 

SCHOLARSHIP FUNDS ARE AVAILABLE. PLEASE CALL THE PARKS & COMMUNITY SERVICES FRONT DESK OR VISIT THE MAIN OFFICES FOR APPLICATION DETAILS.

Things to Know

- ✓ Bring a water bottle, wear athletic shoes, and come ready to have fun!
- ✓ Parent must remain with child for the full length of the session, no drop offs are allowed.
- ✓ No make up classes will be offered if a session is missed

 Contact Us
559.585.2525

 Visit Our Website
www.ci.hanford.ca.us/

 Our Location
321 N Douty Street



CHILD & PARENT DANCES

Marketing Plan

- Facebook and Instagram Post Organic
- Posters
- Press Releases
- Goal is to get over 250 guests to attend

Sponsorships

- Goal is \$2,500 (For Food)



EASTER EGG HUNT

Marketing Plan

- Facebook and Instagram Post Organic
- Posters
- Press Releases
- Goal is to sell out event.

Sponsorships

- Goal is \$5,000 (Covers Registration)



QUESTIONS?



AGENDA STAFF REPORT

MEETING DATE: 2/9/2026

AGENDA SECTION: DIVISION UPDATES

SUBJECT:

Events and Program Updates

RECOMMENDATION:

Recommendation:

Recommended Motion:

BACKGROUND:

FISCAL IMPACT:

ATTACHMENTS:

None



AGENDA STAFF REPORT

MEETING DATE: 2/9/2026	AGENDA SECTION: DIVISION UPDATES
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SUBJECT:

Directors Updates

RECOMMENDATION:

Recommendation:

Recommended Motion:

BACKGROUND:

The month of February is getting busy with three Saturday events:

February 14th Liberty Tree Planting in Civic Park (across Douty from Superior Dairy) at 11 am. The Sons of the American Revolution and community members will be planting a Liberty Tree (Valley Oak). Their goal is to plant 250 Liberty Trees to signify the 250th anniversary of the Declaration of Independence. This will be the first Liberty Tree planted in the State of California.

February 21st Community Outreach at two Landscape Assessment Districts (LADs). At 11 am at Quail Run Park and 1 pm at Cielo en Tierra (Ambassador and Zion Way). Both districts are targeted to be balloted this Spring to raise assessment levels to meet the current needs. Staff will meet with residents to educate and explain why this is needed. Two more outreach events are scheduled this Spring at four other LADs.

February 28th at 8:00 am - Ribbon Cutting for the new YAC Restroom/Concession Building.

A brief ribbon-cutting event to celebrate the opening of the new building and surrounding improvements to the Bob Hill Baseball Complex. This is also opening day for Hanford Youth Baseball.

Tree Planting at the Hanford Softball Complex — Tree planting will begin around the perimeter of the Softball Complex, beginning on February 16th. 88 trees will be planted by the Sequoia Community Corps. Minor irrigation improvements will also be completed.

Heroes Park Design - Heroes Park design continues. Staff is working with the State to identify project scope and available funding. Melton Design Group (MDG), City Engineering, and Public Works are collaboratively working to move this project forward.

Winter Wonderland - We are finalizing revenue and expenses for the past season. Staff will present the Final Report to the City Council and return to the Commission in March with the final report.

Repairs and renovation of Civic Park are underway by the Parks Division. Replacement sod, cement repairs, and hydro-seeding are needed to recover from heavy use and restore the park for the busy summer season.

FISCAL IMPACT:

ATTACHMENTS:

None



AGENDA STAFF REPORT

MEETING DATE: 2/9/2026

AGENDA SECTION: GENERAL BUSINESS

SUBJECT:

Tree Permit Request - 1821 Easy St

RECOMMENDATION:

Recommendation:

Recommended Motion:

BACKGROUND:

FISCAL IMPACT:

ATTACHMENTS:

1. heritage tree prune 1821 Easy updated



Re-visiting Heritage Tree Removal 1821 Easy St

Alvin Dias

Public Works Deputy Director

Current Conditions

The tree is in the back corner of the property



The owner's ask:

- **The tree has recently begun to drop major branches.**
- **The tree is located between two homes and could negatively impact either home should a branch fall on either home.**
- **Tree appears to be in declining health, given its appearance and proximity to the homes and potential risk to property and residents they would like it removed.**

Recommendation

Recommendation to approve

- An on-site inspection was conducted by Alvin Dias and Levi Winebrenner. They confirmed that the tree is a Valley oak and that, due to its size and location, the risk cannot be adequately mitigated through pruning.
- The on-call arborist was not available for this project because the tree is not located within the public right-of-way, and using public funds for this service could be considered a gift of public funds.
- The tree is in close proximity to both properties and presents a high risk of damage to one or both structures, with the potential for significant structural damage and possible injury to occupants.



AGENDA STAFF REPORT

MEETING DATE: 2/9/2026	AGENDA SECTION: GENERAL BUSINESS
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SUBJECT:

Update on the establishment of a Parks and Recreation Foundation

RECOMMENDATION:

Recommendation:

Recommended Motion:

BACKGROUND:

At the November 11, 2025, Parks and Recreation Commission meeting, Director Albert provided an Introduction to Foundations presentation to the Commission (attached). The presentation provided general guidelines on the purpose, establishment, and next steps of establishing a foundation.

During that presentation, a key question arose: whether a Commissioner could also serve on the board of a Parks and Recreation Foundation. This question was forwarded to the City Attorney for clarification. Below is his response:

The FPPC's basic rule regarding conflicts of interest prohibits an official from making a decision or attempting to use the official's position to influence a government decision if "the official has a disqualifying financial interest."

Serving simultaneously on the Parks & Rec. The commission and the foundation's board do not automatically create a disqualifying financial interest. Other factors would need to be present for a conflict of interest to arise. For example, if the Commission considers a donation for purposes of making a recommendation to the Council, recusal may be necessary if a donor is a commissioner's source of income.

Conclusion: A person may serve simultaneously on the Parks & Rec. Commission and on the foundation's board without creating an automatic conflict of interest under the FPPC's regulations. Under his definition, a Commissioner could also serve on the foundation board.

The next steps remain the same:

1. Is this something that is of interest?
2. Who will lead the process?
3. Creation of a vision and mission statement
4. Founding board structure
5. Outline of bylaws and MOU framework.
6. Development of a first-year fundraising plan.

The National Association of Park Foundations is offering an online course titled "Establishing and Advancing a Park Foundation."

<https://www.the-napf.org/establishing-advancing-a-park-foundation>

As a reference, the following websites are available for review:

Visalia Parks and Recreation Foundation: www.supportvisaliaparks.co

Greater Tulare Recreation

Foundation: <https://www.tulare.ca.gov/government/departments/community-services/parks-recreation/greater-tulare-recreation-foundation>

North of the River Recreation Foundation (Bakersfield): www.mightcause.com/organization/north-of-the-river-recreation-foundation

**FISCAL IMPACT:
UNKNOWN AT THIS TIME**

ATTACHMENTS:

1. Introduction to Foundations



HANFORD

CALIFORNIA

Introduction to Parks and Recreation Foundations
November 10, 2025

What is a Parks and Recreation Foundation?

A Parks and Recreation Foundation is a legal non-profit organization that supports local parks and recreation activities, including:

Fundraising and financial support, including

- Private and corporate donations
- Grants
- Sponsorships





Advocacy and Community Engagement

- Advocacy
- Public awareness
- Bridge between city government and residents

Strategic Partnerships

- Matching funds for grants
- Private-Public partnerships

Stewardship and Accountability

- Operates independently but aligns with the City's goals
- Provides transparent stewardship of donated funds

Enhancing Quality of Life

- Ultimate mission is to improve the quality of life in the community





Establishing a Foundation

1. Define the purpose and mission

2. Choose the structure

- Establish a 501©(3) nonprofit organization
- Form a founding board of directors
- Articles of incorporation
- Develop bylaws

3. Build the Board and Leadership

- Recruit a diverse and skilled founding board that reflects Hanford's community values





4. Develop a Funding Strategy

- Founding a sponsor campaign
- “Friend of Hanford Park” donor circle
- Grant application
- Event sponsorships

5. Branding and Community Visibility

- Develop a brand identity – logo, website, social media presence
- Publicly launch the foundation with a kick-off event and press release

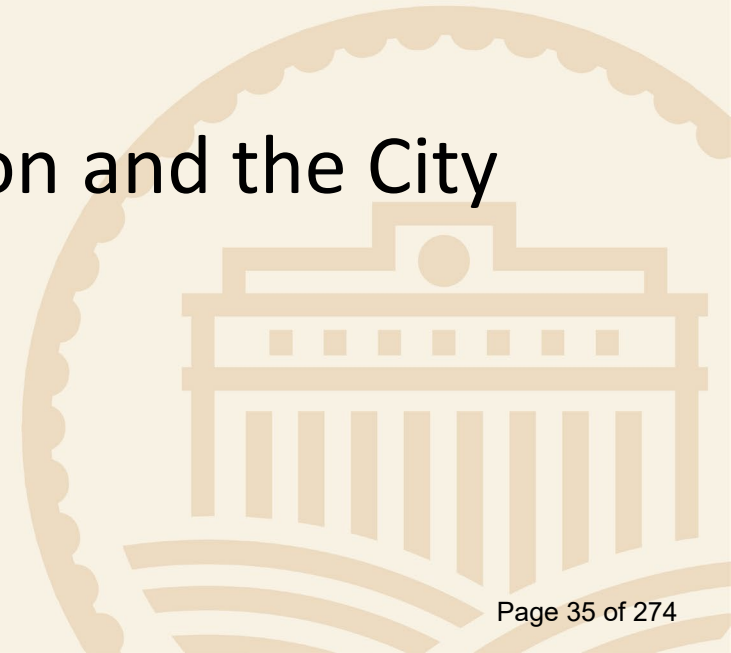


6. Administrative Framework

- Set-up transparent policies for
 - Fund distribution and approval
 - Donation acknowledgement
 - Conflict of interests and ethics compliance
 - Annual reporting and financial audits

7. Ongoing Partnership with the City

- Establish an MOU between the foundation and the City





Next Steps & Questions

1. Is this something that is of interest?
2. Who will lead the process?
3. Creating a sample vision and mission statement
4. Founding board structure
5. Outline of bylaws and MOU framework
6. Develop a first-year fundraising plan





AGENDA STAFF REPORT

MEETING DATE: 2/9/2026

AGENDA SECTION: GENERAL BUSINESS

SUBJECT:

Urban Forest Master Plan Recommendation

RECOMMENDATION:

Recommendation:

Recommended Motion: To make a formal recommendation to the City Council to adopt the draft Urban Forest Master Plan.

BACKGROUND:

In October 2024, the City of Hanford was awarded \$1 million for the USDA Urban and Community Forest grant to launch a comprehensive urban forestry program. The scope of work included the following eleven deliverables:

1. Comprehensive Tree Inventory
2. Implementation of Tree Inventory Software
3. Development of an Urban Forest Master Plan
4. Urban Tree Canopy and Land Cover Assessment
5. Socioeconomic/Equity Analysis
6. Urban Heat Island Mapping
7. Tree Health Analysis
8. Climate Vulnerability Analysis
9. Review of Operations and Existing Policies and Ordinances
10. Community Engagement through collaboration with local nonprofits
11. Planting 600 trees in various disadvantaged communities as identified by CEJST, EPA IRA tool and EJScreen.

The City has entered into an agreement with Dudek to complete several grant deliverables, including the Urban Forest Master Plan, which unifies collected data and serves as a roadmap for the future.

During the January 12, 2026, Parks and Recreation Commission meeting, Dudek presented the UFMP to the Commission, answered questions, and included a draft of the plan for review.

Tonight, we are seeking a formal recommendation of the UFMP to the City Council. A study session item has been added to the Council agenda as a study session on February 17th. Formal adoption of the UFMP will be placed on the March 3rd Council agenda.

Attached for your review is the Draft Urban Forest Master Plan.

FISCAL IMPACT:

ATTACHMENTS:

1. City of Hanford UFMP Public Draft
2. Hanford UFMP Appendices Combined



THE CITY OF HANFORD URBAN FOREST MANAGEMENT PLAN





ACKNOWLEDGMENTS

CITY COUNCIL

Mayor – Travis Paden
Council Member – Kimber Regan
Council Member – Nancy Howze
Council Member – Lou Martinez
Council Member – Mark Kairis

CITY MANAGER

City Manager – Mario Cifuentez

PARKS AND RECREATION COMMISSION

Commissioner – Joseph Castaneda
Commissioner – Judy Scott
Commissioner – Gregory Kelley
Commissioner – Carolyn Hudgins
Commissioner – Sheldon Blackwell
Commissioner (Alternate) – Santiago Rodriguez

Prepared By
DUDEK
URBAN FORESTRY DIVISION



CITY DEPARTMENTS AND STAFF

Parks and Community Services Director – Bradley Albert
Parks Manager – Levi Winebrenner
Community Relations Manager – Brian Johnson
Utilities and Engineering Department Director – Frank Senteno*
Associate Civil Engineer – Jaklin Hart*
Assistant City Manager – Jason Waters*
Public Works Director – Russ Sterling*

**Individuals who participated in portions of the Urban Forest Management Plan development process.*

HANFORD UFMP WORKING GROUP MEMBERS

Joseph Castaneda – Hanford Parks and Recreation Commission
Victor Rosa – Hanford Joint Union High School District
Daniel Pierotte – Hanford Elementary School District

Todd Barlow – Kings County Office of Education
Jeff Garner – Kings County Action Organization
Marilyn Castaneda – King’s Partnership
Carson DeBlieck – Engaged and Dedicated Resident
Greg Mendonsa – Urban Tree Foundation
Dudek

INDIGENOUS PEOPLE OF KINGS COUNTY

Tachi Yokut Tribal Nation

FUNDING

Funding for the City of Hanford’s Urban Forest Management Plan has been made possible in part by an Urban and Community Forestry Program grant from the U.S. Department of Agriculture’s Forest Service, administered by GreenLatinos.

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ACRONYMS & ABBREVIATIONS

ACRONYMS & ABBREVIATIONS

Acronym/ Abbreviation	Definition
BMP:	best management practices
City/Hanford:	City of Hanford
Ordinance:	Trees and Shrubs Ordinance
UFMP:	Urban Forest Management Plan

EXECUTIVE SUMMARY

A GREENER FUTURE FOR HANFORD



Hanford is embracing a bold vision for a healthier, cooler, and more equitable city through the development of its first Urban Forest Management Plan (UFMP). This UFMP contains both an analysis of current conditions, as well as a 30-year strategic road map for improving the management and health of Hanford's trees. With support from a \$1 million U.S. Forest Service grant, Hanford is investing in trees as critical infrastructure, including planting 600 new trees over the next two years, to address climate resilience, public health, and environmental justice.



WHY TREES MATTER

Urban trees are more than just greenery—they are essential to Hanford's quality of life:



Cooler Streets

Tree canopy can reduce temperatures by up to 10°F during extreme heat.



Cleaner Air

Trees absorb pollutants and improve respiratory health.



Stormwater Management

Trees intercept thousands of gallons of runoff annually.



Mental Health & Recreation

Green spaces promote well-being and community connection.



Economic Value

Tree-lined streets can increase property values by 3–15%.

(Sources: Nowak 2002, Rahman et al. 2023, White et al. 2014, Wolf 2009)

CURRENT URBAN FOREST SNAPSHOT

Hanford's urban forest includes trees in parks, streets, private yards, and commercial areas. A comprehensive tree inventory and canopy cover assessment were conducted as part of this project.

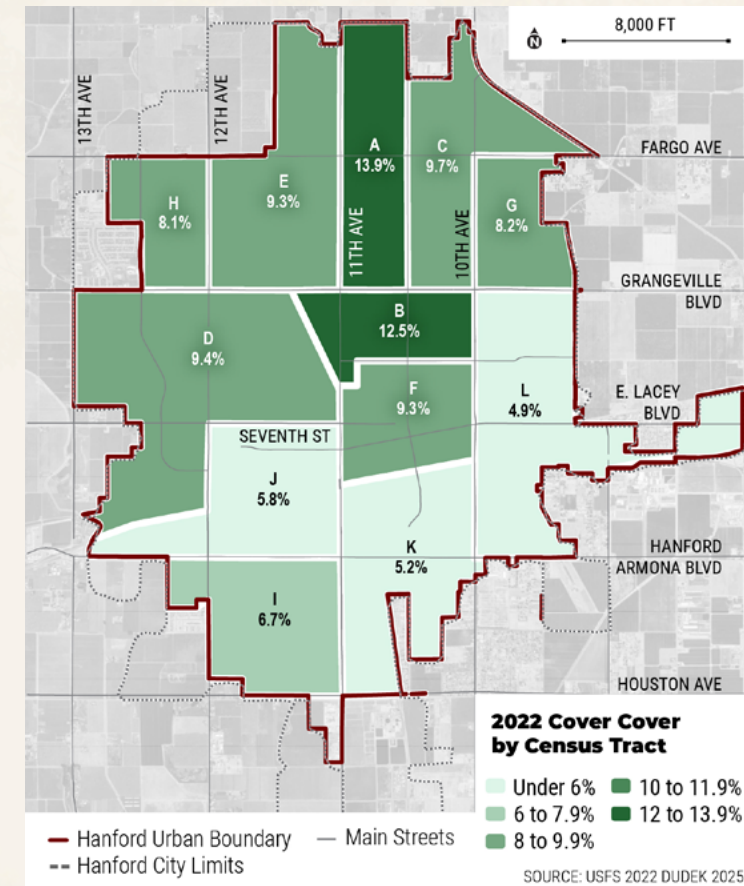
- Hanford has a current (2022) city-wide canopy cover of 8%, down from 9.5% in 2018. This is a loss of 140 canopy acres and equates to losing roughly 8,600 trees. Roughly 138 acres of this loss was on private property, which is why the City will need help from residents to reach their future urban forest goals.
- Hanford's 2025 public tree inventory by the numbers:

Living Trees: 6,486

Vacant Sites & Stumps: 600

Dead-standing: 159

Unique Tree Species: 100



TOP 3 SPECIES IN HANFORD

(FROM THE CITY'S 2025 PUBLIC TREE INVENTORY)



KEY CHALLENGES TO THE URBAN FOREST

Hanford faces a number of key environmental, social, and financial challenges:



Extreme Heat: Summer highs often reach over 100°F for consecutive days.



Tree Equity Gaps: Underserved areas lack tree canopy and suffer from higher heat exposure and the urban heat island effect.



Limited Resources: Funding and staffing constraints impact long-term maintenance of the City’s public trees.



Limited public knowledge of the Trees and Shrubs Ordinance: Over half of the respondents who took the UFMP survey were not aware of Hanford’s ordinance or their responsibilities for maintaining trees in the parkway adjacent to their properties. The Trees and Shrubs Ordinance was updated as part of this project to clarify protection standards, maintenance responsibilities, the tree removal permit process, and replacement requirements.



VISION & GOALS

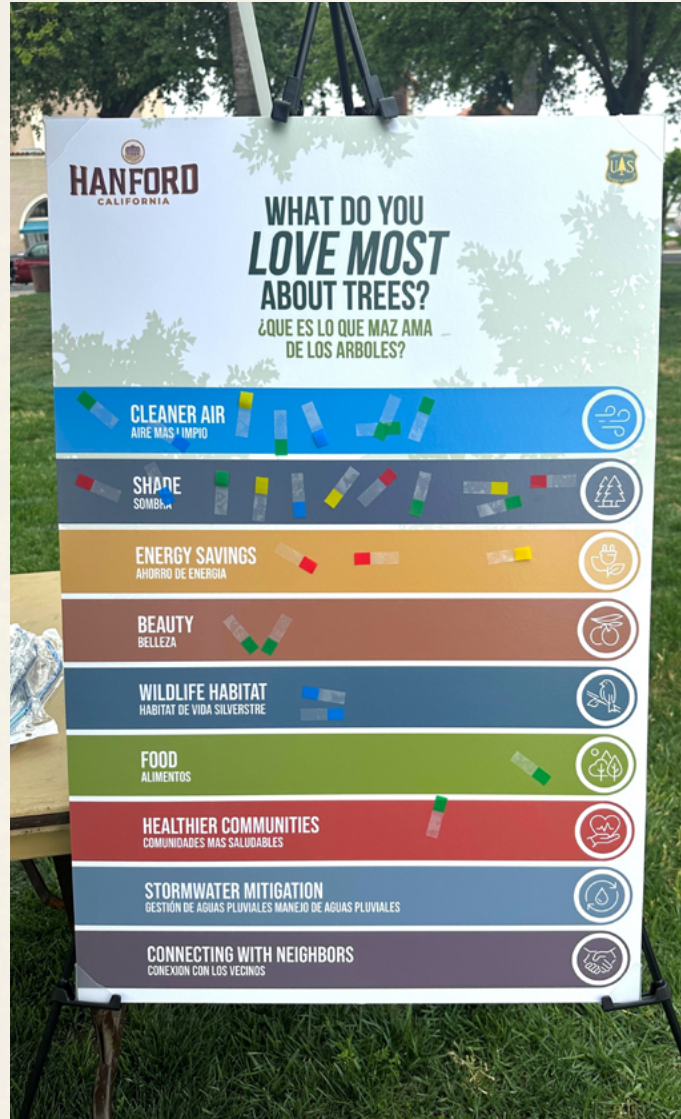


Hanford Future Urban Forest Vision:
Hanford’s trees are a valuable resource, sustainably managed by the City and its residents, providing shade from heat, cleaner air to breathe, increasing property values, and enhancing the quality of life for our current and future generations.



Goals - Achieving the future urban forest vision will include:

- 1. Increasing City-wide Canopy Cover to 10% by 2055** to improve climate resilience. Roughly 3,700 new trees will need to be planted over the next 30 years to achieve this goal.
- 2. Prioritizing Tree Equity** through prioritizing tree planting in census tracts with the lowest canopy cover and access to green space.
- 3. Enhancing Tree Diversity, Health, and Sustainability** through the development of additional financial and human resources, a shift to proactive maintenance, improving tree species selection, and better tracking of tree-related work records.
- 4. Engaging the Community** by providing education and resources including an Urban Tree Care Guide and encouraging stewardship through tree giveaways.



COMMUNITY ENGAGEMENT

The UFMP was shaped by community input through surveys, outreach events, and a Working Group with various community partners and interested parties.

Here is what we heard from the 69 survey respondents:



95% of respondents were in support of having neighborhood street trees planted in the public right-of-ways along roadways

Here is what we heard from the 82 attendees who participated at our UFMP outreach table:



The top four areas where attendees want to see more trees planted are Parks (22%), Schools (20%), Streets/Sidewalks (14%), and Parking Lots (14%).

HOW YOU CAN GET INVOLVED

- **Plant a tree on your property, request a tree to be planted in the parkway adjacent to your property, or participate in a volunteer tree planting event. Picking the “right tree for the right place” is important and a recommended tree species list is provided in the Urban Tree Care Guide and in Appendix I.**
- **Talk to your schools about planting more trees to shade playgrounds.**
- **Help water and care for trees in your neighborhood.**
- **Attend a City-hosted educational workshop about trees.**
- **Talk to your neighbors and friends about the importance of trees and the benefits they provide.**
- **Help report tree issues on public property using the My Hanford reporting website or mobile app: <https://www.cityofhanfordca.com/1385/Report-My-Hanford> .**

I

INTRODUCTION

The City of Hanford's (City's) urban forest is made up of all the public and private trees within the city limits, including trees in parks like Civic Park and Hidden Valley Park, front and back yards, parking lots, and along streets and sidewalks in downtown Hanford or in residential neighborhoods (see Figure 1-1). All trees in Hanford, regardless of ownership, provide urban forestry benefits to the community, and community members play an important role in maintaining and enhancing the City's urban forest.

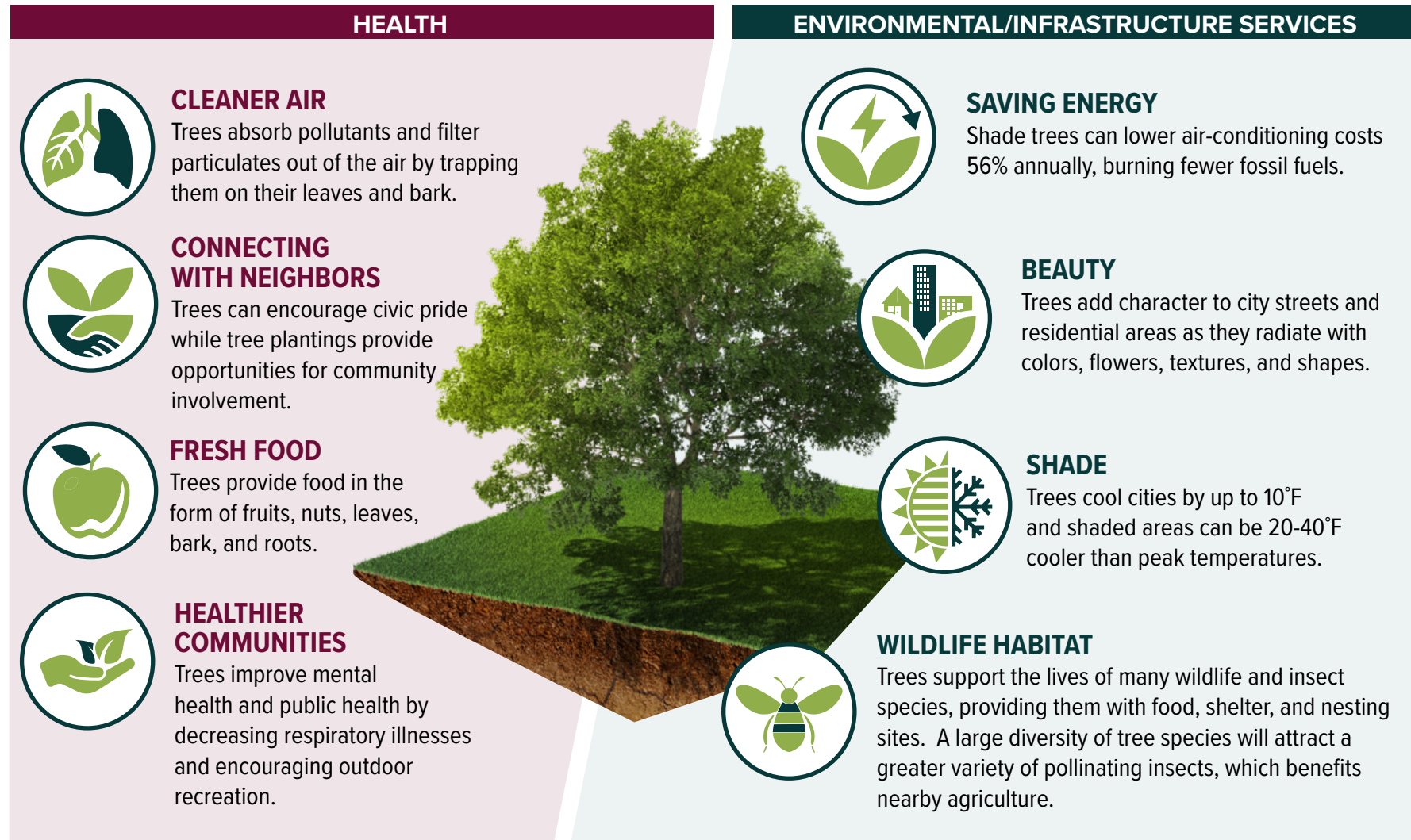
Figure 1-1. Hanford's Urban Forest



Source: Dudek

Figure 1-2. The Benefits of Trees

THE BENEFITS OF TREES



Source: Dudek 2024

1.1 Benefits of an Urban Forest

Many Hanford residents already appreciate the commonly known benefits of trees such as the shade they provide on hot days or the aesthetic beauty they provide to the Hanford’s streetscapes, residential neighborhoods, and parks. Figure 1-2 illustrates the many other benefits that Hanford’s trees provide, including some that are less widely known, such as providing habitat and food for pollinating insects, which in turn, can benefit the local agriculture that relies on those insects to pollinate their crops (Daniels et al. 2020). It is important that trees are properly cared for so that their benefits can be maximized for the whole community.

1.2 Historical and Environmental Context

Early History

Understanding the history and environmental setting of Hanford helps give context for future urban forest planning. The earliest known history of this territory was that of the Yokuts tribe. Yokuts translates to “people” and is commonly used to refer to the indigenous people who have lived in and tended to the Central Valley for thousands of years. There were many tribes throughout the valley that were shaped by the ecosystems they lived near, such as the delta, rivers, lakes, and grasslands, but united by a

common language. The valley was a place of great abundance for Yokuts. Its large rivers were teeming with seasonal salmon and trout runs; expansive riparian forests and oak woodlands provided ample acorns and fruit; vast lakes and wetlands housed countless waterfowl; endless grasslands with spring wildflowers were roamed by elk, deer, and pronghorn; and there was also alkali scrub land, which is vital to many unique species like the California kangaroo rat (*Dipodomys californicus*) and San Joaquin kit fox (*Vulpes macrotis mutica*) (Noss 2020).





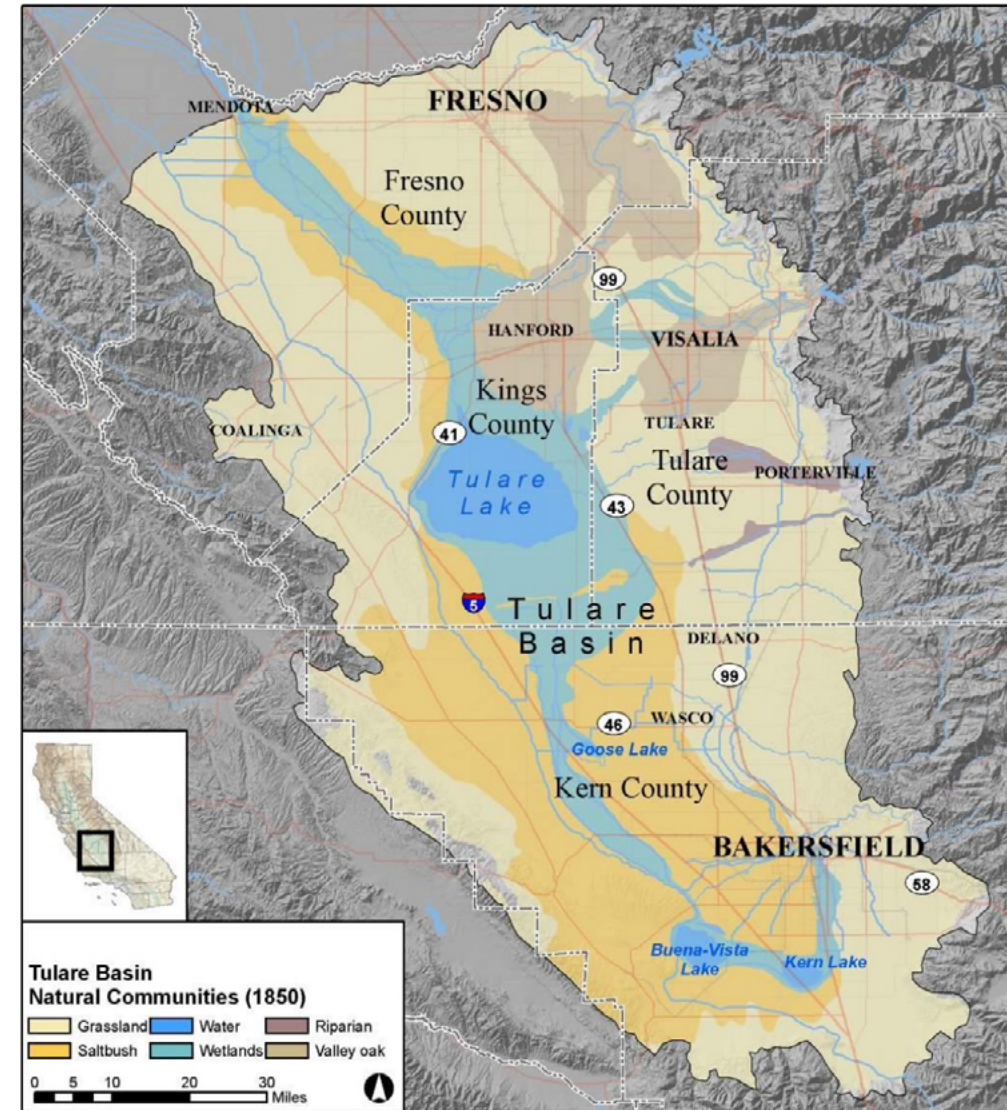
The most prominent tribe today nearest to Hanford is the Tachi Yokuts, which historically lived around the banks of Tulare Lake, or Pa’ashi as it was originally called. At its historical capacity, the Tulare Lake was the largest freshwater lake west of the Great Lakes in what would become the United States (Figure 1-3). The Hanford region, being between the Kings River to the north and Tulare Lake to the south, historically supported a vast woodland primarily dominated by the valley oak (*Quercus lobata*). Large valley oaks can still be found throughout Hanford today, and these trees can live up to 600 years old (CNPS 2025). The staple food source for the Yokuts were acorns from oaks (*Quercus spp.*) and the tubers of the tule (*Schoenoplectus acutus*) that grew in wetlands and around lakes. In fact, the Spanish named Tulare Lake for the dense tule surrounding it.

European Arrival Through Incorporation

The arrival of European settlers after the Gold Rush in the mid-1800s led to significant changes, including the diversion of rivers, draining of wetlands, and development of large-scale agriculture, transforming the landscape dramatically (Latta 1949; Best 2023).

Hanford originated in 1877 when the Southern Pacific Railway passed through a modest sheep camp. The

Figure 1-3. Historic Map of Tulare Lake and Basin



Source: Austin 2012



settlement was named after railroad auditor James Madison Hanford. The railway’s presence fueled rapid growth, making Hanford a regional trade hub, but water delivery was crucial to the survival of the city. Workers dug canals like the People’s Ditch and Last Chance Ditch by hand using crude equipment. Canals were deliberately planted with trees and bushes to strengthen the dikes, protect children and animals from falling in, and prevent evaporation. The value of irrigation canals as transportation arteries and recreational facilities was also appreciated by many residents (Roberts 2005). Hanford was officially incorporated as a city in 1891 and became the county seat when Kings County formed in 1893 (City of Hanford 2025a).

1900s and Early 2000s

Throughout the twentieth and early twenty-first centuries, Hanford evolved into a vibrant community and transitioned to a modern city government. Responding to threats to its downtown vitality in the 1970s, city leaders and merchants launched revitalization programs, investing in infrastructure, historic preservation, and beautification. These efforts earned statewide and national recognition, and in 2000, the Main Street Program was launched to continue fostering growth. Hanford's historic charm and civic pride remain central to its ongoing development (City of Hanford 2025a). Hanford was first recognized as a Tree City USA in 2007 and has maintained this recognition for the last 18 years. In November 2015, the City created

and adopted its first Trees and Shrubs Ordinance (Ordinance) (Chapter 12.12 of the Municipal Code), which protects street trees and assigns responsibilities for tree maintenance and replacement. The Ordinance was updated as part of this project to clarify tree protection standards, maintenance responsibilities, replacement requirements, fees, and the tree removal permit process.





Current Planning Efforts

The City kicked off the Urban Forest Management Plan (UFMP) Project in October 2024 with a tree planting celebration called “Hanford Goes Green” (Figure 1-4) after receiving an Urban and Community Forestry grant from the U.S Department of Agriculture. In December 2024, the City hired the environmental consultant Dudek, and the official urban forest management planning process began in January 2025. Another large part of the City grant included funding to plant 600 new trees in Hanford, which will be taking place over fall 2025 and fall 2026. To learn more about the full urban forest management plan development process, see **Section 2.2, Plan Development Process**. Concurrently with the UFMP effort, the City and partner agencies are developing a Transit-Oriented Development and Connectivity Plan that, once implemented, is meant to create a thriving, inclusive, and transit-oriented community near the new high speed rail station, ensuring that some of the state’s most disadvantaged and low-income communities can be the direct beneficiaries of high-speed rail’s arrival (City of Hanford 2025b).

1.3 Hanford’s Urban Forest Today

One of the main metrics for measuring the success of a city’s urban forest is the extent and distribution of its **canopy cover**, which is the portion of ground that is covered or shaded by tree leaves,

Figure 1-4. Hanford Goes Green Kickoff Tree Planting



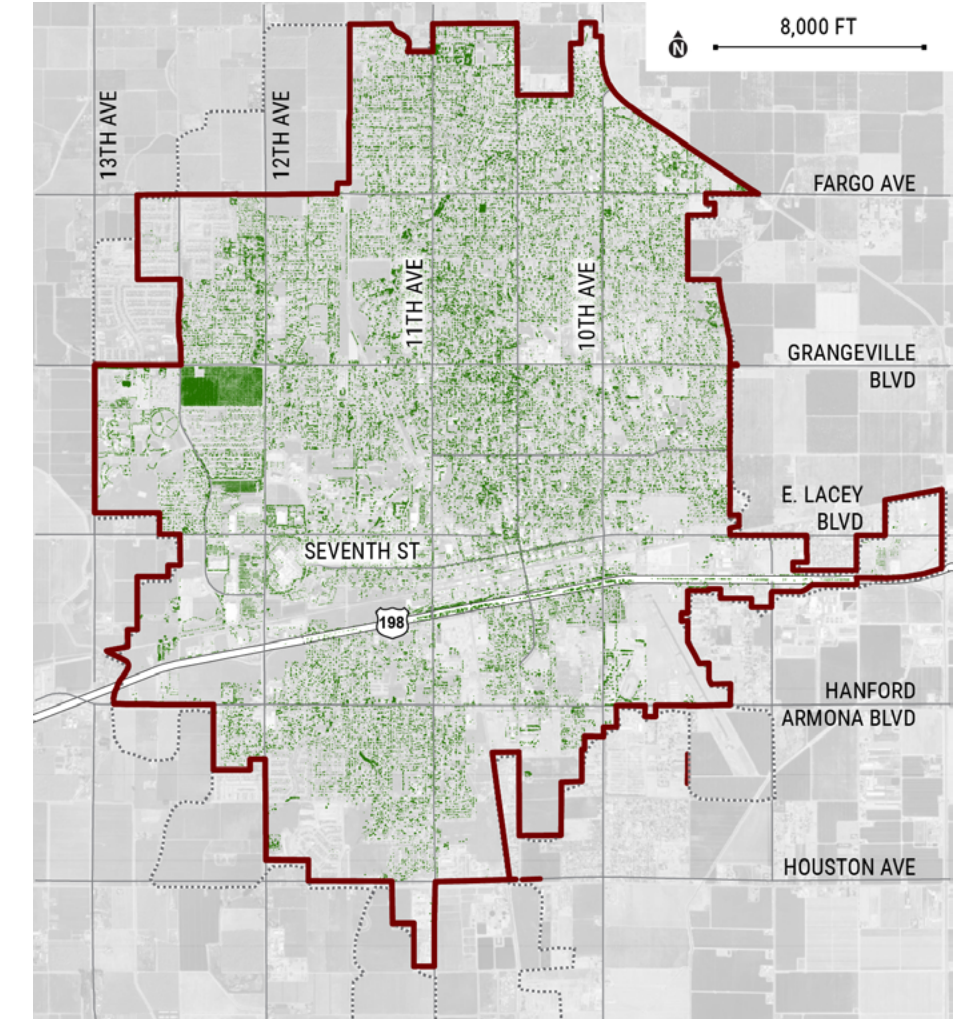
Source: Austin 2012

branches, and stems when looking from a bird’s eye view. Using 2022 data, Hanford was found to have a canopy cover of 8.0% when looking at all of the public and private trees within the city’s urban boundary (see Figure 1-5). This canopy cover level has decreased by 1.5 percentage points or 140 acres since 2018. This loss of canopy is discussed further in **Section 2.1, Key Findings**. A full detailed breakdown of the canopy cover analysis including methodology and recommendations can be found in Appendix A, Urban Forest Resources Report.



Hanford’s public inventory of nearly 6,500 living trees (Figure 1-6) consists of 100 different types (species) of trees. Figure 1-7 shows the top 10 most common tree species within Hanford’s public tree inventory. Chinese pistache (*Pistacia chinensis*) trees make up over one third of the total inventory. While Chinese pistache does well in Hanford, if this tree species becomes vulnerable to a future pest or pathogen, it could potentially lead to the decline and/or removal of a large number of public trees and result in many lost benefits to the community. Having an urban forest with a large diversity of tree species combined with a diversity of different tree age groups builds resilience to future threats whether from climate, pests, or pathogens. With this snapshot of Hanford’s urban forest in mind, let’s explore what a UFMP is, and why the City needs one.

Figure 1-5. 2022 Tree Canopy Cover in Hanford



■ Hanford 2022 Canopy Cover Hanford City Limits
— Hanford Urban Boundary — Main Streets

SOURCE: USFS 2022 DUDEK 2025

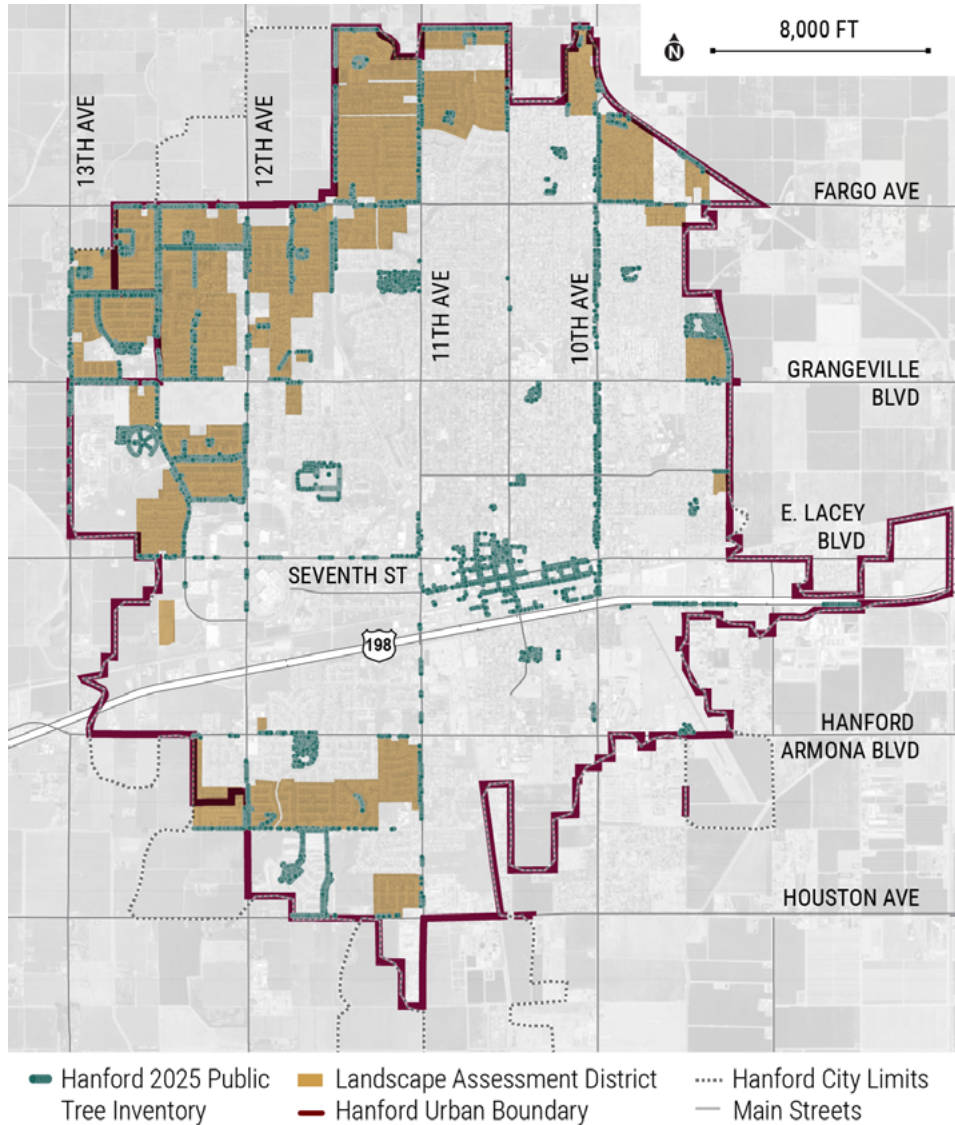
Source: Dudek 2025; USFS and CAL FIRE 2022



An inventory of all City-owned trees was conducted in the late spring and early summer of 2025 (Figure 1-6). Here are some interesting facts about Hanford’s public trees:

- Living Trees: 6,486
- Stumps: 113
- Dead-standing: 159
- Vacant Sites: 487
- Unique Tree Species: 100
- Unique Genera: 64

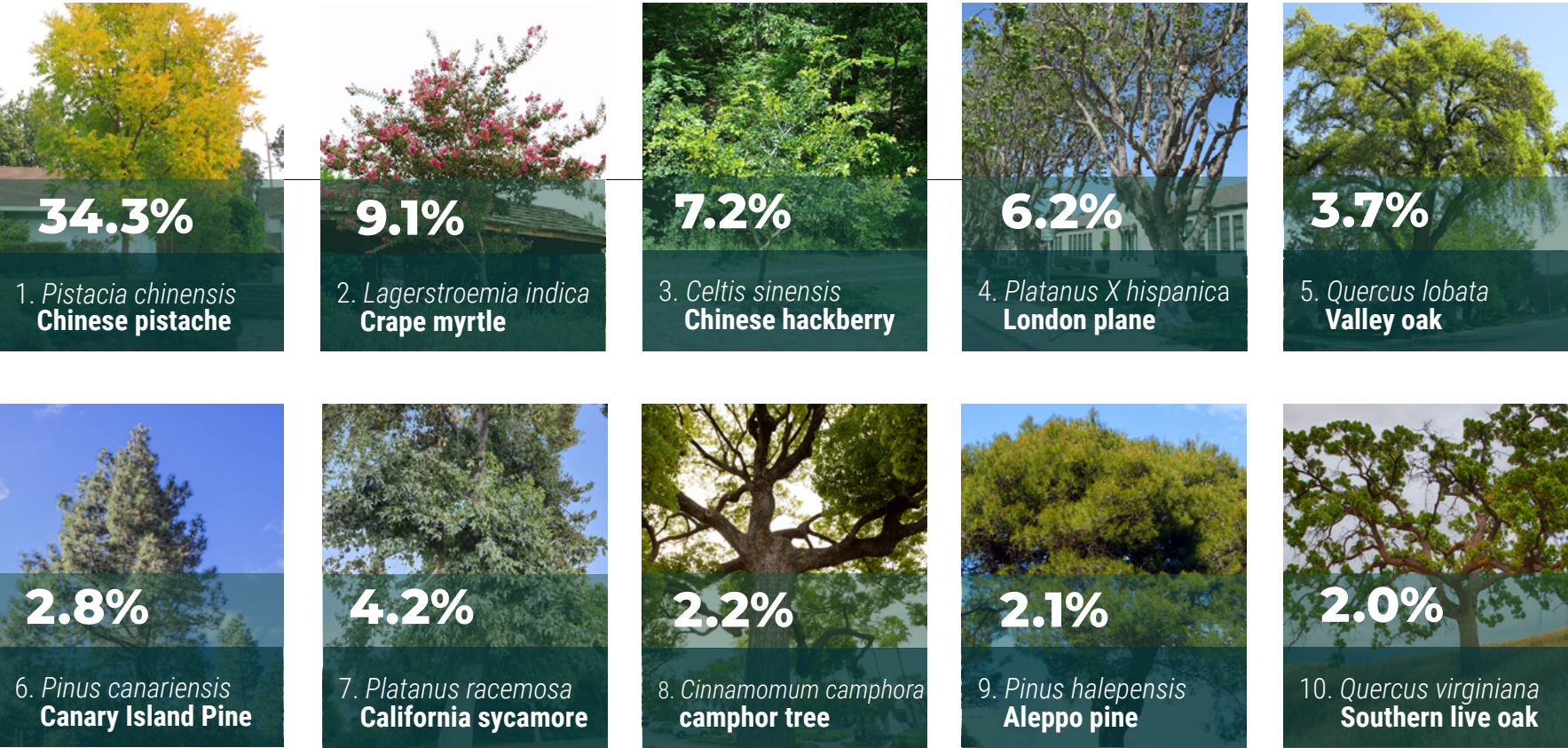
Figure 1-6. Hanford's 2025 Public Tree Inventory



Source: Austin 2012

SOURCE: USFS 2022 DUDEK 2025

Figure 1-7. Top 10 Most Common Tree Inventory Species



Source: Dudek 2025; USFS and CAL FIRE 2022

1.4 Our Strategy for the Future: An Urban Forest Management Plan

An **urban forest management plan (UFMP)** is a strategic road map and guiding document that the City will use to set and achieve urban forest goals over the next 30 years. The planning process involved a comprehensive analysis of existing conditions, identification of key challenges and opportunities, and the development of actionable goals to support long-term sustainability and the resilience of Hanford's urban forest. While the City has long demonstrated a commitment to tree planting and canopy enhancement, the creation of this UFMP represents the first comprehensive effort to align policies, staffing, and field practices under a unified strategy.

1.5 Why Hanford Needs a UFMP

New Period of Transformation

Hanford is entering a period of significant transformation. With major public projects on the horizon such as the creation of the new Heroes Park, upgrades to East Lacey Boulevard, and the construction of the California High-Speed Rail station, the City is preparing for increased regional prominence, enhanced connectivity, and long-term economic and community growth. These developments present a unique opportunity at this crucial time to

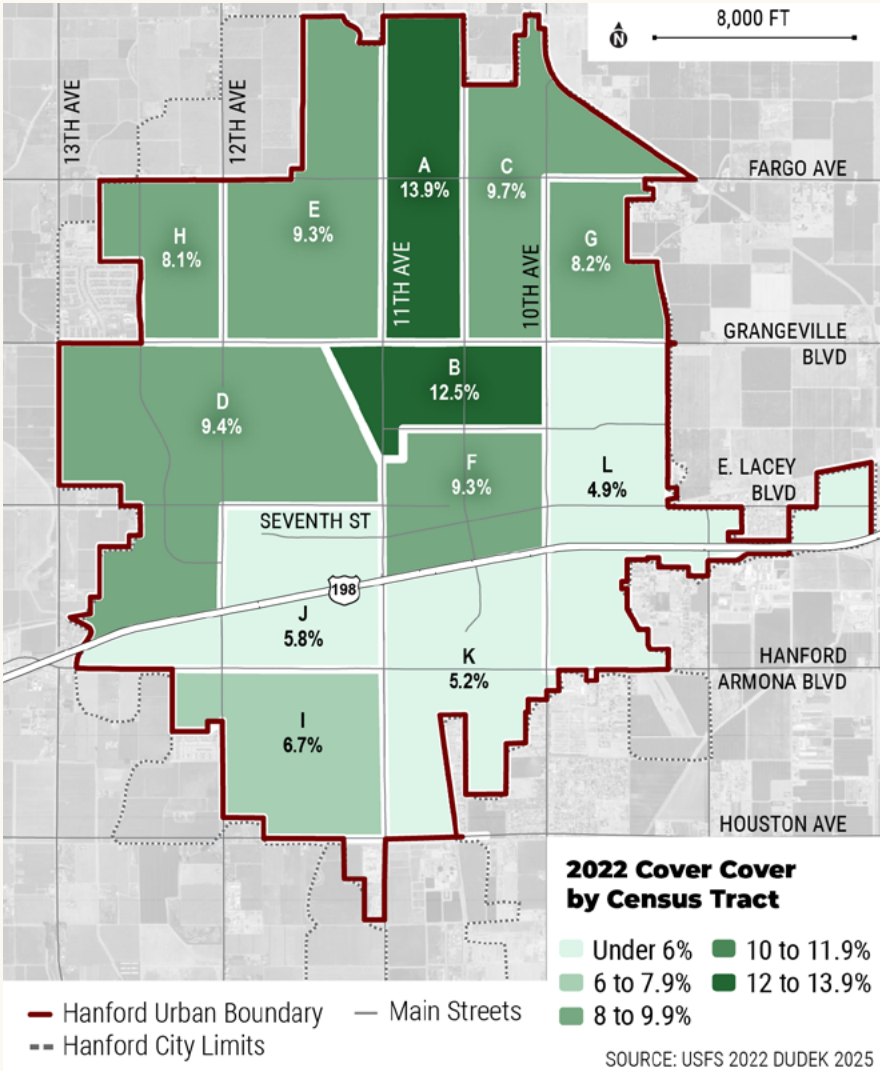
shape Hanford's future and establish new tree canopy in a way that is resilient, equitable, and community focused.

Equitable access to tree canopy is a critical issue for Hanford's urban forest. Although trees provide essential benefits such as shade, cooling, and improved air quality, these benefits are not shared evenly across the city. The areas with the least canopy are often the same places where residents face higher levels of poverty, greater exposure to summer heat, and limited access to shaded public spaces.

These conditions are most evident in central, south, and southeast Hanford, where tree cover is sparse and large areas of pavement and buildings leave residents more vulnerable to extreme heat (see Figure 1-8). In contrast, neighborhoods in north and west Hanford have more established tree cover and greater access to shade. This uneven distribution creates disparities in comfort, health, and livability across the community.

The UFMP provides an opportunity to address these inequities by guiding tree planting and canopy investment in neighborhoods where they are needed most. The City can reduce heat-related risks, improve quality of life, and ensure that all residents benefit from the protection and services provided by a healthy urban forest by focusing on areas with limited canopy and higher social vulnerability.

Figure 1-8. 2022 Canopy Cover by Census Tract



Source: Dudek 2025

2022 Cover Cover by Census Tract ID

6031000602	A	13.9%
6031000901	B	12.5%
6031000701	C	9.7%
6031001001	D	9.4%
6031000604	E	9.3%
6031000902	F	9.3%
6031000702	G	8.2%
6031000603	H	8.1%
6031001003	I	6.7%
6031001002	J	5.8%
6031001100	K	5.2%
6031000800	L	4.9%





Environmental Threats

Trees in cities face many challenges including environmental stressors and those caused by people. In Hanford, some of the environmental threats for trees include extreme heat, drought, and high boron levels in the soil. These conditions, intensified by climate change, make urban trees more susceptible to water stress, pests, diseases, and other emerging threats. Invasive insects, fungal pathogens, and shifting weather patterns can weaken tree health and shorten lifespans, often necessitating removal to protect public safety and infrastructure. Each tree lost diminishes the vital benefits they provide including cooling shade, cleaner air, and a healthier, more livable city. This plan helps the City to identify potential threats, evaluate risks they present, and develop strategies to enhance resiliency.

Mitigating Impacts of a Hotter Future Climate

Hanford's trees are a crucial component in reducing the impact of the predicted hotter future climate. People in Hanford are already experiencing persistent extreme heat in the summers with average temperatures regularly exceeding 90°F and often remaining in the triple digits for several consecutive days. Other climate and health risks include drought, localized flooding, and poor air quality. These issues are expected to increase in the future according to California's Fourth Climate Change Assessment (Cayan 2018). Trees

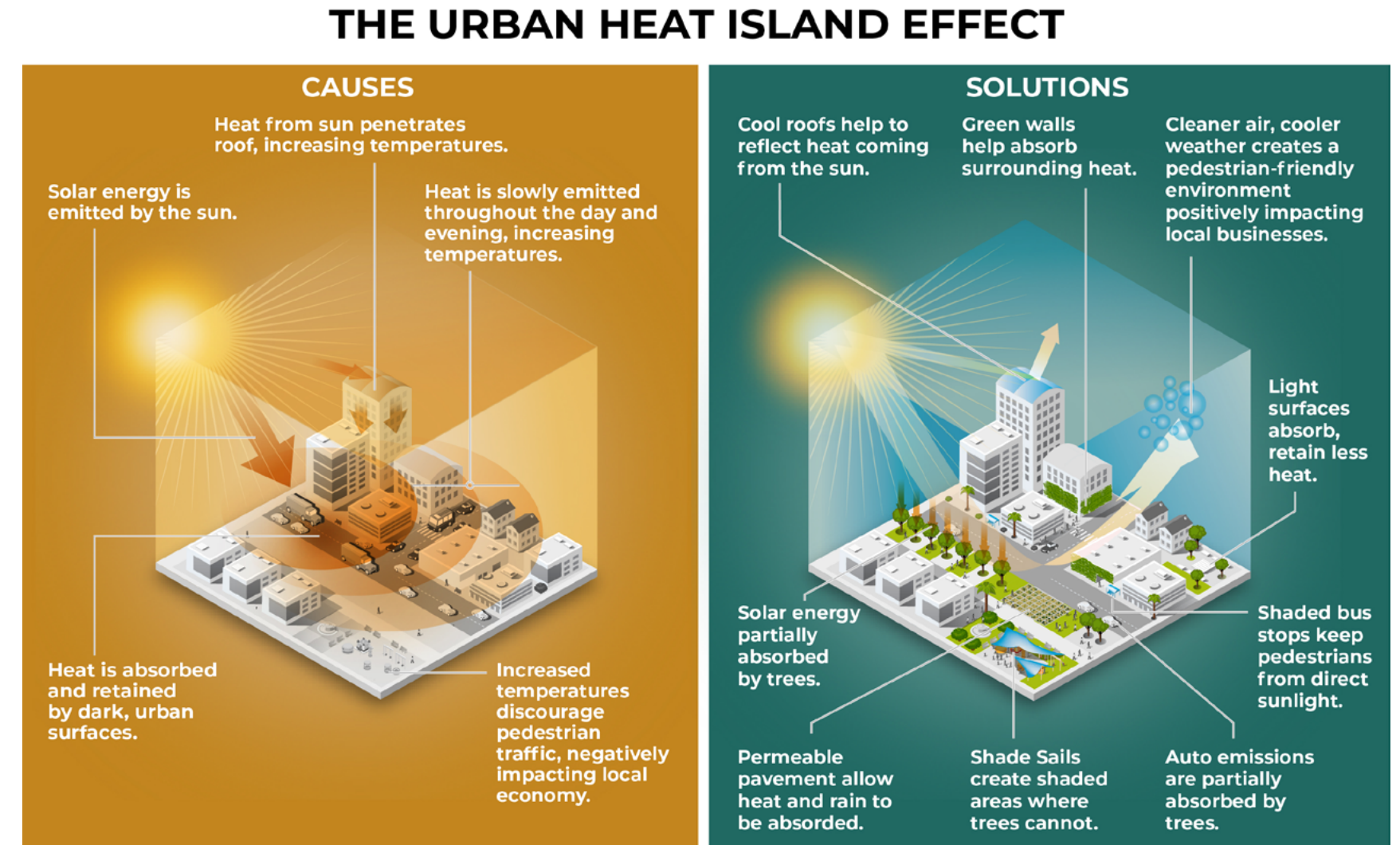
will be vital in mitigating these impacts and protecting Hanford's current and future community members from these environmental stressors by providing shade and cooler temperatures on hot summer days, reducing the urban heat island effect (Figure 1-9), and improving air quality. At the same time, Hanford's trees will also need more support from City staff and private property owners over the summer to ensure they are receiving enough water during those extreme heat days. The UFMP provides planting recommendations for drought-tolerant tree species, as well as recommended management actions to help the City better prepare and maintain the existing trees for climate-related challenges, ensuring they stay healthy for a long time.

Management

Urban forest management in Hanford has historically been implemented without a dedicated International Society of Arboriculture Certified Arborist on staff and with limited documentation of tree-related activities. Tree maintenance practices vary between City crews and contractors, highlighting the need for clear standards and guidance. These conditions have shaped a program that is responsive in addressing immediate needs yet limited in its ability to plan proactively or evaluate long-term outcomes. Despite these challenges, City staff and leadership have shown a clear interest in strengthening the program.



Figure 1-9. Urban Heat Island Effect



Source: EPA 2019, 2020



Many residents are unaware of the City's Trees and Shrubs Ordinance and their responsibilities related to caring for trees in the public right-of-way. Parkway tree maintenance is largely the responsibility of adjacent property owners, which reduces City tree management costs, but also creates other issues such as deferred care, occasional unpermitted removals, and community frustration related to the responsibility of maintaining City-planted trees. The UFMP helps clarify roles, improve communication, and support more coordinated stewardship across public and private landscapes.

Funding constraints further complicate the City's ability to manage and grow its urban forest. With limited resources, it is essential to prioritize actions that deliver measurable value, including reduced liability, improved public safety, and long-term cost savings. Targeted efforts are needed to ensure City resources are consistently applied and responsive to emerging challenges, including extreme heat, declining canopy, and increasing development pressure. Despite the many challenges, the City is taking proactive steps to ensure the foundational elements of their urban forestry program are in place. As part of this UFMP effort, the City has made updates to the Ordinance to clarify tree maintenance responsibilities, replanting requirements, and penalties; they developed a tree inventory and workflow management system for all publicly managed trees; and they have started to build partnerships with community

organizations and schools for future tree planting efforts. This plan represents a practical step forward in improving Hanford's urban forest. It is designed to help the City manage its trees with greater clarity, consistency, and purpose. By investing in thoughtful planning, the City can build a healthier, safer, and more resilient urban forest that reflects the values and needs of its community members. For a deeper dive into the analysis and recommendations for the City's urban forest management program, see Appendix B, Urban Forest Management Staffing and Budget Report.



2

UFMP KEY FINDINGS AND PLANNING PROCESS

The development of this UFMP involved a thorough assessment of the City's urban forest resources, policies, and practices. The following key findings highlight critical strengths, challenges, and opportunities that emerged through data analysis, field observations, and stakeholder input.

2.1 UFMP Key Findings and Planning Process

- #1 The City lost 140 acres of tree canopy between 2018 and 2022.
- #2 The City does not have detailed work records of in-house or contracted tree work.
- #3 Staffing difficulties in the City's urban forestry program have created persistent operational bottlenecks.
- #4 Residents of Hanford recognize the collaborative nature of planting and caring for trees.
- #5 Community members have limited awareness and understanding of the City's Trees and Shrubs Ordinance.



Key Finding #1

The City lost 140 acres of tree canopy between 2018 and 2022.

Tree canopy cover within Hanford's urban boundary declined from 905 acres in 2018 to 765 acres in 2022, reducing overall cover from 9.5% to 8.0%. This reduction of 140 acres is equivalent to losing approximately 106 football fields of tree cover. Private parcels accounted for the largest change, losing 138 acres of canopy. Public parcels gained 1 acre during this time, while canopy in streetscapes, medians, and other areas outside the parcel dataset declined by 3 acres. The full canopy cover and public tree inventory analyses can be found in Appendix A.

This trend shows that canopy is being lost faster than it is being replaced, especially on private property where the majority (82%) of Hanford's trees are located. Protecting and expanding the canopy will require property owners to play a central role, supported by City policies, incentives, outreach, and continued investment in public trees and partnerships.

Key Finding #2

The City does not have detailed work records of in-house or contracted tree work.

Without work record data, the City is not able to accurately determine how much they annually spend on the services they provide for tree planting, establishment care, tree pruning, removals, and other management actions. Understanding costs for each tree service metric and management activity is essential for the City to create annual budgets and project its future budgetary needs. This would also clarify how staff and contractor time is spent, determine where resources should be prioritized to better manage the urban forest, and determine whether the City efficiently completes urban forest management related tasks.



Key Finding #3

Staffing difficulties in the City's urban forestry program have created persistent operational bottlenecks.

The City has historically faced a combination of limited funding for staff positions and difficulties in consistently filling the existing positions. This challenge impacts the City's ability to proactively plant trees, provide sufficient irrigation, conduct routine maintenance, and implement strategic initiatives. To address staffing limitations in the short term, the City should prioritize tree trimming and removals and take advantage of new development projects to increase tree planting, supplemented by grant funding.

The City has set a goal to strengthen the urban forestry program through the addition of a dedicated urban forester and field staff team that would manage the City's public tree services, tree contractor services, and the implementation of the UFMP Strategic Plan. The City is currently working on identifying additional sources of funding through grants and other financial sources (see **Section 3.4.1**) to help in filling the staffing positions that were recommended as part of Appendix B. The City is also working on building partnerships with community organizations to create opportunities for volunteer-led urban forest improvement efforts. Municipal programs with certified arborists and sufficient field crews consistently demonstrate improved canopy health, reduced public safety liabilities, and more equitable service delivery, resulting in a more resilient urban forest.





Key Finding #4

Residents of Hanford recognize the collaborative nature of planting and caring for trees.

During the community engagement phase of the UFMP, both survey participants and several attendees of the Thursday Night Market events shared that residents understand the City cannot completely maintain all of Hanford’s trees by themselves. While some residents voiced financial concerns about caring for trees, several others said they would like to understand how they can help with the effort of maintaining trees in Hanford for the benefit of their community. Hanford residents and the City have demonstrated that they care for trees and are willing to take proactive measures to ensure there are sufficient funds and partnerships in place to grow and maintain Hanford’s trees. This is evident with the passing of local Measure H, which includes funds for park improvements, as well as the with City applying for and being awarded an Urban and Community Forestry grant from the U.S. Department of Agriculture’s Forest Service under the Inflation Reduction Act (administered by Green Latinos). This grant is supporting this UFMP effort and the planting of 600 new trees in Hanford. The City has also taken steps to support ongoing efforts to improve the City’s urban forest by building partnerships with a wide range of urban forestry experts and community organizations like Kings County Action Organization, the Urban Tree Foundation, Cal Poly San Luis Obispo, and Tree Fresno. The City is committed to ongoing outreach efforts after the completion of the UFMP to inform and educate the community on how they can best help grow and maintain City trees.



Key Finding #5

Community members have limited awareness and understanding of the City’s Trees and Shrubs Ordinance.

The City’s Ordinance places the responsibility of right-of-way tree maintenance on the adjacent property owner. Many community members are not aware of this policy, resulting in trees not receiving proper care. The City has acknowledged that more can be done to educate and inform residents and business owners on the specifics of the Ordinance. This has been identified as a top priority for the next several years. The Ordinance was reviewed and updated during the UFMP process to provide better clarity on ordinance definitions, City versus property owner responsibilities, replanting requirements, and penalties for unauthorized tree removals. A full summary of the ordinance updates can be found in Appendix C, Hanford Trees and Shrubs Ordinance Recommended Updates Summary.

An Urban Tree Care Guide (see Figure 2-1) has been created to provide information to community members in Hanford on how to plant, water, maintain, and prune residential trees. This guide also provides an information page summarizing the key facts from the Ordinance, tree maintenance responsibilities for property owners, a recommended list of climate-appropriate tree species for Hanford, and a guide to ensure the “right tree” is planted in the “right place.”

Figure 2-1. Urban Tree Care Guide





2.2 Plan Development Process

The City kicked off the UFMP project in October 2024 with a tree planting celebration called “Hanford Goes Green” after receiving the previously mentioned Urban and Community Forestry grant. In December 2024, the City hired the environmental consultant Dudek, and the first UFMP project meeting was held in January 2025. The City’s parks and community services director, parks manager, and community relations manager were the main staff responsible for overseeing the UFMP’s development and provided important insights into the City’s urban forestry practices, as well as the specific City standard documents and other datasets that were crucial for analysis. These City staff also coordinated with internal and external stakeholders and co-hosted community engagement events, which shed light on the community’s interactions and perspective around City trees. The following sections detail the analysis, community engagement activities, and processes involved in developing the UFMP.

2.2.1 Urban Forest Resource Assessment

Public Tree Inventory

Tree inventory data were collected between April and July 2025 for all 7,245 City-managed sites, including along sidewalks, medians, parks, City facilities, and boundaries of Landscape Assessment

Districts. An accurate inventory helps determine the current condition and environmental benefits of City trees and inform management recommendations.

Canopy Cover Analysis

Existing canopy cover data from 2022 and 2018, created by the U.S. Forest Service and California Department of Forestry and Fire Protection, were analyzed to identify total area covered by tree canopy from both City trees and private property trees. This analysis determined the level of change in the City’s tree canopy cover over time and was used to establish a canopy cover goal for the City. See Appendix A for the full tree inventory and canopy cover analysis and methodology.

2.2.2 Urban Forest Management Assessment

A comprehensive review was conducted of Hanford’s urban forestry program and related plans, policies, and ordinances to better understand the effectiveness of City tree management. This review included analyses of urban forest funding, staffing policy and procedure manuals, municipal plans, tree ordinances, design guidelines, and planning documents. Understanding current City efforts and the effectiveness of existing City programs and policies provides a baseline in which to measure the success of new urban forestry practices in meeting future urban forest goals. City staff



interviews and a comprehensive budget and urban forest metrics analysis was used to discover trends and gaps that informed the funding and urban forest management program recommendations in Appendix B.

2.2.3 Aligning Urban Forest Goals with Existing City Goals

Policies and Ordinances

Municipal Code Chapter 12.12, Trees and Shrubs Ordinance, was reviewed and updated as part of the UFMP process. The recommend updates clarify tree protection standards, tree maintenance responsibilities, replacement requirements, fees, and the tree removal permit process. It was also provided updates to align with International Society of Arboriculture best management practices.

Planning

The City’s General Plan and Parks Master Plan were reviewed for the development process to ensure the UFMP directly supports these plans and provides updated urban forestry and tree-related information that should be incorporated as these plans are updated. The full plan review can be found in Appendix D, City Document Review.

2.2.4 Understanding Hanford’s Urban Forest Values and Perspectives

City Staff Interviews

City staff from various departments were interviewed to further inform the urban forest analysis (Table 2-1). Gathering input from various departments that impact urban forestry illuminated the core values of the community and informed key development processes of the UFMP. The City departments and staff positions that took part in the interviews are listed in Table 2-1.



Table 2-1. Department Interview Participants

Department	Position
Parks and Community Services	Parks and Community Services Director Community Relations Manager
Community Relations	Community Relations Manager
Community Development	Deputy City Manager
Public Works	Public Works Director
Utilities and Engineering	Utilities and Engineering Department Director
Utilities and Engineering	Associate Engineer

Community Engagement

Community engagement was a crucial step to understanding the perspective and values of Hanford’s community. Outreach for the UFMP began in April 2025, with community members being engaged in the following ways:

- An online, tree-related community survey (69 responses total)
- Tabling at community events including one Easter egg hunt event and two Thursday Night Markets in Civic Park with educational posters describing tree benefits, desired future tree planting locations, tree ordinance information, and a QR code linking to the tree survey.
- Hanford’s UFMP webpage (<https://www.cityofhanfordca.com/1594/Urban-Forest-Management-Plan>), detailing project updates, public meeting and UFMP review notifications, and other community resources.
- Social media outreach through City channels (Instagram, Facebook, and NextDoor).
- An Urban Forest Informational Open House hosted in November 2025 to inform attendees on the status of the UFMP and the tree inventory and canopy cover analysis results, as well as to gather general feedback on the recommended updates to the Trees and Shrubs Ordinance (XX attendees).

- A working group made up of various local organizations and community members who helped craft the vision statement and guiding principles for the Strategic Plan (3 meetings, 12 members)

Working Group

The consultant team formed a working group of various community stakeholders (Table 2-2) that met three times during the plan development process. The three meetings provided an opportunity for the consultant team to relay key findings to the working group, get feedback on the draft plan, and discuss and prioritize strategies and actions for addressing current issues and achieving Hanford’s future urban forestry goals. The result was the creation of the UFMP’s vision statement, guiding principles, and the strategic, implementation, and monitoring plans.



Table 2-2. Working Group Participants

Participant	Organization/Affiliation
Bradley Albert	City of Hanford
Brian Johnson	City of Hanford
Kevin Cullinen	Dudek
Kanami Otani	Dudek
Joe Castaneda	Hanford Parks and Recreation Commission
Victor Rosa	Hanford Joint Union High School District
Daniel Pierotte	Hanford Elementary School District
Todd Barlow	Kings County Office of Education
Jeff Garner	Kings County Action Organization
Marilyn Castaneda	King’s Partnership
Carson DeBlieck	Resident and Community Champion
Greg Mendonsa	Urban Tree Foundation



3

STRATEGIC PLAN

3.1 VISION

Hanford’s trees are a valuable resource, sustainably managed by the City and its residents, providing shade from heat and cleaner air to breathe, increasing property values, and enhancing the quality of life for current and future generations.



The Hanford UFMP Strategic Plan provides the specific goals and actions it will take to achieve the City’s future vision. The Implementation Plan **(Section 3.4)** prioritizes these actions and assigns an associated cost, who is responsible for completing the action, and a method of measurement to determine successful completion. The Monitoring Plan **(Section 3.5)** is the long-term strategy the City will take to periodically assess whether it is successfully progressing towards its urban forest goals. The following strategic plan has been developed to guide the growth and management of Hanford’s urban forest over the next 30 years.

3.2 Guiding Principles

The Guiding Principles described in Table 3-1 are themes that represent the core values and long-term vision for Hanford’s urban forest. These principles serve as a foundation for shaping the goals and strategies of the UFMP, ensuring that all actions align with the community’s aspirations for a healthy, resilient, and sustainable urban forest. Each Guiding Principle has associated goals and actions listed in Section 3.3.



Table 3-1. Guiding Principles

Guiding Principle	Guiding Principle Description	This Principle Emphasizes
1 A resilient and sustainable urban forest	The City will cultivate a resilient and sustainable urban forest by prioritizing science-based planning, climate-adapted tree species, and the consistent application of arboricultural best practices. Long-term success will be supported by stable and sufficient funding, proactive maintenance, and a commitment to continuous learning and innovation. Hanford’s urban forest will be managed as a living infrastructure that is essential to the health, safety, and well-being of current and future generations.	• Resilience through climate-appropriate and diverse species • Sustainability via long-term investment and planning • Professionalism through adherence to best practices • Infrastructure mindset, treating trees as vital assets • Future-readiness through innovation and adaptability
2 Community-centered stewardship	Urban forest management should be rooted in inclusive, transparent, and ongoing community engagement. The City is committed to empowering residents with accessible information, meaningful opportunities for participation, and a responsive planning process that reflects the diverse values, needs, and aspirations of its community members. Decisions will be guided not only by arboricultural and technical expertise but also by the lived experiences and voices of the community.	• Shared responsibility between the City and the community • Transparency in decision-making • Accessibility of information • Inclusivity in participation • Responsiveness to community input • Integration of community values with urban forest goals
3 A connected and healthy Hanford	The City will foster a connected and healthy community by ensuring equitable access to trees and green spaces that support walking, biking, and outdoor activity. Urban forest planning will be integrated with pedestrian and bicycle infrastructure to promote physical and mental well-being. While the City leads in designing inclusive pathways, parks, and other public spaces, residents and businesses will be empowered as stewards of the street trees that enhance neighborhood vitality and livability.	• Equity in access to green infrastructure • Integration of trees with active transportation networks • Health and wellness as core outcomes of urban forestry • Connectivity both physical and social, through parks, green spaces, and corridors

3.3 Goals, Actions, and Implementation Plan

The three Guiding Principles are used to categorize the goals of the strategic plan. The goals reflect what the City wants to achieve for each guiding principle. The actions are the specific steps it will take to achieve each goal, and the time frame prioritizes when the action is expected to be completed (see Tables 3 2, 3-3, and 3-4).

Table 3-2. Guiding Principle No. 1: A Resilient and Sustainable Urban Forest

I Guiding Principle No. I: A Resilient and Sustainable Urban Forest					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 1.1 - Achieve urban forest sustainability indicators for tree species diversity, age distribution, health condition, and relative performance index by 2055.					
1.1 A	Increase tree species diversity through future plantings by prioritizing alternative tree species to the City's most commonly planted species which currently include Chinese pistache (<i>Pistacia chinensis</i>), Chinese hackberry (<i>Celtis sinensis</i>), London plane (<i>Platanus x hispanica</i>), and crape myrtle (<i>Lagerstroemia indica</i>).	Short (ongoing)	\$\$	Public Works/ Parks and Community Services	Short-term: Percentage of new tree species planted that are not in the five most common species of the 2025 inventory. Long-term: Achieving an inventory where no one species represents more than 10% of the overall inventory.
1.1B	Every 5 years, complete an analysis of the City's public tree inventory to measure progress towards urban forest sustainability indicators of species diversity, age distribution, health condition, and relative performance index.	Medium	\$	Public Works/ Parks and Community Services	Achieving urban forest sustainability indicators such as a City-managed tree inventory comprising no more than 10% of one species and 20% of one genus. The top six most common species in the inventory will have a relative performance index of 1 or better.

Table 3-2. Guiding Principle No. 1: A Resilient and Sustainable Urban Forest

I Guiding Principle No. I: A Resilient and Sustainable Urban Forest					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 1.1 - Achieve urban forest sustainability indicators for tree species diversity, age distribution, health condition, and relative performance index by 2055.					
1.1C	As trees age and require replacement and as new parks and public spaces are developed, plant available tree sites with climate appropriate species identified in the Recommended Species List with the goal of planting the right tree in the right place.	Long	\$\$\$	Public Works/ Parks and Community Services/ Streets Division	100% of all new City-planted trees are from the recommended species list.
GOAL 1.2 - Develop the financial and human resources necessary to effectively manage the urban forest and implement the UFMP.					
1.2A	Accurately record program expenses by management actions to develop annual program budgets that will need to progressively increase over time as more trees are added to the inventory.	Short (ongoing)	\$\$\$	Public Works/ Parks and Community Services	Annual funding should include additional resources for tree maintenance, arborist review for planning and development, implementation of the updated tree ordinance, and an expanded tree planting program over and above current funding levels. Funding may also go to a new position for an urban forest manager.
1.2B	Maintain an updated inventory using tree management software to accurately document tree plantings, removals, pruning, and other maintenance.	Short (ongoing)	\$\$	Public Works/ Parks and Community Services	Maintaining an updated inventory where tree inventory information is no more than 5 years old.

Table 3-2. Guiding Principle No. 1: A Resilient and Sustainable Urban Forest

I Guiding Principle No. I: A Resilient and Sustainable Urban Forest					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 1.2 - Develop the financial and human resources necessary to effectively manage the urban forest and implement the UFMP.					
1.2C	Develop an invoicing and reporting template for contractors to better track tree service metrics in Landscape Assessment Districts and other areas where tree contractors are utilized.	Short	\$	Public Works/ Parks and Community Services	Development of a contract template for tree contractors that has invoice reporting requirements to provide information on tree services metrics.
1.2D	Create and fill the position of an urban forest manager, an International Society of Arboriculture Certified Arborist who will coordinate with all City departments in implementation of the UFMP, urban forestry programming, and community engagement efforts, including finding and applying for grants, educating the public, and coordinating with non-profits.	Medium	\$\$\$	Public Works/ Parks and Community Services	Filling the urban forest manager position.
1.2E	Explore potential partnerships with schools, non-profits, and community-based organizations to apply for urban forestry-related grant funding (e.g., Kings County Action Organization, Tree Fresno, Urban Tree Foundation) to establish more trees on schools and private property in Hanford.	Medium	\$	Public Works/ Parks and Community Services	Filling the urban forest manager position.

Table 3-2. Guiding Principle No. 1: A Resilient and Sustainable Urban Forest

I Guiding Principle No. I: A Resilient and Sustainable Urban Forest					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 1.2 - Develop the financial and human resources necessary to effectively manage the urban forest and implement the UFMP.					
1.2F	Partner with local service groups (e.g., rotary clubs, Elk Lodge, religious groups) to secure sponsorships (e.g., Adventist Health) for urban tree work and increasing tree planting on private property.	Long	\$	Public Works/ Parks and Community Services	Number of sponsorships secured, total number of dollars secured from those sponsorships, or number of new trees planted on private property.

Note: *
Short: Years 1–2
Medium: Years 3–5
Long: Years 5–10+
Ongoing: Actions that should continue to be implemented once completed.
Cost: \$ = Low (\$0–\$15,000), \$\$ = Medium (\$15,000–\$50,000), \$\$\$ = High (\$50,000–\$100,000).



Table 3-3. Guiding Principle No. 2: Community-Centered Stewardship

2 Guiding Principle No. 2: Community-Centered Stewardship					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 2.1 - By 2035, engage at least 50% of residents through outreach and informational efforts on the City's UFMP and updated Trees and Shrubs Ordinance. Engage with a population representative of all residential types and demographics within the City.					
2.1A	Table at a minimum of two community events (Thursday Night Market, National Night Out, etc.) annually with information about the benefits of the City's urban forest and/or an update on the implementation status of the UFMP. Inform residents how they can get involved in the urban forest.	Short (ongoing)	\$	Public Works/ Parks and Community Services	Number of events where the City tabled with UFMP information, or number of community members that stopped by the table.
2.1B	In addition to having resources on the City's website, create and distribute informational materials like the Urban Tree Care Guide with recommended drought-tolerant and other climate appropriate species for private property to hand out at commonly attended public events.	Short	\$	Public Works/ Parks and Community Services	Number of new drought-tolerant species planted on private property.
2.1C	Host five in-person and/or virtual workshops over the next 5 years to inform and educate residents on the updated Trees and Shrubs Ordinance and the tree maintenance responsibilities of private property owners, with a target of reaching at least 200 people.	Medium	\$	Public Works/ Parks and Community Services	Number of residents who attended information events.



Table 3-3. Guiding Principle No. 2: Community-Centered Stewardship

2 Guiding Principle No. 2: Community-Centered Stewardship					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 2.1 - By 2035, engage at least 50% of residents through outreach and informational efforts on the City's UFMP and updated Trees and Shrubs Ordinance. Engage with a population representative of all residential types and demographics within the City.					
2.1D	Provide educational information to commercial property owners on the benefits of trees for businesses, to encourage commercial property owners to plant and maintain trees.	Short (ongoing)	\$	Public Works/ Parks and Community Services	Informational materials developed and number of commercial property owners that plant new trees.
GOAL 2.2 - Residents will plant at least 2,200 trees on private property by 2055.					
2.2A	Purchase, or partner with a utility (e.g., Southern California Edison), to give away up to 40 shade trees per year with tree planting and care information resources at tree giveaway events.	Short (ongoing)	\$	Public Works/ Parks and Community Services/ Private Residents	Number of trees given away and planted on private property. Promotion of appropriate species to plant under utilities.

Note: *
Short: Years 1–2
Medium: Years 3–5
Long: Years 5–10+
Ongoing: Actions that should continue to be implemented once completed.
Cost: \$ = Low (\$0–\$15,000), \$\$ = Medium (\$15,000–\$50,000), \$\$\$ = High (\$50,000–\$100,000).

Table 3-4. Guiding Principle No. 3: A Connected and Healthy Hanford

3 Guiding Principle No. 3: A Connected and Healthy Hanford					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 3 - Maintain and grow a healthy and diverse urban forest to bring the City-wide canopy cover to 10% by 2055 and increase equitable access to greenspace for residents.					
3A	Annually plant 52 trees (in addition to planting replacement trees for any removals) on City-owned land and right -of-way. Fill all 600 City-managed viable tree planting sites that are currently vacant or occupied by a stump and identify other planting locations to create more tree-lined streets throughout Hanford. Utilize tree inventory management software to identify and prioritize viable tree planting locations and incorporate new viable sites into the tree inventory.	Medium (ongoing)	\$\$\$	Public Works/ Parks and Community Services / Streets Division	Number of new trees planted by 2030 and 2055. Number of vacant viable tree planting sites filled. City-wide canopy cover achieved.
3B	Provide a 3-year establishment care period for all newly planted trees. If it is too costly, explore other methods for watering trees such as through the use of volunteers or irrigation improvements.	Medium (ongoing)	\$\$\$	Public Works/ Parks and Community Services	Number of trees provided a 3-year establishment care period.

Table 3-4. Guiding Principle No. 3: A Connected and Healthy Hanford

3 Guiding Principle No. 3: A Connected and Healthy Hanford					
Action No.	Action	Time Frame*	Cost	Responsible Party	Method of Measurement
GOAL 3 - Maintain and grow a healthy and diverse urban forest to bring the City-wide canopy cover to 10% by 2055 and increase equitable access to greenspace for residents (Continued).					
3C	Prioritize City tree planting and establishment care resources to census tracts with the lowest canopy cover and highest tree priority planting index scores as established in the UFMP.	Medium (ongoing)	\$\$	Public Works/ Parks and Community Services	Achieve at least 10% canopy cover in all census tracts by 2055. Measure city-wide and census tract canopy cover every 5 years using the latest published U.S. Forest Service canopy cover data, found here: https://data.fs.usda.gov/geodata/rastergateway/treecanopycover/ .
3D	Establish new, tree-lined pedestrian and bicycle pathways throughout Hanford, such as along the People's Ditch or as part of the Kings-Tulare High-Speed Rail Station and Cross Valley Corridor Rail Service Planning Project, to encourage non-vehicle modes of transportation and interconnectivity between neighborhoods.	Long)	\$\$\$	Public Works/ Parks and Community Services	Each year, determine the number of new trees planted along new pedestrian and bicycle pathways.

Note: *
Short: Years 1–2
Medium: Years 3–5
Long: Years 5–10+
Ongoing: Actions that should continue to be implemented once completed.
Cost: \$ = Low (\$0–\$15,000), \$\$ = Medium (\$15,000–\$50,000), \$\$\$ = High (\$50,000–\$100,000).

3.3.1 Budgeting to Achieve Hanford's Urban Forest Goals

Limitations of the Funding Data

The current urban forest program budget (estimated to be around \$175,000 annually as of 2024) is based on rough estimates of in-house labor costs for tree-related services that were provided by the Parks and Community Services department, as well as a rough estimate for the portion of landscape assessment district fees that pay for contracted tree work in those districts. These expenditures come from a mix of general funds and landscape assessment district fees. There is a large gap in work records, especially for tree services in landscape assessment districts, where half of the City-managed trees are located. This creates uncertainty about how much the City spends on tree-related work, which impacts the accuracy of the projected funding gap between the current urban forestry funding and the amount of funding needed to reach the 10% canopy cover goal. Moving forward, the City should focus on creating a consistent and detailed work records system that will also be used by contractors so that all urban forestry-related services are documented accurately each month. This will enable the City to create more accurate cost projections for their urban forest program needs. The following provides a framework for how the City should prioritize existing funds but does not provide estimates for budgetary increases.

Program Impacts To Achieve 10% City-Wide Canopy Cover

Increasing canopy cover within the City is an endeavor that will require a combined public and private effort from the City and community members. For Hanford to increase canopy cover on a city-wide basis from its current level (8%) to its future 10% goal, approximately 3,750 new trees will need to be planted over the next 30 years. When accounting for the average of 25 City trees that die and need to be replaced every year, the total number of trees needed to be planted increases to roughly 4,500 trees. It is expected that the City could take on the planting for just over half of these new trees (a total of 2,300 trees), while the remaining 2,200 trees would be planted on private property as described below:

30-year Total for City: 2,300 trees

- 26 trees per year planted in existing vacant sites by the City (800 total)
- 25 new tree sites created or identified and planted by the City per year (750 total)
- 25 trees planted per year as a replacement for a dead tree by the City (750 total)

30-year Total for Non-City Planted Trees: 2,200 trees

- 40 trees per year purchased by the City or partnering organizations and given away to the community to be planted

on private property (1,200 total)

- 11 trees per year planted by private residents outside of the tree giveaways (330 total)
- 15 trees per year planted and maintained through new development projects (450 total)
- 7 trees per year planted and maintained by schools in Hanford (210 total)

Budgeting For The Urban Forest Program

Based on the above and when excluding replacement trees, the City will need to plant approximately 1,550 new trees towards the goal. However, the City currently has a grant that is paying for the planting and establishment care of 600 new trees, will progress the City over a third of the way toward their tree planting goal and leave 950 new trees to be planted. The City has demonstrated that it can be successful in applying for and receiving grant funds that can support tree planting, establishment care, and the creation of new tree wells. As such, it would be practical for the City to continue to seek additional grant funds to pay for the material costs, planting, and establishment of the remaining 950 trees. This approach would reduce the need for the City to use general funds to cover the costs for the tree planting effort and could likely be completed on a much shorter time scale like ten years, which would ultimately save the City money.

The City should then prioritize its annual urban forestry budget, allocated from the general fund and landscape assessment district fees, for the planting of replacement trees and the watering and establishment care needed. Further cost savings on watering and establishment care can be achieved by planting trees in locations with existing irrigation. The City will also need to budget for the purchase of approximately 40 trees a year to be given away to community members to plant on private property. This per tree cost is much lower than City planting costs as it would likely only include purchasing 5-gallon size container trees and the staff time to coordinate distribution. The combination of using grant funds for new tree planting efforts (including outreach to encourage tree planting on private property), and using City funds to plant replacement trees and give away trees to the community will minimize the overall budget impact for the City to achieve its canopy cover goal.

The influx of 600 trees over the next two years, as well as any future influx from an accelerated grant funded tree planting program, will increase the number of trees the City will need to prune, monitor, and remove. Those trees will need structural pruning in the first three to five years after planting. After that, they will have to be accounted for in the regular pruning and maintenance cycle of the City managed tree inventory. In total, planting 1,550 new trees will increase the total City managed trees by approximately 24%, which could provide a baseline for the potential long-term increase in funding for the urban forest program.

3.3.2 Funding Methods to Achieve the City's Urban Forest Goals

The City needs to allocate and enhance their annual urban forestry budget to effectively manage their urban forest and achieve their urban forestry goals. Assessment districts, taxes, and administrative fees related to urban forestry; local, state, and federal grant programs; departmental partnerships; and community resources are methods commonly used in urban forestry to enhance or supplement operational budgets (Appendix G, Potential Funding Sources).

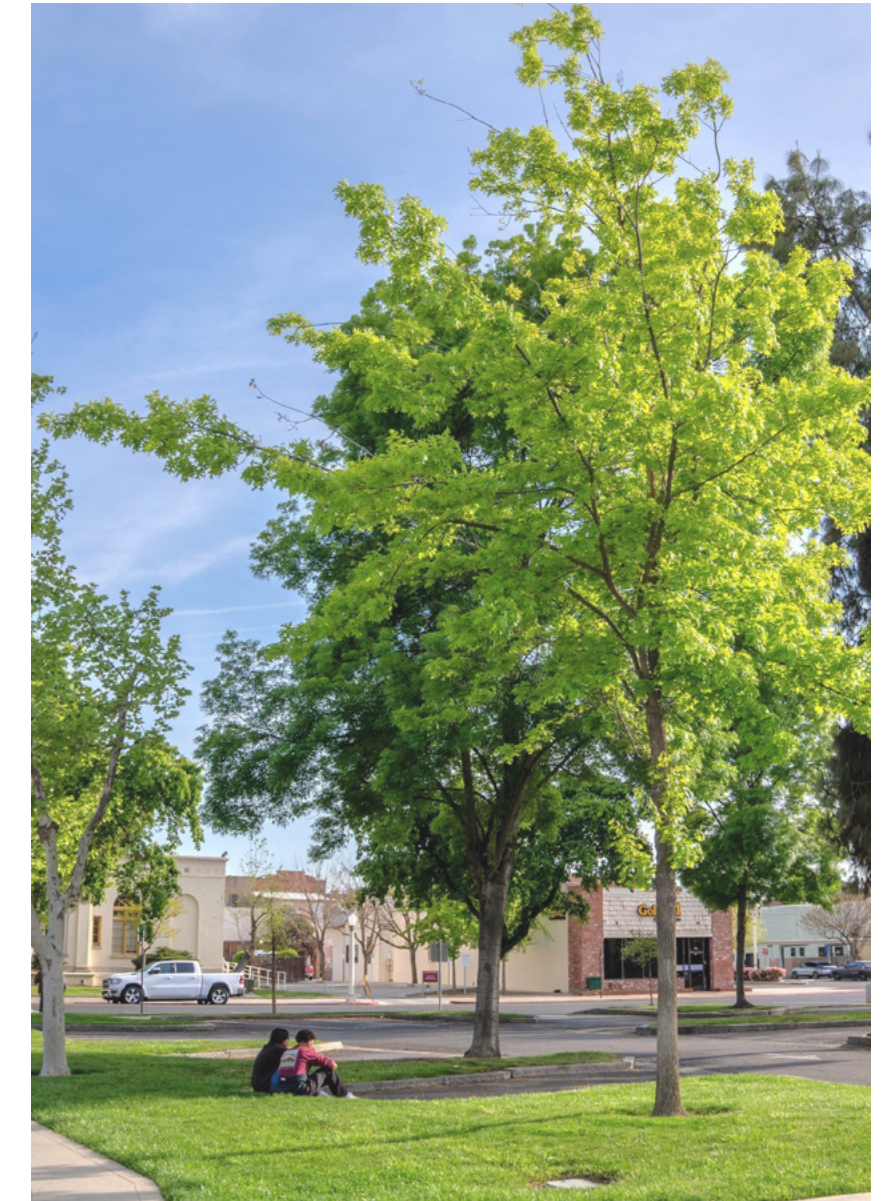
The City has limited yet various methods to explore when enhancing their urban forestry budget. For example, fees, taxes, and assessments are a common funding mechanism; however, the City recently passed Measure H, which includes allocated funding for the City's parks. Due to this recent measure, requesting additional funding through this mechanism may not be of interest to the community or City leadership. Establishing administrative fees within the urban forestry program such as permit fees and ordinance violation penalties should be explored. These methods may allow the City to recover costs associated with urban forest management. When fees are set at a reasonable cost, effective communication regarding the administrative burdens associated with these tasks may establish an understanding by community members of the necessity of these fees. Working with internal City departments such as the water provider, streets, and risk reduction may allow for collaborative funding opportunities for community engagement efforts or

maintenance tasks that meet the goals of internal departments such as large-scale tree and infrastructure conflict resolution.

Hanford's urban forest is a community asset that provides benefits such as cleaner air and water, shade, lower temperatures, and stormwater mitigation, which is often recognized by community members. Community groups, individuals, and businesses may be open to sponsoring a tree planting event or volunteering their time to plant trees in public areas. These community partners can enhance urban forest advocacy, can allow the public to engage with urban forestry efforts, and can be included as a match component for grant projects, while supporting the engagement goals of the City. Community groups are typically interested in funding tree planting events or sponsoring refreshments for volunteer planting but typically are not interested in funding new tree watering or mature tree pruning, which are often included in operational budgets. Volunteers and their commitments are not guaranteed, and the City should enhance their operational budgets without relying on potential volunteers or sponsorship opportunities. However, long-term contracts with urban forestry and other community organizations to engage community members is a successful method used by other municipalities to creatively fund urban forestry efforts. These organizations can employ Hanford residents, not employed by the City, who are interested in community engagement efforts. These partners can provide educational

canvassing for tree adoption, seek corporate sponsorships, and host educational workshops in partnership with the City but hosted by the organization. This method establishes a secure income source for community organizations to employ staff, minimizes the burden on staff to meet engagement goals, allows another organization to be an engagement lead in City projects, and simultaneously allows the City to reach residents who may be hesitant to engage with City staff.

Although the City is a target population for grant funded programs, the future of these programs is uncertain at the time of UFMP development. Even when these programs were available annually, national surveys note that only 2.6% of the urban forestry budget of municipal programs relied on grant awards (Hauer and Peterson 2016). While grant programs can be helpful in funding short term urban forestry goals and programs, they cannot be relied on as a sole source of long-term funding necessary to sustain Hanford's urban forestry program. However, exploring other grant programs where urban trees can be used as a tool such as for heat mitigation, stormwater mitigation, or workforce development, may allow for trees to be included in grant applications not focused on urban forestry. Although these opportunities should be explored as they arise, the City must also seek resources separate from potential grant opportunities to effectively manage the growing urban forest.



3.4 Monitoring Plan

The Hanford Monitoring Plan will be accomplished through a combination of processes identified in the Implementation Plan and additional actions as listed below:

- Annually assess progress towards the Strategic Plan actions using the methods of measurement as outlined in the implementation plan.
- Every 2 years complete the Community Assessment and Goal-Setting Tool (described below).
- Every 3 years assess the Strategic and Implementation Plans and determine if specific actions should be revised or reprioritized based on current conditions in the City.
- Every 5 years conduct an updated canopy cover analysis to measure progress towards the canopy cover goal.
- Every 5 years complete an analysis of the City's public tree inventory to measure progress towards urban forest sustainability indicators of species diversity, age distribution, health condition, and relative performance index.
- Every 10 years determine if the UFMP should be updated to address progress towards goals, changes in the City's environmental and economic conditions, or other unforeseen factors.

Community Assessment and Goal-Setting Tool

The Community Assessment and Goal-Setting Tool was created by the Vibrant Cities Lab to provide a quantifiable method for a city to track its progress towards a sustainable urban forest. Vibrant Cities Lab is a collaboration of partners that includes the U.S. Forest Service, American Forests, and the National Association of Regional Councils and serves as an online hub of urban forest and tree research, best practices, and planning tools (<http://vibrantcitieslab.com>). The Assessment and Goal-Setting Tool is based on research of urban forest sustainability and establishes criteria and indicators to measure urban forest sustainability. The tool is used to define the current state of a specific area of a city's urban forest sustainability. The user decides what the current state of the metric is and then sets where the goal metric should be. Each metric is assigned a point value, and the city is assigned a "Total Current Score" and a "Gap Score," or how far off the current state is from the desired goal. A city that has a gap score between 20 to 40 is not far from achieving the goals of its urban forest program. Gap scores of 40+ indicate that a city is still implementing programs and policies to close the gap and develop a sustainable urban forest.

Hanford's first assessment was conducted on August 6, 2025, by City staff and the consultant team. Table 3-6 provides the results from the first assessment, which set the baseline for the City's "Total Current Score" at its pre-UFMP metrics. Staff used Vibrant Cities Lab's rating descriptions to determine Hanford's status (prior to the UFMP process)

Table 3-5. Vibrant Cities Lab Community Assessment Goal Setting Tool Summary

Category	Current Score	Goal Score	Gap Score
Measure Your Current Tree Canopy and Set Goals	1	4	3
Urban Forest Inventory and Assessment	4	6	2
Know What's Happening to Trees in Your Community	4	11	7
Urban Forest Characteristics	3	8	5
Engaging Peers and Residents in Process	2	16	14
Creating Essential, Effective Public/Private Partnerships	-1	6	7
Resource Management: Planning	1	8	7
Resource Management: Implementation	2	20	18
Resource Management: Monitoring and Maintenance	4	12	8
Score Totals	20	91	71



for the various categories and then chose the goals they want to achieve in each category to determine the gap between the two ratings.

Based on this first assessment, the City has a current rating of 20, with a gap score of 71. The City's UFMP monitoring plan should be based around the Vibrant Cities Lab Community Assessment and Goal-Setting Tool and be retaken each year to track, measure, and highlight progress. The assessment can also be used to demonstrate successes and justify additional funding requests to City Council. The full Goal Setting Tool can be found in Appendix F.



4

REFERENCES

REFERENCES

Austin, J.T. 2012. “Floods and Droughts in the Tulare Lake Basin.” Accessed August 5, 2025. http://orangecoveid.org/Web%20Page/MATERIAL/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf.

Best, J. 2023. “Kings County history is a story of humanity, agriculture, oil and growth.” The Sentinel. February 7, 2024. Accessed July 1, 2025. https://hanfordsentinel.com/news/local/kings-county-history-is-a-story-of-humanity-agriculture-oil-and-growth/article_0a72fca8-4d48-526f-9278-ef5eaf9cddb0.html.

City of Hanford. 2025a. “History.” Accessed July 1, 2025. <https://www.ci.hanford.ca.us/1290/History>.

City of Hanford. 2025b. “Kings-Tulare High-Speed Rail Station TOD Project (Hanford Connected).” Accessed July 1, 2025. <https://www.cityofhanfordca.com/1580/Kings-Tulare-High-Speed-Rail-Station-TOD>.

CNPS (California Native Plant Society). 2025. “Valley Oak (Quercus lobata).” Accessed September 26, 2025. [https://calscape.org/Quercus-lobata-\(Valley-Oak\)](https://calscape.org/Quercus-lobata-(Valley-Oak)).

Daniels, B., J. Jedamski, R. Ottermanns, and M. Ross-Nickoll. 2020. “A ‘Plan Bee’ for Cities: Pollinator Diversity and Plant-Pollinator Interactions in Urban Green Spaces.” PLoS ONE 15(7): e0235492. <https://doi.org/10.1371/journal.pone.0235492>.

Hauer, R.J., and W.D. Peterson. 2016. Municipal Tree Care and Management in the United States: A 2014 Urban & Community Forestry Census of Tree Activities. Accessed August 15, 2025. <https://caufc.org/wp-content/uploads/2025/03/Hauer-Peterson-2014-urban-forest-program-census.pdf>.

Latta, F.F. 1949. Handbook of the Yokut Indians. Bear State Books.

Noss, R. 2020. "California Central Valley grasslands." Terrestrial Ecoregions. World Wildlife Fund. Accessed July 1, 2025. <https://www.oneearth.org/ecoregions/california-central-valley-grasslands/>.

Nowak, D.J. 2002. “The Effects of Urban Trees on Air Quality.” Accessed March 3, 2021. https://www.nrs.fs.fed.us/units/urban/local-resources/downloads/Tree_Air_Qual.pdf.

Pierce, D.W., J.F. Kalansky, and D.R. Cayan. 2018. Climate, Drought, and Sea Level Rise Scenarios for the Fourth California Climate Assessment. California's Fourth Climate Change Assessment, California Energy Commission. Publication Number: CNRA-CEC-2018-006.



REFERENCES

Rahman, M.A., Pawijit, Y., Xu, C., Moser-Reischl, A., Pretzsch, H., Rötzer, T. and Pauleit, S., 2023. A comparative analysis of urban forests for storm-water management. *Scientific Reports*, 13(1), p.1451.

Roberts, M.R. 2005. *Images of America: Hanford*. Arcadia Publishing.

White, M.P., I. Alcock, B.W. Wheeler, M.H. Depledge. 2014. “Would You Be Happier Living in a Greener Urban Area? A Fixed-Effects Analysis of Panel Data.” *Psychological Science* 24(6): 920–928. <https://pubmed.ncbi.nlm.nih.gov/23613211/>.





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APPENDICES

THE CITY OF HANFORD
**URBAN FOREST
MANAGMENT PLAN**

Hanford UFMP Appendices

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Appendix A

Hanford Urban Forest Resource Report

City of Hanford

Urban Forest Resource Report

OCTOBER 2025

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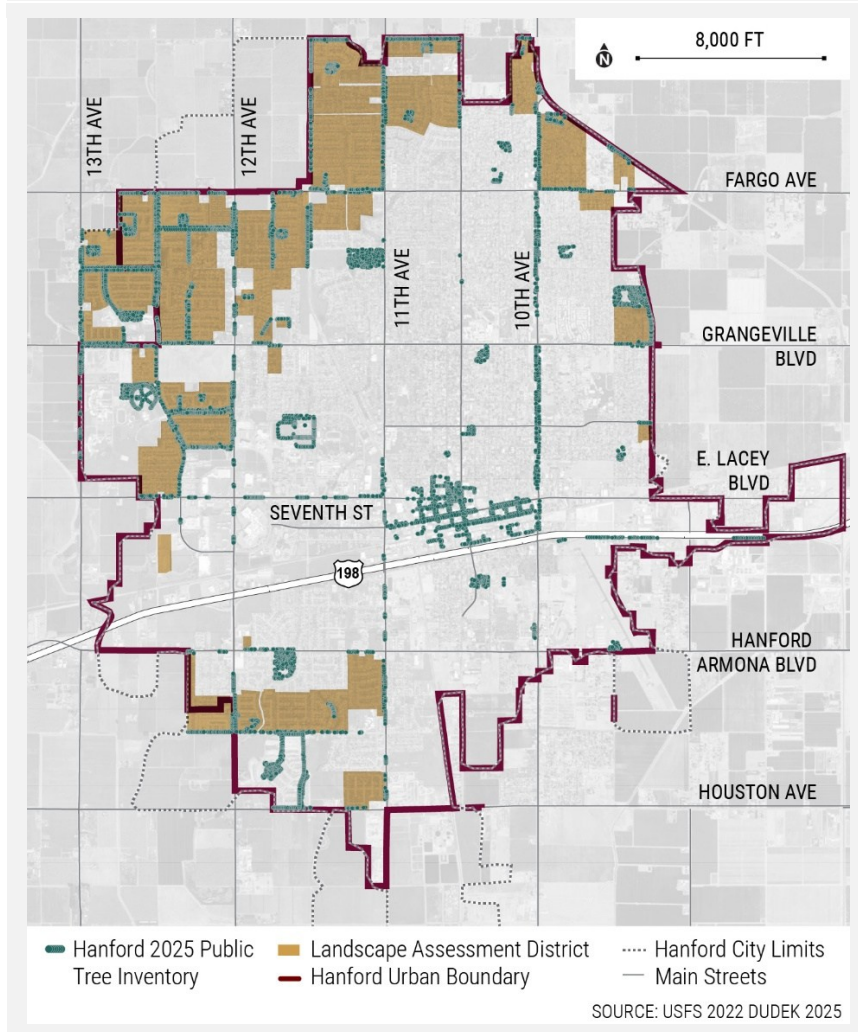
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1 Hanford Tree Inventory Overview

To support long-term urban forest planning and sustainability efforts, the City of Hanford (City) partnered with Dudek to complete a comprehensive tree inventory. This inventory provides the foundation for all analyses presented in this report, including assessments of species diversity, tree health, age structure, water use, and environmental services. Data from the City-managed inventory were also submitted to the i-Tree Eco model to estimate associated environmental and economic benefits.

Inventory data were collected by Dudek staff in April through July 2025, covering all City-managed trees within City sidewalks, medians, parks, City facilities, and boundaries of Landscape Assessment Districts. Each tree was recorded using TreePlotter inventory software on mobile smart phone devices, with data attributes including location, species, diameter at standard height (DSH), condition, height, crown characteristics, and growing space type.

Exhibit 1. Hanford 2025 Tree Inventory



In total, the inventory includes 7,245 sites, consisting of 6,486 living City-managed trees, 159 dead standing trees, trees, and 600 vacant sites or stumps. These data represent a snapshot of the City's urban forest and serve as a baseline for identifying priorities, tracking progress, and guiding future planting, maintenance, and policy decisions. **Exhibit 1** presents a map of inventoried sites across the City, including existing trees, vacant planting sites, and stumps.

1.1 Sustainability Analysis

The sustainability analysis evaluates the City’s tree inventory against a set of indicators used to guide management priorities and assess the urban forest’s resilience to pests, disease, and climate change. These indicators provide a current snapshot of the condition and structure of City-managed trees and establish a baseline for tracking changes over time.

This analysis reflects conditions at the time of data collection and should be repeated every 3 to 5 years to monitor progress toward long-term sustainability goals. The selected indicators are based on widely accepted urban forestry standards and best practices, including those developed by the International Society of Arboriculture (ISA), American National Standards Institute (ANSI), and published research in peer-reviewed journals such as the Journal of Arboriculture.

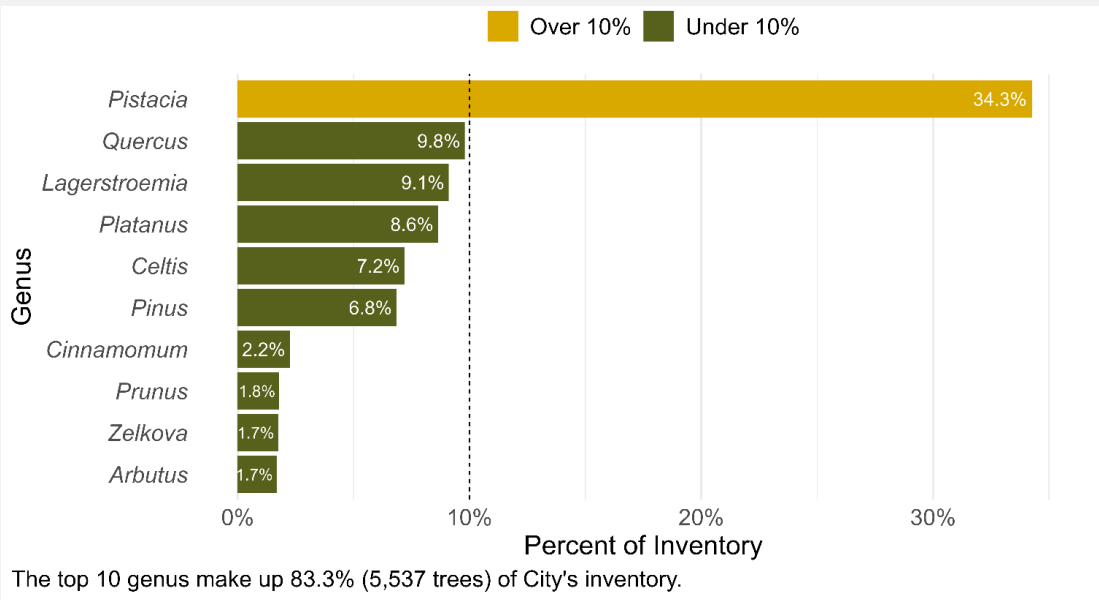
1.1.1 Genus and Species Diversity

Maintaining a diverse tree population improves the urban forest’s ability to withstand pests, diseases, and extreme weather. A well-distributed mix of species provides a buffer against the potential loss of a dominant tree type, helping to ensure long-term canopy continuity and ecological resilience. The City-managed inventory includes 6,645 trees composed of approximately 64 genera and 100 species. The top 10 genera and species are shown in **Exhibit 2**. Diversity is evaluated using species composition sustainability goals originally proposed by Moll (1989), which serve as benchmarks for promoting a resilient and balanced urban forest:

Genus Sustainability Goal: No single genus represents more than 10% of inventory.

Species Sustainability Goal: No single species represents more than 5% of inventory.

Exhibit 2. Tree Inventory Genus and Species Diversity



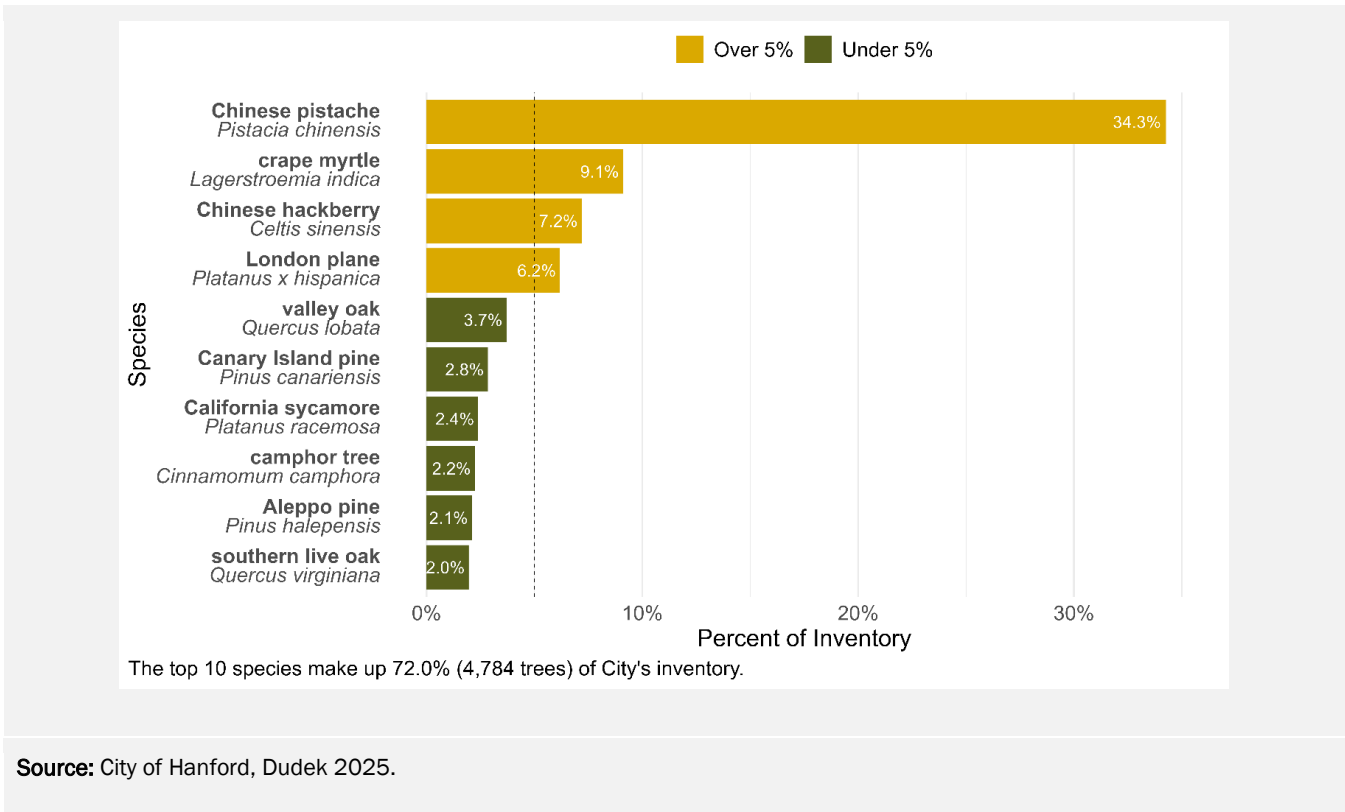


Exhibit 2 show that *Pistacia* exceeds the recommended genus-level sustainability goal, accounting for 34.3% of the inventory. At the species level, Chinese pistache (*Pistacia chinensis*), crape myrtle (*Lagerstroemia indica*), Chinese hackberry (*Celtis sinensis*), and valley oak (*Quercus lobata*) all exceed the 5 percent threshold. To improve diversity and reduce long-term risk, these species should be a lower priority in future planting efforts. **Appendix I** of the UFMP, provides a selection of recommended species for the City's climate and conditions that are suitable for replacement trees and can help increase diversity in future plantings.

Increasing diversity improves resilience but may also introduce challenges for maintenance. Trees vary in size, structure, and pruning needs. For example, some species have wide, spreading crowns with large branches, while others are tall and narrow. These differences can affect equipment needs, trimming techniques, and scheduling. To maintain efficiency, the City can group trees with similar forms and maintenance requirements within the same block or maintenance area. Balancing species diversity with operational consistency will help maintain a resilient and manageable urban forest.

1.1.2 Age Diversity

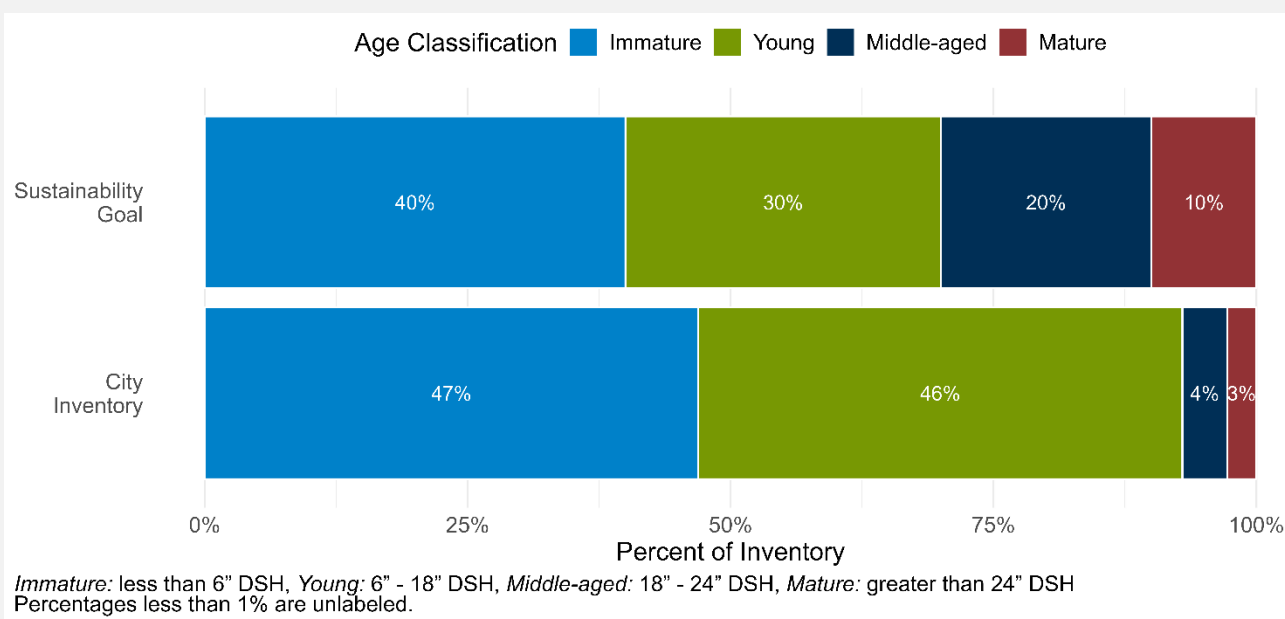
Understanding the tree age distribution within the City's urban forest is useful for informing management decisions, estimating future budgets, and forecasting potential shortfalls in canopy coverage. Management activities influenced by age distribution typically include planting priorities, removal planning, and pruning schedules.

Because tree age is difficult to determine without invasive methods like tree coring, diameter at standard height (DSH) is used as a proxy for estimating age. **Exhibit 3** shows the DSH distribution for all trees in the City's inventory. A widely referenced ideal age distribution, represented by DSH classes, was proposed in an analysis of the Syracuse,

New York urban forest (Richards 1993) and has since been adopted as a guideline for achieving long-term urban forest sustainability. The recommended structure includes:

- Maintaining a steady supply of young trees to replace those lost to age or decline
- Ensuring the majority of trees are functionally mature and delivering consistent environmental and economic benefits
- Retaining a smaller share of large, aging trees that, despite being near the end of their lifespan, continue to deliver consistent environmental and economic benefits

Exhibit 3. Age Diversity



Source: City of Hanford, Dudek 2025.

The inventory is currently dominated by younger trees. As shown in **Exhibit 3**, 47% of trees are immature (less than 6" DSH) and 46% are young (6"–18" DSH), meaning 93% of the inventory consists of recently planted or small-stature trees. Only 4% are middle-aged (18"–24" DSH), and 3% are mature (greater than 24" DSH), falling short of the combined 30% sustainability target for those classes.

This imbalance suggests that while planting efforts have increased in recent years, relatively few trees have been retained or supported long enough to reach middle-aged or mature stages. Part of this pattern may also reflect the City's species composition. For example, approximately 34% of Hanford's public trees are Chinese pistache (*Pistacia chinensis*), a species that typically does not exceed 18 inches DSH, even at maturity. As a result, DSH-based age estimates may somewhat understate the functional maturity of smaller-stature species.

To build a more balanced age structure, the City should continue planting new trees to support future canopy growth while investing in the preservation of older trees and selecting species that can reach larger sizes in suitable planting spaces. Early investment in establishment care, including structural pruning and watering, guided by an ISA Certified Arborist, can help reduce long-term costs and promote healthy canopy development. Addressing structural defects with simple pruning while the tree is young and small is often more cost effective than having to address defects with more advanced pruning equipment when the tree is mature. This approach also allows the critical root zone for trees to better establish into the landscape, increasing resilience to prolonged droughts and high heat events. However, the high proportion of young trees in the current inventory also indicates a shift in how allocations to tree care may be spent. As trees already in the inventory may have structural defects that were not addressed due to a lack of past funding for establishment care, mature trees may benefit from a scheduled and cyclical pruning cycle to maintain a healthy, resilient and sustainable municipal urban forest. Establishing dedicated and reoccurring budgets for pruning cycles of mature stature trees will allow the City to monitor tree conditions and address defects in a phased, proactive approach.

1.1.3 Health Condition

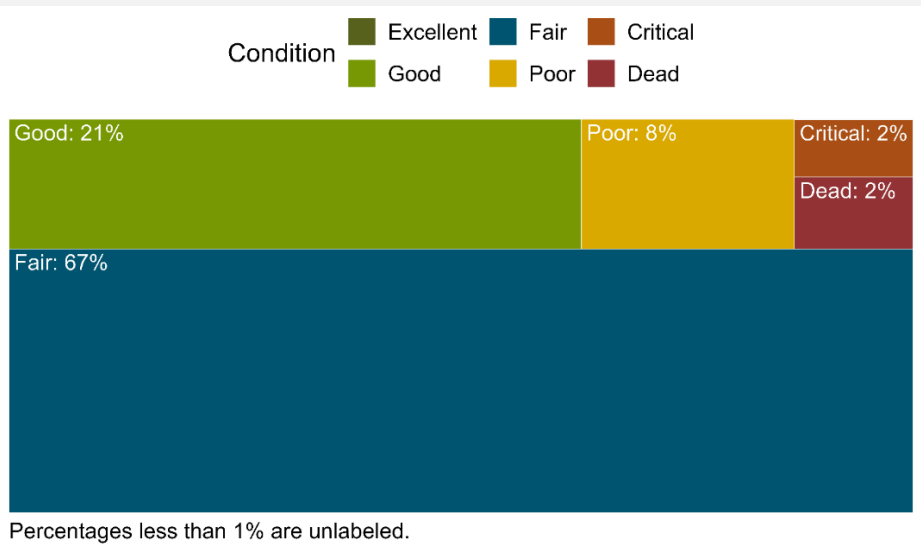
Healthy trees increase public safety and may reduce the City's liability by lowering the risk of tree part failure. They are also more resilient to pests, disease, drought, and extreme weather. Assessing tree health provides insight into the City's level of urban forest management, how trees are performing overall, and the baseline resilience of the tree population.

Tree condition ratings used in the inventory are defined as follows:

- **Excellent:** Nearly perfect health and canopy structure.
- **Good:** Normal health and canopy structure
- **Fair:** Minor deficiencies in health and canopy structure
- **Poor:** Significant deficiencies in health and canopy structure
- **Critical:** Major deficiencies, is in late stage of decline, and is a candidate for removal.
- **Dead:** No longer a viable tree and should be removed

Based on the analysis of the City's tree inventory shown in **Exhibit 4**, approximately 21% of trees are in good condition and 67% are in fair condition. In total, 88% of trees are rated as fair or better (fair, good, or excellent), indicating a generally healthy and structurally sound urban forest. The remaining trees are rated poor (8%), critical (2%), or dead (2%).

Exhibit 4. Tree Condition Diversity



Source: City of Hanford, Dudek 2025.

These results suggest the City’s urban forest is not currently showing signs of widespread stress or decline. The high percentage of trees in fair and good condition reflects effective management practices and a growing environment suited to the tree species found in the inventory. Continued monitoring and maintenance will be essential to sustain this condition and address emerging issues. Trees in poor, critical, and dead condition should be evaluated to determine appropriate actions such as targeted pruning, treatment, or removal to improve tree condition of individual specimens.

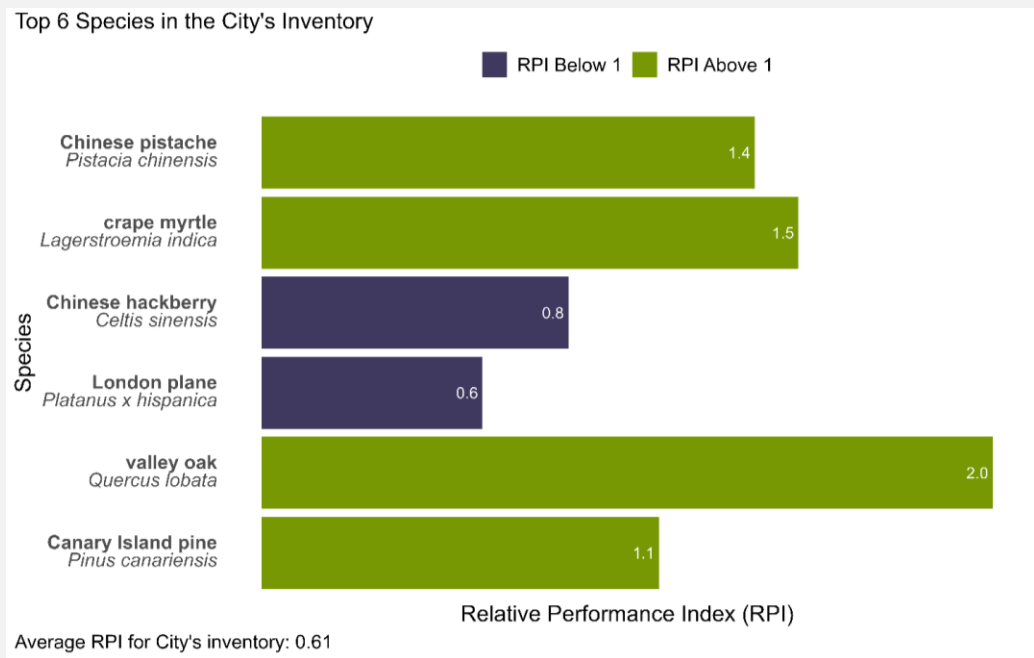
This assessment can also help identify whether certain species are underperforming. For example, of the 113 Carolina laurel cherry (*Prunus caroliniana*) trees in the inventory, 103 were rated as poor, critical, or dead, indicating a potential issue with species suitability or site-specific conditions. Understanding these patterns can guide future species selection and management strategies.

1.1.4 Relative Performance Index

While overall condition ratings provide a snapshot of individual tree health, they do not account for species-level performance trends. The Relative Performance Index (RPI) offers a way to evaluate how each species performs in comparison to the inventory average and can help identify species that may require further evaluation or targeted management. RPI is calculated by dividing the percentage of trees within a species that are rated in good or better condition by the percentage of all trees in the inventory that are rated in good or better condition.

A species with an RPI above 1.0 is more likely to be in good condition than the inventory average. A value below 1.0 indicates that the species is underperforming relative to the overall population. For example, a species with an RPI of 0.75 is 25 percent less likely to be in good condition compared to the inventory average. The average RPI across all species in the inventory is 0.61, meaning many species have condition ratings below the inventory average. This reflects variation in species performance and highlights the value of using RPI as a comparative tool. **Exhibit 5** presents the RPI values for the six most common species in the inventory.

Exhibit 5. Tree Inventory Relative Performance Index



Source: City of Hanford, Dudek 2025.

Valley oak (*Quercus lobata*) has the highest RPI, followed by crape myrtle (*Lagerstroemia indica*) and Chinese pistache (*Pistacia chinensis*). The valley oak has an RPI of 2.0, indicating that this species performs well in the City and exploring other oak species and varieties may be beneficial to enhance tree species diversity with a large canopied species. Chinese hackberry (*Celtis sinensis*) and London plane (*Platanus × hispanica*) fall below the inventory average, suggesting they may be underperforming relative to other species. These lower values may indicate site incompatibility or higher susceptibility to stress. The City may want to evaluate whether continued planting of these species is appropriate, particularly if maintenance needs or health concerns persist across different planting locations.

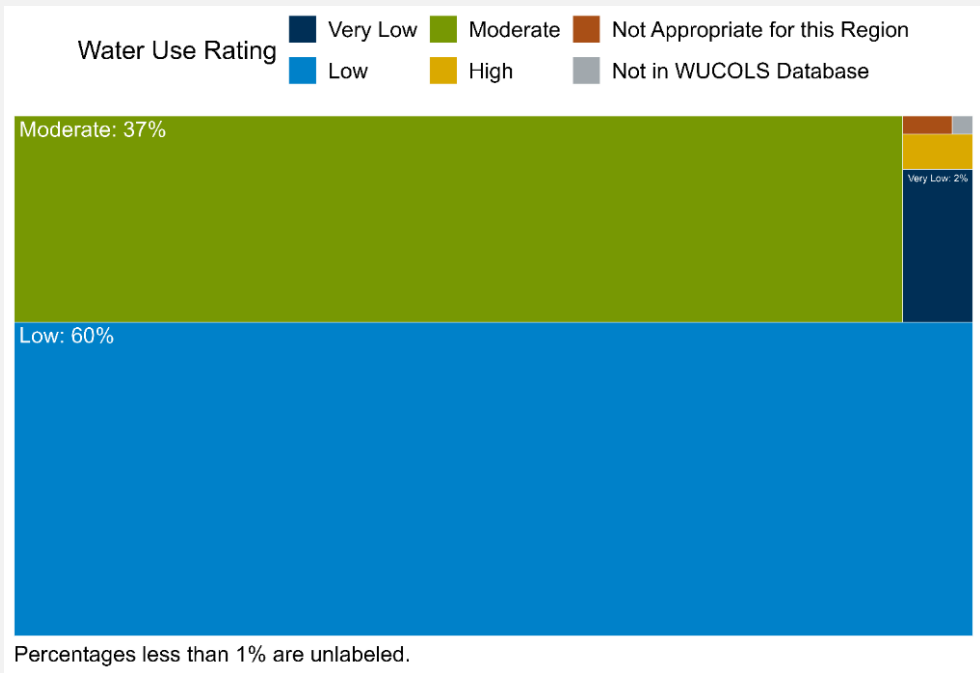
1.1.5 Water Use

In urban environments, trees often face limited rooting space, compacted soils, and restricted access to groundwater. Supplemental irrigation is critical during the first 1 to 3 years after planting to ensure establishment. However, water scarcity is an increasing concern throughout California, especially in the Central Valley, where hot and dry conditions are common. The City has experienced multiple drought years over the past decade, with ongoing pressure on water resources due to rising temperatures and limited regional precipitation. Climate projections indicate that drought frequency and severity are likely to increase in the years ahead (Intergovernmental Panel on Climate Change 2021; Lacan and McBride 2018; Watson 2014; California State Water Resources Control Board 2023).

Tree species differ widely in their water needs. In water-limited regions such as Hanford, selecting low and very low water use species helps reduce long-term irrigation demands. Providing supplemental irrigation to a newly planted tree helps establish the root structure which improves the ability for a tree to recover from drought stress over the

tree’s lifetime. **Exhibit 6** shows the breakdown of water use ratings for the City’s tree inventory, based on the Water Use Classification of Landscape Species (WUCOLS) database as well as water use data from Urban Forest Ecosystems Institute’s (UFEI) SelecTree tree selection guide (<https://selectree.calpoly.edu/>).

Exhibit 6. Water Use Rating Diversity



Source: City of Hanford, Dudek 2025.

Low and very low water use species make up 62% of the City’s tree inventory. Moderate water use species account for 37%, and less than 1% are rated as high water use, not appropriate for the region, or are unlisted in WUCOLS or UFEI’s SelecTree. While moderate water use species may be appropriate in irrigated areas, the City should continue prioritizing drought-adapted species, particularly in locations with limited watering infrastructure. Selecting species based on site conditions, water needs, and growth characteristics will help reduce long-term reliance on supplemental water and improve the success of future plantings.

1.1.6 Climate Resiliency

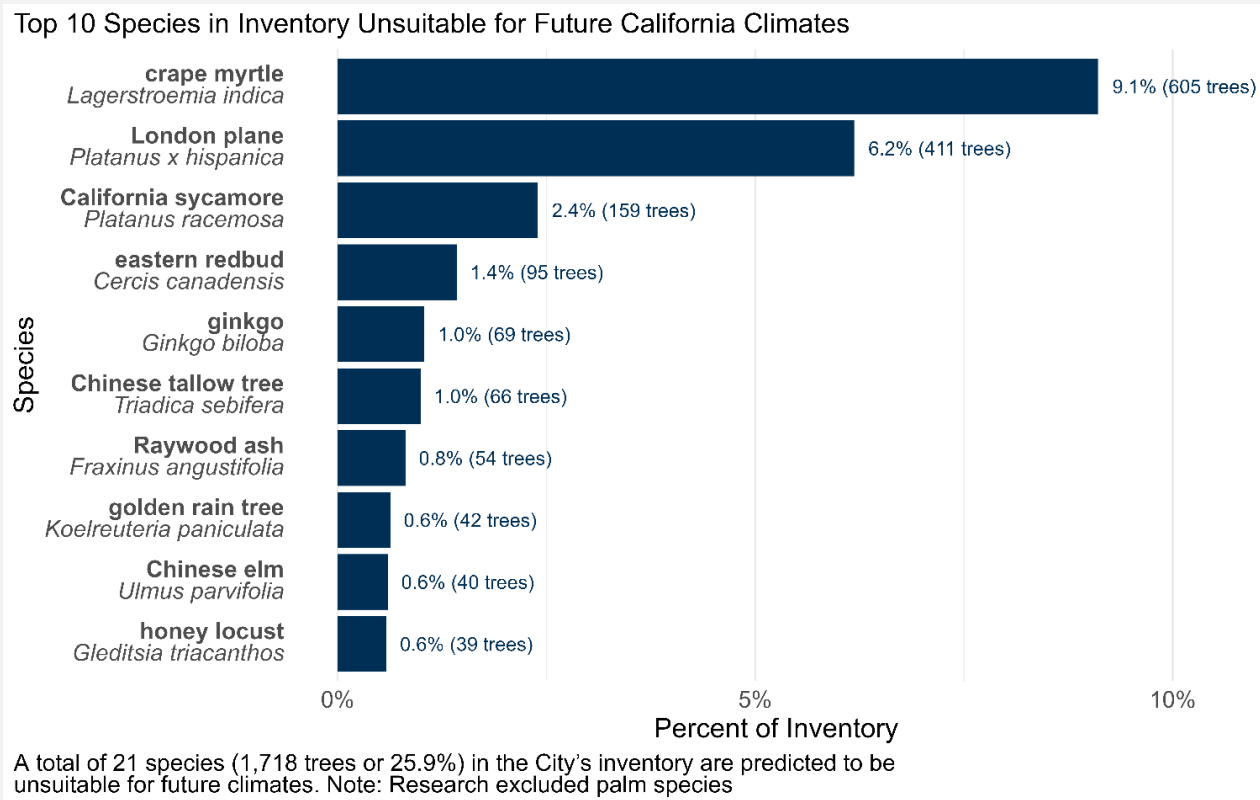
Urban forests are increasingly vulnerable to climate change, particularly in cities facing hotter and drier conditions. In dense urban environments, trees already contend with stressors such as limited rooting space, reflected heat from pavement, compacted soils, and exposure to air pollutants. When combined with prolonged drought and rising temperatures, these conditions can reduce tree health, shorten lifespans, and diminish the long-term benefits provided by the urban forest.

In 2018, a climate suitability study was conducted by Lacan and McBride to evaluate the long-term viability of street trees in California. The study selected one city to represent each of the state’s 16 climate zones, then identified common street tree species in each location. These species lists were compared to those in cities with current

temperatures similar to what each California city is projected to experience by the year 2099. Species that were largely absent from those warmer cities were flagged as potentially unsuitable for future planting. The final list was informed by professional judgment and WUCOLS water use ratings that identified species as unsuitable under high heat or water-limited conditions.

When this framework is applied to the City's inventory, 21 species are identified as potentially unsuitable for the City's future climate. These species make up 25.9% of the total inventory, or 1,718 trees. **Exhibit 7** highlights the 10 species identified as potentially unsuitable that are most prevalent in the City's current inventory.

Exhibit 7. Tree Inventory Species Climate Resiliency Analysis



Source: City of Hanford, Dudek 2025.

Notably, several of the most common species in the City's inventory have been identified as potentially unsuitable under future climate conditions, including crape myrtle (*Lagerstroemia indica*), London plane (*Platanus x hispanica*), and California sycamore (*Platanus racemosa*). Reducing reliance on these species in future plantings may help the City manage long-term maintenance needs and reduce the risk of canopy loss as conditions grow hotter and drier. London plane also has a below-average RPI, suggesting it may already be underperforming relative to other species in the City. In contrast, crape myrtle shows a high RPI but is overrepresented and vulnerable under projected climate conditions, reinforcing the importance of diversifying future plantings.

While the 2018 Lacan and McBride study provides a valuable framework for evaluating species under future climate scenarios, it should not be the sole resource guiding planting decisions. Species performance, site conditions, and observed health trends within the City should also be considered. City staff and arborists play a key role in identifying underperforming species and tracking changes over time. Monitoring tree condition by species will help determine whether certain trees should be phased out of future planting efforts. In addition to selecting climate-adapted species, long-term success depends on using high-quality nursery stock, planting at the correct depth, matching trees to site conditions, and providing adequate watering during establishment. Applying ISA best management practices throughout the planting and maintenance process will support healthier and longer-lasting trees. Prioritizing species that are both resilient to future climate conditions and suited to the urban environment will help the City maintain a sustainable and adaptable urban forest

1.2 Environmental Services and Economic Value

Data from the City-managed inventory was submitted to the i-Tree Eco software. The 2025 i-Tree Eco analysis quantifies environmental and economic contributions for the portion of the City’s inventory that met i-Tree input requirements. Results highlight both the ecological and economic benefits of trees in Hanford’s inventory, along with potential risks from invasive species and pests.

The analysis found that 82 percent of trees are non-native to North America, with only 9 percent native to California, and identified four invasive species, including tree of heaven, though these account for just 1.3 percent of the population. Chinese pistache (*Pistacia chinensis*) makes up more than one-third of the population, which increases risk if pests or diseases affect the species. The i-Tree analysis identified several pests that pose a high potential economic risk, including Pine Shoot Beetle, Southern Pine Beetle, and Sirex Wood Wasp, each with potential losses exceeding \$2.5 million in replacement value, along with Oak Wilt and Winter Moth, each threatening more than \$1.5 million. These findings reinforce the importance of diversifying the species composition to strengthen long-term resilience.

The complete i-Tree Eco results are provided at the end of this report. Key takeaways are summarized below.

Table 1 presents estimates of the environmental services provided by the City’s trees, including air pollution removal, carbon storage and sequestration, and avoided runoff. **Table 2** summarizes the economic value of these services, along with the broader replacement value of City’s urban forest.

Table 1. Environmental Services of Hanford Trees

Service	Environmental Benefit	Why it Matters
Air Pollution Removal	2,029 Pounds per year	Poor air quality is a common problem in many urban areas. It can lead to decreased human health, damage to landscape materials and ecosystem processes, and reduced visibility. The urban forest can help improve air quality by reducing air temperature, directly removing pollutants from the air, and reducing energy consumption in buildings, which consequently reduces air pollutant emissions from fossil-fuel-based power sources (i-Tree 2020).
Carbon stored in trees	1,324 tons of carbon	Climate change is an issue of global concern. Urban trees can help mitigate climate change by sequestering atmospheric carbon (from carbon dioxide) in tree tissue and by altering energy use in

Table 1. Environmental Services of Hanford Trees

Service	Environmental Benefit	Why it Matters
		buildings, which consequently reduces carbon dioxide emissions from fossil-fuel-based power sources (Abdollahi et al 2000).
Carbon Sequestration (Carbon Removed From Air)	38.89 tons per year	Increasing greenhouse gases, particularly carbon dioxide, in the atmosphere is one of the main causes of climate change. Human activity is releasing vast amounts of carbon dioxide, principally through the burning of fossil fuels. Trees play an important role in the removal of carbon dioxide from the atmosphere. Through the biochemical process of photosynthesis, carbon dioxide is taken in by trees and stored as carbon in the trunk, branches, leaves, and roots.
Avoided Runoff	146,100 gallons per year	Surface runoff can be a cause for concern in many urban areas, as it can contribute pollution to streams, wetlands, rivers, lakes, and oceans. During precipitation events, some portion of the precipitation is intercepted by vegetation (trees and shrubs) while the other portion reaches the ground. The portion of the precipitation that reaches the ground and does not infiltrate into the soil becomes surface runoff (Hirabayashi et al., 2013). In urban areas, the large extent of impervious surfaces increases the amount of surface runoff. Urban trees and shrubs are beneficial in reducing surface runoff. Trees and shrubs intercept precipitation, while their root systems promote infiltration and storage in the soil.

Table 2. Financial Value of Hanford Trees

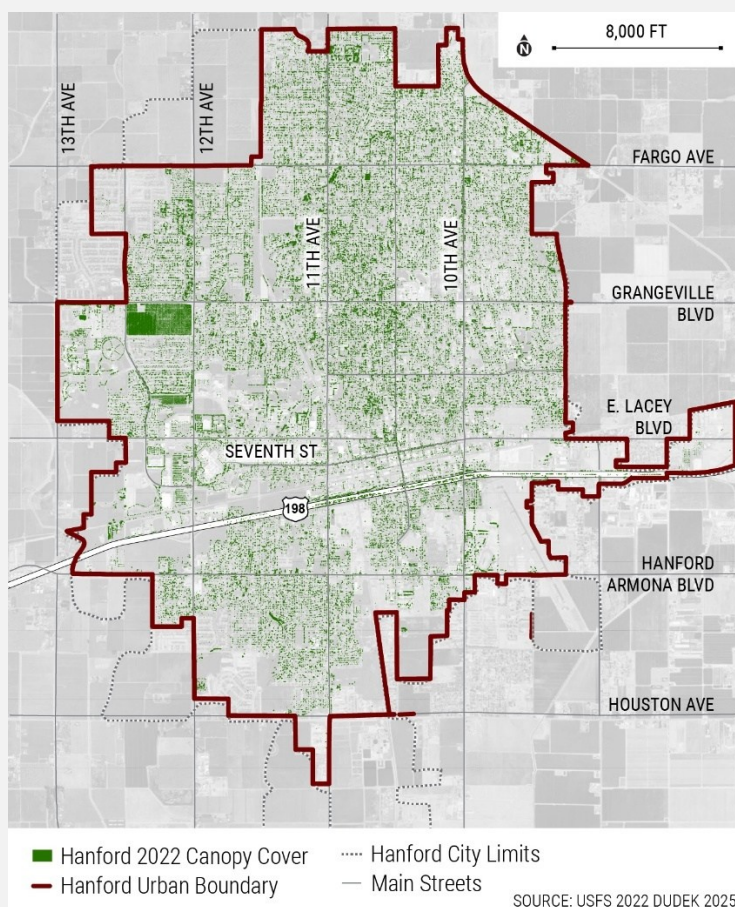
Value	Description	Amount
Functional	Value based on the functions (environmental services) trees perform	\$25,700/year
Carbon Storage	Value of the carbon stored in the trees	\$573,000 total
Replacement	Cost of having to replace the entire inventory of City-managed trees with similar trees	\$10.9 million total

2 Hanford Canopy Overview

To support the City's urban forest planning and sustainability initiatives, Dudek completed a comprehensive canopy cover assessment using publicly available canopy data derived from the 2018 and 2022 National Agriculture Imagery Program (NAIP) imagery. For the purposes of this section, "City" refers to the urban area boundaries within the City limits. The defined urban boundary encompasses 9,526 acres, and all acreage, percent cover, and change values presented here are based on this area. Within this boundary, canopy cover was estimated at 765 acres, or 8.0% in 2022.

The assessment provides a current snapshot of urban tree canopy distribution, evaluates changes since 2018, and identifies opportunities for canopy growth. Results are summarized for several geographic units including, urban boundary, public and private parcels, census tracts, zoning districts, Landscape Assessment Districts (LADs), and parks, to highlight where canopy is most and least concentrated to inform strategies for expansion. **Exhibit 8** highlights the current canopy distribution across the City.

Exhibit 8. Hanford Urban Canopy Cover, 2022



Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery.

2.1 Citywide Canopy Change and Current Condition

Citywide canopy cover declined from 905 acres (9.5%) in 2018 to 765 acres (8.0%) in 2022, a net reduction of approximately 140 acres. This decline equates to a 1.5 percentage point decrease in cover and a 15.8 percent relative reduction compared to the 2018 baseline.

Table 3. Tree Canopy Change Metrics (2018-2022)

Metric	Value	Description
Canopy loss (acres)	-140	Actual land area lost to canopy decline
Absolute % change	-1.5 percentage points	Difference in canopy cover percentage from 2018 to 2022
Relative % change	-15.8%	Proportional decline in canopy cover compared to 2018 baseline

Canopy loss occurred across most land use types, zoning categories, and census tracts, indicating a citywide trend rather than an isolated issue. Several factors may have contributed to the decline, including development or redevelopment that resulted in tree removals, mortality of aging trees without replacement, pest or disease impacts, or drought stress.

The 2022 canopy distribution (**Exhibit 8**) provides the current planning baseline for the UFMP. The following sections examine how canopy distribution and change vary across different geographic units to help identify trends and priority areas for future planting.

2.1.1 Public and Private Parcels

This analysis evaluated canopy cover within the parcel dataset, dividing parcels into public and private ownership. Some areas are not represented in the parcel dataset, such as streetscapes, medians, highways, and rights-of-way (ROW). Values are approximate, as totals depend on how parcel information is defined and categorized.

In 2018, public parcels supported 6.3 percent canopy cover (40.8 acres). By 2022, canopy on public parcels increased slightly to 6.5 percent (41.8 acres), a gain of about 0.14 percentage points. Private parcels contained 10.7 percent canopy cover in 2018 (765.9 acres) but declined to 8.7 percent in 2022 (628.0 acres), a reduction of 2.0 percentage points. Areas outside the parcel dataset accounted for 5.6 percent canopy cover in 2022 (95 acres).

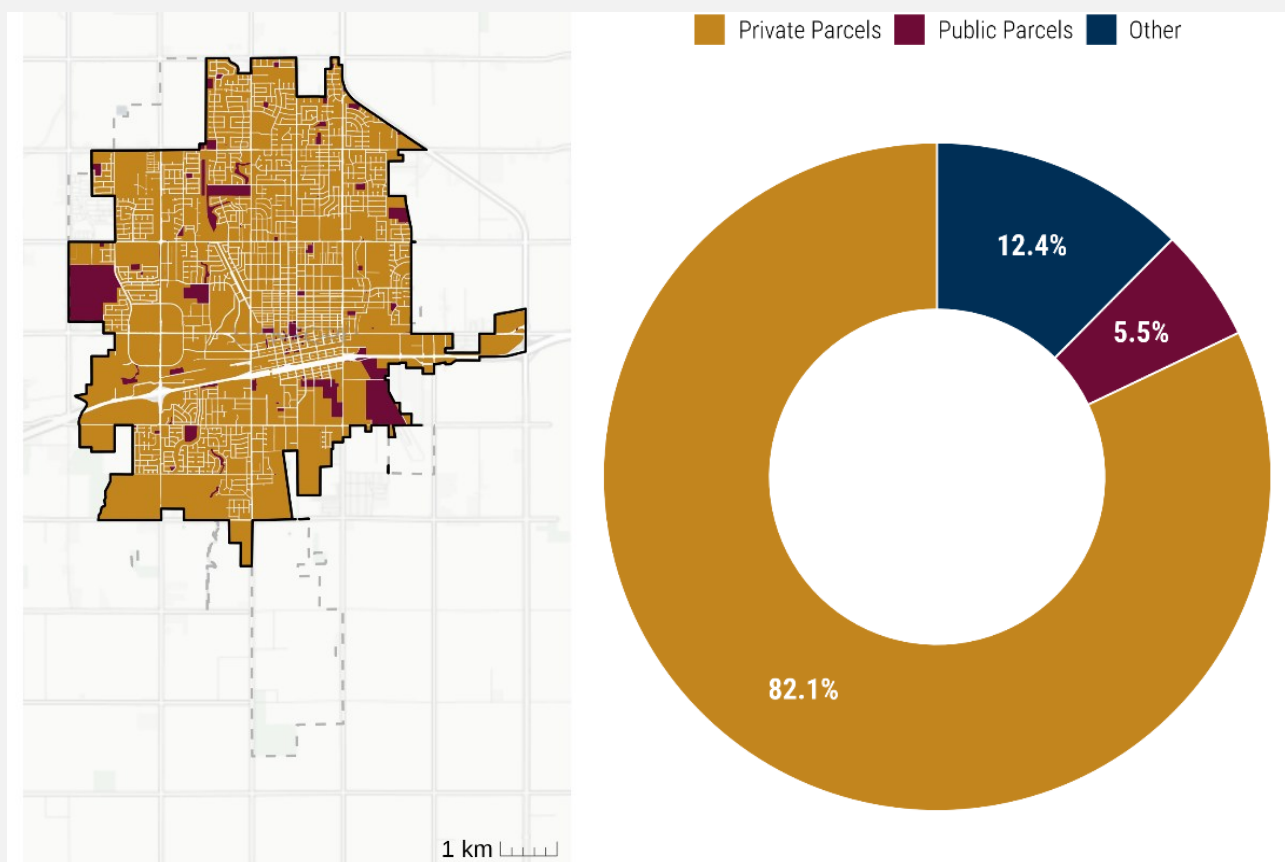
Although public parcels experienced a small canopy gain between 2018 and 2022, overall canopy change was driven by losses on private parcels. With about four-fifths of the City’s canopy in private ownership, expanding and protecting canopy will depend largely on actions taken on private property owners. City efforts such as tree planting giveaways, community education and outreach, ordinance updates, and incentive programs can encourage planting and long-term care on private land, while continued management of public trees will remain an important part of sustaining and expanding the overall urban forest.

Table 4 provides the 2022 canopy distribution across the full urban boundary, including public and private parcels, and areas not represented in the parcel dataset. **Exhibit 9** illustrates the distribution of parcels classified as private or public and the share of canopy cover within each area type.

Table 4. Canopy Distribution by Area Type (2022)

Area Type	Area (Acres)	Canopy Area (Acres)	Canopy Cover (%)	Share of Total Canopy (%)
Public Parcels	647	42	6.5	6.0
Private Parcels	7,191	628	8.7	82
Other areas outside parcels (ROW, medians, etc.)	1,688	95	5.6	12
Urban Area	9,526	765	8.0	100

Exhibit 9. Parcel Ownership and Tree Canopy Distribution by Parcel Type



Source: Hanford GIS Data, 2025.

2.1.2 Census Tracts

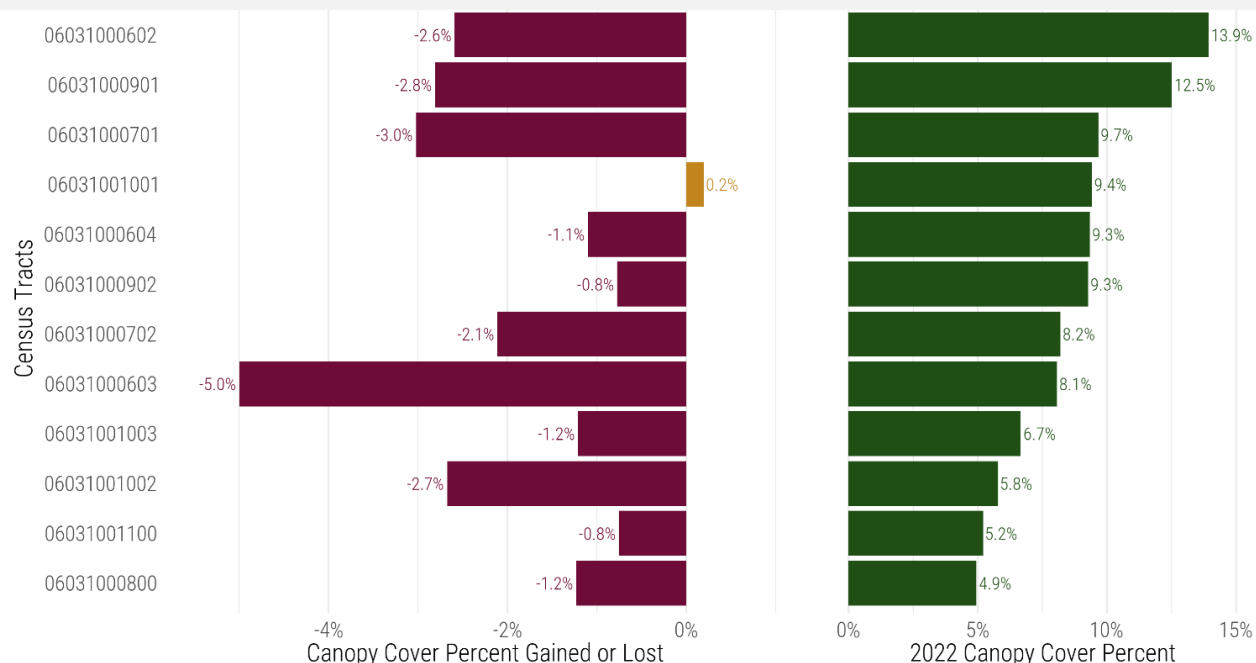
Tree canopy cover was evaluated across 12 census tracts to assess distribution patterns relative to population-based units. Census tracts are a useful geographical unit for assessing canopy because they align with demographic, health, and environmental datasets. This makes them valuable for identifying disparities, supporting grant applications, and prioritizing areas for community investment.

Between 2018 and 2022, canopy cover declined in 11 of the 12 tracts, with only tract 06031001001 showing a slight gain of 0.2 percentage points. Losses ranged from less than 1 percentage point (tracts 06031000902 and 06031001100) to nearly 5 percentage points in tract 06031000603. Other substantial decreases occurred in tracts 06031000701, 06031000901, and 06031000602, each losing between 2.6 and 3.0 percentage points.

In 2022, the highest canopy levels were found in tracts 06031000602 (13.9%) and 06031000901 (12.5%), while the lowest were in tracts 06031001100 (5.2%) and 06031000800 (4.9%). These results show that canopy loss has occurred across both higher- and lower-coverage neighborhoods, indicating that restoration efforts should balance expanding canopy in historically low-coverage areas with protecting existing canopy in tracts that began with higher levels of tree cover.

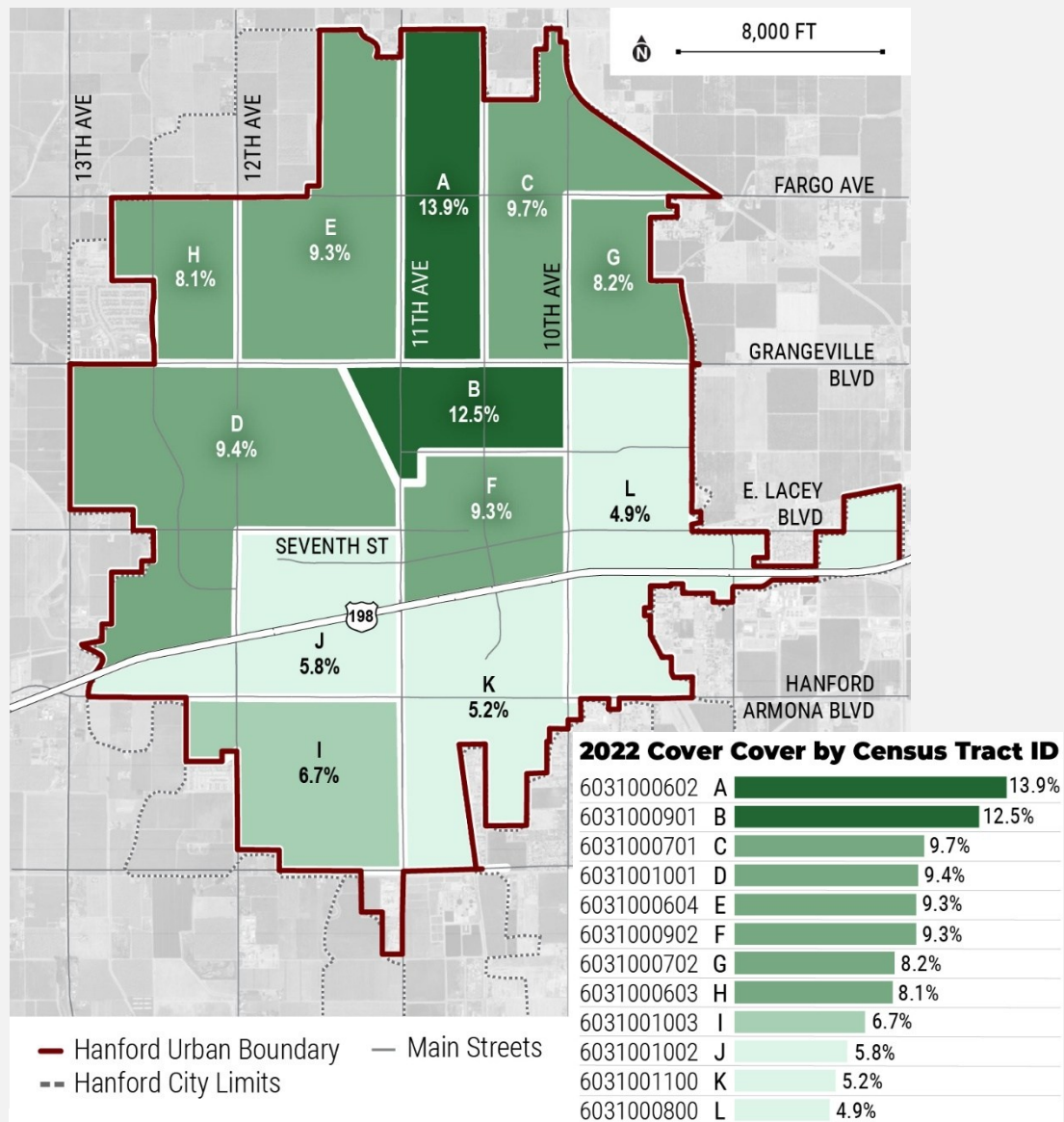
Exhibit 10 presents canopy change by census tract from 2018 to 2022 alongside 2022 canopy levels. **Exhibit 11** shows the spatial distribution of 2022 canopy cover.

Exhibit 10. Canopy Cover and Change by Census Tract (2018–2022)



Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery.

Exhibit 11. 2022 Canopy Cover by Census Tract



Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery.

2.1.3 Zoning Districts

Canopy cover was analyzed by zoning district to understand how tree distribution aligns with land use regulations. Zoning is a useful framework because it reflects both existing development patterns and future growth potential, providing insight into where canopy gains or losses may have the greatest planning implications.

Between 2018 and 2022, canopy declined in nearly all zoning districts, with the exception of the Public zoning district, which increased by 1.5 percentage points. Losses were most pronounced in Airport Protection, which

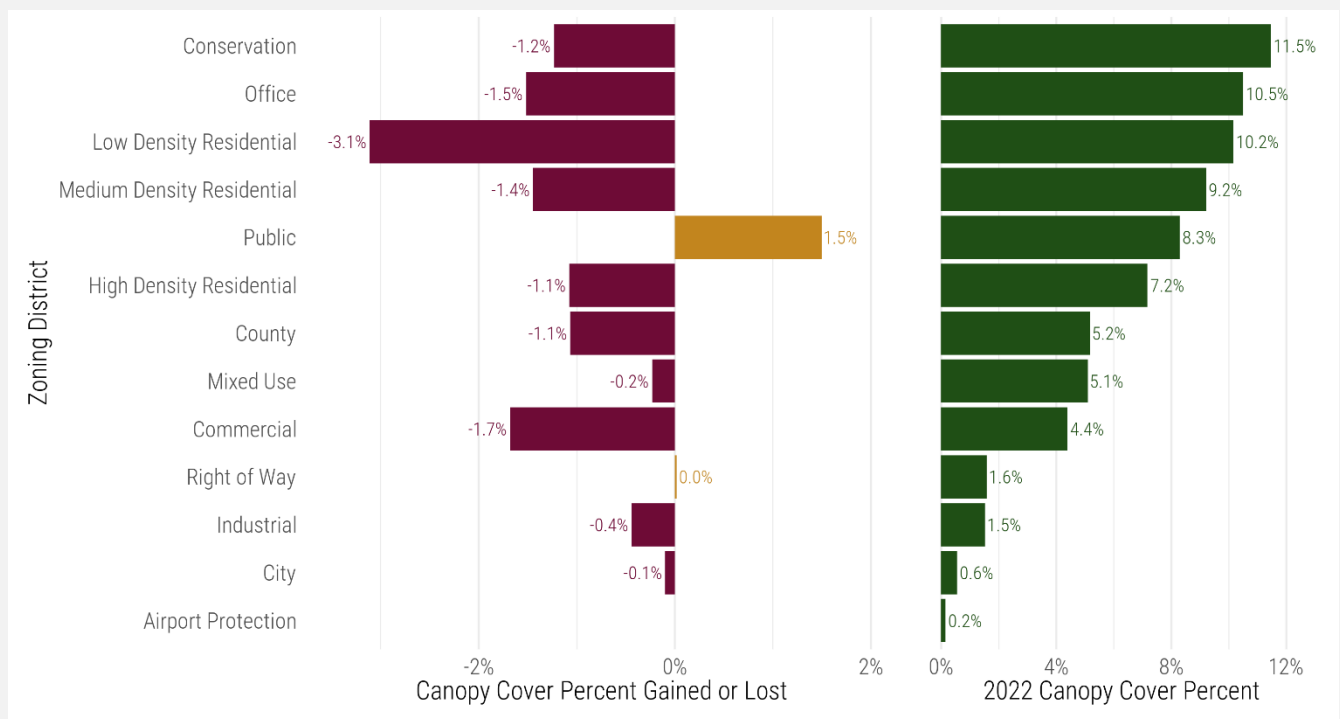
declined by 69 percentage points, Low Density Residential areas (-3.1), followed by Office (-1.5), Commercial (-1.7), and Medium Density Residential (-1.4).

In 2022, the highest canopy levels were found in Conservation (11.5%), Office (10.5%), and Low Density Residential (10.2%). The lowest canopy levels were in Airport Protection (0.2%), City (0.6%), and Industrial (1.5%). Right-of-way areas also contained relatively little canopy at 1.6%.

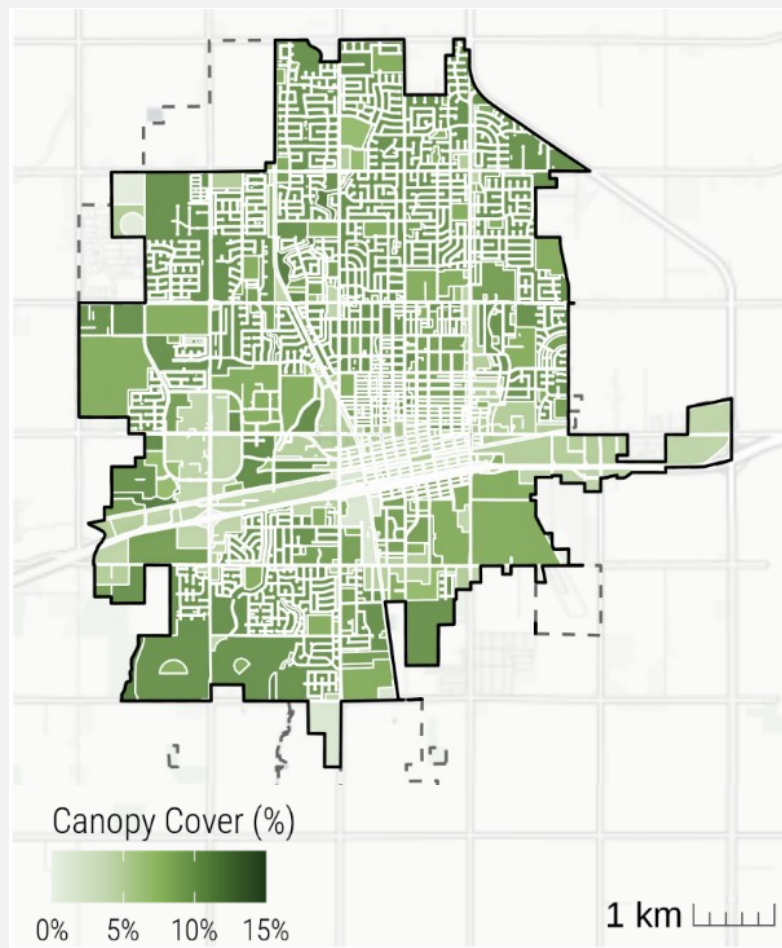
These results indicate that while Conservation and residential areas continue to support the majority of canopy cover, residential zoning districts are also experiencing some of the steepest declines. This trend suggests that strategies to expand canopy will need to prioritize residential neighborhoods while also ensuring canopy retention within commercial, industrial, and mixed-use zones where cover is currently limited.

Exhibit 12 presents canopy change by zoning district from 2018 to 2022 alongside 2022 canopy levels. **Exhibit 13** shows the spatial distribution of canopy cover in 2022 across zoning districts.

Exhibit 12. Canopy Cover and Change by Zoning District (2018–2022)



Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery; Hanford GIS Data, 2025.

Exhibit 13. 2022 Canopy Cover by Zoning District

Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery; Hanford GIS Data, 2025.

2.1.4 Landscape Assessment Districts (LADs)

Canopy cover was evaluated across 42 Landscape Assessment Districts (LADs) to identify local-scale variations in canopy change. LAD boundaries provide a finer level of geographic resolution than zoning or census tracts and can help link canopy trends to specific maintenance areas with associated funding districts.

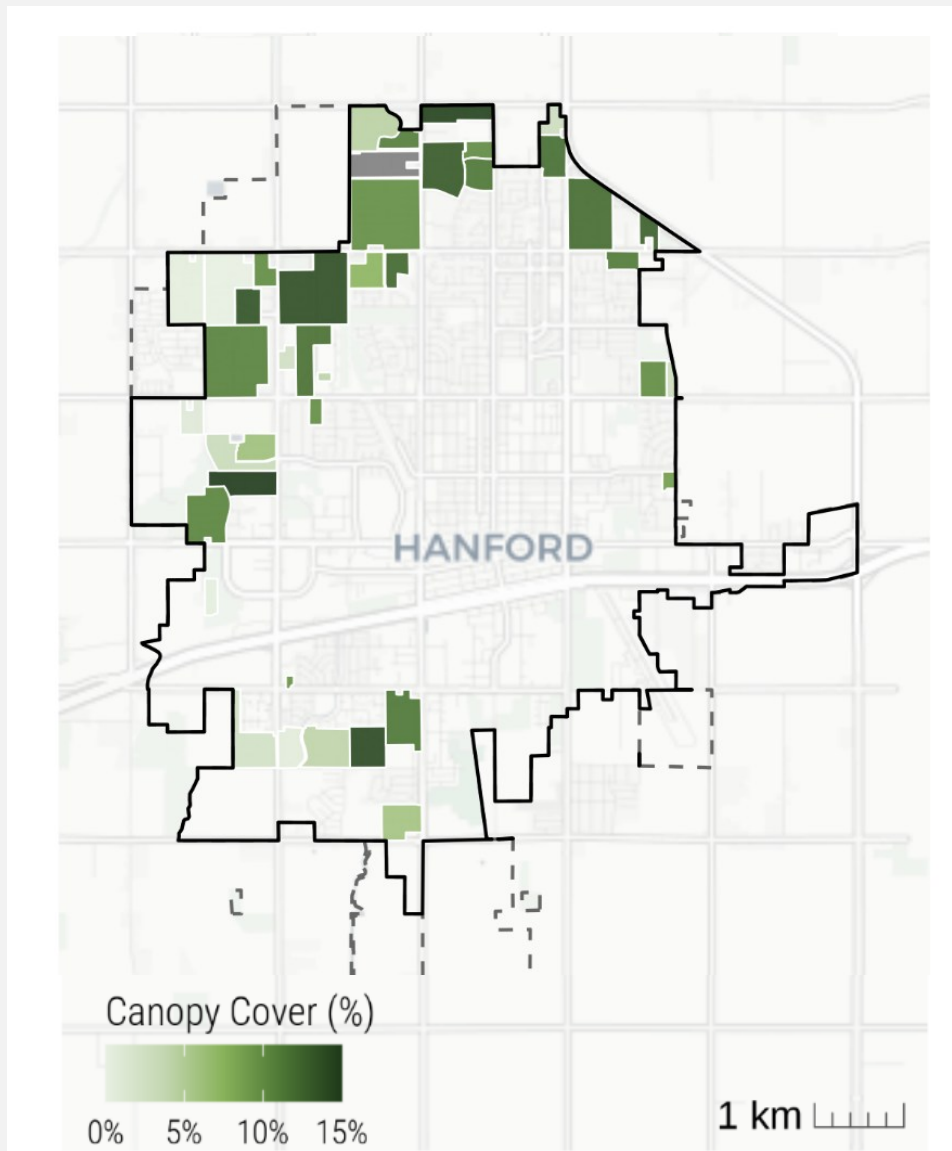
Between 2018 and 2022, canopy change varied widely across LADs, with some districts showing gains while others experienced substantial losses. The largest increases occurred in Quail (+3.4 percentage points) and Sidonia Estates (+1.3 percentage points). Other LADs with gains over 1 percentage point included Independence Units 3 & 4 and Independence Units 1 & 2.

The most substantial loss occurred in San Joaquin Valley Homes (−18.9 percentage points), largely due to housing development. However, part of this decline reflects a classification issue in the 2018 dataset, which appears to have mapped vineyards or cropland as canopy. Other LADs with notable losses included Silver Oaks, Stonecrest, and Pinecastle, each declining by more than 2 percentage points.

Overall, canopy loss was more prevalent than canopy gain across LADs, indicating that localized declines are contributing to the citywide canopy reduction. LADs are tied to specific maintenance and funding structures, so reversing these losses may require targeted replanting, adjusted maintenance schedules, and community engagement to sustain canopy over the long term.

Exhibit 14 shows the spatial distribution of canopy cover in 2022 across LADs.

Exhibit 14. Canopy Cover Distribution Across LADs



Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery.

2.1.5 Parks

Canopy cover was evaluated across 28 parks within the urban boundary. Parks provide important local-scale benefits, offering shade, recreation, and wildlife habitat, and their canopy distribution can highlight opportunities for preservation of large canopy trees and replanting large species.

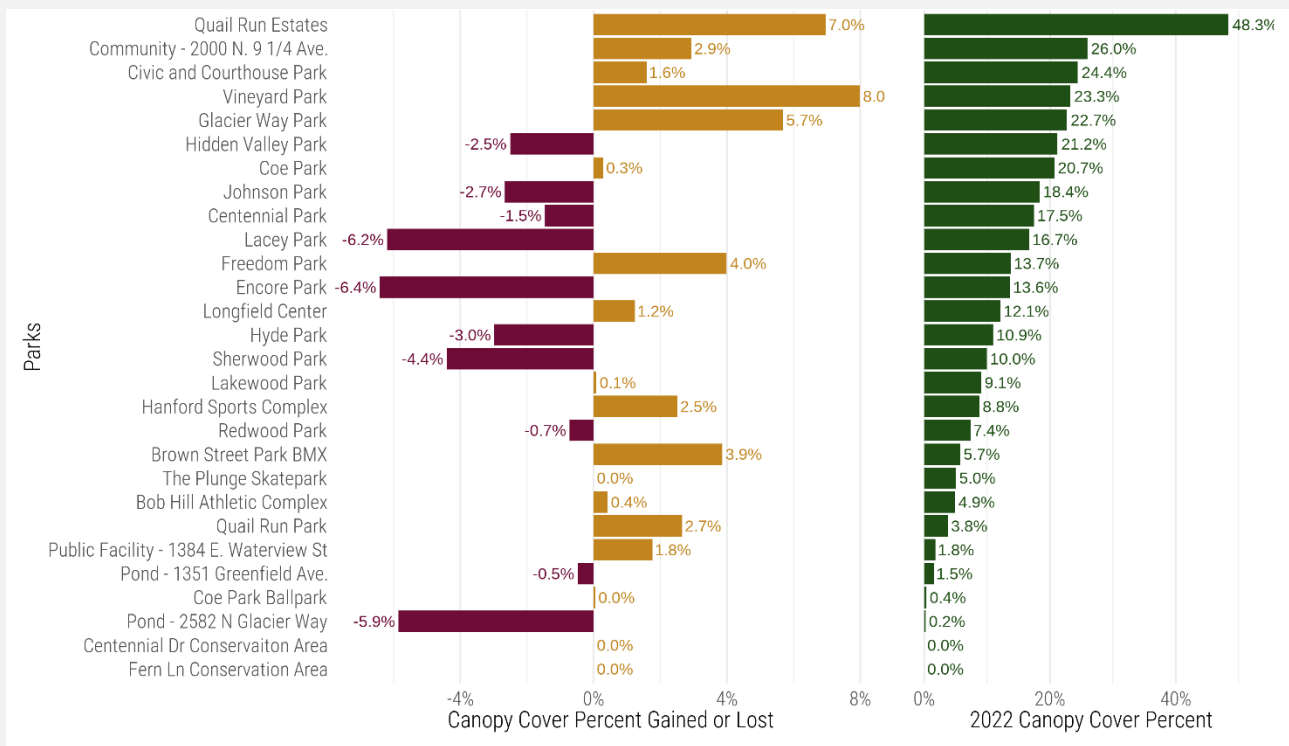
Between 2018 and 2022, canopy change varied across parks. The largest increases occurred in Vineyard Park (+8.0), Quail Run Estates (+7.0), and Freedom Park (+4.0). Other parks such as the Hanford Sports Complex, Brown Street Park BMX, and The Plunge Skatepark also saw smaller gains. The most substantial losses occurred in Encore Park (-6.4), Lacey Park (-6.2), Pond - 2582 N Glacier Way (-5.9), and Sherwood Park (-4.4).

In 2022, canopy levels in parks ranged from 0 to 48 percent, with the highest coverage in Quail Run Estates (48.3%), Community - 2000 N. 9 1/4 Ave. (26.0%), and Civic and Courthouse Park (24.4%). Several small parks and conservation areas contained less than 1 percent canopy cover.

Parks with declining canopy may benefit from targeted replanting and management to stabilize long-term cover, while those with higher canopy levels highlight opportunities for continued preservation.

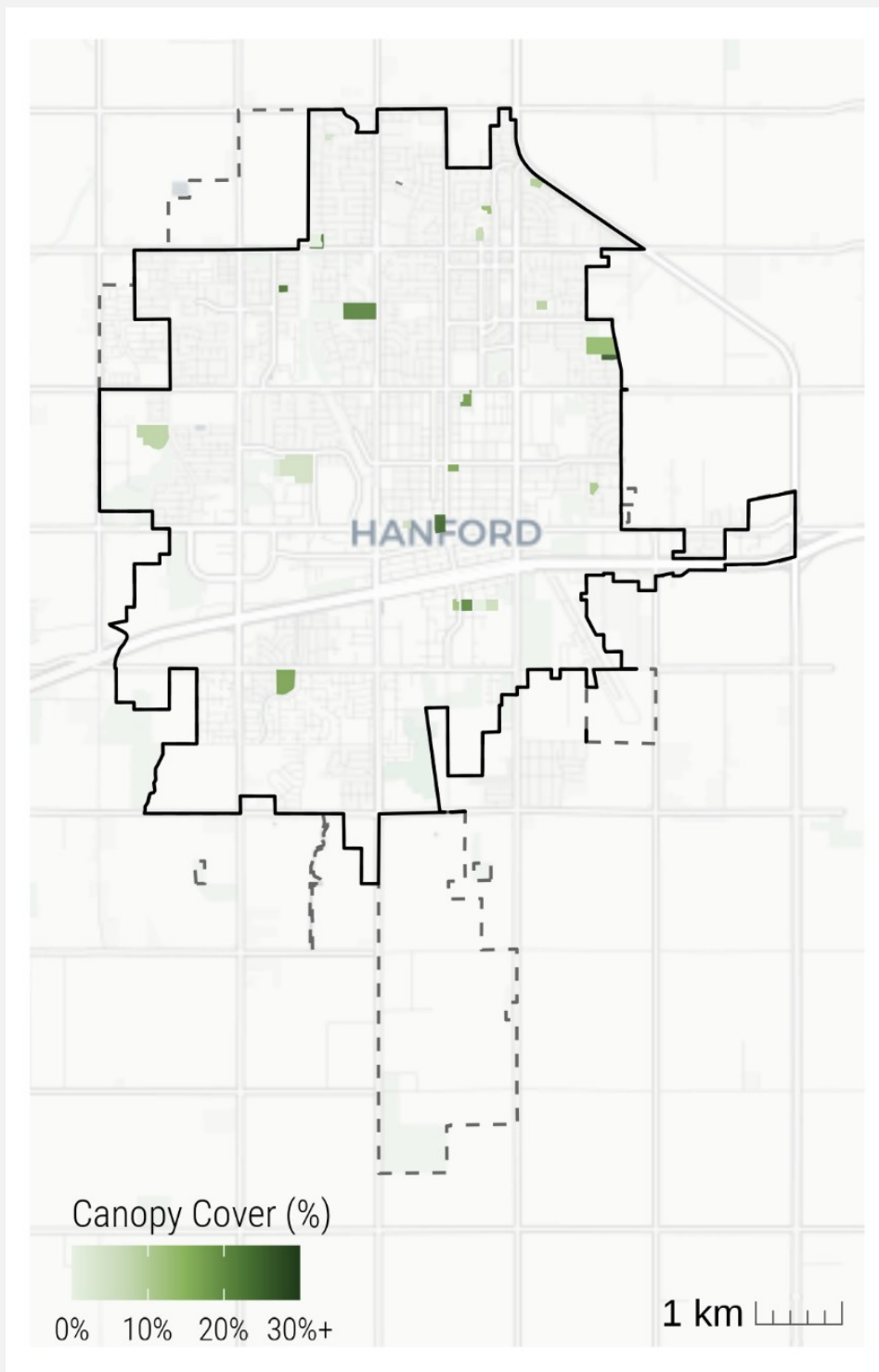
Exhibit 15 presents canopy change by parks from 2018 to 2022 alongside 2022 canopy levels. **Exhibit 16** shows the spatial distribution of canopy cover in 2022 parks.

Exhibit 15. Canopy Cover and Change by Parks (2018–2022)



Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery; Hanford GIS Data, 2025.

Exhibit 16. 2022 Canopy Cover by Parks



Source: EarthDefine 2025, derived from 2022 National Agriculture Imagery Program imagery.

2.2 Canopy Cover Target Analysis

Setting canopy cover targets requires balancing planting potential with the City's capacity to maintain and sustain urban forest growth over time. This section presents a preliminary analysis to support target setting by estimating potential canopy gains from the growth of existing public trees and planting within viable sites identified in the City's inventory, and evaluating the number of additional trees needed to reach a citywide canopy goal of 10%.

Although these findings provide a helpful foundation, they do not capture all conditions that influence urban forest outcomes, such as available funding, community support, and long-term tree care needs. These broader considerations will be addressed through the UFMP to ensure canopy targets are both realistic and sustainable.

2.2.1 Potential Canopy Growth

This analysis estimates how much additional canopy cover the City could gain through the natural growth of existing public trees and, separately, the potential expansion that could occur if all viable vacant sites identified in the inventory were planted. Together, these estimates provide a preliminary understanding of the City's overall canopy growth potential based on its existing tree population and the physical availability of planting space on City-managed land.

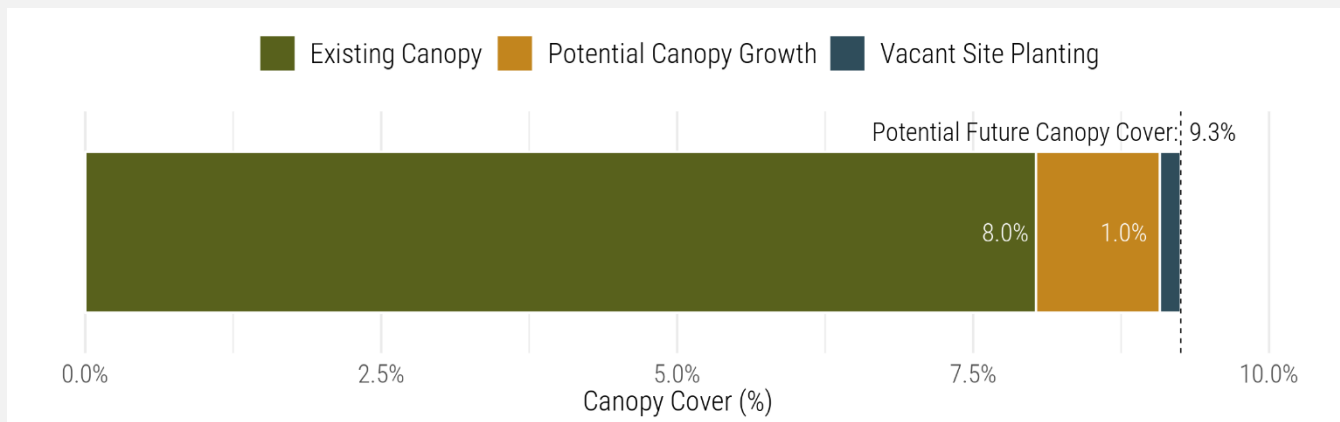
City-managed trees were evaluated for potential canopy expansion as they continue to mature. The analysis assumed an average mature height of 45 feet and a corresponding canopy diameter of approximately 34 feet, based on a height-to-canopy ratio of 1:0.75 derived from the City's tree inventory. Additional canopy area was calculated by comparing the estimated mature canopy area for each tree to its current canopy area, summing the difference across all trees, and converting the total to acres. This portion of the analysis suggests a potential increase in canopy cover of approximately 1.0%, representing the maximum canopy gain achievable from existing public trees as they reach maturity under current conditions.

A separate analysis was completed to estimate the potential canopy cover gained if all inventoried vacant planting sites and sites with stumps were filled with new trees. Of the 600 total sites, 591 were determined to be viable and were used to estimate potential canopy gain. Each site was assigned a typical mature canopy diameter based on its category: 20 feet for stumps and small planting sites, 35 feet for medium sites, and 50 feet for large sites. If all recorded vacant sites were planted and the trees grown to maturity, canopy cover could increase by an additional 0.2 percent.

This analysis suggests that the City's total canopy cover could increase from the current 8% to approximately 9.3% if all existing public trees reach maturity and all viable vacant sites are eventually planted. This represents a maximum potential scenario using existing public resources and planting space. Potential canopy increases from creating new planting areas, such as converting paved or built surfaces, were not included and require additional analysis. These results are based on assumptions such as available funding for tree planting and the ability to preserve existing trees, and do not account for tree mortality, removals, or other long-term management factors that could reduce the maximum canopy growth potential.

Exhibit 17 illustrates the potential canopy gains achievable from the growth of existing City-managed trees and planting within viable vacant sites identified in the inventory.

Exhibit 17. Projected Canopy Gains from City-Managed Tree Growth and Vacant Planting Sites



Source: City of Hanford, Dudek 2025.

2.2.2 Increasing Canopy Cover

The results of the canopy growth analysis indicate that, under current conditions, the City’s canopy cover could reach approximately 9.3% if all existing public trees were preserved to maturity and all viable vacant sites in the inventory were planted. This represents the upper limit of canopy expansion achievable through trees on City-managed land.

To explore how canopy cover could increase beyond this estimate, additional planting scenarios were modeled. These scenarios estimate the number of trees that would need to be established to achieve higher canopy levels across the City. A 10% canopy cover scenario was selected as a practical next step and planning benchmark. While the analysis is based on publicly managed trees and known planting sites, achieving this canopy level would ultimately depend on participation across both public and private properties. The scenario builds on the results of the canopy growth analysis to provide a realistic and measurable reference point for guiding long-term investment in tree planting and maintenance efforts.

Achieving a 10% canopy level would require expanding total canopy cover by approximately two percentage points above current conditions. Assuming existing public trees continue to mature and private canopy remains stable, this increase represents roughly 88 additional acres of canopy citywide. To illustrate what this level of growth would require, the additional canopy area was translated into approximate tree counts using a representative mix of tree sizes and their expected mature canopy spread.

Table 5 summarizes the number of trees and corresponding canopy area needed to increase total canopy cover by approximately 88 acres. The analysis assumes a balanced distribution of canopy width classes, small, medium, large, and extra-large, representative of typical urban planting conditions.

Table 5. Estimated Tree Planting Requirements to Achieve 10% Canopy Cover

Canopy Width	Ratio	Trees to Plant	Total Acres Increase
Small (20')	20%	749	5.29
Medium (30')	30%	1,122	17.85
Large (40')	30%	1,122	31.73
Extra-Large (50')	20%	749	33.09
Total	100%	3,742	87.96

Reaching a 10% canopy level would require planting approximately 3,742 trees, distributed across a mix of small, medium, large, and extra-large canopy width classes. If implemented gradually over a 30-year period, this would equate to planting about 125 new trees per year. The estimate includes a 2% mortality adjustment applied at the end of the analysis period, representing expected losses through maturity. This estimate assumes the City would continue to replace trees lost to mortality through replanting efforts, supporting the long-term establishment and sustainability of canopy gains.

With only 591 viable planting sites currently identified in the City's tree inventory, Hanford would need to identify additional viable planting areas and expand opportunities through streetscape retrofits, new development requirements, or private property initiatives to meet this goal. While the City plays a leading role in managing and expanding canopy cover through the care and planting of public trees, the long-term success of the urban forest will also rely heavily on actions taken on private property.

The canopy cover analysis shows that approximately 82% of the City's existing canopy is located on private property, with 6% on public land and 12% within rights-of-way and medians. This distribution highlights the importance of community participation and policy support to achieve meaningful canopy increases.

To make progress toward a 10% canopy goal, the City must consider influencing tree planting and preservation through various avenues including evaluating current planting and maintenance practices, identifying and prioritizing new planting opportunities, securing additional funding for the City's urban forestry program, guiding developers to preserve or replace trees, and utilizing programmatic tools such as tree protection ordinances and partnerships with schools, private land owners, and community organizations. Initiatives like residential tree giveaways, securing funding for a proactive maintenance program, and encouraging preservation of existing trees during development or reconstruction can further support canopy growth and ensure the benefits of the urban forest are distributed equitably across Hanford's neighborhoods.

2.3 Priority Planting Areas

A priority planting analysis was conducted to assist the City in identifying areas where new trees would provide the most benefit. The analysis incorporates information on urban heat severity, viable planting sites, and the Tree Equity Score (TES) to highlight locations where tree planting may deliver the greatest environmental and community benefits.

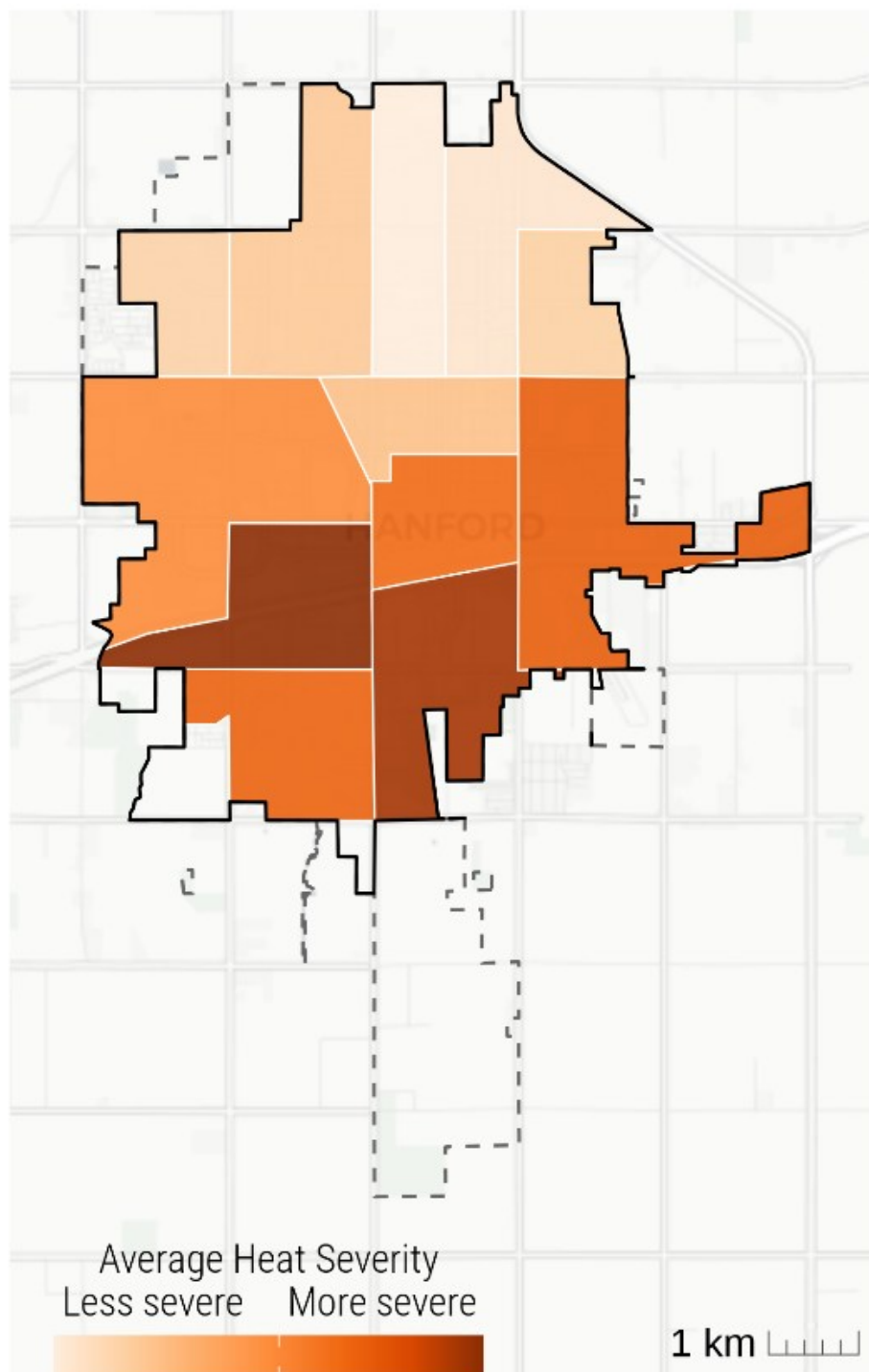
This analysis serves as a planning tool to guide decision-making and support future implementation of the UFMP. Priority areas may evolve as new data become available, advantageous funding opportunities arise, or community partnerships are developed, to enhance the urban forest collaboratively. The results of this analysis can inform policy development, outreach efforts, and strengthen grant applications, by identifying neighborhoods where planting can reduce heat exposure, increase shade, and promote equitable access to urban forest resources.

2.3.1 Urban Heat Severity

Urban heat island effects occur when built surfaces such as pavement, roofs, and parking lots absorb and retain heat, leading to higher local temperatures compared to surrounding rural or vegetated areas. To assess relative temperature patterns within Hanford, the analysis used the 2024 Urban Heat Severity dataset developed by the Trust for Public Land. The dataset classifies relative surface heat intensity on a scale from 1 (less severe) to 5 (more severe). For this assessment, the dataset was processed to calculate a weighted average heat severity for each Census tract, allowing comparison of localized heat exposure across Hanford. This approach combines both the extent and intensity of heat within each tract to identify neighborhoods most affected by elevated surface temperatures where tree planting may help mitigate these heat impacts.

Exhibit 18 shows that central and southwestern Hanford experience the highest heat severity, indicating areas that may benefit most from increased tree canopy and shade infrastructure to mitigate urban heat. Northern and northeastern neighborhoods exhibit lower relative heat severity, likely reflecting greater vegetation cover or fewer impervious surfaces.

Exhibit 18. Urban Heat Island Severity by Census Tract



Source: The Trust for Public Land 2024.

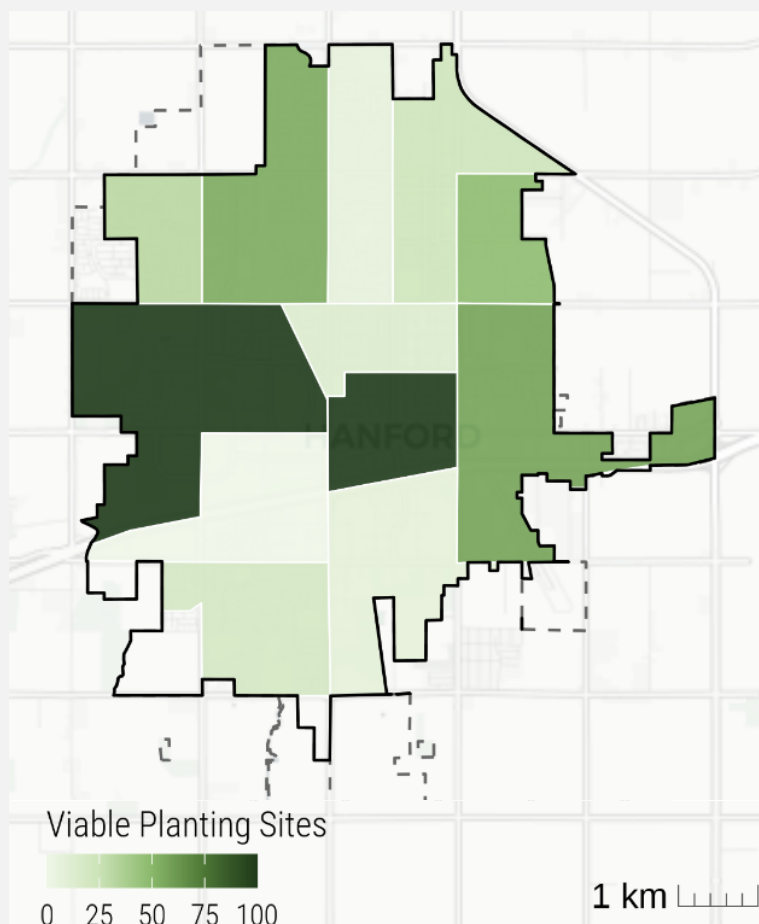
2.3.2 Viable Planting Sites

Viable planting sites were evaluated using data from the City's tree inventory. These sites represent existing locations where new trees could be established without major modifications to current land use or infrastructure. Each site was categorized based on the anticipated mature size of tree it can support: small, medium, or large. Stump locations were also included, representing opportunities for replanting once stumps are removed. A total of 591 viable planting sites were identified, including:

- 60 small sites – best suited for narrow spaces or under utility lines,
- 140 medium sites – appropriate for general use in most parkways and landscaped areas, and
- 278 large sites – capable of supporting shade trees with expansive canopies,
- 113 stump locations – representing opportunities for replacement planting once stumps are removed.

Exhibit 19 illustrates the density of viable planting sites across Hanford by Census tract. Darker areas indicate tracts with a higher number of vacant planting opportunities, highlighting where near-term canopy gains may be most feasible.

Exhibit 19. Viable Planting Site Density by Census Tract



Source: City of Hanford 2025.

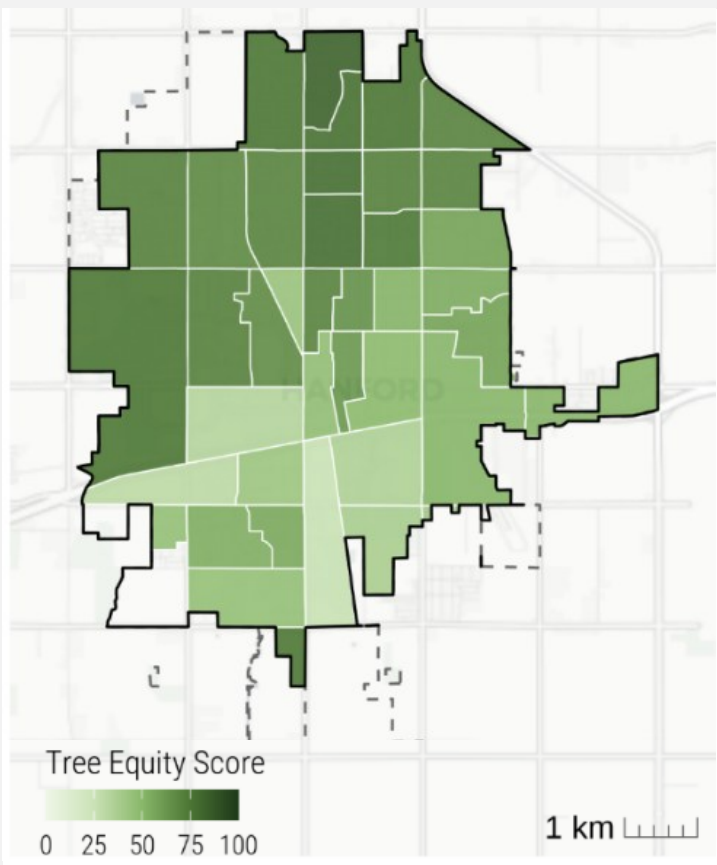
2.3.3 Tree Equity

The Tree Equity Score (TES) is a nationwide metric developed by American Forests to measure how well the benefits of trees are reaching all residents within a community. The score evaluates whether neighborhoods have enough tree canopy to ensure equitable access to shade, air-quality benefits, and climate resilience. It is calculated at the Census block-group level and combines high-resolution tree canopy data with demographic, environmental, and socioeconomic indicators that influence vulnerability to extreme heat and pollution.

TES scores range from 0 to 100, with lower values indicating a greater need for tree planting. A score of 100 means the neighborhood has met its canopy goal and is providing an equitable level of tree benefits relative to local conditions. Tree canopy goals are determined based on biome-specific targets (e.g., forest, Mediterranean, grassland, or desert) adjusted for building density, while the social and environmental context is captured through a Priority Index, which considers factors such as income, race, age, linguistic isolation, unemployment, health burden, and heat severity.

Exhibit 20 illustrates Tree Equity Scores across the City's Census block groups. Lighter colors represent lower scores, indicating neighborhoods with limited canopy and higher planting need. Darker colors represent areas that have met or exceeded equitable canopy thresholds.

Exhibit 20. Tree Equity Score by Census Block Groups



Source: Tree Equity Score. 2023. American Forests.

In Hanford, the Tree Equity Score highlights neighborhoods where existing canopy does not adequately serve residents most affected by heat and socioeconomic stressors. These areas typically correspond with communities experiencing higher poverty rates, greater heat exposure, or limited access to shade. Evaluating TES across the City helps identify where tree planting and canopy preservation efforts can most effectively reduce environmental disparities, mitigate extreme heat, and improve quality of life.

Aligning future planting efforts in areas with low Tree Equity Scores, high heat severity, and available planting space overlap, will help the City direct resources where trees may provide the greatest combined benefit. Focusing on these overlapping areas can reduce heat exposure, expand canopy where establishment is most feasible, and improve equitable access to urban forest benefits across Hanford. This integrated approach supports data-driven prioritization and provides a foundation for future implementation, advocacy for funding, and management decisions for the urban forestry program.

3 References

- Costello, L.R., and K.S. Jones. 2014. *Water Use Classification of Landscape Species (WUCOLS IV): A Guide to the Water Needs of Landscape Plants in California*. California Department of Water Resources. <https://ucanr.edu/sites/WUCOLS>.
- Hirabayashi, Y., R. Mahendran, S. Koirala, L. Konoshima, D. Yamazaki, S. Watanabe, H. Kim, and S. Kanae. 2013. "Global flood Risk Under Climate Change." *Nature Climate Change* 3(9): 816–821. <https://doi.org/10.1038/nclimate1911>.
- Intergovernmental Panel on Climate Change. 2021. *Climate Change 2021: The Physical Science Basis*. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.
- Lacan, J., and J. McBride. 2018. "Street Trees and Climate Change." *Urban Forestry & Urban Greening* 31:1–10. <https://doi.org/10.1016/j.ufug.2018.07.020>.
- McBride, J.R. and I. Lacan. 2018. *Climate Change and Urban Forests: A Tree Selection Guide for Future Climates*. University of California Agriculture and Natural Resources.
- McPherson, E.G., N.S. van Doorn, and J. de Goede. 2016. "Structure, Function and Value of Street Trees in California, USA." *Urban Forestry & Urban Greening* 17:104–115. <https://doi.org/10.1016/j.ufug.2016.02.011>.
- Moll, Gary. 1989. *Urban Forestry: Managing the Urban Forest*. Washington, D.C.: The American Forestry Association.
- Richards, N.A. 1993. "Reasonable Guidelines for Street Tree Diversity." *Journal of Arboriculture* 19(6): 344–350.
- The Trust for Public Land. 2024. "Heat Severity Urban Areas – USA 2024" [dataset]. <https://www.arcgis.com/home/item.html?id=b573ae35364e48d9ba9b2383f482630c>.
- Tree Equity Score. 2023. *American Forests*. Last accessed October 14, 2025. <https://treeequityscore.org>
- USFS (United States Forest Service). 2020. i-Tree Eco [online software]. <https://www.itreetools.org/tools/i-tree-eco>.
- Watson, G. 2014. *Best Management Practices: Tree Planting*, 2nd ed. International Society of Arboriculture.

i-Tree Ecosystem Analysis

Hanford



Urban Forest Effects and Values
July 2025

Summary

Understanding an urban forest's structure, function and value can promote management decisions that will improve human health and environmental quality. An assessment of the vegetation structure, function, and value of the Hanford urban forest was conducted during 2025. Data from 6640 trees located throughout Hanford were analyzed using the i-Tree Eco model developed by the U.S. Forest Service, Northern Research Station.

- Number of trees: 6,640
- Tree Cover: 28.07 acres
- Most common species of trees: Chinese pistache, Common crapemyrtle, Chinese hackberry
- Percentage of trees less than 6" (15.2 cm) diameter: 47.0%
- Pollution Removal: 2029 pounds/year (\$7.09 thousand/year)
- Carbon Storage: 1.324 thousand tons (\$573 thousand)
- Carbon Sequestration: 39.89 tons (\$17.3 thousand/year)
- Oxygen Production: 106.4 tons/year
- Avoided Runoff: 146.1 thousand gallon/year (\$1.31 thousand/year)
- Building energy savings: N/A – data not collected
- Avoided carbon emissions: N/A – data not collected
- Replacement values: \$10.9 million

Ton: short ton (U.S.) (2,000 lbs)

Monetary values \$ are reported in US Dollars throughout the report except where noted.

Ecosystem service estimates are reported for trees.

With Complete Inventory Projects, oxygen production is estimated from gross carbon sequestration and does not account for decomposition. Oxygen production in Plot Inventory Projects is estimated from net carbon sequestration.

For an overview of i-Tree Eco methodology, see Appendix I. Data collection quality is determined by the local data collectors, over which i-Tree has no control.

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I. Tree Characteristics of the Urban Forest

The urban forest of Hanford has 6,640 trees with a tree cover of Chinese pistache. The three most common species are Chinese pistache (33.6 percent), Common crapemyrtle (9.1 percent), and Chinese hackberry (7.2 percent).

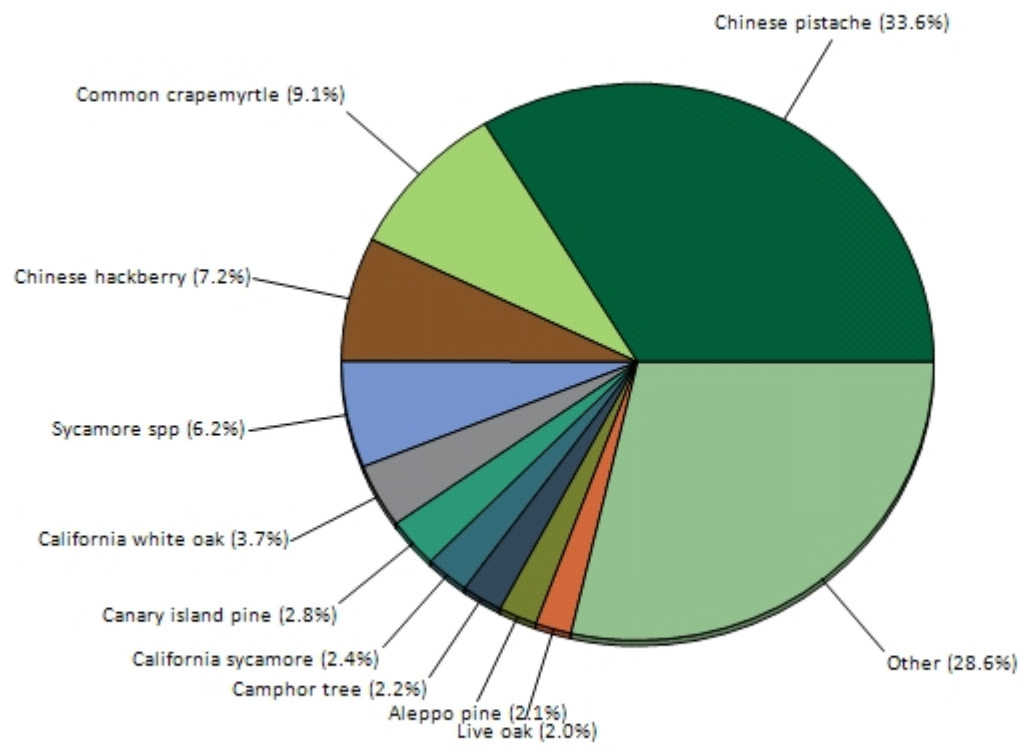


Figure 1. Tree species composition in Hanford

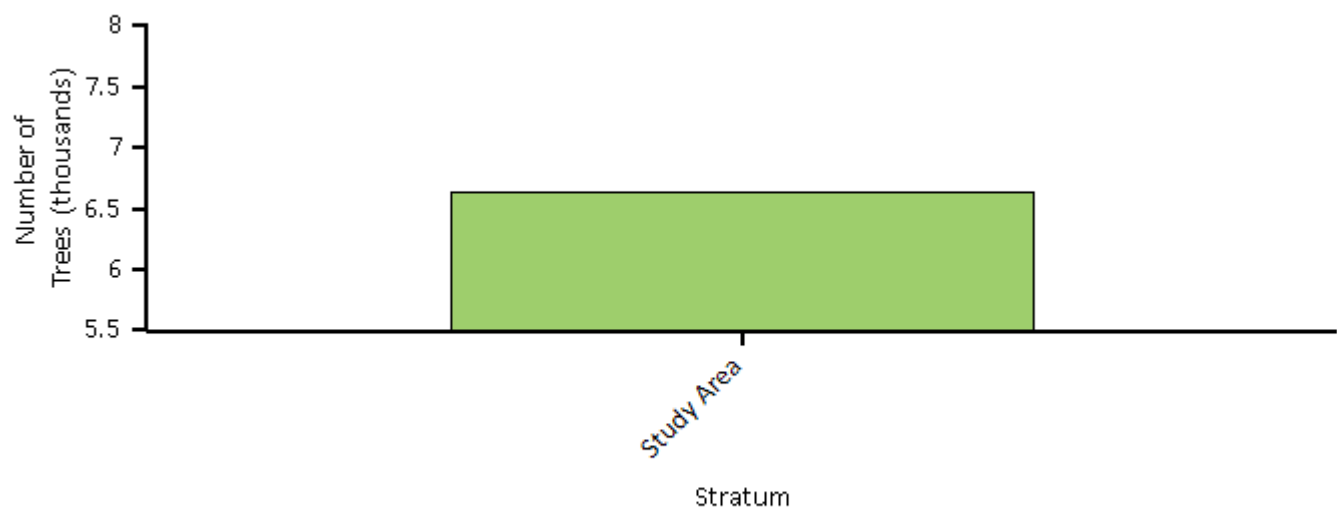


Figure 2. Number of trees in Hanford by stratum

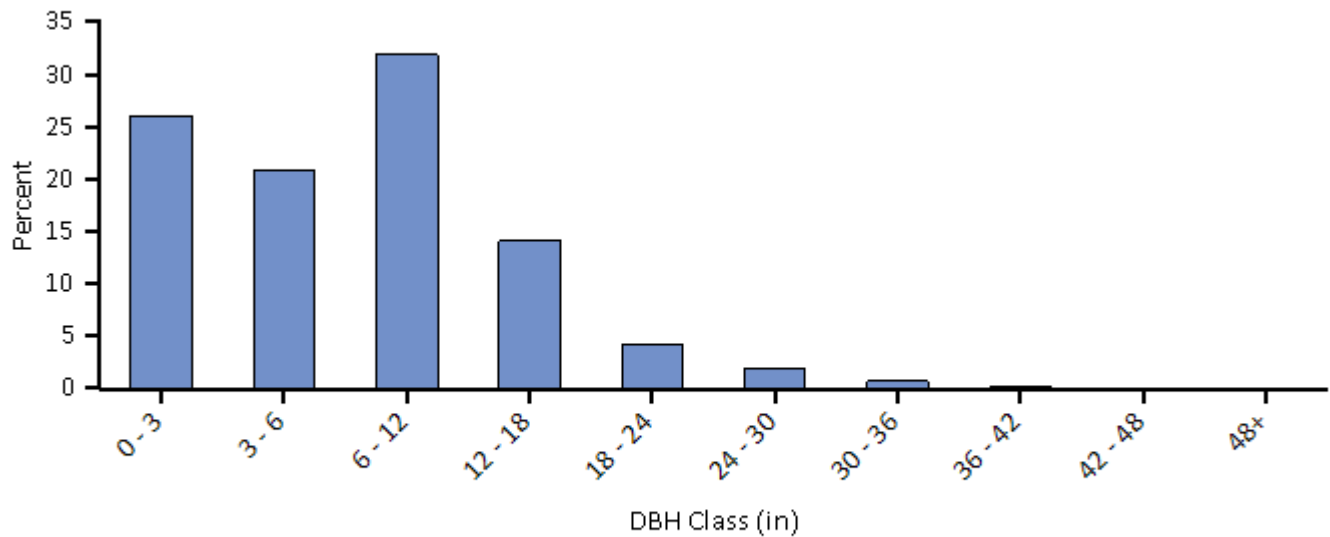


Figure 3. Percent of tree population by diameter class (DBH - stem diameter at 4.5 feet)

Urban forests are composed of a mix of native and exotic tree species. Thus, urban forests often have a tree diversity that is higher than surrounding native landscapes. Increased tree diversity can minimize the overall impact or destruction by a species-specific insect or disease, but it can also pose a risk to native plants if some of the exotic species are invasive plants that can potentially out-compete and displace native species. In Hanford, about 18 percent of the trees are species native to North America, while 9 percent are native to California. Species exotic to North America make up 82 percent of the population. Most exotic tree species have an origin from Asia (59 percent of the species).

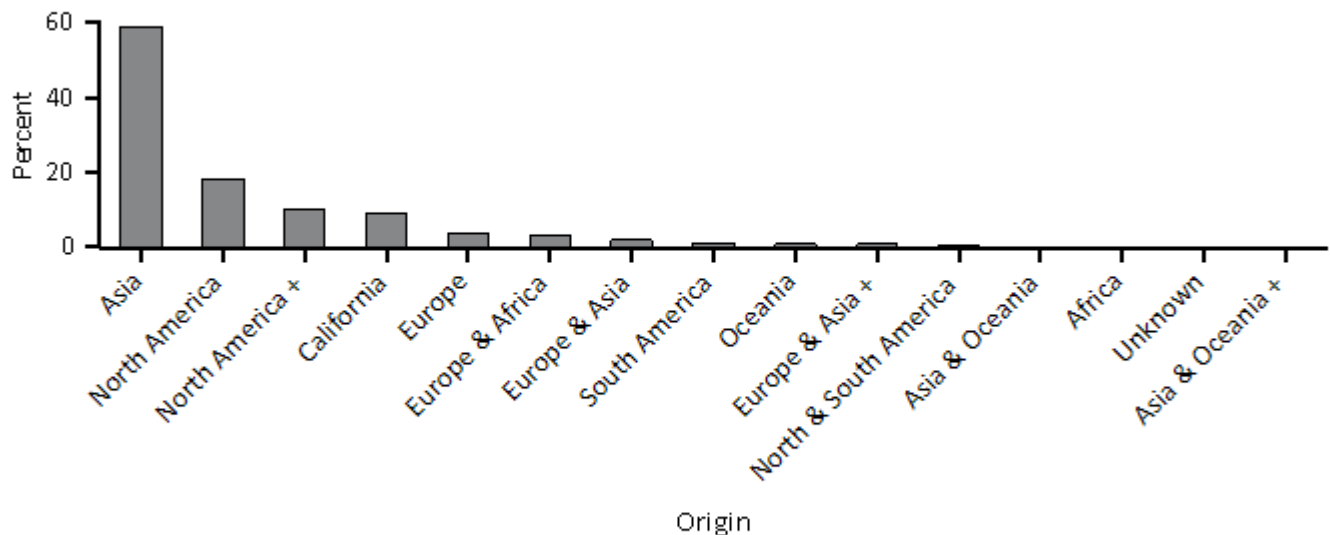


Figure 4. Percent of live tree population by area of native origin, Hanford

The plus sign (+) indicates the tree species is native to another continent other than the ones listed in the grouping.

Invasive plant species are often characterized by their vigor, ability to adapt, reproductive capacity, and general lack of natural enemies. These abilities enable them to displace native plants and make them a threat to natural areas. Four of the 101 tree species in Hanford are identified as invasive on the state invasive species list (California Invasive Species Advisory Committee 2010). These invasive species comprise 1.3 percent of the tree population though they may only cause a minimal level of impact. The three most common invasive species are Chinese tallowtree (1.0 percent of population), Tree of heaven (0.1 percent), and California peppertree (0.1 percent) (see Appendix V for a complete list of invasive species).

II. Urban Forest Cover and Leaf Area

Many tree benefits equate directly to the amount of healthy leaf surface area of the plant. Trees cover about 28.07 acres of Hanford and provide 88.53 acres of leaf area.

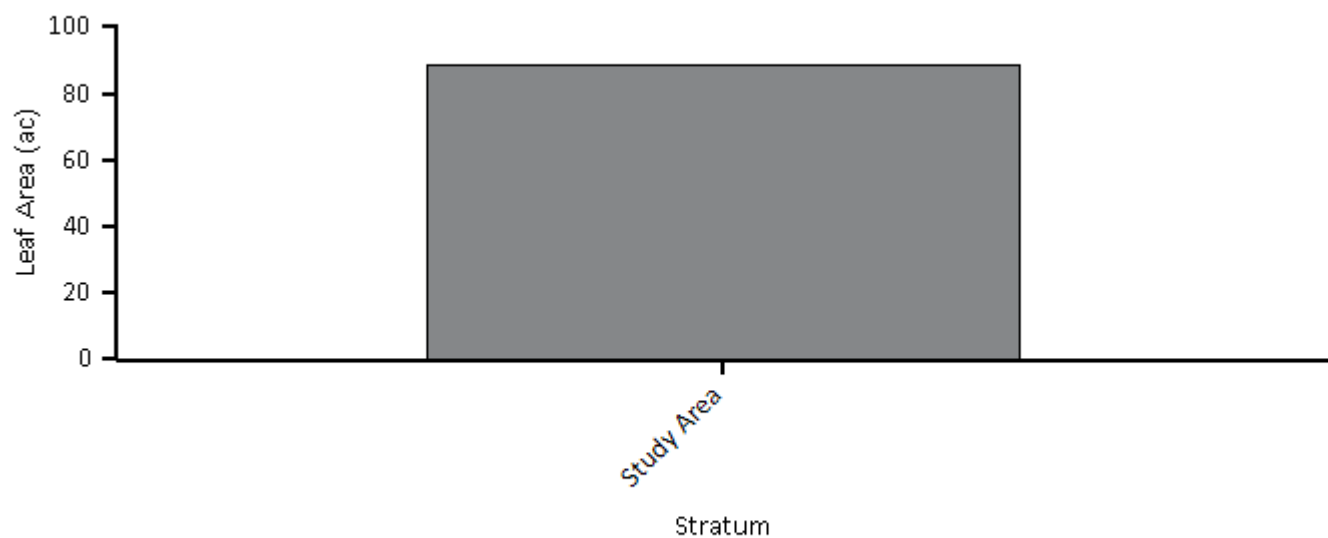


Figure 5. Leaf area by stratum, Hanford

In Hanford, the most dominant species in terms of leaf area are Chinese pistache, Chinese hackberry, and California white oak. The 10 species with the greatest importance values are listed in Table 1. Importance values (IV) are calculated as the sum of percent population and percent leaf area. High importance values do not mean that these trees should necessarily be encouraged in the future; rather these species currently dominate the urban forest structure.

Table 1. Most important species in Hanford

Species Name	Percent Population	Percent Leaf Area	IV
Chinese pistache	33.6	15.7	49.3
Chinese hackberry	7.2	11.9	19.1
Sycamore spp	6.2	8.4	14.6
California white oak	3.7	10.7	14.4
Canary island pine	2.8	9.8	12.7
Common crapemyrtle	9.1	0.6	9.7
Italian stone pine	1.5	7.1	8.6
Aleppo pine	2.1	4.5	6.6
Camphor tree	2.2	3.2	5.4
Live oak	2.0	2.4	4.3

Common ground cover classes (including cover types beneath trees and shrubs) in Hanford are not available since they are configured not to be collected.

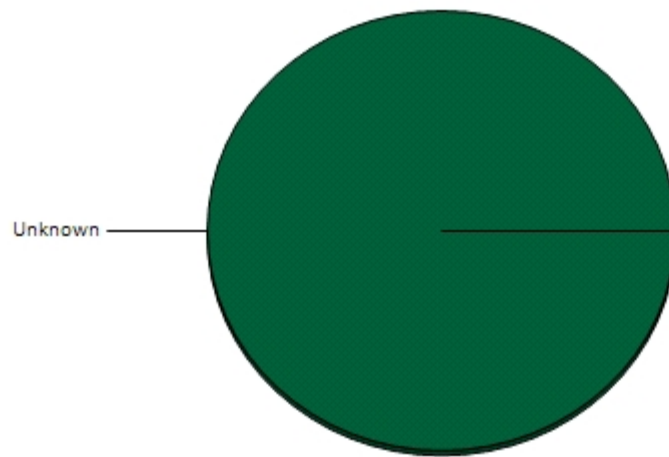


Figure 6. Percent of land by ground cover classes, Hanford

III. Air Pollution Removal by Urban Trees

Poor air quality is a common problem in many urban areas. It can lead to decreased human health, damage to landscape materials and ecosystem processes, and reduced visibility. The urban forest can help improve air quality by reducing air temperature, directly removing pollutants from the air, and reducing energy consumption in buildings, which consequently reduces air pollutant emissions from the power sources. Trees also emit volatile organic compounds that can contribute to ozone formation. However, integrative studies have revealed that an increase in tree cover leads to reduced ozone formation (Nowak and Dwyer 2000).

Pollution removal¹ by trees in Hanford was estimated using field data and recent available pollution and weather data available. Pollution removal was greatest for ozone (Figure 7). It is estimated that trees remove 2029 pounds of air pollution (ozone (O3), carbon monoxide (CO), nitrogen dioxide (NO2), particulate matter less than 2.5 microns (PM2.5), particulate matter less than 10 microns and greater than 2.5 microns (PM10*)², and sulfur dioxide (SO2)) per year with an associated value of \$7.09 thousand (see Appendix I for more details).

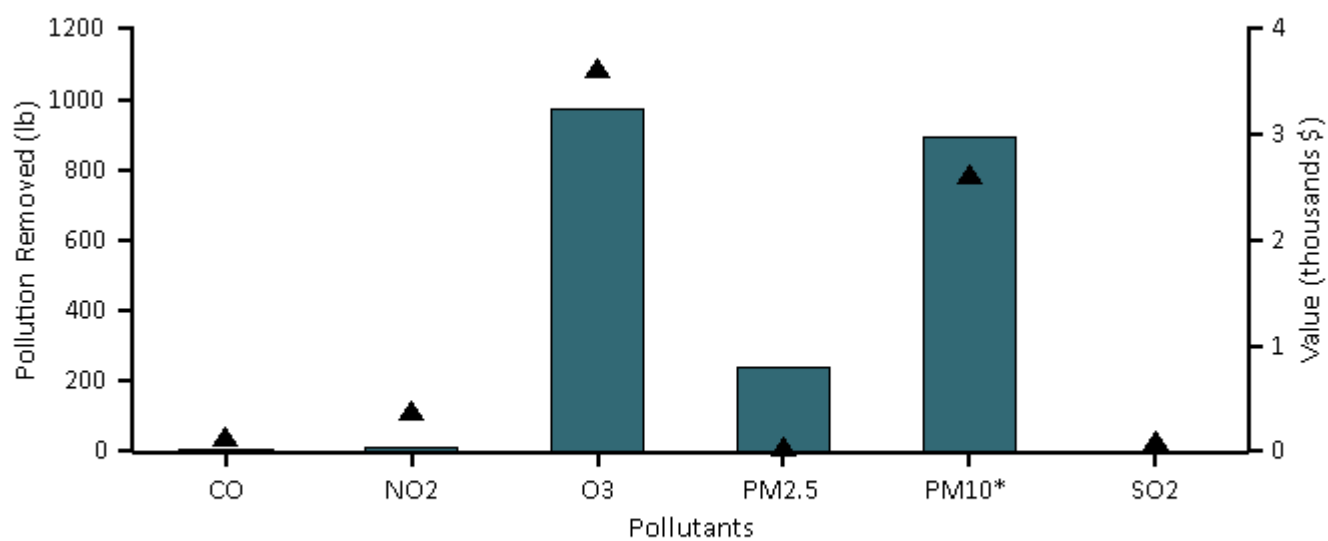


Figure 7. Annual pollution removal (points) and value (bars) by urban trees, Hanford

¹ PM10* is particulate matter less than 10 microns and greater than 2.5 microns. PM2.5 is particulate matter less than 2.5 microns. If PM2.5 is not monitored, PM10* represents particulate matter less than 10 microns. PM2.5 is generally more relevant in discussions concerning air pollution effects on human health.

² Trees remove PM2.5 and PM10* when particulate matter is deposited on leaf surfaces. This deposited PM2.5 and PM10* can be resuspended to the atmosphere or removed during rain events and dissolved or transferred to the soil. This combination of events can lead to positive or negative pollution removal and value depending on various atmospheric factors (see Appendix I for more details).

In 2025, trees in Hanford emitted an estimated 1.451 tons of volatile organic compounds (VOCs) (0.7503 tons of isoprene and 0.7008 tons of monoterpenes). Emissions vary among species based on species characteristics (e.g. some genera such as oaks are high isoprene emitters) and amount of leaf biomass. Forty- five percent of the urban forest's VOC emissions were from California white oak and Live oak. These VOCs are precursor chemicals to ozone formation.³

General recommendations for improving air quality with trees are given in Appendix VIII.

³ Some economic studies have estimated VOC emission costs. These costs are not included here as there is a tendency to add positive dollar estimates of ozone removal effects with negative dollar values of VOC emission effects to determine whether tree effects are positive or negative in relation to ozone. This combining of dollar values to determine tree effects should not be done, rather estimates of VOC effects on ozone formation (e.g., via photochemical models) should be conducted and directly contrasted with ozone removal by trees (i.e., ozone effects should be directly compared, not dollar estimates). In addition, air temperature reductions by trees have been shown to significantly reduce ozone concentrations (Cardelino and Chameides 1990; Nowak et al 2000), but are not considered in this analysis. Photochemical modeling that integrates tree effects on air temperature, pollution removal, VOC emissions, and emissions from power plants can be used to determine the overall effect of trees on ozone concentrations.

IV. Carbon Storage and Sequestration

Climate change is an issue of global concern. Urban trees can help mitigate climate change by sequestering atmospheric carbon (from carbon dioxide) in tissue and by altering energy use in buildings, and consequently altering carbon dioxide emissions from fossil-fuel based power sources (Abdollahi et al 2000).

Trees reduce the amount of carbon in the atmosphere by sequestering carbon in new growth every year. The amount of carbon annually sequestered is increased with the size and health of the trees. The gross sequestration of Hanford trees is about 39.89 tons of carbon per year with an associated value of \$17.3 thousand. See Appendix I for more details on methods.

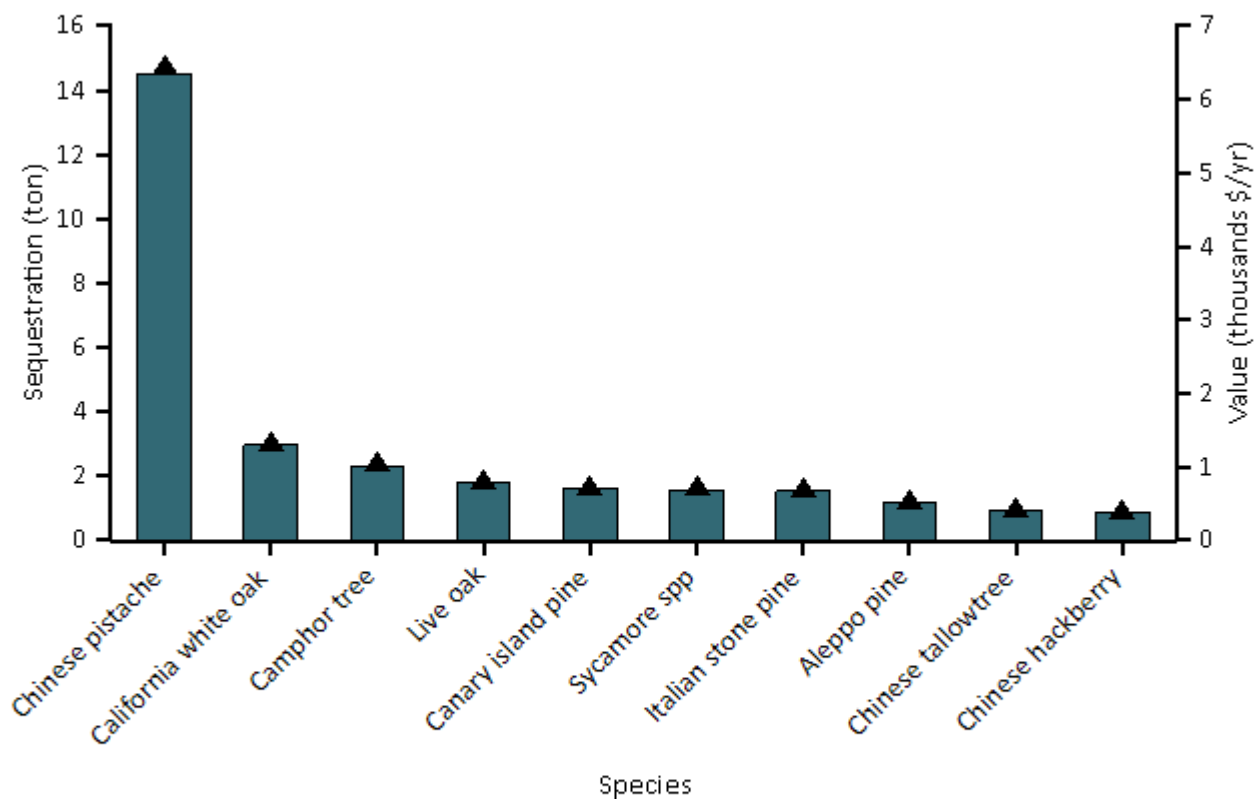


Figure 8. Estimated annual gross carbon sequestration (points) and value (bars) for urban tree species with the greatest sequestration, Hanford

Carbon storage is another way trees can influence global climate change. As a tree grows, it stores more carbon by holding it in its accumulated tissue. As a tree dies and decays, it releases much of the stored carbon back into the atmosphere. Thus, carbon storage is an indication of the amount of carbon that can be released if trees are allowed to die and decompose. Maintaining healthy trees will keep the carbon stored in trees, but tree maintenance can contribute to carbon emissions (Nowak et al 2002c). When a tree dies, using the wood in long-term wood products, to heat buildings, or to produce energy will help reduce carbon emissions from wood decomposition or from fossil-fuel or wood-based power plants.

Trees in Hanford are estimated to store 1320 tons of carbon (\$573 thousand). Of the species sampled, Chinese pistache stores and sequesters the most carbon (approximately 24.6% of the total carbon stored and 36.8% of all sequestered carbon.)

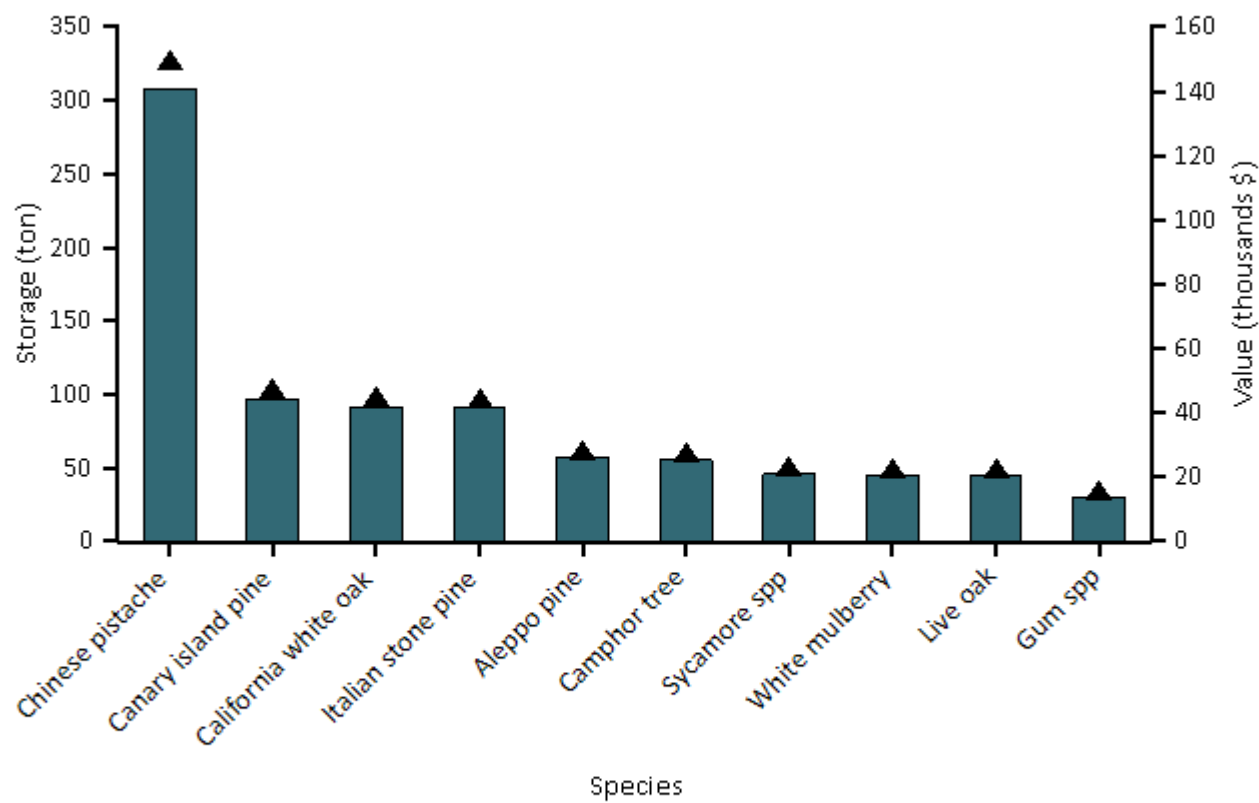


Figure 9. Estimated carbon storage (points) and values (bars) for urban tree species with the greatest storage, Hanford

V. Oxygen Production

Oxygen production is one of the most commonly cited benefits of urban trees. The annual oxygen production of a tree is directly related to the amount of carbon sequestered by the tree, which is tied to the accumulation of tree biomass.

Trees in Hanford are estimated to produce 106.4 tons of oxygen per year.⁴ However, this tree benefit is relatively insignificant because of the large and relatively stable amount of oxygen in the atmosphere and extensive production by aquatic systems. Our atmosphere has an enormous reserve of oxygen. If all fossil fuel reserves, all trees, and all organic matter in soils were burned, atmospheric oxygen would only drop a few percent (Broecker 1970).

Table 2. The top 20 oxygen production species.

<i>Species</i>	<i>Oxygen (ton)</i>	<i>Gross Carbon Sequestration (ton/yr)</i>	<i>Number of Trees</i>	<i>Leaf Area (acre)</i>
Chinese pistache	39.13	14.67	2,234	13.88
California white oak	8.01	3.00	246	9.49
Camphor tree	6.28	2.36	148	2.81
Live oak	4.79	1.80	130	2.11
Canary island pine	4.37	1.64	189	8.70
Sycamore spp	4.26	1.60	411	7.42
Italian stone pine	4.12	1.54	99	6.25
Aleppo pine	3.13	1.18	140	4.00
Chinese tallowtree	2.47	0.93	66	0.85
Chinese hackberry	2.37	0.89	478	10.56
Common crapemyrtle	1.91	0.72	605	0.52
Coastal live oak	1.61	0.60	75	2.30
Carolina laurelcherry	1.47	0.55	113	0.42
Chinese elm	1.37	0.51	40	0.74
White mulberry	1.35	0.51	31	0.76
Callery pear	1.26	0.47	51	0.78
Ash spp	1.12	0.42	54	1.93
Red gum eucalyptus	1.08	0.41	9	1.07
Honeylocust	1.04	0.39	39	0.58
Silk oak	0.96	0.36	34	0.44

VI. Avoided Runoff

Surface runoff can be a cause for concern in many urban areas as it can contribute pollution to streams, wetlands, rivers, lakes, and oceans. During precipitation events, some portion of the precipitation is intercepted by vegetation (trees and shrubs) while the other portion reaches the ground. The portion of the precipitation that reaches the ground and does not infiltrate into the soil becomes surface runoff (Hirabayashi 2012). In urban areas, the large extent of impervious surfaces increases the amount of surface runoff.

Urban trees and shrubs, however, are beneficial in reducing surface runoff. Trees and shrubs intercept precipitation, while their root systems promote infiltration and storage in the soil. The trees and shrubs of Hanford help to reduce runoff by an estimated 146 thousand gallons a year with an associated value of \$1.3 thousand (see Appendix I for more details). Avoided runoff is estimated based on local weather from the user-designated weather station. In Hanford, the total annual precipitation in 2023 was 12.8 inches.

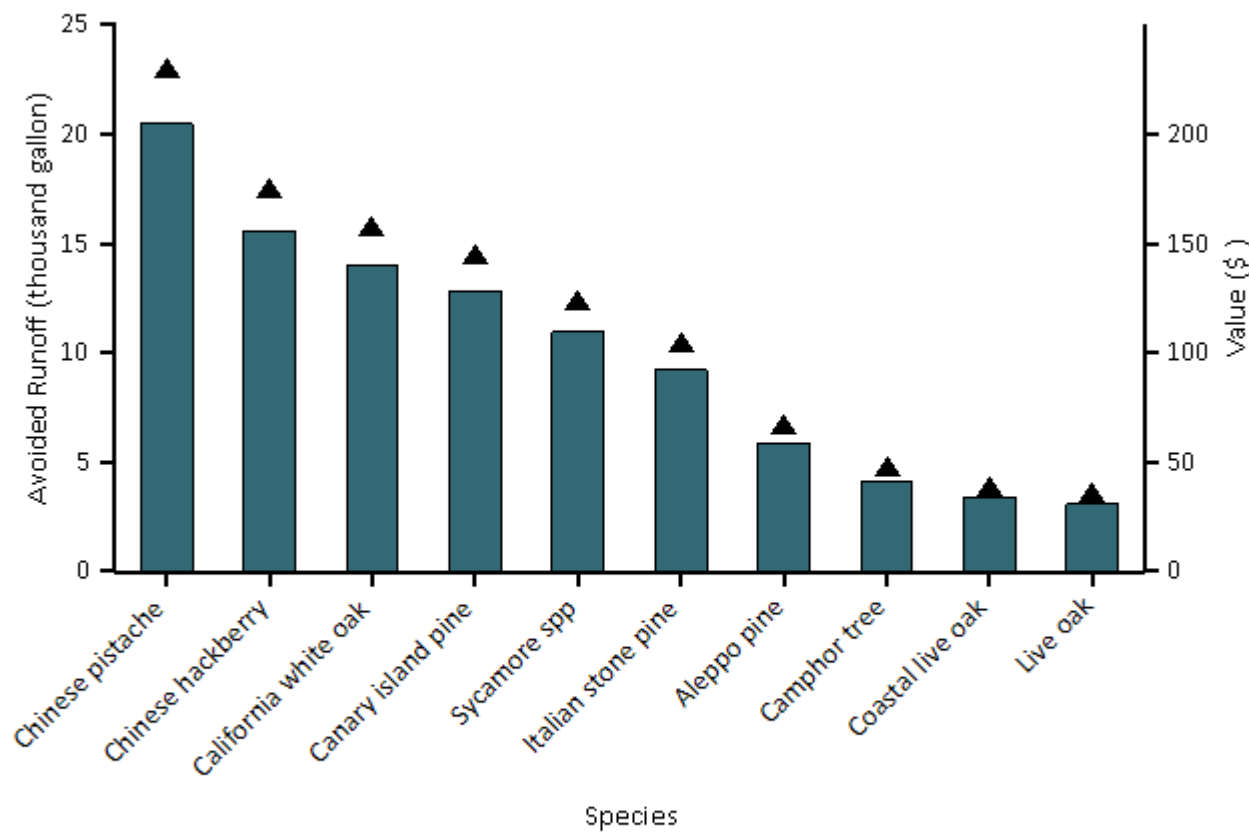


Figure 10. Avoided runoff (points) and value (bars) for species with greatest overall impact on runoff, Hanford

VII. Trees and Building Energy Use

Trees affect energy consumption by shading buildings, providing evaporative cooling, and blocking winter winds. Trees tend to reduce building energy consumption in the summer months and can either increase or decrease building energy use in the winter months, depending on the location of trees around the building. Estimates of tree effects on energy use are based on field measurements of tree distance and direction to space conditioned residential buildings (McPherson and Simpson 1999).

Because energy-related data were not collected, energy savings and carbon avoided cannot be calculated.

Table 3. Annual energy savings due to trees near residential buildings, Hanford

	<i>Heating</i>	<i>Cooling</i>	<i>Total</i>
MBTU ^a	0	N/A	0
MWH ^b	0	0	0
Carbon Avoided (pounds)	0	0	0

^aMBTU - one million British Thermal Units

^bMWH - megawatt-hour

Table 4. Annual savings ^a (\$) in residential energy expenditure during heating and cooling seasons, Hanford

	<i>Heating</i>	<i>Cooling</i>	<i>Total</i>
MBTU ^b	0	N/A	0
MWH ^c	0	0	0
Carbon Avoided	0	0	0

^bBased on the prices of \$204.7 per MWH and \$12.9396400362223 per MBTU (see Appendix I for more details)

^cMBTU - one million British Thermal Units

^cMWH - megawatt-hour

⁵ Trees modify climate, produce shade, and reduce wind speeds. Increased energy use or costs are likely due to these tree-building interactions creating a cooling effect during the winter season. For example, a tree (particularly evergreen species) located on the southern side of a residential building may produce a shading effect that causes increases in heating requirements.

VIII. Replacement and Functional Values

Urban forests have a replacement value based on the trees themselves (e.g., the cost of having to replace a tree with a similar tree); they also have functional values (either positive or negative) based on the functions the trees perform.

The replacement value of an urban forest tends to increase with a rise in the number and size of healthy trees (Nowak et al 2002a). Annual functional values also tend to increase with increased number and size of healthy trees. Through proper management, urban forest values can be increased; however, the values and benefits also can decrease as the amount of healthy tree cover declines.

Urban trees in Hanford have the following replacement values:

- Replacement value: \$10.9 million
- Carbon storage: \$573 thousand

Urban trees in Hanford have the following annual functional values:

- Carbon sequestration: \$17.3 thousand
- Avoided runoff: \$1.31 thousand
- Pollution removal: \$7.09 thousand
- Energy costs and carbon emission values: \$0

(Note: negative value indicates increased energy cost and carbon emission value)

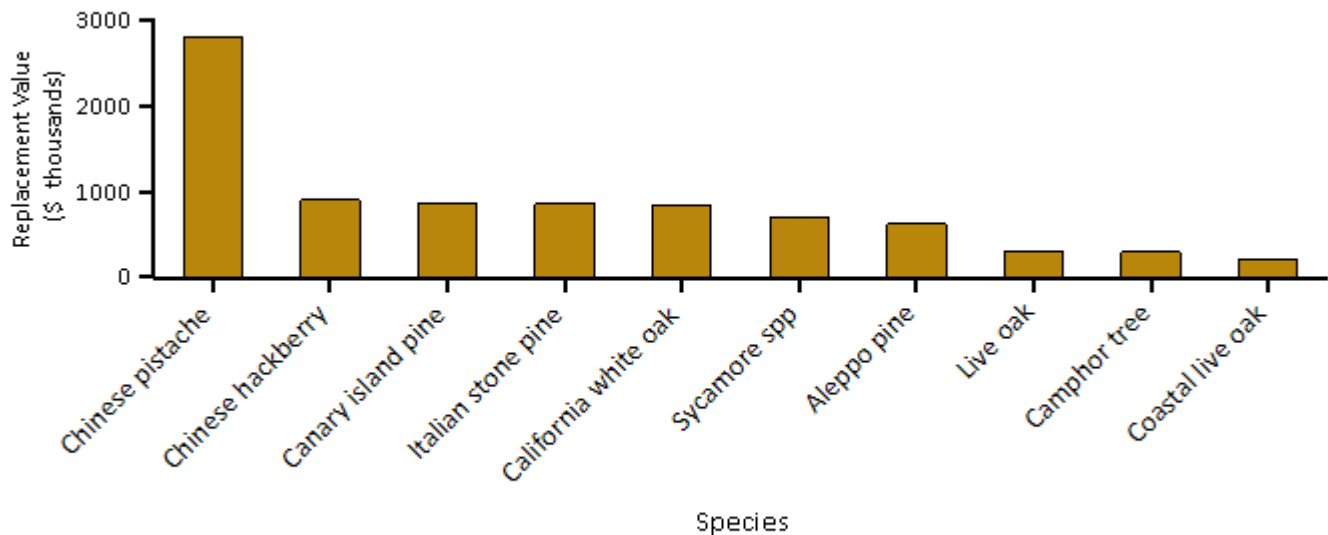


Figure 11. Tree species with the greatest replacement value, Hanford

IX. Potential Pest Impacts

Various insects and diseases can infest urban forests, potentially killing trees and reducing the health, replacement value and sustainability of the urban forest. As pests tend to have differing tree hosts, the potential damage or risk of each pest will differ among cities. Fifty-three pests were analyzed for their potential impact and compared with pest range maps (Forest Health Technology Enterprise Team 2014) for the conterminous United States to determine their proximity to Kings County. Two of the fifty-three pests analyzed are located within the county. For a complete analysis of all pests, see Appendix VII.

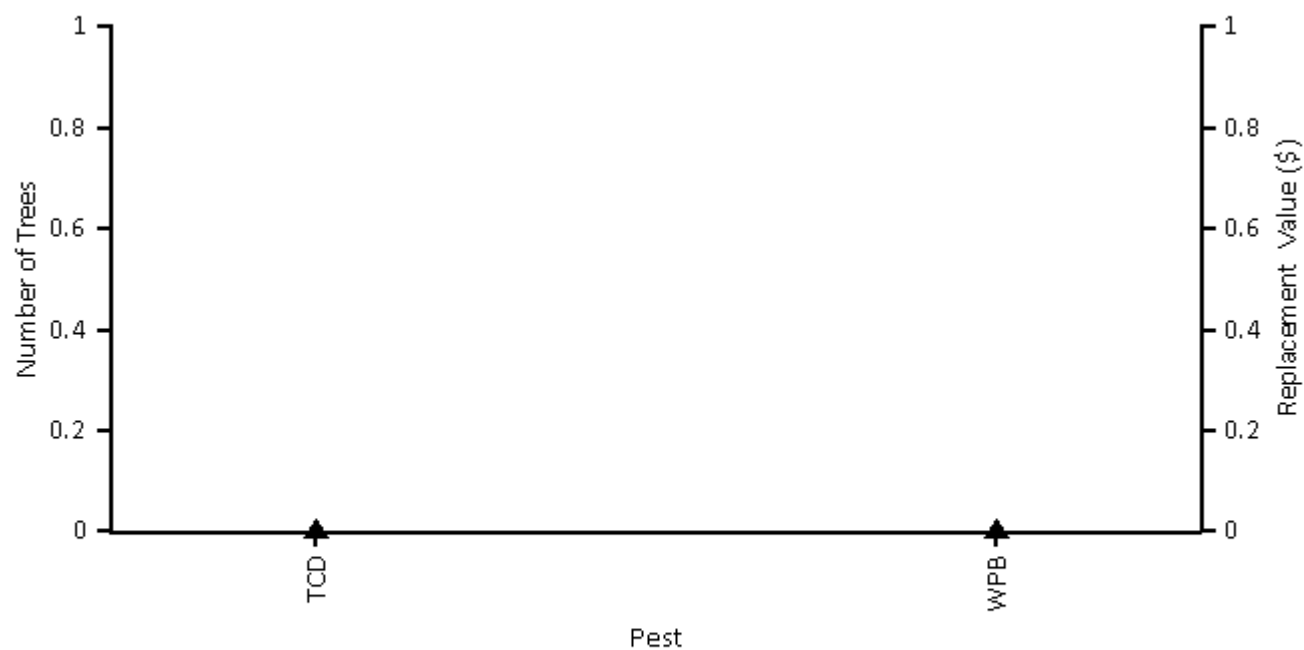


Figure 12. Number of trees at risk (points) and associated compensatory value (bars) for most threatening pests located in the county, Hanford

Thousand canker disease (TCD) (Cranshaw and Tisserat 2009; Seybold et al 2010) is an insect-disease complex that kills several species of walnuts, including black walnut. Potential loss of trees from TCD is 0.0 percent (\$0 in replacement value).

The western pine beetle (WPB) (DeMars and Roettgering 1982) is a bark beetle and aggressive attacker of ponderosa and Coulter pines. This pest threatens 0.0 percent of the population, which represents a potential loss of \$0 in replacement value.

Appendix I. i-Tree Eco Model and Field Measurements

i-Tree Eco is designed to use standardized field data and local hourly air pollution and meteorological data to quantify urban forest structure and its numerous effects (Nowak and Crane 2000), including:

- Urban forest structure (e.g., species composition, tree health, leaf area, etc.).
- Amount of pollution removed hourly by the urban forest, and its associated percent air quality improvement throughout a year.
- Total carbon stored and net carbon annually sequestered by the urban forest.
- Effects of trees on building energy use and consequent effects on carbon dioxide emissions from power sources.
- Replacement value of the forest, as well as the value for air pollution removal and carbon storage and sequestration.
- Potential impact of infestations by pests, such as Asian longhorned beetle, emerald ash borer, spongy moth, and Dutch elm disease.

Typically, all field data are collected during the leaf-on season to properly assess tree canopies. Typical data collection (actual data collection may vary depending upon the user) includes land use, ground and tree cover, individual tree attributes of species, stem diameter, height, crown width, crown canopy missing and dieback, and distance and direction to residential buildings (Nowak et al 2005; Nowak et al 2008).

During data collection, trees are identified to the most specific taxonomic classification possible. Trees that are not classified to the species level may be classified by genus (e.g., ash) or species groups (e.g., hardwood). In this report, tree species, genera, or species groups are collectively referred to as tree species.

Tree Characteristics:

Leaf area of trees was assessed using measurements of crown dimensions and percentage of crown canopy missing. In the event that these data variables were not collected, they are estimated by the model.

An analysis of invasive species is not available for studies outside of the United States. For the U.S., invasive species are identified using an invasive species list (California Invasive Species Advisory Committee 2010) for the state in which the urban forest is located. These lists are not exhaustive and they cover invasive species of varying degrees of invasiveness and distribution. In instances where a state did not have an invasive species list, a list was created based on the lists of the adjacent states. Tree species that are identified as invasive by the state invasive species list are cross-referenced with native range data. This helps eliminate species that are on the state invasive species list, but are native to the study area.

Air Pollution Removal:

Pollution removal is calculated for ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, particulate matter less than 2.5 microns, and particulate matter less than 10 microns and greater than 2.5 microns. PM_{2.5} is generally more relevant in discussions concerning air pollution effects on human health.

Air pollution removal estimates are derived from calculated hourly tree-canopy resistances for ozone, and sulfur and nitrogen dioxides based on a hybrid of big-leaf and multi-layer canopy deposition models (Baldocchi 1988; Baldocchi et al 1987). As the removal of carbon monoxide and particulate matter by vegetation is not directly related to transpiration, removal rates (deposition velocities) for these pollutants were based on average measured values from the literature (Bidwell and Fraser 1972; Lovett 1994) that were adjusted depending on leaf phenology and leaf area. Particulate removal incorporated a 50 percent resuspension rate of particles back to the atmosphere (Zinke 1967). Recent updates (2011) to air quality modeling are based on improved leaf area index simulations, weather and

pollution processing and interpolation, and updated pollutant monetary values (Hirabayashi et al 2011; Hirabayashi et al 2012; Hirabayashi 2011).

Trees remove PM_{2.5} and PM₁₀* when particulate matter is deposited on leaf surfaces (Nowak et al 2013). This deposited PM_{2.5} and PM₁₀* can be resuspended to the atmosphere or removed during rain events and dissolved or transferred to the soil. This combination of events can lead to positive or negative pollution removal and value depending on various atmospheric factors. Generally, PM_{2.5} and PM₁₀* removal is positive with positive benefits. However, there are some cases when net removal is negative or resuspended particles lead to increased pollution concentrations and negative values. During some months (e.g., with no rain), trees resuspend more particles than they remove. Resuspension can also lead to increased overall PM_{2.5} and PM₁₀* concentrations if the boundary layer conditions are lower during net resuspension periods than during net removal periods. Since the pollution removal value is based on the change in pollution concentration, it is possible to have situations when trees remove PM_{2.5} and PM₁₀* but increase concentrations and thus have negative values during periods of positive overall removal. These events are not common, but can happen.

For reports in the United States, default air pollution removal value is calculated based on local incidence of adverse health effects and national median externality costs. The number of adverse health effects and associated economic value is calculated for ozone, sulfur dioxide, nitrogen dioxide, and particulate matter less than 2.5 microns using data from the U.S. Environmental Protection Agency's Environmental Benefits Mapping and Analysis Program (BenMAP) (Nowak et al 2014). The model uses a damage-function approach that is based on the local change in pollution concentration and population. National median externality costs were used to calculate the value of carbon monoxide removal (Murray et al 1994).

For international reports, user-defined local pollution values are used. For international reports that do not have local values, estimates are based on either European median externality values (van Essen et al 2011) or BenMAP regression equations (Nowak et al 2014) that incorporate user-defined population estimates. Values are then converted to local currency with user-defined exchange rates.

For this analysis, pollution removal value is calculated based on the prices of \$1,622 per ton (carbon monoxide), \$6,007 per ton (ozone), \$868 per ton (nitrogen dioxide), \$313 per ton (sulfur dioxide), \$201,290 per ton (particulate matter less than 2.5 microns), \$7,623 per ton (particulate matter less than 10 microns and greater than 2.5 microns).

Carbon Storage and Sequestration:

Carbon storage is the amount of carbon bound up in the above-ground and below-ground parts of woody vegetation. To calculate current carbon storage, biomass for each tree was calculated using equations from the literature and measured tree data. Open-grown, maintained trees tend to have less biomass than predicted by forest-derived biomass equations (Nowak 1994). To adjust for this difference, biomass results for open-grown urban trees were multiplied by 0.8. No adjustment was made for trees found in natural stand conditions. Tree dry-weight biomass was converted to stored carbon by multiplying by 0.5.

Carbon sequestration is the removal of carbon dioxide from the air by plants. To estimate the gross amount of carbon sequestered annually, average diameter growth from the appropriate genera and diameter class and tree condition was added to the existing tree diameter (year x) to estimate tree diameter and carbon storage in year x+1.

Carbon storage and carbon sequestration values are based on estimated or customized local carbon values. For international reports that do not have local values, estimates are based on the carbon value for the United States (U.S. Environmental Protection Agency 2015, Interagency Working Group on Social Cost of Carbon 2015) and converted to local currency with user-defined exchange rates.

For this analysis, carbon storage and carbon sequestration values are calculated based on \$433 per ton.

Oxygen Production:

The amount of oxygen produced is estimated from carbon sequestration based on atomic weights: net O₂ release (kg/yr) = net C sequestration (kg/yr) × 32/12. To estimate the net carbon sequestration rate, the amount of carbon sequestered as a result of tree growth is reduced by the amount lost resulting from tree mortality. Thus, net carbon sequestration and net annual oxygen production of the urban forest account for decomposition (Nowak et al 2007). For complete inventory projects, oxygen production is estimated from gross carbon sequestration and does not account for decomposition.

Avoided Runoff:

Annual avoided surface runoff is calculated based on rainfall interception by vegetation, specifically the difference between annual runoff with and without vegetation. Although tree leaves, branches, and bark may intercept precipitation and thus mitigate surface runoff, only the precipitation intercepted by leaves is accounted for in this analysis.

The value of avoided runoff is based on estimated or user-defined local values. For international reports that do not have local values, the national average value for the United States is utilized and converted to local currency with user-defined exchange rates. The U.S. value of avoided runoff is based on the U.S. Forest Service's Community Tree Guide Series (McPherson et al 1999; 2000; 2001; 2002; 2003; 2004; 2006a; 2006b; 2006c; 2007; 2010; Peper et al 2009; 2010; Vargas et al 2007a; 2007b; 2008).

For this analysis, avoided runoff value is calculated based on the price of \$0.01 per gallon.

Building Energy Use:

If appropriate field data were collected, seasonal effects of trees on residential building energy use were calculated based on procedures described in the literature (McPherson and Simpson 1999) using distance and direction of trees from residential structures, tree height and tree condition data. To calculate the monetary value of energy savings, local or custom prices per MWH or MBTU are utilized.

For this analysis, energy saving value is calculated based on the prices of \$204.70 per MWH and \$12.94 per MBTU.

Replacement Values:

Replacement value is the value of a tree based on the physical resource itself (e.g., the cost of having to replace a tree with a similar tree). Replacement values were based on valuation procedures of the Council of Tree and Landscape Appraisers, which uses tree species, diameter, condition, and location information (Nowak et al 2002a; 2002b). Replacement value may not be included for international projects if there is insufficient local data to complete the valuation procedures.

Potential Pest Impacts:

The complete potential pest risk analysis is not available for studies outside of the United States. The number of trees at risk to the pests analyzed is reported, though the list of pests is based on known insects and disease in the United States.

For the U.S., potential pest risk is based on pest range maps and the known pest host species that are likely to experience mortality. Pest range maps for 2012 from the Forest Health Technology Enterprise Team (FHTET) (Forest Health Technology Enterprise Team 2014) were used to determine the proximity of each pest to the county in which

the urban forest is located. For the county, it was established whether the insect/disease occurs within the county, is within 250 miles of the county edge, is between 250 and 750 miles away, or is greater than 750 miles away. FHTET did not have pest range maps for Dutch elm disease and chestnut blight. The range of these pests was based on known occurrence and the host range, respectively (Eastern Forest Environmental Threat Assessment Center; Worrall 2007).

Relative Tree Effects:

The relative value of tree benefits reported in Appendix II is calculated to show what carbon storage and sequestration, and air pollutant removal equate to in amounts of municipal carbon emissions, passenger automobile emissions, and house emissions.

Municipal carbon emissions are based on 2010 U.S. per capita carbon emissions (Carbon Dioxide Information Analysis Center 2010). Per capita emissions were multiplied by city population to estimate total city carbon emissions.

Light duty vehicle emission rates (g/mi) for CO, NO_x, VOCs, PM₁₀, SO₂ for 2010 (Bureau of Transportation Statistics 2010; Heirigs et al 2004), PM_{2.5} for 2011-2015 (California Air Resources Board 2013), and CO₂ for 2011 (U.S. Environmental Protection Agency 2010) were multiplied by average miles driven per vehicle in 2011 (Federal Highway Administration 2013) to determine average emissions per vehicle.

Household emissions are based on average electricity kWh usage, natural gas Btu usage, fuel oil Btu usage, kerosene Btu usage, LPG Btu usage, and wood Btu usage per household in 2009 (Energy Information Administration 2013; Energy Information Administration 2014)

- CO₂, SO₂, and NO_x power plant emission per kWh are from Leonardo Academy 2011. CO emission per kWh assumes 1/3 of one percent of C emissions is CO based on Energy Information Administration 1994. PM₁₀ emission per kWh from Layton 2004.
- CO₂, NO_x, SO₂, and CO emission per Btu for natural gas, propane and butane (average used to represent LPG), Fuel #4 and #6 (average used to represent fuel oil and kerosene) from Leonardo Academy 2011.
- CO₂ emissions per Btu of wood from Energy Information Administration 2014.
- CO, NO_x and SO_x emission per Btu based on total emissions and wood burning (tons) from (British Columbia Ministry 2005; Georgia Forestry Commission 2009).

Appendix II. Relative Tree Effects

The urban forest in Hanford provides benefits that include carbon storage and sequestration, and air pollutant removal. To estimate the relative value of these benefits, tree benefits were compared to estimates of average municipal carbon emissions, average passenger automobile emissions, and average household emissions. See Appendix I for methodology.

Carbon storage is equivalent to:

- Amount of carbon emitted in Hanford in 2 days
- Annual carbon (C) emissions from 937 automobiles
- Annual C emissions from 384 single-family houses

Carbon monoxide removal is equivalent to:

- Annual carbon monoxide emissions from 0 automobiles
- Annual carbon monoxide emissions from 0 single-family houses

Nitrogen dioxide removal is equivalent to:

- Annual nitrogen dioxide emissions from 8 automobiles
- Annual nitrogen dioxide emissions from 3 single-family houses

Sulfur dioxide removal is equivalent to:

- Annual sulfur dioxide emissions from 111 automobiles
- Annual sulfur dioxide emissions from 0 single-family houses

Annual carbon sequestration is equivalent to:

- Amount of carbon emitted in Hanford in 0.1 days
- Annual C emissions from 0 automobiles
- Annual C emissions from 0 single-family houses

Appendix III. Comparison of Urban Forests

A common question asked is, "How does this city compare to other cities?" Although comparison among cities should be made with caution as there are many attributes of a city that affect urban forest structure and functions, summary data are provided from other cities analyzed using the i-Tree Eco model.

I. City totals for trees

City	% Tree Cover	Number of Trees	Carbon Storage (tons)	Carbon Sequestration (tons/yr)	Pollution Removal (tons/yr)
Toronto, ON, Canada	26.6	10,220,000	1,221,000	51,500	2,099
Atlanta, GA	36.7	9,415,000	1,344,000	46,400	1,663
Los Angeles, CA	11.1	5,993,000	1,269,000	77,000	1,975
New York, NY	20.9	5,212,000	1,350,000	42,300	1,676
London, ON, Canada	24.7	4,376,000	396,000	13,700	408
Chicago, IL	17.2	3,585,000	716,000	25,200	888
Phoenix, AZ	9.0	3,166,000	315,000	32,800	563
Baltimore, MD	21.0	2,479,000	570,000	18,400	430
Philadelphia, PA	15.7	2,113,000	530,000	16,100	575
Washington, DC	28.6	1,928,000	525,000	16,200	418
Oakville, ON , Canada	29.1	1,908,000	147,000	6,600	190
Albuquerque, NM	14.3	1,846,000	332,000	10,600	248
Boston, MA	22.3	1,183,000	319,000	10,500	283
Syracuse, NY	26.9	1,088,000	183,000	5,900	109
Woodbridge, NJ	29.5	986,000	160,000	5,600	210
Minneapolis, MN	26.4	979,000	250,000	8,900	305
San Francisco, CA	11.9	668,000	194,000	5,100	141
Morgantown, WV	35.5	658,000	93,000	2,900	72
Moorestown, NJ	28.0	583,000	117,000	3,800	118
Hartford, CT	25.9	568,000	143,000	4,300	58
Jersey City, NJ	11.5	136,000	21,000	890	41
Casper, WY	8.9	123,000	37,000	1,200	37
Freehold, NJ	34.4	48,000	20,000	540	22

II. Totals per acre of land area

City	Number of Trees/ac	Carbon Storage (tons/ac)	Carbon Sequestration (tons/ac/yr)	Pollution Removal (lb/ac/yr)
Toronto, ON, Canada	64.9	7.8	0.33	26.7
Atlanta, GA	111.6	15.9	0.55	39.4
Los Angeles, CA	19.6	4.2	0.16	13.1
New York, NY	26.4	6.8	0.21	17.0
London, ON, Canada	75.1	6.8	0.24	14.0
Chicago, IL	24.2	4.8	0.17	12.0
Phoenix, AZ	12.9	1.3	0.13	4.6
Baltimore, MD	48.0	11.1	0.36	16.6
Philadelphia, PA	25.1	6.3	0.19	13.6
Washington, DC	49.0	13.3	0.41	21.2
Oakville, ON , Canada	78.1	6.0	0.27	11.0
Albuquerque, NM	21.8	3.9	0.12	5.9
Boston, MA	33.5	9.1	0.30	16.1
Syracuse, NY	67.7	10.3	0.34	13.6
Woodbridge, NJ	66.5	10.8	0.38	28.4
Minneapolis, MN	26.2	6.7	0.24	16.3
San Francisco, CA	22.5	6.6	0.17	9.5
Morgantown, WV	119.2	16.8	0.52	26.0
Moorestown, NJ	62.1	12.4	0.40	25.1
Hartford, CT	50.4	12.7	0.38	10.2
Jersey City, NJ	14.4	2.2	0.09	8.6
Casper, WY	9.1	2.8	0.09	5.5
Freehold, NJ	38.3	16.0	0.44	35.3

Appendix IV. General Recommendations for Air Quality Improvement

Urban vegetation can directly and indirectly affect local and regional air quality by altering the urban atmosphere environment. Four main ways that urban trees affect air quality are (Nowak 1995):

- Temperature reduction and other microclimate effects
- Removal of air pollutants
- Emission of volatile organic compounds (VOC) and tree maintenance emissions
- Energy effects on buildings

The cumulative and interactive effects of trees on climate, pollution removal, and VOC and power plant emissions determine the impact of trees on air pollution. Cumulative studies involving urban tree impacts on ozone have revealed that increased urban canopy cover, particularly with low VOC emitting species, leads to reduced ozone concentrations in cities (Nowak 2000). Local urban management decisions also can help improve air quality.

Urban forest management strategies to help improve air quality include (Nowak 2000):

<i>Strategy</i>	<i>Result</i>
Increase the number of healthy trees	Increase pollution removal
Sustain existing tree cover	Maintain pollution removal levels
Maximize use of low VOC-emitting trees	Reduces ozone and carbon monoxide formation
Sustain large, healthy trees	Large trees have greatest per-tree effects
Use long-lived trees	Reduce long-term pollutant emissions from planting and removal
Use low maintenance trees	Reduce pollutants emissions from maintenance activities
Reduce fossil fuel use in maintaining vegetation	Reduce pollutant emissions
Plant trees in energy conserving locations	Reduce pollutant emissions from power plants
Plant trees to shade parked cars	Reduce vehicular VOC emissions
Supply ample water to vegetation	Enhance pollution removal and temperature reduction
Plant trees in polluted or heavily populated areas	Maximizes tree air quality benefits
Avoid pollutant-sensitive species	Improve tree health
Utilize evergreen trees for particulate matter	Year-round removal of particles

Appendix V. Invasive Species of the Urban Forest

The following inventoried tree species were listed as invasive on the California invasive species list (California Invasive Species Advisory Committee 2010):

Species Name ^a	<i>Number of Trees</i>	<i>% of Trees</i>	<i>Leaf Area (ac)</i>	<i>Percent Leaf Area</i>
Chinese tallowtree	66	1.0	0.8	1.0
Tree of heaven	9	0.1	0.2	0.2
California peppertree	6	0.1	0.1	0.1
Small flower tamerisk	3	0.0	0.1	0.1
Total	84	1.27	1.20	1.35

^aSpecies are determined to be invasive if they are listed on the state's invasive species list

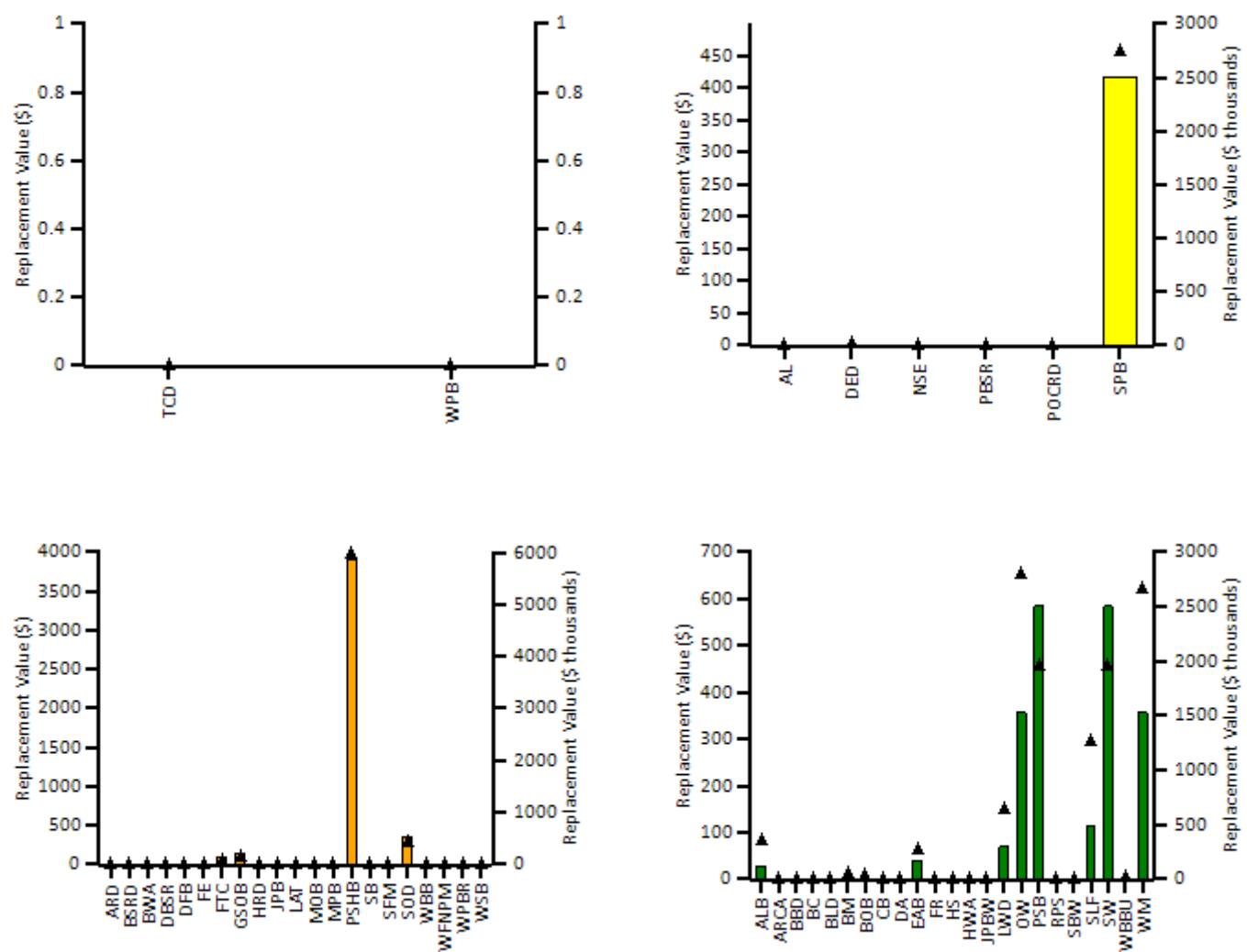
Appendix VI. Potential Risk of Pests

Fifty-three insects and diseases were analyzed to quantify their potential impact on the urban forest. As each insect/disease is likely to attack different host tree species, the implications for {0} will vary. The number of trees at risk reflects only the known host species that are likely to experience mortality.

Code	Scientific Name	Common Name	Trees at Risk (#)	Value (\$ thousands)
AL	Phyllocnistis populiella	Aspen Leafminer	0	0.00
ALB	Anoplophora glabripennis	Asian Longhorned Beetle	84	119.18
ARCA	Neodothiora populina	Aspen Running Canker	0	0.00
ARD	Armillaria spp.	Armillaria Root Disease	0	0.00
BBD	Neonectria faginata	Beech Bark Disease	0	0.00
BC	Sirococcus clavigignenti juglandacearum	Butternut Canker	0	0.00
BLD	Litylenchus crenatae mccannii	Beech Leaf Disease	0	0.00
BM	Euproctis chrysorrhoea	Browntail Moth	13	17.34
BOB	Tubakia iowensis	Bur Oak Blight	6	5.65
BSRD	Leptographium wageneri	Black Stain Root Disease	0	0.00
BWA	Adelges piceae	Balsam Woolly Adelgid	0	0.00
CB	Cryphonectria parasitica	Chestnut Blight	0	0.00
DA	Discula destructiva	Dogwood Anthracnose	0	0.00
DBSR	Leptographium wageneri var. pseudotsugae	Douglas-fir Black Stain Root Disease	0	0.00
DED	Ophiostoma novo-ulmi	Dutch Elm Disease	3	4.47
DFB	Dendroctonus pseudotsugae	Douglas-Fir Beetle	0	0.00
EAB	Agrilus planipennis	Emerald Ash Borer	62	171.75
FE	Scolytus ventralis	Fir Engraver	0	0.00
FR	Cronartium quercuum f. sp. Fusiforme	Fusiform Rust	0	0.00
FTC	Malacosoma disstria	Forest Tent Caterpillar	56	130.91
GSOB	Agrilus auroguttatus	Goldspotted Oak Borer	96	217.00
HRD	Heterobasidion irregulare/ occidentale	Heterobasidion Root Disease	0	0.00
HS	Neodiprion tsugae	Hemlock Sawfly	0	0.00
HWA	Adelges tsugae	Hemlock Woolly Adelgid	0	0.00
JPB	Dendroctonus jeffreyi	Jeffrey Pine Beetle	0	0.00
JPBW	Choristoneura pinus	Jack Pine Budworm	0	0.00
LAT	Choristoneura conflictana	Large Aspen Tortrix	0	0.00
LWD	Raffaelea lauricola	Laurel Wilt	148	295.11
MOB	Xyleborus monographus	Mediterranean Oak Borer	0	0.00
MPB	Dendroctonus ponderosae	Mountain Pine Beetle	0	0.00
NSE	Ips perturbatus	Northern Spruce Engraver	0	0.00
OW	Bretziella fagacearum	Oak Wilt	651	1,528.11
PBSR	Leptographium wageneri var. ponderosum	Pine Black Stain Root Disease	0	0.00
POCRD	Phytophthora lateralis	Port-Orford-Cedar Root Disease	0	0.00
PSB	Tomicus piniperda	Pine Shoot Beetle	457	2,504.64

Code	Scientific Name	Common Name	Trees at Risk (#)	Value (\$ thousands)
PSHB	Euwallacea nov. sp.	Polyphagous Shot Hole Borer	3,985	5,871.15
RPS	Matsucoccus resinosae	Red Pine Scale	0	0.00
SB	Dendroctonus rufipennis	Spruce Beetle	2	0.05
SBW	Choristoneura fumiferana	Spruce Budworm	0	0.00
SFM	subalpine fir mortality summary	Subalpine Fir Mortality	0	0.00
SLF	Lycorma delicatula	Spotted Lanternfly	294	496.89
SOD	Phytophthora ramorum	Sudden Oak Death	278	521.08
SPB	Dendroctonus frontalis	Southern Pine Beetle	457	2,504.64
SW	Sirex noctilio	Sirex Wood Wasp	455	2,504.59
TCD	Geosmithia morbida	Thousand Canker Disease	0	0.00
WBB	Dryocoetes confusus	Western Balsam Bark Beetle	0	0.00
WBBU	Acleris gloverana	Western Blackheaded Budworm	2	0.05
WFNPM	western five-needle pine mortality summary	Western Five-Needle Pine Mortality	0	0.00
WM	Operophtera brumata	Winter Moth	623	1,530.48
WPB	Dendroctonus brevicomis	Western Pine Beetle	0	0.00
WPBR	Cronartium ribicola	White Pine Blister Rust	0	0.00
WSB	Choristoneura occidentalis	Western Spruce Budworm	0	0.00

In the following graph, the pests are color coded according to the county's proximity to the pest occurrence in the United States. Red indicates that the pest is within the county; orange indicates that the pest is within 250 miles of the county; yellow indicates that the pest is within 750 miles of the county; and green indicates that the pest is outside of these ranges.



Note: points - Number of trees, bars - Replacement value

Based on the host tree species for each pest and the current range of the pest (Forest Health Technology Enterprise Team 2014), it is possible to determine what the risk is that each tree species in the urban forest could be attacked by an insect or disease.

Spp.	Risk	Weight	Species Name	AL	ALB	ARCA	ARD	BBD	BC	BLD	BM	BOB	BSRD	BWA	CB	DA	DBSR	DED	DFB	EAB	FE	FR	FTC	GSOB	HRD	HS	HWA	JPB	JPBW	LAT	LWD	MOB	MPB	NSE	OW	PBSR
		11	Coastal live oak																																	
		9	Northern red oak																																	
		8	California black oak																																	
		8	Pin oak																																	
		7	Camphor tree																																	
		7	Holly oak																																	
		7	Spruce spp																																	
		7	Pine spp																																	
		7	American elm																																	
		6	Bur oak																																	
		5	California white oak																																	
		5	Live oak																																	
		5	Shumard oak																																	
		5	Ash spp																																	
		5	Trident maple																																	
		5	Persian silk tree																																	
		5	Velvet ash																																	
		5	Netleaf oak																																	
		5	Interior live oak																																	
		4	Canary island pine																																	
		4	Aleppo pine																																	
		4	Japanese zelkova																																	
		4	Italian stone pine																																	
		4	Cork oak																																	
		4	Chinese elm																																	
		4	White mulberry																																	
		4	Gray pine																																	
		4	Tree of heaven																																	
		4	Fremont cottonwood																																	
		4	Shamel ash																																	
		4	Japanese persimmon																																	
		4	Chinaberry																																	
		4	English oak																																	
		4	Siberian elm																																	
		3	Chinese pistache																																	
		3	California sycamore																																	
		3	Carolina laurelcherry																																	
		3	Strawberry tree																																	
		3	Chinese tallowtree																																	
		3	Callery pear																																	
		3	California palm																																	

Spp. Risk	Risk Weight	Species Name	AL	ALB	ARCA	ARD	BBD	BC	BLD	BM	BOB	BSRD	BWA	CB	DA	DBSR	DED	DFB	EAB	FE	FR	FTC	GSOB	HRD	HS	HWA	JPB	JPBW	LAT	LWD	MOB	MPB	NSE	OW	PBSR
	3	Goldenrain tree																																	
	3	Honeylocust																																	
	3	Babylon weeping willow																																	
	3	Mexican fan palm																																	
	3	Red maple																																	
	3	Bay laurel																																	
	3	Olive																																	
	3	Sweetgum																																	
	3	Jerusalem thorn																																	
	3	Outeniqua yellowwood																																	
	3	Red gum eucalyptus																																	
	3	Weeping bottlebrush																																	
	3	Southern magnolia																																	
	3	Pear spp																																	
	3	California peppertree																																	
	3	Carob																																	
	3	Loquat tree																																	
	3	Arizona sycamore																																	
	3	Shoestring acacia																																	
	3	Chinese fringe tree																																	
	2	Swamp white oak																																	
	1	Black locust																																	
	1	Black tupelo																																	
	1	Oriental arborvitae																																	

Spp. Risk	Risk Weight	Species Name	POCRD	PSB	PSHB	RPS	SB	SBW	SFM	SLF	SOD	SPB	SW	TCD	WBB	WBBU	WFNPM	WM	WPB	WPBR	WSB
	11	Coastal live oak																			
	9	Northern red oak																			
	8	California black oak																			
	8	Pin oak																			
	7	Camphor tree																			
	7	Holly oak																			
	7	Spruce spp																			
	7	Pine spp																			
	7	American elm																			
	6	Bur oak																			
	5	California white oak																			
	5	Live oak																			
	5	Shumard oak																			
	5	Ash spp																			
	5	Trident maple																			
	5	Persian silk tree																			
	5	Velvet ash																			

Spp. Risk	Risk Weight	Species Name	POCRD	PSB	PSHB	RPS	SB	SBW	SFM	SLF	SOD	SPB	SW	TCD	WBB	WBBU	WFNPM	WM	WPB	WPBR	WSB
	5	Netleaf oak																			
	5	Interior live oak																			
	4	Canary island pine																			
	4	Aleppo pine																			
	4	Japanese zelkova																			
	4	Italian stone pine																			
	4	Cork oak																			
	4	Chinese elm																			
	4	White mulberry																			
	4	Gray pine																			
	4	Tree of heaven																			
	4	Fremont cottonwood																			
	4	Shamel ash																			
	4	Japanese persimmon																			
	4	Chinaberry																			
	4	English oak																			
	4	Siberian elm																			
	3	Chinese pistache																			
	3	California sycamore																			
	3	Carolina laurelcherry																			
	3	Strawberry tree																			
	3	Chinese tallowtree																			
	3	Callery pear																			
	3	California palm																			
	3	Goldenrain tree																			
	3	Honeylocust																			
	3	Babylon weeping willow																			
	3	Mexican fan palm																			
	3	Red maple																			
	3	Bay laurel																			
	3	Olive																			
	3	Sweetgum																			
	3	Jerusalem thorn																			
	3	Outeniqua yellowwood																			
	3	Red gum eucalyptus																			
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	3	Southern magnolia																			
	3	Pear spp																			
	3	California peppertree																			
	3	Carob																			
	3	Loquat tree																			
	3	Arizona sycamore																			
	3	Shoestring acacia																			

Spp. Risk	Risk Weight	Species Name	POCRD	PSB	PSHB	RPS	SB	SBW	SFM	SLF	SOD	SPB	SW	TCD	WBB	WBBU	WFNPM	WM	WPB	WPBR	WSB
Orange	3	Chinese fringe tree			Orange																
Green	2	Swamp white oak																Green			
Green	1	Black locust								Green											
Green	1	Black tupelo								Green											
Green	1	Oriental arborvitae								Green											

Note:

Species that are not listed in the matrix are not known to be hosts to any of the pests analyzed.

Species Risk:

- Red indicates that tree species is at risk to at least one pest within county
- Orange indicates that tree species has no risk to pests in county, but has a risk to at least one pest within 250 miles from the county
- Yellow indicates that tree species has no risk to pests within 250 miles of county, but has a risk to at least one pest that is 250 and 750 miles from the county
- Green indicates that tree species has no risk to pests within 750 miles of county, but has a risk to at least one pest that is greater than 750 miles from the county

Risk Weight:

Numerical scoring system based on sum of points assigned to pest risks for species. Each pest that could attack tree species is scored as 4 points if red, 3 points if orange, 2 points if yellow and 1 point if green.

Pest Color Codes:

- Red indicates pest is within Kings county
- Red indicates pest is within 250 miles county
- Yellow indicates pest is within 750 miles of Kings county
- Green indicates pest is outside of these ranges

References

- Abdollahi, K.K.; Ning, Z.H.; Appeaning, A., eds. 2000. Global climate change and the urban forest. Baton Rouge, LA: GCRCC and Franklin Press. 77 p.
- Baldocchi, D. 1988. A multi-layer model for estimating sulfur dioxide deposition to a deciduous oak forest canopy. *Atmospheric Environment*. 22: 869-884.
- Baldocchi, D.D.; Hicks, B.B.; Camara, P. 1987. A canopy stomatal resistance model for gaseous deposition to vegetated surfaces. *Atmospheric Environment*. 21: 91-101.
- Bidwell, R.G.S.; Fraser, D.E. 1972. Carbon monoxide uptake and metabolism by leaves. *Canadian Journal of Botany*. 50: 1435-1439.
- British Columbia Ministry of Water, Land, and Air Protection. 2005. Residential wood burning emissions in British Columbia. British Columbia.
- Broecker, W.S. 1970. Man's oxygen reserve. *Science* 168(3939): 1537-1538.
- Bureau of Transportation Statistics. 2010. Estimated National Average Vehicle Emissions Rates per Vehicle by Vehicle Type using Gasoline and Diesel. Washington, DC: Bureau of Transportation Statistics, U.S. Department of Transportation. Table 4-43.
- California Air Resources Board. 2013. Methods to Find the Cost-Effectiveness of Funding Air Quality Projects. Table 3 Average Auto Emission Factors. CA: California Environmental Protection Agency, Air Resources Board.
- California Invasive Species Advisory Committee. 2010. The California Invasive Species List. CA: Invasive Species Council of California. <<http://www.iscc.ca.gov/docs/CaliforniaInvasiveSpeciesList.pdf>>
- Carbon Dioxide Information Analysis Center. 2010. CO₂ Emissions (metric tons per capita). Washington, DC: The World Bank.
- Cardelino, C.A.; Chameides, W.L. 1990. Natural hydrocarbons, urbanization, and urban ozone. *Journal of Geophysical Research*. 95(D9): 13,971-13,979.
- Cranshaw, W.; Tisserat, N. 2009. Walnut twig beetle and the thousand cankers disease of black walnut. Pest Alert. Ft. Collins, CO: Colorado State University.
- Seybold, S.; Haugen, D.; Graves, A. 2010. Thousand Cankers Disease. Pest Alert. NA-PR-02-10. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Area State and Private Forestry.
- DeMars, C. J., Jr.; Roettgering, B. H. 1982. Western Pine Beetle. Forest Insect & Disease Leaflet 1. Washington, DC: U.S. Department of Agriculture, Forest Service. 8 p.
- Eastern Forest Environmental Threat Assessment Center. Dutch Elm Disease. <http://threatsummary.forestthreats.org/threats/threatSummaryViewer.cfm?threatID=43>
- Energy Information Administration. 1994. Energy Use and Carbon Emissions: Non-OECD Countries. Washington, DC: Energy Information Administration, U.S. Department of Energy.
- Energy Information Administration. 2013. CE2.1 Fuel consumption totals and averages, U.S. homes. Washington, DC:

Energy Information Administration, U.S. Department of Energy.

Energy Information Administration. 2014. CE5.2 Household wood consumption. Washington, DC: Energy Information Administration, U.S. Department of Energy.

Federal Highway Administration. 2013. Highway Statistics 2011. Washington, DC: Federal Highway Administration, U.S. Department of Transportation. Table VM-1.

Forest Health Technology Enterprise Team. 2014. 2012 National Insect & Disease Risk Maps/Data. Fort Collins, CO: U.S. Department of Agriculture, Forest Service. <http://www.fs.fed.us/foresthealth/technology/nidrm2012.shtml>

Georgia Forestry Commission. 2009. Biomass Energy Conversion for Electricity and Pellets Worksheet. Dry Branch, GA: Georgia Forestry Commission.

Heirigs, P.L.; Delaney, S.S.; Dulla, R.G. 2004. Evaluation of MOBILE Models: MOBILE6.1 (PM), MOBILE6.2 (Toxics), and MOBILE6/CNG. Sacramento, CA: National Cooperative Highway Research Program, Transportation Research Board.

Hirabayashi, S. 2011. Urban Forest Effects-Dry Deposition (UFORE-D) Model Enhancements, [http://www.itreetools.org/eco/resources/UFORE-D enhancements.pdf](http://www.itreetools.org/eco/resources/UFORE-D%20enhancements.pdf)

Hirabayashi, S. 2012. i-Tree Eco Precipitation Interception Model Descriptions, http://www.itreetools.org/eco/resources/iTree_Eco_Precipitation_Interception_Model_Descriptions_V1_2.pdf

Hirabayashi, S.; Kroll, C.; Nowak, D. 2011. Component-based development and sensitivity analyses of an air pollutant dry deposition model. *Environmental Modeling and Software*. 26(6): 804-816.

Hirabayashi, S.; Kroll, C.; Nowak, D. 2012. i-Tree Eco Dry Deposition Model Descriptions V 1.0

Interagency Working Group on Social Cost of Carbon, United States Government. 2015. Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866. <http://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tds-final-july-2015.pdf>

Layton, M. 2004. 2005 Electricity Environmental Performance Report: Electricity Generation and Air Emissions. CA: California Energy Commission.

Leonardo Academy. 2011. Leonardo Academy's Guide to Calculating Emissions Including Emission Factors and Energy Prices. Madison, WI: Leonardo Academy Inc.

Lovett, G.M. 1994. Atmospheric deposition of nutrients and pollutants in North America: an ecological perspective. *Ecological Applications*. 4: 629-650.

McPherson, E.G.; Maco, S.E.; Simpson, J.R.; Peper, P.J.; Xiao, Q.; VanDerZanden, A.M.; Bell, N. 2002. Western Washington and Oregon Community Tree Guide: Benefits, Costs, and Strategic Planting. International Society of Arboriculture, Pacific Northwest, Silverton, OR.

McPherson, E.G.; Simpson, J.R. 1999. Carbon dioxide reduction through urban forestry: guidelines for professional and volunteer tree planters. Gen. Tech. Rep. PSW-171. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 237 p.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Crowell, A.M.N.; Xiao, Q. 2010. Northern California coast community tree guide: benefits, costs, and strategic planting. PSW-GTR-228. Gen. Tech. Rep. PSW-GTR-228. U.S. Department of

Agriculture, Forest Service, Pacific Southwest Research Station, Albany, CA.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Gardner, S.L.; Vargas, K.E.; Maco, S.E.; Xiao, Q. 2006a. Coastal Plain Community Tree Guide: Benefits, Costs, and Strategic Planting PSW-GTR-201. USDA Forest Service, Pacific Southwest Research Station, Albany, CA.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Gardner, S.L.; Vargas, K.E.; Xiao, Q. 2007. Northeast community tree guide: benefits, costs, and strategic planting.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Maco, S.E.; Gardner, S.L.; Cozad, S.K.; Xiao, Q. 2006b. Midwest Community Tree Guide: Benefits, Costs and Strategic Planting PSW-GTR-199. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Albany, CA.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Maco, S.E.; Gardner, S.L.; Vargas, K.E.; Xiao, Q. 2006c. Piedmont Community Tree Guide: Benefits, Costs, and Strategic Planting PSW-GTR 200. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Albany, CA.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Maco, S.E.; Xiao Q.; Mulrean, E. 2004. Desert Southwest Community Tree Guide: Benefits, Costs and Strategic Planting. Phoenix, AZ: Arizona Community Tree Council, Inc. 81 :81.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Scott, K.I.; Xiao, Q. 2000. Tree Guidelines for Coastal Southern California Communities. Local Government Commission, Sacramento, CA.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Xiao, Q. 1999. Tree Guidelines for San Joaquin Valley Communities. Local Government Commission, Sacramento, CA.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Xiao, Q.; Maco, S.E.; Hoefer, P.J. 2003. Northern Mountain and Prairie Community Tree Guide: Benefits, Costs and Strategic Planting. Center for Urban Forest Research, USDA Forest Service, Pacific Southwest Research Station, Albany, CA.

McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Xiao, Q.; Pittenger, D.R.; Hodel, D.R. 2001. Tree Guidelines for Inland Empire Communities. Local Government Commission, Sacramento, CA.

Murray, F.J.; Marsh L.; Bradford, P.A. 1994. New York State Energy Plan, vol. II: issue reports. Albany, NY: New York State Energy Office.

National Invasive Species Information Center. 2011. Beltsville, MD: U.S. Department of Agriculture, National Invasive Species Information Center. <http://www.invasivespeciesinfo.gov/plants/main.shtml>

Nowak, D.J. 1994. Atmospheric carbon dioxide reduction by Chicago's urban forest. In: McPherson, E.G.; Nowak, D.J.; Rowntree, R.A., eds. Chicago's urban forest ecosystem: results of the Chicago Urban Forest Climate Project. Gen. Tech. Rep. NE-186. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 83-94.

Nowak, D.J. 1995. Trees pollute? A "TREE" explains it all. In: Proceedings of the 7th National Urban Forestry Conference. Washington, DC: American Forests: 28-30.

Nowak, D.J. 2000. The interactions between urban forests and global climate change. In: Abdollahi, K.K.; Ning, Z.H.; Appeaning, A., eds. Global Climate Change and the Urban Forest. Baton Rouge, LA: GCRCC and Franklin Press: 31-44.

Nowak, D.J., Hirabayashi, S., Bodine, A., Greenfield, E. 2014. Tree and forest effects on air quality and human health in

the United States. *Environmental Pollution*. 193:119-129.

Nowak, D.J., Hirabayashi, S., Bodine, A., Hoehn, R. 2013. Modeled PM_{2.5} removal by trees in ten U.S. cities and associated health effects. *Environmental Pollution*. 178: 395-402.

Nowak, D.J.; Civerolo, K.L.; Rao, S.T.; Sistla, S.; Luley, C.J.; Crane, D.E. 2000. A modeling study of the impact of urban trees on ozone. *Atmospheric Environment*. 34: 1601-1613.

Nowak, D.J.; Crane, D.E. 2000. The Urban Forest Effects (UFORE) Model: quantifying urban forest structure and functions. In: Hansen, M.; Burk, T., eds. *Integrated tools for natural resources inventories in the 21st century*. Proceedings of IUFRO conference. Gen. Tech. Rep. NC-212. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station: 714-720.

Nowak, D.J.; Crane, D.E.; Dwyer, J.F. 2002a. Compensatory value of urban trees in the United States. *Journal of Arboriculture*. 28(4): 194 - 199.

Nowak, D.J.; Crane, D.E.; Stevens, J.C.; Hoehn, R.E. 2005. The urban forest effects (UFORE) model: field data collection manual. V1b. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station, 34 p. http://www.fs.fed.us/ne/syracuse/Tools/downloads/UFORE_Manual.pdf

Nowak, D.J.; Crane, D.E.; Stevens, J.C.; Ibarra, M. 2002b. Brooklyn's urban forest. Gen. Tech. Rep. NE-290. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 107 p.

Nowak, D.J.; Dwyer, J.F. 2000. Understanding the benefits and costs of urban forest ecosystems. In: Kuser, John, ed. *Handbook of urban and community forestry in the northeast*. New York, NY: Kluwer Academics/Plenum: 11-22.

Nowak, D.J.; Hoehn, R.; Crane, D. 2007. Oxygen production by urban trees in the United States. *Arboriculture & Urban Forestry*. 33(3):220-226.

Nowak, D.J.; Hoehn, R.E.; Crane, D.E.; Stevens, J.C.; Walton, J.T; Bond, J. 2008. A ground-based method of assessing urban forest structure and ecosystem services. *Arboriculture and Urban Forestry*. 34(6): 347-358.

Nowak, D.J.; Stevens, J.C.; Sisinni, S.M.; Luley, C.J. 2002c. Effects of urban tree management and species selection on atmospheric carbon dioxide. *Journal of Arboriculture*. 28(3): 113-122.

Peper, P.J.; McPherson, E.G.; Simpson, J.R.; Albers, S.N.; Xiao, Q. 2010. Central Florida community tree guide: benefits, costs, and strategic planting. Gen. Tech. Rep. PSW-GTR-230. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Albany, CA.

Peper, P.J.; McPherson, E.G.; Simpson, J.R.; Vargas, K.E.; Xiao Q. 2009. Lower Midwest community tree guide: benefits, costs, and strategic planting. PSW-GTR-219. Gen. Tech. Rep. PSW-GTR-219. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Albany, CA.

U.S. Environmental Protection Agency. 2010. Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. Washington, DC: U.S. Environmental Protection Agency. EPA-420-R-10-012a

U.S. Environmental Protection Agency. 2015. The social cost of carbon. <http://www.epa.gov/climatechange/EPAactivities/economics/scc.html>

van Essen, H.; Schrotten, A.; Otten, M.; Sutter, D.; Schreyer, C.; Zandonella, R.; Maibach, M.; Doll, C. 2011. External Costs of Transport in Europe. Netherlands: CE Delft. 161 p.

Vargas, K.E.; McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Gardner, S.L.; Xiao, Q. 2007a. Interior West Tree Guide.

Vargas, K.E.; McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Gardner, S.L.; Xiao, Q. 2007b. Temperate Interior West Community Tree Guide: Benefits, Costs, and Strategic Planting.

Vargas, K.E.; McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Gardner, S.L.; Xiao, Q. 2008. Tropical community tree guide: benefits, costs, and strategic planting. PSW-GTR-216. Gen. Tech. Rep. PSW-GTR-216. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Albany, CA.

Worrall, J.J. 2007. Chestnut Blight. Forest and Shade Tree Pathology.
http://www.forestpathology.org/dis_chestnut.html

Zinke, P.J. 1967. Forest interception studies in the United States. In: Sopper, W.E.; Lull, H.W., eds. Forest Hydrology. Oxford, UK: Pergamon Press: 137-161.

Appendix B

Hanford Urban Forestry Program Staff and Budget Report

City of Hanford

Urban Forestry Program Budget and Staff Report

OCTOBER 2025

Prepared for:

CITY OF HANFORD

319 N Douty Street

Hanford, CA Zip

Prepared by:

DUDEK

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1 Introduction

This Staff and Budget Report (Report) is an analysis of the City of Hanford's (City's) urban forest program as of fiscal year (FY) 2024/2025 and details the existing conditions prior to Urban Forest Management Plan (UFMP) implementation. Various aspects of the City's urban forestry program were reviewed and analyzed, including governance structure, staffing, and budgetary records, to understand the program's capacity and identify necessary resources. This analysis was used to then develop realistic and achievable goals for the City.

Key Takeaways

The following key takeaways were identified from staff interviews, inventory data, and a review of work and budgetary records and City policies:

1. **The City demonstrates a commitment to urban forestry.** City council and staff show an eagerness to enhance canopy cover, develop efficient management systems, and maximize the benefits that trees provide the community. This commitment is shown through the City's tree planting efforts and the development of a UFMP, which will serve as a guide for the City's urban forest initiatives.
2. **The City does not have detailed work records for in-house or contracted work** for tree planting, pruning, and removals. These missing data result in gaps in understanding how staff and contractor time is spent, where resources may need to be allocated to better manage the urban forest, and whether the City efficiently completes urban forest management related tasks.
3. **Limited staffing creates bottlenecks in urban forest management** and restricts the City's ability to plant trees and maintain the urban forest. This impacts the City's ability to develop and implement programs that respond to the needs of the trees they manage and requests from community members.
4. **Need for specialized urban forestry leadership.** The City's urban forestry program would benefit from having a City arborist on staff. The City arborist should be an International Society of Arboriculture (ISA) Certified Arborist and would provide leadership to the City's urban forestry efforts by coordinating internal and external urban forest management activities. They would also provide specialized skills and expertise for City tree management and coordinate the implementation of the UFMP Strategic Plan actions. This would help promote the long-term health and resilience of Hanford's urban forest.
5. **The City allocates a low level of funding to urban forestry.** The City's urban forest management spending is roughly one third of the amount that similar sized cities spend on urban forestry (see "Annual Maintenance Costs" section). The City needs to explore creative approaches to increase internal efficiencies and mechanisms that would generate additional revenue to support tree management. It will be difficult to achieve urban forestry goals without additional funding.

1.1 The City Demonstrates a Commitment to Urban Forestry

City staff highly value trees and the benefits they provide for the community. Staff have taken proactive measures over the last several years to ensure there are sufficient funds and partnerships in place to grow and maintain Hanford's trees. This is evident by the passing of local Measure H and the City applying for and being awarded a U.S. Department of Agriculture's Forest Service Urban and Community Forestry grant. This grant is supporting this UFMP effort and the planting of 600 new trees in Hanford. The City has also taken steps to support ongoing efforts to improve the City's urban forest by building partnerships with a wide range of urban forestry experts and community organizations like Kings County Action Organization, the Urban Tree Foundation, Cal Poly San Luis Obispo, and Tree Fresno and remains dedicated to continuing public education and outreach to support long-term tree stewardship.

1.2 The City Does Not Have Adequate Work Records

The City does not currently have a detailed work records management system, and accurate recordkeeping is essential for the success and sustainability of the urban forestry program. Detailed records help identify trends and areas needing more attention, enabling better planning and decision-making. Implementing a tracking system for maintenance activities, linking expenditures to specific actions, and keeping clear records can significantly improve the effectiveness of tree management. Better records will help the City understand if resources are being allocated efficiently by tracking budgets for activities such as planting, pruning, and removal. Accurate documentation, including metrics about work done by tree contractors, also supports accountability and can be used to justify funding requests and demonstrate the impact of urban forestry initiatives. This approach facilitates better planning and resource allocation, contributes to tree health and longevity, and fosters community trust by showing a commitment to maintaining and improving the urban forest.

This Report acknowledges that the analysis in the following sections is limited by the City's lack of quantitative and detailed work records. This Report is based on information provided by City staff and reflects their understanding and best estimates of staff time and expenditures allocated to urban forest management. This analysis should be conducted again after the City has implemented a system to accurately record work and budget data.

1.3 Limited Staff

The City's Parks and Community Services Department manages day-to-day urban forest management tasks including pruning, monitoring, planting, and addressing conflicts between trees and infrastructure. The City's current staff allocation for the urban forestry program was analyzed to gain a better understanding of how trees are managed and help identify opportunities for improvement. **Table 1** highlights the estimated percentage of time staff spend on urban forest responsibilities and the calculated total City investment in urban forest management spending.

Table 1. Urban Forestry Staffing in the City of Hanford

Title	No. of Positions	FTE	Total Salary + Benefits + Fringe	Percent of Time Allocated to Urban Forestry*	Average Annual Time Allocated to Urban Forestry (Hours)	Urban Forestry Adjusted Salary + Benefits + Fringe
Park Maintenance Worker I/II	8	8	\$666,498.56	15%	2,496	\$99,974.78
Laborer	2	1	\$43,056.00	5%	104	\$2,152.80
Management Director/Supervisor	2	2	\$166,666.67	7.5%	312	\$12,500
Total	12	11	\$876,221.23	N/A	2,912	\$114,627.58

Source: City of Hanford Departmental Interviews

Notes: FTE = full-time equivalent; N/A = not applicable.

* Percent time is an estimate.

While the amount of time spent on tree maintenance varies significantly based on factors such as tree species, age, health, and location, studies suggest that urban trees typically require more frequent and intensive care to thrive (Roy et al. 2012; Roman et al. 2015). The City currently allocates limited staff time to urban forest management, with no more than 15% of any employee's duties dedicated to tree care in a given year (**Table 1**). While this demonstrates some commitment to maintaining the urban forest, it also reflects the challenge of managing over 7,000 trees with constrained resources and a limited amount of time available.

Additionally, the current staffing ratio of 20 acres per staff member exceeds the National Recreation and Park Association's recommended average of 10 acres per staff member, further highlighting the need for additional support (NRPA 2024). The City has a standing target estimate for 6,000 hours to be dedicated to tree work each year. The discrepancy between the City's target and their actual time spent is largely due to a crewmember shortage and other tasks receiving higher priority. These factors indicate a need for further resource allocation to urban forest management.

City staff have a goal to establish a small team dedicated to tree work. This crew, while still balancing park maintenance work during the busy summer season, would be the assigned staff for urban forest management tasks, which would primarily focus on tree planting, establishment care, watering, smaller tree prunings, and conducting outreach and education to the community on the City's Trees and Shrubs Ordinance.

1.4 Need for Specialized Urban Forestry Leadership

Hanford would benefit from having a City arborist or urban forester on staff that would dedicate time to leadership and management of the urban forest program, as opposed to functioning as a crew lead or focusing on operational tasks. This role would provide full-time, specialized leadership for urban forest management, including tree planning and planting, contractor management, permit reviews, community engagement, and implementation of the UFMP.

This position should be filled by an ISA Certified Arborist who can make informed decisions about trees, including health assessments, risk management, and maintenance recommendations. This would help ensure the City arborist has the necessary expertise to minimize infrastructure conflicts and provide guidance on implementing tree best management practices. The City does not currently employ an ISA Certified Arborist. By comparison, a 2014 study shows that 84% of similar-sized Californian cities have a certified arborist on staff (Hauer and Peterson 2016).

Feedback from both staff and community members emphasized that this position is necessary to achieve City goals for the urban forest. If creating this position is not feasible, an alternative could be to employ an ISA Certified Arborist as either a City staff member or in an on-call consulting role to provide the necessary expertise to guide urban forest management. The City is currently working on hiring a consulting arborist to assist with tree removal permits and other arboricultural services. The City has put out a Request for Qualifications and expects to work with the consulting arborist until either existing staff are trained and receive their ISA arborist certification or they can fund and hire this full-time position in-house.

1.5 The City Allocates a Low Level of Funding to Urban Forestry

The City allocates an estimated \$876,221 per year to parks and facilities maintenance from the City’s General Fund. Of these funds, approximately \$114,627 is expended on staff time for urban forestry tasks, while an estimated \$60,000 is spent on contract tree work for pruning of palm trees and trees in landscape assessment districts (LADs), which the City will be transitioning to community facilities districts. This analysis does not include equipment costs in the calculation of urban forestry spending due to the lack of available City records.

Annual Maintenance Costs

Work history records help the City understand their current level of service, estimate costs necessary to meet urban forestry goals, and plan for future urban forestry efforts. **Table 2** shows how management funds have been allocated in FY 2024/2025.

Table 2. Urban Forestry Expenditures

Expense Item	Funded by General Fund	Funded by Landscape Assessment District (LAD) Fees	Sum of General Fund and LAD Expenditures
Parks and Facilities Staff*	\$114,627	—	\$114,627
Contractor – All Tree-related work**	—	\$50,000	\$50,000
Contractor – Palm Pruning**	\$10,000	—	\$10,000
Materials and Equipment	Data unavailable	Data unavailable	Data unavailable
Total Urban Forestry Expenditures	\$124,627	\$50,000	\$174,627

Source: City of Hanford Departmental Interviews 2025.

Notes:

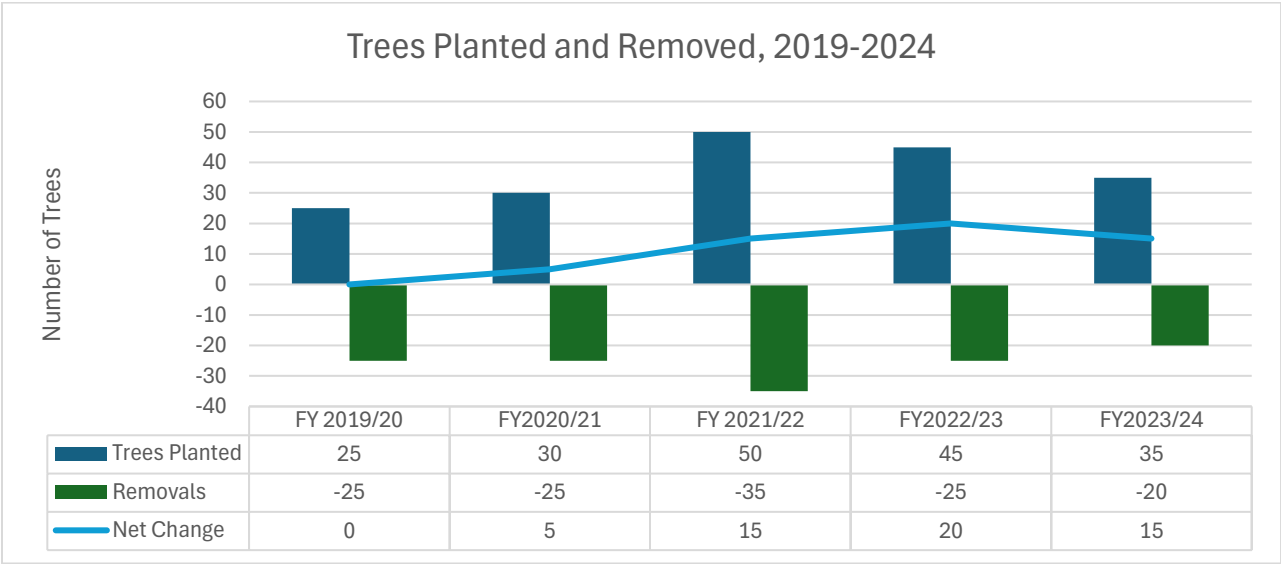
- * Based on the percent time spent on Urban forestry, as seen in **Table 1**.
- ** Based on estimates provided by City staff.

American cities like Hanford with 50k–99k residents spend an average of \$646,501 on urban forest management activities (Hauer and Peterson 2016). This means the City’s urban forest expenditures, totaling \$174,627, are 27% of the 2016 national average. This large difference may indicate below average investment in tree planting, less frequent maintenance, and delayed responses to tree-related issues. Lower investment in urban forestry often means increased risk, such as higher chances of tree-related hazards, storm damage, or detrimental effects from pests and diseases, which may ultimately be more costly than routine maintenance. This level of investment may also set a lower-than-average standard that influences how the City’s private property owners value and manage urban forest on private property.

On the other hand, the City’s low level of expenditure may indicate efficient management of the City’s urban forest resources. The results are inconclusive since work history is not tracked closely enough to compare expenditures to the City’s level of service. See Section 1.2 for recommendations on improving City record keeping for urban forest management work.

1.6 The City Estimates to have Plant More Trees than they Remove

Figure 1 displays the City’s estimated in-house staff planting and removals between FY 2020/2021 and FY 2023/2024. These numbers are based on estimates from City staff with a moderate level of uncertainty. The City has not yet developed a system for tracking tree service metrics within the LADs and does not have an accurate method to estimate these tree service metrics, so service data for LADs are not included in **Figure 1**.



Source: City of Hanford Departmental Interviews 2025

Note:

* Based on staff estimates

Work history estimates suggest that City efforts have resulted in an estimated net gain of 55 trees on City-owned property in the past 5 fiscal years, averaging 11 new trees added per year. This estimated increase in trees in the City is a great jumping off point for the urban forest plan and shows that the City has demonstrated value for growing its urban forest resources.

As noted above, these numbers are based on staff estimates and may deviate from the actual work completed. A more detailed system for recordkeeping will enhance the City's decision-making, budgeting, and efficiency.

2 References

APWA Urban Forestry Budgeting and Staffing. PDF.

City of Hanford Departmental Interviews. 2025. "Urban forestry management strategies" [Interviews].

Hauer, R., and W. Petersen. 2016. *Municipal Tree Care and Management in the United States: A 2014 Urban & Community Forestry Census of Tree Activities*. Accessed August 15, 2025.

<https://caufc.org/wp-content/uploads/2025/03/Hauer-Peterson-2014-urban-forest-program-census.pdf>.

NRPA (National Recreation and Park Association). 2024. *NRPA Agency Performance Review*. Accessed August 15, 2025. <https://www.nrpa.org/siteassets/research/2024-agency-performance-review.pdf>.

Roman, L.A., J.J. Battles, and J.R. McBride. 2015. "The balance of planting and mortality in a street tree population." *Urban Forestry & Urban Greening*, 14(2), 356-364.

https://www.fs.usda.gov/nrs/pubs/jrnl/2013/nrs_2013_roman_002.pdf.

Roy, S., J. Byrne, and C. Pickering. 2012. "A systematic quantitative review of urban tree benefits, costs, and assessment methods across cities in different climatic zones." *Urban Forestry & Urban Greening*, 11(4), 351-363. <https://doi.org/10.1016/j.ufug.2012.06.006>.

Appendix C

Hanford Ch 12.12 Trees and Shrubs Ordinance
Recommended Updates

Chapter 12.12 - STREET TREES AND SHRUBS

Note: Prior history: Prior code §§ 7-2.01—7-2.13 and Ord. 96-18.

§ 12.12.010 Purpose.

§ 12.12.015 Applicability

§ 12.12.020 Definitions.

§ 12.12.110 Authority to direct work on trees, shrubs, hedges, and other plants.

§ 12.12.115 Tree establishment, maintenance, and property owner responsibilities.

§ 12.12.130 Prohibition of violation of chapter.

§ 12.12.210 Pruning or removal of heritage or street tree—Permit required.

§ 12.12.220 Permit application and appeals.

§ 12.12.230 Development permit combined.

§ 12.12.240 No permit required.

§ 12.12.260 Presentation of permit on request.

§ 12.12.270 Revocation of permit.

§ 12.12.280 Reforestation:Tree replacement.

§ 12.12.300 Property owner maintenance—Responsibility and duty to public.§

12.12.305 Determination of Heritage Tree by City Council.

§ 12.12.310 Protection and preservation of heritage trees.

§ 12.12.320 Interfering with maintenance work or injuring street trees prohibited.

§ 12.12.320 Protection During Construction

§ 12.12.330 Park strip inspection.

§ 12.12.340 Hazardous conditions—Sight obstructions on private property.

§ 12.12.350 Violations and penalties.

§ 12.12.400 Notice of violation.

§ 12.12.410 Notice of violation—Delivery.

§ 12.12.420 Notice of violation—Contents.

§ 12.12.430 Notice of violation—Right to appeal.

§ 12.12.440 Work performed by city.

§ 12.12.450 City invoice for work performed.

§ 12.12.460 Collection of city's costs.

§ 12.12.470 Collection of corrective action costs—Special assessment.

§ 12.12.480 Private arrangements for tree trimming or removal.

Commented [KC1]: These sections were shifted into Section 12.12.400

Commented [KC2]: This sections were deleted.

§ 12.12.500 No interference with enforcement of this chapter.

§ 12.12.510 Failure to give or receive notice.

§ 12.12.520 Additional penalties.

§ 12.12.530 Remedies.

§ 12.12.010 Purpose

The purpose of this street trees and shrubs ordinance (ordinance) is to protect and enhance the urban forest within the City of Hanford, foremost recognizing its vital role in mitigating the extreme heat typical to the region. By preserving and managing trees on both public and private property, the ordinance aims to improve air quality, provide shade and wildlife habitat, and enhance the overall aesthetic and environmental quality of the city. This ordinance ensures that the urban forest continues to contribute to the health, well-being, and resilience of the Hanford community.

§ 12.12.015 Applicability.

This chapter shall apply to all trees on public property and in right-of-ways within the City of Hanford.

§ 12.12.020 Definitions.

"Authorized street tree list" means that list identifying the types of trees which may be planted in park strips.

"Canopy width" means the ground covered by the foliage of a tree, measured at the greatest diameter. This measurement is used to determine the extent of shade and environmental benefits provided by the tree.

"City arborist" means an arborist who is a member of the International Society of Arborists (or equivalent organization) designated by the parks and recreation department director.

"Critical root zone" or "CRZ" means a defined circular area around a tree with a radius measured to the nearest foot of the tree's longest drip line radius plus one foot as illustrated below:

"Damaged" means the removal of bark greater than three inches across, the breaking or splitting of the main trunk, or the dislocation of the main trunk or any act compromising its health or structural integrity according to accepted industry standards or to cause damage that is severely detrimental to its overall aesthetics.

"Dead" means a tree, shrub, hedge, or other plant that is no longer alive, has been damaged beyond repair, or is in an advanced state of decline (where an insufficient amount of live tissue, green leaves, limbs, or branches exist to sustain life) and has been determined to be in such state by the director.

"Development project" means any exterior construction work associated with or requiring a building permit for any building addition, building demolition, site grading, excavation or site paving.

"Diameter at Standard Height (DSH)" means the diameter of a tree trunk measured at four and one-half feet (4.5 ft) above the natural grade on the uphill side of the tree. For multi-stemmed trees, DSH shall be the [...]

"Director" means the parks and recreation department director of the city of Hanford or designee.

"Hazard" or "hazardous condition" means any tree, shrub, hedge, or plant that is or appears to be: (1) dead; (2) likely to fall; (3) seriously diseased; (4) an obstruction or potential obstruction to pedestrian or vehicular traffic; (5) an obstruction or potential obstruction of any traffic signs, traffic control devices, streetlights, regulatory signs, or similar types of equipment or signs; or (6) in a condition that is detrimental to the public health, safety, or general welfare.

"Hedge" means any group of shrubs planted in line or in groups so that the branches of any one plant are intermingled or contact the branches of any other plant in the line or group.

"Heritage tree" means any of the following: (1) any Oak Tree species native to Central California, Valley Oak Tree (Quercus lobata), located on public property and rights-of-way, with a Diameter at Standard Height (DSH) greater than 10 inches; (2) any tree or group of trees specifically designated by the City Council for protection due to historical significance, special character, or community benefit; (3) any replacement tree planted pursuant to this chapter that assumes heritage status under the ordinance.

"Imminent hazard" or "imminently hazardous condition" means a hazardous condition that presents an immediate threat to the health, safety, or general welfare of the public which requires immediate action to prevent injury to the public or property.

For purposes of this section, "Maintenance" shall maintenance of street trees, shrubs, hedges, and other plants includes mean the routine and ongoing care necessary to ensure the health, safety, and structural integrity of a tree. Maintenance includes, but is not limited to, watering, mulching, pruning, pest and disease management, weed abatement, removal of debris, and protection of the tree's critical root zone. All maintenance activities shall be performed in accordance with best management practices and applicable standards, including those established by the International Society of Arboriculture (ISA) and the American National Standards Institute (ANSI A300, without limitation: watering, pruning, fertilizing, pest control, spraying, removal of branches, leaves and other debris, weed abatement, and protection of the critical root zone. Watering shall occur in a manner consistent with the city's rules on water use identified in this code.

)

Commented [JD3]: And private property?

Commented [KC4]: Moved from original section 12.12.300 (B)

"Park strip" means that portion of the public street right-of-way between the curb or curb line and the adjacent sidewalk or property line, as applicable, used for or which may be used for the purpose of planting and maintaining street trees, shrubs, hedges, or other plants. In some areas within the city, park strips may extend into a private property's yard beyond the sidewalk. Park strips may be located on private property or may abut private property.

"Prune" or "trim" means to remove any segment of the above- or below-ground woody tissue of a tree, shrub, hedge, or other plant. If pruning is done in nonconformance with said conditions of permit or without a permit, it shall be deemed a "removal."

"Remove" or "removal" means cutting to the ground, complete extraction, or killing by spraying, girdling, or any other means of a tree.

"Replacement tree" means a tree that is planted in place of a tree that is protected in this ordinance. Tree replacement policy is covered in § 12.12.280 Reforestation. for the purposes of this chapter shall be determined by utilizing a certified tree and landscape appraiser or the most recent edition of the Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers.

"Right-of-Way" means the street, sidewalk and parkway areas that are used by the public as a means of travel, and may contain public trees, shrubs, or other landscaping.

"Shrub" means a bush or plant (excluding weeds) more than 12 inches tall but not more than six feet tall.

"Street" means a public right-of-way owned by or under the control of the city whose primary function is to carry vehicular traffic and shall also include sidewalks and park strips.

"Street tree" means a tree located within the public right-of-way, typically in a park strip or planting area between the curb and sidewalk, or in other city-owned or controlled spaces adjacent to streets.

"Topping" means the removal of branches from mature trees leaving stubs and large wounds on such trees.

"Tree" shall mean any perennial, woody plant species or cultivar that reaches a height exceeding six feet at maturity, whether planted singly or as a hedge, or having secondary branches supported on a main stem or stems. The term "tree" includes street trees and heritage trees.

"Tree protection plan" means a plan in compliance with Section 12.12.310, Protection and preservation of heritage trees.

"Tree protection zone" or "TPZ" means the area surrounding the critical root zone of a tree which is typically located at or beyond the dripline of a tree. The TPZ should be determined by a city arborist and be specified in a tree protection plan or included in a construction plan. The TPZ is a restricted activity zone before and after construction where soil disturbance, vehicular or pedestrian traffic, or activities that compact soil within the critical root zone are prohibited unless approved and supervised by the city arborist with reasonable modifications to protect the tree.

§ 12.12.115 Tree Establishment, Maintenance, and Property Owner Responsibilities

- A. All newly planted trees within the City of Hanford shall be subject to a three-year establishment period beginning on the date of planting. During this period, the party that planted the tree, whether the City, a developer, or another private entity, shall be solely responsible for all establishment care. This includes watering, mulching, structural pruning, and any other maintenance necessary to support healthy root and canopy development.
- B. At the time of planting, the City shall provide written notification to the adjacent property owner when a street tree is installed by the City. This notification shall clearly state that the City will maintain the tree during the three-year establishment period immediately following the planting of the tree and provide the future date upon which responsibilities for tree maintenance will transfer to the adjacent property owner. The adjacent property owner shall then assume full responsibility for the ongoing maintenance and replacement of the tree, unless another party has formally agreed in writing, with approval from the director, to assume that responsibility. Once this transfer of responsibility occurs, the property owner shall also assume liability for any damage or injury resulting from failure to properly maintain the tree in accordance with this chapter.
- ~~B-C.~~ Each property owner shall maintain and replace, when necessary, any street trees, shrubs, hedges, or other plants located within a park strip that abuts their property, in a manner that complies with this chapter. Property owners owe a duty to the public to maintain these plantings in a safe and non-hazardous condition.
- D. Property owners responsible for maintenance shall:
1. Ensure trees and vegetation do not become hazardous;

Commented [JD5]: @city please review this section closely.

Commented [KC6]: This clause was taken from the original ordinance section 12.12.300 A

Commented [KC7]: Items D1 - 5 were taken from the original ordinance Sec 12.12.300

2. Maintain a minimum of eight (8) feet of vertical pedestrian clearance from the sidewalk and fourteen (14) feet of vertical vehicular clearance from the street, with uniform canopy clearance;

3. Maintain clear visibility of traffic signals, street lights, regulatory signs, and street name signs;

4. Obtain a permit for pruning or removal as required under Section 12.12.210;

5. Obtain an encroachment permit from the Public Works Department for any work involving vehicles or equipment in the public right-of-way.

~~E.~~ If a property owner fails to maintain trees or vegetation as required and such failure results in damage or injury, the property owner shall be liable for all resulting damages or injuries.

~~F.~~ If, in the opinion of the director, a tree or plant on private property outside of a park strip constitutes a nuisance or hazard, the City may apply the same procedures and remedies as for vegetation within park strips.

G. Any damage caused by a tree, shrub, hedge, or plant to persons, property, or public infrastructure shall be the responsibility of:

1. The owner of the property on which the vegetation is located; or

2. If located in a park strip abutting private property, the owner of the abutting property.

Commented [KC8]: Item G was taken from the original ordinance Sec 12.12.300 (D)

§ 12.12.130 Prohibition of violation of chapter.

A. It is unlawful for any person to plant, remove, prune, or maintain any trees, shrubs, hedges, or other plants ~~or cause the same to be done in violation of this chapter in City-owned property or park strips.~~ (Ord. 15-12 § 1, 2015)

B. No person shall, except with written permission of the director:

1. Damage, cut, carve, girdle, or injure the bark of any street tree;

2. -Attach or keep attached, or cause the same, any sign, wire, light, device, or injurious material to any such tree or the guard or stake intended for the protection of such street tree;

Commented [KC9]: Items B1 - 7 were taking from the original Ordinance Sec 12.12.320 (A) and (B).

3. ~~-Allow any gaseous, liquid or solid substance, pesticide, herbicide, or similar chemical agent harmful to a street tree to come into contact with the roots, leaves, bark or any part of any street tree;~~

4. ~~-Construct concrete, asphalt or brick paving or otherwise fill the ground area within four the planting area feet of any street tree that may shut out/off air, light, or water to the street tree or its roots;~~

5. ~~Pile building material or other material around any street tree in any manner that will in any way injure the street tree; or~~

~~4-6. -Construct any raised planter around a street tree's trunk.~~

~~2-7. Interfere with the city or its employees or contractors engaged in the planting, mulching, pruning, spraying, treating, or removal of any street tree, or in the removal of stone, cement, or other substance around the trunk of any street tree.~~

§ 12.12.210 Pruning or removal of heritage or street tree—Permit required.

~~A. All pruning of street trees shall follow the American National Standards Institute (ANSI) A300 standards. The City shall make available a Residential Tree Care Guide that includes visual examples of proper pruning techniques, including clearance pruning, structural pruning, and prohibited practices such as topping. This guide shall be available on the City's website and distributed at public events.~~

~~B. A permit shall not be required for routine pruning of street trees performed solely to maintain pedestrian or vehicular clearance, provided such pruning does not involve removal of branches exceeding four inches in diameter, does not compromise the tree's structural integrity, and is conducted in accordance with ANSI A300 standards. Any pruning exceeding these thresholds or affecting the tree's form or health shall require a permit.~~

~~C. Except as provided in this subsection A, it is unlawful for any person to prune or remove any heritage tree or remove a street tree, or tree or do any construction work or activity that may affect the critical root zone of a heritage or street tree, without a permit issued by the director.~~

~~A-D. Each permit to prune or remove one or more a heritage or street trees shall contain the following information:~~

- ~~1. Name of permit applicant;~~

2. Time period in which to complete the action specified or required in the permit;
3. Reason for pruning or removal;
4. If a tree will be removed, the type and species of the replacement tree to be purchased and planted by the permittee at the permittee's sole cost and expense;
5. Description of the pruning, if applicable; and

6. Tree information for all trees under the permit, including:

- a. Species: The botanical name or common name of the tree(s).
- b. Canopy sizewidth: The width of a tree's leafy cover, measured as the longest distance from one edge of the canopy to the opposite edge (diameter).
- a.c. Location: of the tree to be pruned or removed (Aaddress of property where tree is located and the specific location of the tree on the applicant's property).

B-E. The director shall, subject to the consultation requirements set forth below, issue a permit to prune or remove a street tree or prune a heritage tree only if at least one of the following criteria is met:

1. The tree creates a hazardous condition or imminently hazardous condition;
2. The type, species, or location of the tree ~~is in conflict with~~conflicts with the policy or plans of the city;
3. The tree interferes with electrical lines and the interference cannot be corrected by pruning the tree;
4. The tree has caused damage to infrastructure including, but not limited to, concrete or asphalt, water or sewer lines, or other electrical infrastructure that creates, or has the potential to create, a hazardous or imminently hazardous condition ~~and which cannot be resolved by other reasonable means;.~~ This damage cannot be reasonably resolved by other means, and root pruning to address the issue will compromise the tree's stability, as determined by an ISA Certified Arborist.
5. ~~The tree has or may cause damage to utilities, including without limitation water, sewer, communication lines or power lines, that results or could result in a hazardous condition or imminently hazardous condition and which cannot be resolved by other reasonable means;~~

~~6. The tree is in conflict with an approved development permit for an adjacent property or right-of-way;~~

~~7.5. The tree that is being proposed for removal is hindering the growth of an adjacent tree of greater value as determined by an ISA certified arborist, required for thinning to allow proper spacing, or~~

~~8. Removal would allow a more desirable planting in conformance with the approved tree list.~~

~~G. The director shall, subject to the consultation requirements set forth below, issue a permit to remove a heritage tree only if the tree creates a hazardous condition or imminently hazardous condition.~~

~~D.F. Except as otherwise provided in this chapter, the director will consult with the commission on applications to remove street trees and applications to prune or remove heritage trees. The commission shall make recommendations to the director concerning heritage or street tree removal and heritage tree pruning after an inspection by a subcommittee of the commission and after deliberation by the commission. Requests for such inspections shall be made by the director at commission meetings. The director need not consult with the commission on heritage or street tree removal or heritage tree pruning if, in the director's reasonable judgment, a heritage or street tree poses an imminently hazardous condition. In such instance, the director may approve a permit without consulting the commission; provided however, the director will inform the commission of the issuance of such permit at the commission's meeting that immediately follows the permit's issuance. The director need not consult with the commission regarding applications to prune street trees.~~

Commented [KC10]: Recommendation is to remove the commission's role in heritage tree permit decisions and instead rely on a certified arborists assessment with the final decision made by the Director.

~~E.G. If the city grants a permit for the removal of a heritage or street tree, the person or entity removing the tree must remove the tree's trunk to a minimum depth of two feet below the adjacent ground level.~~

§ 12.12.220 Permit application and appeals.

A. Applications for permits required under this chapter shall be submitted to the director, along with an application fee. Application fees shall be set by resolution of the city council. The director shall review each permit application that the city accepts for filing. As part of the review of each application, the director may request additional information from the applicant or conduct any investigation the director believes is necessary to complete the review. After the completion of the review of the permit application and advisory input by the commission, if required, the director shall provide

written notice to the applicant of the decision to issue (as requested or modified) or deny the permit.

- B. The notice shall be in a form prescribed by the director. The notice shall provide the opportunity for the applicant to appeal the director's decision.
- C. An applicant wishing to appeal the director's decision shall submit a written request for an appeal hearing to the director within seven calendar days of the property owner's receipt of the director's notice. The city council will serve as the hearing body for appeals. A hearing shall be set for a date that is not less than 15 days and not more than 60 days from the date that the request for hearing is filed in accordance with the provisions of this section. The city council will give the applicant an opportunity to be heard and will thereafter render a written decision regarding the director's decision on the permit application.
- D. Permits issued for work occurring under Section 12.12.210 shall, except as otherwise provided herein, be valid for 60 days, except permits issued to public utilities, which may be for a period of one year. The director may extend the effective period of a permit if the director finds good cause exists in a particular case.

~~§ 12.12.230 Development permit combined.~~

~~The request for a heritage or street tree planting, pruning, or removal permit may be included as part of an application for a development permit. Where the request for planting, pruning, or removal permit is included as part of the development permit application, the development permit may serve as the planting, pruning, or removal permit and be processed under the application, noticing, hearing, and appeal provisions applicable to the development permit application, and no separate planting, pruning, or removal permit application and planting, pruning, or removal permit is required, so long as all of the substantive provisions and permit processing requirements of this chapter are satisfied as part of the processing of the development application.~~

§ 12.12.240 No permit required.

- A. Notwithstanding any provision of this chapter, no permit shall be required for pruning or removing a heritage or street tree if any of the following criteria are met prior to any work being performed:
 - 1. An imminent hazard exists where the immediate pruning is necessary to protect the public health, safety, or welfare. Any pruning work to address hazardous tree conditions should be completed by an ISA Certified Arborist. The property owner

who causes emergency work to be done must ensure that the heritage or street tree is not pruned more than is reasonably required to eliminate the imminent hazard; ~~such. A permit is required for any additional, non-emergency pruning done on the same tree. party must obtain a permit for any non-emergency pruning of the same tree.~~ The property owner causing the emergency pruning or removal must provide, within two business days of the completion of the emergency work, written notice to the director that includes a full description of the work completed, the exact location where the work was performed, the bases for the emergency work, and photographs clearly showing the condition creating the imminently hazardous condition;

2. An imminently hazardous condition exists, and the director provides written notice to the responsible property owner to take corrective action, and the owner complies strictly with such notice;
3. Removal of the tree is in connection with a city-approved public works project; or
4. A development permit, or amendment thereto, which allows the removal of a tree, has been issued by the city and accepted by the permit applicant pursuant to the provisions of this code pertaining to development permits.

B. In case of emergency, when a tree is hazardous or dangerous to life or property, it may be pruned or removed by order of the city's public works, parks and recreation, police, or fire departments, ~~provided further, that any~~ Any franchise public utility or representative of the city may remove or prune trees which interferes with the safe and efficient operation of the public service for which they are responsible, but only to the extent made necessary by such interference. ~~In such, with the permission cases, permission from of the director and/or the city arborist is still required.~~

§ 12.12.260 Presentation of permit on request.

- A. It is unlawful for any person to prune or remove ~~or cause the same to be done to~~ a heritage or street tree unless the permit or a copy of the permit allowing for this activity is maintained on the site where the tree to be pruned or removed is located.
- B. It is unlawful for any person to prune or remove ~~or cause the same to be done to~~ a heritage or street tree unless the permit or a copy of the permit can immediately be presented upon request by an official or representative of the city.
- C. It is unlawful for any person to engage in any work on or allow any work on a heritage or street tree that is subject to a permit to occur unless and until: (1) the permit or a copy of the permit is located on the site where the subject tree is located; and (2) the permit

or a copy of the permit is readily available for presentation upon request as described in this section.

§ 12.12.270 Revocation of permit.

- A. The director may revoke a permit issued pursuant to this part if the director determines any of the following:
1. The permit was obtained or extended by false, misleading, or incomplete information;
 2. One or more conditions set forth in the permit have been violated; or
 3. One or more provisions of this chapter have been violated.
- B. The director shall give written notice of the revocation of the permit to the applicant. The applicant may appeal the director's decision in accordance with the provisions of Section 12.12.220.

§ 12.12.280 Tree replacement.

- A. Permits for heritage or street tree removal, removals without permits and acts causing damage to heritage or street trees shall require replanting in accordance with the following guidelines:
- B. Replacement trees shall be planted on the same property at which they are removed. The number of replacement trees required shall be as prescribed in Table 2 Tree Replacement Standard.

Table 1: Replacement Requirements	
Canopy Width (Diameter) of Removed Tree	Replacement Trees Requirement
<u>Up to 25 feet</u>	<u>1 Tree</u>
<u>25.1 feet to 40 feet</u>	<u>2 Trees</u>
<u>40.1 feet to 65 feet</u>	<u>4 trees</u>
<u>More than 65 feet</u>	<u>6 trees</u>

1. All replacement trees must be twenty-four inch box trees.
2. Replacement trees should come from the City of Hanford Tree List.

Commented [JD11]: @City, please review these new replacement mechanisms closely, paying special attention to replacement requirements and the in-lieu fee.

C. In Fees In-lieu of Replanting. In cases where the director determines replacing the tree(s) is inappropriate due to existing tree canopy or site restrictions, in-lieu replacement fees will be required.

A.D. An in-lieu payment for each tree removed and not replaced onsite, in the amount of \$1,500, shall be paid to the City Tree Replacement Fund, used to add or replace trees on public or private property in the vicinity of the subject property on other City-owned or private property; or to support the City's urban forestry management program. The City Tree Replacement Fund shall be administered by the Parks and Community Services Department and used exclusively for tree planting, establishment, and maintenance in areas of need, as identified in the Urban Forest Management Plan.

Commented [KC12]: For CITY, an analysis that we did for San Mateo County to cover tree sourcing, materials, planting, and establishment care for 3 years came out to be around \$3,300. This would likely be too high of a fee for Hanford residents, so we are proposing \$1,500, but ultimately the City would need to decide the balance between cover City expenses to plant a replacement tree elsewhere, and a fair fee to the average resident.

Commented [KC13]: Modified from original ordinance Section 12.12.280 (E)

§ 12.12.280 Reforestation:

Permits for heritage or street tree removal, removals without permits and acts causing damage to heritage or street trees shall require replanting in accordance with the following guidelines:

A. Trees removed under jurisdiction of a planning approval pursuant to this chapter shall conform to conditions specified in the planning approval:

B. Trees removed with a valid tree removal permit shall be replaced in accordance with this chapter and instructions identified by the director. Replacement instructions shall include direction on the location and species of the replacement tree. Tree replacement shall be one to four twenty-four (24) inch box size tree(s) determined by the director, for each tree removed:

C. Trees removed without a valid tree removal permit shall be replaced by one to four 48 inch box size tree(s) for each tree removed at the discretion by the director if the value of the removed tree(s) was significantly greater than that of a forty-eight (48) inch box tree. In such cases of non-permitted removal, the determination of the level of replacement shall be within the discretion of the director, but will not exceed the actual tree loss as determined by the replacement value. In addition to the requirements of this subsection, penalties under Section 12.12.530 or other sanctions allowed by law may be imposed for removal of heritage or street trees without a permit.

D. Where the director determines that replanting is not feasible and/or appropriate, e.g., sufficient trees exist on site, the director may: (1) require that a payment of equal value to the cost of the purchase and installation of the replacement tree(s) be made to the city tree planting fund; or (2) place other conditions on the permit which are of equal value to the cost of the purchase and installation of the replacement tree(s):

E. Any person causing damage to a heritage or street tree shall be required to take such steps as may be required by the director to assure the future vitality of the tree(s);

including costs of treatment and/or construction of protection barriers, or if the director determines that the damage is so great that the tree is no longer reasonably sustainable, replacement of the damaged tree per subsection C.

~~§ 12.12.300 Property owner maintenance—Responsibility and duty to public.~~

~~A.—Subject to the provisions of Section 12.12.110, each owner of property that is located in the city shall maintain and replace, when necessary, any street trees, shrubs, hedges, or other plants within a park strip located on or which abuts an owner's property in such condition so as to comply with this chapter. Each property owner shall plant and replace any removed or otherwise missing street trees in accordance with the requirements of Section 12.12.210.~~

~~B.—A property owner required by this section to plant, maintain, and replace, when necessary, street trees, shrubs, hedges, and other plants shall owe a duty to the public using streets and/or sidewalks to maintain such street trees, shrubs, hedges, and other plants in a safe and non-hazardous condition. For purposes of this section, maintenance of street trees, shrubs, hedges, and other plants includes, without limitation: watering, pruning, fertilizing, pest control, spraying, removal of branches, leaves and other debris, weed abatement, and protection of the critical root zone. Watering shall occur in a manner consistent with the city's rules on water use identified in this code.~~

~~C.—A property owner required by this section to maintain any street trees, shrubs, hedges, or plants shall comply with the following:~~

- ~~1.—Provide the necessary maintenance so that street trees, shrubs, hedges, and plants do not become a hazard;~~
- ~~2.—Provide a minimum of eight foot vertical pedestrian clearance from the top of the sidewalk and a minimum 14 foot vertical vehicular clearance from the top of pavement, to any part of a street tree; provided however, each street tree shall be trimmed so that the vertical clearance around the entire tree is uniform and consistent;~~
- ~~3.—Provide adequate clearance for unobstructed pedestrian and vehicular view of all traffic signals, street lights, regulatory signs, street name signs, and other similar types of equipment and signs;~~
- ~~4.—All maintenance shall be completed in accordance with the guidelines of the American National Standard Institute (ANSI);~~

Commented [KC14]: Most of this section moved to new section 12.12.115 Tree Establishment, Maintenance, and Property Owner Responsibilities

5.—Obtain a permit as required in Section 12.12.210; and

6.—Obtain an encroachment permit from the city's public works department for any work that the property owner or his or her contractor will perform within a public right-of-way or if any vehicle or equipment will operate or be parked in any public right-of-way as a result of any work pertaining to a tree, shrub, hedge, or other plant for which the property owner is responsible.

D.—If any property owner fails to maintain any street trees, shrubs, hedges or other plants for which the owner is responsible in a non-hazardous condition as required by this section, and any person or entity suffers damage or injury to person or property, the property owner shall be liable for all damages and/or injuries caused by his or her failure to maintain the street trees, shrubs, hedges, or other plants.

E.—If, in the opinion of the director, a tree, shrub, hedge, or other plant located on private property located outside of a park strip constitutes a nuisance or hazard, the process, procedures, and remedies described in this chapter with respect to street trees, shrubs, hedges, and other plants located in park strips, will be available to the city.

F.—Any and all damage caused by a tree, shrub, hedge, or plant to any person or property or to any utility, street, sidewalk or other improvement shall be the responsibility of: (1) the owner of the property on which such tree, shrub, hedge, or plant is located; or (2) if the offending street tree, shrub, hedge, or plant is located within a park strip that abuts private property, the owner of the private property that abuts such park strip.

§ 12.12.305 Determination of Heritage Tree by City Council

A. All native Oak tree with a Diameter at Standard Height (DSH) greater than 10 inches are considered heritage trees.

B. A tree or group of trees may be nominated for Heritage Tree designation if it meets one or more of the following criteria:

1. Is associated with a significant historical event, person, or site;
2. Possesses unique or rare species characteristics;
3. Provides exceptional ecosystem services (e.g., habitat, shade, carbon sequestration);
4. Has significant cultural, community, or aesthetic value.

C. Nomination Process.

Commented [KC15]: New section to set criteria for determining and nominating a heritage tree.

1. Nominations may be submitted by any member of the public, City staff, or a recognized community organization.

2. Nominations must include:

- A completed Heritage Tree Nomination Form;
- Photographs of the tree(s);
- A description of how the tree meets one or more eligibility criteria;
- A map or site plan showing the tree's location.
- If on private property, written consent by the property owner.

3. Nominations shall be reviewed by the City Arborist for completeness and eligibility. Eligible trees must be in good health as determined by the City Arborist

D. Council Action.

1. Heritage trees may be designated either by the City Council or by an ISA Certified Arborist appointed by the Council.
2. Upon designation, the tree(s) shall be added to the City's Heritage Tree Registry and subject to all applicable protections under this chapter.

E. Notification.

The City shall notify the property owner(s) in writing of the designation and provide information regarding maintenance responsibilities and protections.

F. Removal from Registry.

A Heritage Tree may be removed from the registry only by City Council action, following a public hearing and recommendation from the Tree Commission, based on evidence that the tree no longer meets the designation criteria or poses an imminent hazard.

§ 12.12.310 Protection and preservation of heritage trees.

- A. 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 these regulations.
- B. Any application for discretionary development approval of real property or any other development project shall be accompanied by a signed statement by the property owner or authorized agent which discloses whether any heritage trees exist on property and described on the plans associated with the application the location of each such tree, its species, trunk size and drip line area. In addition, the location of any tree within

30 feet of the area proposed for construction ~~that is within the public right-of-way~~ shall be shown on the plans identified by species.

C. In regard to any heritage tree ~~designated by the city council for protection~~ (hereinafter "protected tree"), any exterior construction work associated with any development project performed within a radius measured from the trunk center equal to 10 times the ~~diameter-DSH~~ of the trunk measured ~~at four feet above grade~~ shall require the preparation and submittal of a tree protection plan for review and approval by the director and/or the city arborist prior to the issuance of any permit for a development project. The tree protection plan shall be prepared by a certified arborist.

D. A tree protection plan shall at minimum include the following requirements:

1. Prior to the commencement of any development project, fencing shall be installed at the drip line of any ~~protected heritage~~ tree which will be affected by the construction and shall prohibit the storage of any construction materials, equipment or other materials inside the fence. The drip line shall not be altered in any way so as to increase the encroachment of the construction.
2. Prohibit extraction, soil deposit, drainage and leveling within the drip line unless approved by the director and the city arborist.
3. Prohibit disposal or depositing of oil, gasoline, chemicals, paints, solvents or other materials within the drip line or in drainage channels, swales or areas that may lead to the drip line.
4. Prohibit the attachment of wires, signs, ropes, or any foreign objects to any ~~protected heritage~~ tree.
5. Utility service and irrigation lines shall be located outside of the drip line when feasible.
6. Include provision for the retention of the services of a certified arborist for periodic monitoring of the project site for the health of ~~protected heritage~~ trees. An arborist or the director or designee must be present whenever activities occur which will pose a potential threat to the health of the ~~protected heritage~~ trees or whenever any work needs to be done within the drip line of such tree.
7. Include other provisions as deemed necessary by the director and/or the city arborist to preserve the ~~protected heritage~~ tree and insure compliance with those provisions.

8. Require that the parks and recreation department be notified whenever any damage or injury occurs to a protected-heritage tree during construction so that proper treatment may be administered.
9. Contain the signature of the property owner and building permit applicant.

§ 12.12.320 Protection During Construction.

All construction activities occurring within proximity to such trees shall comply with the following requirements in order to preserve the health and structural integrity of heritage and street trees during development:

1.—No person shall, except with written permission of the director: (1) damage, cut, carve, girdle, or injure the bark of any street tree; (2) attach or keep attached, or cause the same, any sign, wire, device, or injurious material to any such tree or the guard or stake intended for the protection of such street tree; (3) allow any gaseous, liquid or solid substance, pesticide, herbicide, or similar chemical agent harmful to a street tree to come into contact with the roots, leaves, bark or any part of any street tree; (4) construct concrete, asphalt or brick paving or otherwise fill the ground area within four feet of any street tree that may shut out/off air, light, or water to the street tree or its roots; (5) pile building material or other material around any street tree in any manner that will in any way injure the street tree; or (6) construct any raised planter around a street tree's trunk:

A. A Tree Protection Plan shall be required for any development project involving exterior construction within a radius equal to ten times the Diameter at Standard Height (DSH) of any Heritage Tree or Street Tree. The plan shall be prepared by an ISA Certified Arborist and submitted for review and approval by the director or City Arborist prior to permit issuance.

B. All Tree Protection Plans shall include:

1. Identification of all trees within 30 feet of the proposed construction area, including species, DSH, and canopy extent.
2. Location of all trees to be preserved, removed, or planted.
3. Installation of protective fencing at the drip line of each tree to be preserved, with signage indicating “Tree Protection Zone – No Entry.”
4. Prohibition of grading, trenching, soil compaction, or material storage within the Tree Protection Zone unless explicitly approved by the director and City Arborist.
5. Routing of utility and irrigation lines outside the Tree Protection Zone where feasible.

6. Prohibition of chemical disposal, equipment washing, or attachment of foreign objects to any protected tree.
7. Schedule for periodic monitoring by a Certified Arborist, including presence during any work within the Tree Protection Zone.

C. The property owner and contractor shall sign the Tree Protection Plan and ensure full compliance throughout the project. Any damage to protected trees shall be reported immediately to the Parks and Recreation Department. The director may require mitigation, including treatment, replacement, or payment into the City Tree Replacement Fund, based on the severity of damage.

- 1.-As part of any construction work or activity of a building or structure, the owner or responsible party thereof shall place such guards around all nearby street trees that are required in the opinion of the director to effectively prevent injury to such trees.
- 2.-Tree stakes or guards may be placed around street trees by the city, the city's contractors, or by the owner of the property on which the street tree is located or which is located in a park strip abutting the owner's property as long as such stakes and guards are merely placed near street trees for the purpose of protecting and/or training such trees.
- 3.-Each property owner shall ensure that electrical lines and wires providing electricity to his or her property are secured so they do not come into contact with any street tree, and no person shall, without the written authorization of the director, attach to a street tree any electric wire or line, insulator, or device for the holding or securing of any electric wire or line, or electrical or utility poles.
- 4.-No person shall move any building or other object along any street in such manner as to injure any street tree. Whenever the director determines or reasonably believes that any street tree may be injured, the director may require the person moving the building or other object along a street in the city to furnish a bond in an amount sufficient to cover the damage or destruction of street trees.

§ 12.12.330 Park strip inspection.

The director may inspect or cause to be inspected all street trees, shrubs, hedges, and other plants located within park strips. Upon discovering that any street tree, shrubs, hedges, or other plants within a park strip are dead, infected or infested with plant, animal, insect, or other condition detrimental to the growth, health, or life of any such street tree, the director may utilize the provisions of and pursue the remedies outlined in Sections 12.12.400 through 12.12.530.

§ 12.12.340 Hazardous conditions—Sight obstructions on private property.

A. No owner or person in possession or control of any property shall maintain any tree, shrub, hedge or other plant located on his or her property, or located in a park strip abutting the owner's property, in a manner that causes or may cause a hazardous condition or imminently hazardous condition on a street.

B. No owner of property shall permit the existence of any tree, shrub, hedge, plant, mound of earth, boulders, or any other object located on his or her property or within a park strip abutting his or her property that obscures and/or impairs the view of passing motorists or pedestrians or which impairs the view of any street sign, traffic sign, or any other control device or sign placed upon the streets for the safety and convenience of the public.

§ 12.12.350 Violations and Penalties.

Any person who violates the provisions of this ordinance, including property owners and persons performing tree removal or pruning activities, shall be subject to the following penalty:

A. Mandatory Dual Penalty for Unauthorized Removals. Any unauthorized removal or damage of a heritage or street tree shall require:

1. On-Site Replacement. Replacement in accordance with Table 1 in §12.12.280;

AND,

2. Payment of an In-Lieu Fee. Payment of an in-lieu fee for each tree removed, regardless of whether replacement occurs on-site, as follows:

i. First Violation: One (1) times the in-lieu fee per tree removed.

ii. Second Violation: Two (2) times the in-lieu fee per tree removed.

iii. Third or Subsequent Violation: Four (4) times the in-lieu fee per tree removed.

3. When Replacement is Not Feasible. If on-site replacement is determined to not be feasible by the director or the City Arborist, payment of two (2) times the amount required above.

B. Additional Penalties and Enforcement: The City may impose additional penalties, including:

1. Administrative fines

2. Stop work orders

3. Permit holds or revocations

4. Cost recovery for enforcement and restoration

§ 12.12.400 Notice of violation.

If the director determines that a violation of this chapter has occurred or that the condition of any tree, shrub, hedge, or plant constitutes a violation of any provisions of this chapter, the director may, by written notice, notify the owner of the property in violation to take corrective action. A notice of violation may be provided in the form of an administrative citation or other form of writing that the director deems appropriate.

- A. The notice of violation ~~specified in Section 12.12.400~~ may be given by delivering a written notice personally to the property owner, or by mailing the notice, certified with return receipt requested, to the property owner at his or her last known address as the same appears on the last equalized assessment rolls of the county.
- B. Any notice of violation issued by the director shall contain the following information:
 - 1. The date of inspection;
 - 2. The address or a description of the property upon which such tree, shrub, hedge, or plant is located, or the address of the property which abuts the park strip in which such tree, shrub, hedge, or plant is located;
 - 3. A description of the violation;
 - 4. A description of the corrective action required to address the violation; and
 - 5. A definitive time period or deadline to complete the corrective action.

§ 12.12.430 Notice of violation—Right to appeal.

- A. The notice of violation will specify that the property owner may file with the director a written request for an appeal hearing. Such written request must be received by the director within 15 calendar days of the date of the notice of violation. The written request for hearing must clearly outline the reasons and bases for the property owner's objection to the notice of violation.
- B. The director shall consider each written request for appeal. If the director does not alter his or her decision on an issue as a result of the written request for appeal hearing, the director shall set the matter for a hearing before the city council. The city council will serve as the hearing body for appeals involving notices of violation. A hearing shall be set for a date that is not less than 15 days and not more than 60 days from the date that the request for hearing is filed in accordance with the provisions of this section. The city

council will give the property owner an opportunity to be heard and will thereafter render a written decision regarding the notice of violation.

~~§ 12.12.440 Work performed by city:~~

- ~~A.—If the corrective action required by a notice of violation is not completed within the time specified in the notice, the city may, but shall not be required to, perform the required work or cause the work to be performed.~~
- ~~B.—In cases of imminently hazardous conditions, the director shall have the authority to perform or cause to be performed corrective work necessary to abate the imminent hazard without first issuing a notice of violation to the property owner.~~

~~§ 12.12.450 City invoice for work performed:~~

- ~~A.—The property owner shall be responsible for all costs associated with any corrective action taken by the city, including, without limitation, costs of planting, removal, or pruning and the city's administration time and expenses associated therewith. After completion of the work by the city pursuant to Section 12.12.440, the city shall mail an invoice to the property owner. The property owner shall, except as otherwise provided in this section, remit full payment to the city within 30 calendar days of the date of the city's invoice.~~
- ~~B.—Any invoice not fully paid within the 30-day calendar period referenced in the immediately preceding subsection shall be deemed delinquent and shall accrue interest at the rate of 10% per year or the maximum interest rate allowed by law, whichever is less.~~
- ~~C.—The costs payable to the city pursuant to this section may, at the director's discretion, be made in installments of no less than \$15 per month, which shall be included as a charge on the utility bills or property tax bills for the property at which the city provided services. A property owner wishing to pay the amount owed in installments pursuant to this subsection must submit a written request to the director within 15 calendar days of the date of the invoice issued by the city pursuant to this section; if a property owner fails to submit such a request within the 15-calendar-day period, the payment terms identified in subsection B shall apply. Each owner of real property who is allowed to make installment payments pursuant to this subsection shall execute a promissory note and/or other documents approved by the city to reflect: (1) the payment obligation; (2) interest at a rate equal to the local agency investment fund (LAIF) interest rate in effect on the date of execution of the promissory note and/or other documents; and (3) the city's cost to prepare and record the documents evidencing the debt owed to the city and to process such installment payments.~~

Commented [KC16]: We should discuss with the City how often this occurs and what the general response is when an invoice is sent to the private property owner. Is the property owner sent a letter by the City before any work is done, notifying them that this tree work needs to take place?

1. ~~If the director determines that installment payments shall be added to a property's utility bills, the property owner shall also execute a lien or deed of trust, in a form approved by the city, that will be recorded against the real property at which the city provided services. In determining whether the amount owed to the city will be paid through installments added to a property's utility bills, the director may require satisfactory proof that the real property will sufficiently secure payment of the amount owed to the city.~~

2. ~~If the director determines that installment payments shall be paid through an owner's property tax bills, the city will notify the Kings County tax collector of the amounts to be added to the tax roll. The amount added to each tax bill shall be the equivalent of the monthly installment rate approved by the director plus any administrative fees charged by Kings County to collect and process the payments.~~

~~§ 12.12.460 Collection of city's costs:~~

A. ~~To cause the payment of a delinquent amount, the director may pursue any remedy available to the city to enforce this code.~~

B. ~~The city may add to the owner's unpaid balance any costs incurred by the city to collect a delinquent amount.~~

~~§ 12.12.470 Collection of corrective action costs—Special assessment:~~

A. ~~To cause the payment of a delinquent amount, the director may pursue any remedy available to the city to enforce this code.~~

B. ~~The city may add to the owner's unpaid balance any costs incurred by the city to collect a delinquent amount.~~

C. ~~If a property owner fails to pay a city invoice in a timely manner, the city may, but shall not be required to, declare the delinquent amount a special assessment against the owner's property.~~

D. ~~If the city elects to declare a special assessment in accordance with subsection A, the director will cause a notice of a public hearing before the city council to be provided to the property owner in the manner specified in Section 12.12.430. The notice will specify the day, hour, and place where the city council will hear and pass upon a report of the director (the contents of which are described below), together with written objections, if any, which may be raised by the property owner.~~

E. ~~Prior to such hearing, the director shall prepare and file with the city council a report specifying the work performed by the city, the cost thereof, a description of the real~~

property upon which the offending tree, shrub, hedge, or plant was located or a description of the real property abutting the park strip in which the offending street tree, shrub, hedge, or plant was located, and the assessment proposed to be levied against the property to pay the costs incurred by the city.

F.—On the day and hour fixed for the hearing, the city council will hear and pass upon the report of the director, together with any written or oral objections which may be raised by any property owner liable for the cost of the city's corrective work. The city council may make such modifications in the report as it may deem just, after which, the report, as submitted or as modified, will be confirmed and provided to the property owner. The decision of the city council on all objections shall be final and conclusive.

G.—The hearing will serve to provide full opportunity to the person subject to the city's invoice to be heard and object. The failure of any person to appear at the hearing shall constitute a failure to exhaust administrative remedies.

H.—The city council, after confirmation of a special assessment amount, may:

- 1.—Order a notice of lien to be delivered to the county for recording against the owner's property; or
- 2.—Order the assessment amount to be submitted to the county tax assessor, who shall enter the amount thereof in the county's assessment records opposite the description of the particular property, and the amount shall be collected together with taxes assessed against the property. Thereafter, the city's assessment shall be collected at the same time and in the same manner as taxes against the property are collected and shall be subject to the same penalties and interest, and to the same foreclosure and sales rights and procedures in the event the owner fails to pay the assessment in a timely manner.

3.—**~~§ 12.12.480 Private arrangements for tree trimming or removal:~~**

- 4.—The director may, if he or she deems it to be in the public's interest, cause street trees to be pruned or removed through a private arrangement between the city and the owner of the property on which such trees are located or the owner of the property that abuts the park strip in which the trees are located. The arrangement will include terms under which the city will be reimbursed for initially paying the costs of such work on the owner's behalf.

§ 12.12.500 No interference with enforcement of this chapter.

No person shall interfere with or delay an authorized representative or contractor of the city from executing and enforcing this chapter.

§ 12.12.510 Failure to give or receive notice.

The failure to post, mail, or deliver by personal service any notice required under this chapter or the failure of any person to receive such notice shall not affect the validity of any proceedings or actions taken by the city or its officers, officials, employees, contractors, or volunteers under this chapter.

§ 12.12.530 Remedies.

The provisions of this chapter are non-exclusive and supplement any existing rights and remedies available to the city. The provisions of this chapter may be enforced by any remedies provided for in this municipal code or otherwise available in law or equity. Violations of this chapter may be prosecuted criminally, civilly, or administratively, either undertaken separately or in conjunction with other remedies, at the sole discretion of the city. Nothing in this chapter shall be deemed to prevent the city from commencing any administrative, legal, equitable, or criminal proceeding to enforce this chapter, the city's municipal code, or any law.

(Ord. 15-12 § 1, 2015)

Appendix D

Hanford City Document Review

1 City Document Review

This section reviews and highlights key documents that the city has published in regard to the health and maintenance of their urban forest, and how the UFMP addresses goals and actions within these documents.

1.1 2035 General Plan

The Hanford 2035 General Plan is the main document for the City that guides future development goals and policies and reflects the long-term vision of the community. All other city policies must be consistent with the General Plan. This section focuses on how the General Plan interacts with the urban forest and the ways that recommendations in the Hanford UFMP align with goals and actions in the General Plan.

Table 1.1: General Plan Highlights

Goal/Policy	Section	Relation to UFMP
Goal E7: A vibrant and thriving Downtown that serves as the City's main commercial center and location for community events. Goal E8: A distinct Downtown that sets Hanford apart from surrounding communities. Policy E35: Downtown Infrastructure Improvements Maintain parking, lighting, landscaping, sidewalk and other public improvements that support business activity and movement in the Downtown.	Chapter 2: Economic Development Section 2.6: Downtown	The UFMP emphasizes the importance of trees and landscaping in enhancing the visual character of Hanford's built environment, including the downtown area, where trees can both soften the appearance of large buildings and parking areas, as well as provide shade and greenery to improve the pedestrian experience, encouraging foot traffic and supporting local businesses. The UFMP recommends the City continue partnership with Mainstreet Hanford to enhance canopy cover in the downtown area of the City.
Goal L9: Distinctive neighborhoods that preserve and enhance the quality of life for residents. Policy L28: Street Trees and Landscaping Encourage all new residential developments to include shade trees along the street and install landscaping and irrigation systems that meet State requirements for low water use.	Chapter 3: Land Use & Community Design Section 3.4: Residential Land Use	The UFMP highlights the role of urban trees in helping residents adapt to extreme weather by providing shade, cooling, and stormwater management. Requiring shade trees in new developments contributes to this by reducing urban heat island effects and improving comfort in residential areas. The UFMP also provides a recommended tree list with drought-tolerant tree species which will support the City and residents in establishing green infrastructure that is compliant with low water use requirements.

Goal L38: Revitalized Arterial corridors that accommodate a mix of nonresidential and residential uses that generate activity and economic vitality and improve the visual character. Policy L145: East Lacey Boulevard Design Policies and Ordinances Policy L151: Hanford-Armona Road Public and Industrial Facilities Develop design policies and ordinances for mixed use development that provide for pedestrians and bicyclists including features such as street trees, buildings close to the street, de-emphasis of parking lots and garages, limitation of driveway cuts, traffic-calming features, clearly defined street crossings, adequate lighting, and street furnishings.	Chapter 3: Land Use & Community Design Section 3.13: Corridor Areas	The inclusion of street trees in mixed-use development directly supports the UFMP's goal of expanding and maintaining a healthy urban canopy. The UFMP recognizes the role of trees in creating inviting, shaded, and aesthetically pleasing environments.
Goal L38: Revitalized Arterial corridors that accommodate a mix of nonresidential and residential uses that generate activity and economic vitality and improve the visual character. Policy L54: Design of the Service Commercial Land Use Designation Policy L58: Design of the Highway Commercial Land Use Designation Policy L62: Design of the Neighborhood Mixed Use Land Use Designation Policy L67: Design of the Corridor Mixed Use Land Use Designation Policy L71: Design of the Downtown Mixed Use Land Use Designation Policy L78: Design of the Office Land Use Designation Require that new development projects and major site reconfigurations in the Highway/Service Commercial/ Neighborhood, Corridor and Downtown Mixed Use/ Office land use designations provide site layouts, landscaping, and screening so that the site appears	Chapter 3: Land Use & Community Design Subsection 3.1.5: Service Commercial Subsection 3.5.4: Highway Commercial Subsection 3.6.2: Neighborhood Mixed Use Subsection 3.6.2: Corridor Mixed Use Subsection 3.6.3: Downtown Mixed Use Subsection 3.7.1: Office	The UFMP emphasizes the importance of trees and landscaping in enhancing the visual character of Hanford's built environment. The UFMP encourages tree planting not just in residential areas but also in commercial corridors and downtown zones, where trees can both soften the appearance of large buildings and parking areas, as well as provide shade and greenery to improve the pedestrian experience, encouraging foot traffic and supporting local businesses.

aesthetically pleasing from the public street.		
Goal T3: City streets that meet the needs of bicyclists, pedestrians, children, motorists, persons with disabilities, the elderly, users of public transportation, and commercial goods movers. Policy T37: Shade Trees in Planter Strips Where adequate space permits, include street trees planted in planter strips between the curb and sidewalk to shade paved street surfaces.	Chapter 4: Transportation & Circulation Section 4.2: Streets and Highways Subsection 4.2.8: Planned Roadway Improvements	The new public tree inventory data collected as part of this UFMP project allows for the City to analyze the condition of existing trees and identify where tree gaps exist along streets.
Goal T3: City streets that meet the needs of bicyclists, pedestrians, children, motorists, persons with disabilities, the elderly, users of public transportation, and commercial goods movers. Policy T41: Streetscape Enhancements Strive to improve the visual character of roadway corridors by improving streetscapes with amenities such as street trees, pedestrian-scaled lighting, underground utilities, water-efficient landscaping, and streetscape furniture.	Chapter 4: Transportation & Circulation Section 4.2: Streets and Highways Subsection 4.2.9: Complete Streets Program	The new public tree inventory data collected as part of this UFMP project allows for the City to analyze the condition of existing trees and identify where tree gaps exist along streets.
Goal 02: Conservation of non-renewable energy resources and maximization of the use of renewable energy resources. Policy 016: Vegetation to Conserve Energy Encourage the use of native and drought tolerant shade trees and vines on southern and western exposure building walls as an energy conservation technique	Chapter 5: Open Space, Conservation & Recreation Section 5.3: Mineral and Energy Resources Subsection 5.3.3: Energy Conservation	The UFMP contains an appendix with arboricultural best practices for tree spacing next to structures and discusses the benefits of tree shade and energy conservation.
Goal 04: Protection of natural habitat and other biological resources. Policy 036: Nonnative Invasive Species	Chapter 5: Open Space, Conservation & Recreation Section 5.5: Biological Resources	The UFMP contains an updated recommended tree species list for staff and residents which includes climate-appropriate and drought resistant trees. The tree species list will also include a section on

Manage or eliminate nonnative invasive species from City-owned property and open space. Policy 038: Native Tree Species and Drought Tolerant Vegetation Encourage the planting of native tree species and drought-tolerant vegetation.	Subsection 5.5.1: Natural Habitat	invasive trees species that should not be planted in Hanford.
Goal 04: Protection of natural habitat and other biological resources. Policy 037: Mature Trees Promote the preservation of existing mature trees and encourage the planting of appropriate shade trees in new developments.	Chapter 5: Open Space, Conservation & Recreation Section 5.5: Biological Resources Subsection 5.5.1: Natural Habitat	As part of the UFMP process, the City's Trees and Shrubs ordinance was reviewed and recommendations were provided for updating the ordinance to better preserve existing trees and clarify responsibilities for property owners and developers.
Goal 08: The equitable distribution of parks throughout the community that are well designed, accessible, and integrated with the surrounding neighborhood. Policy 051: Provision of Parkland Acquire and develop new parks consistent with the Parks, Recreation, and Open Space Master Plan.	Chapter 5: Open Space, Conservation & Recreation Section 5.7: Parks and Recreation Subsection 5.7.1: Park Classifications	As part of the UFMP project, a planting plan was developed for 600 new trees to be planted over the next two years along streets and in parks, including the future Heroes Park.
Goal 08: The equitable distribution of parks throughout the community that are well designed, accessible, and integrated with the surrounding neighborhood. Policy 066 Park and Landscaped Area Maintenance Provide adequate staff to maintain parks and other public landscaped areas.	Chapter 5: Open Space, Conservation & Recreation Section 5.7: Parks and Recreation Subsection 5.7.6: Park Design and Maintenance	The UFMP provides an analysis and recommendations for appropriate numbers of staff to maintain trees in parks and other city-maintained spaces. It also provides an inventory and canopy cover analysis for each of the City's parks which will allow the City to prioritize limited resources for improving park canopy.
Goal H3: Reduced risk to public health and safety and disruption of social, economic, and environmental welfare resulting from natural hazards. Policy H18: Extreme Heat Emergency Plan Support the maintenance and implementation of the Kings County Extreme Heat Emergency Plan to support vulnerable populations during times of extreme heat.	Chapter 7: Health, Safety, and Noise Section 7.3: Natural Hazards Subsection 7.3.3: Extreme Heat	The City's urban forest will be crucial for mitigating future climate impacts like providing shade and cooler temperatures on extreme heat days. The UFMP provides resources on climate-appropriate tree species, and tree establishment and maintenance. The UFMP also provides recommended actions and projected costs for increasing the City's tree canopy in priority areas and identifies ways were the City can

		improve its management of the urban forest.
Goal H9: Improved health, safety, and mental well-being Policy H61: Public Amenities Consider environmental justice issues as they are related to the equitable provision of desirable public amenities such as parks, recreational facilities, and other beneficial uses that improve the quality of life. Policy H62: Public Participation Assure that all community residents have opportunities to participate in decisions that affect their environment and health and make accommodations for them to be involved in the decision-making processes.	Chapter 7: Health, Safety, and Noise Section 7.6: Public Health and Fitness Subsection 7.6.2: Environmental Justice	The tree canopy goals within the UFMP are based on analysis of where current canopy is lacking within the City, and prioritizes tree planting efforts to increase canopy in those areas. Community engagement and public participation was a key component of the UFMP process and involved multiple opportunities for the public to voice their opinions, concerns, and desires including an online public survey, City UFMP webpage with email contact information, a Working Group with participation form the public, and a public review period for the draft UFMP.
Goal H9: Improved health, safety, and mental well-being Policy H65: Comfortable Walking and Biking Environments Provide comfortable environments and destinations for walking and bicycling to integrate physical activity into daily routines.	Chapter 7: Health, Safety, and Noise Section 7.6: Public Health and Fitness Subsection 7.6.3: Relationship of Health to Land Use Patterns and Parks Access.	Trees play a crucial role in reducing high temperatures along sidewalks and pathways during the summer months, encouraging the community to use more non-vehicle forms of transportation. The UFMP includes recommended actions for identifying new opportunities to establish trees along planned future pathway improvements associated with the California high-speed rail station.

1.2 Parks and Recreation Master Plan 2020

The purpose of the City of Hanford's Parks and Recreation Master Plan is "to provide a roadmap for future development of recreational facilities and opportunities for the City over the next 10 years, consistent with the General Plan 2035 requirements." The plan is based on recognized park planning principles and standards, and reflects input from residents and stakeholders in Hanford, City staff, the Parks and Recreation Commission and City Council. Parks and open spaces within a City often contribute greatly to a city's overall canopy cover. In addition, they provide areas for green space, recreation, and wildlife habitat, and improve mental and physical health benefits for the community. It is important that City's parks, and trees within them, are well managed so that their benefits can be maximized for the public.

Table 1.2: Parks and Recreation Master Plan Highlights

Goal/Policy	Section	Relation to UFMP
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Investing in the Existing parks System: Continue to focus on reinvesting in, and maintaining existing parks. Resolution of the future of the 18 acres of vacant land adjacent to Hidden Valley Park.	Sec 1.4.2 Community Input Key Findings	The UFMP provides an analysis of what improvements can be made to the City's urban forestry program including establishment and maintenance of trees in City parks. It also includes an updated tree species list with drought tolerant, climate appropriate trees that should require less maintenance than some current City trees.
Trails and Connectivity: Desire for a connected, accessible recreational trail system that also supports active transportation initiatives.	Sec 1.4.2 Community Input Key Findings	The UFMP contains recommended actions for enhancing potential future pedestrian and bike trails with tree canopy as part of the California high-speed rail station and related projects.
Funding the Parks and Recreation System Creative and multiple funding strategies are required to meet the needs of the community.	Sec 1.4.2 Community Input Key Findings	The UFMP includes an appendix with potential funding sources for projects that increase tree canopy in Parks and other public spaces.
Current System Inventory and Level of Service (LOS): If the City achieves the 2035 General Plan's stated goal (of 3.5 parkland acres per 1,000 residents), the overall LOS for the City of Hanford's park system will be 4.57 acres per 1,000 population, which would be slightly below the current LOS of 5.06 acres per 1,000 population.	Sec 1.4.4 Level of Service and Facility Analysis	While the City is currently achieving there parkland acreage per 1000 residents' goal, the UFMP includes an appendix with a tree planting plan for the new Heroes Park, and other parks and public spaces in the City which will include 600 tree plantings over late 2025 and late 2026.
Key Unmet Facility Needs: Walking and biking trails to improve connectivity. Reservable covered picnic areas. Shaded playgrounds. Neighborhood/School parks. Community parks	Sec 1.4.4 Level of Service and Facility Analysis	The UFMP contains recommended actions for enhancing future pedestrian trails and bike paths with additional tree canopy using climate appropriate tree species. The UFMP also identifies tree planting opportunities adjacent to schools and recommends partnering with school administrators on grant funding for tree planting on school properties.

2 References

City of Hanford. Hanford 2035 General Plan. 2017. Accessed June 14, 2025.

<https://www.cityofhanfordca.com/DocumentCenter/View/383/2035-General-Plan-Policy-Documents-PDF>

City of Hanford. Parks and Recreation Master Plan 2020. Accessed June 14, 2025.

<https://www.cityofhanfordca.com/DocumentCenter/View/745/2020-Hanford-Parks-Master-Plan-PDF>

Appendix E

Community Engagement Results

Community Engagement

Community outreach was a key step in the development process of the UFMP to understand and amplify the voices of Hanford’s community. Kicking off in spring 2025, residents and businesses were engaged in outreach efforts that included the following activities and educational materials:

- An online, tree-related community survey (69 responses total)
- Tabling at community events including one Easter egg hunt event and two Thursday Night markets in Civic Park with educational posters describing tree benefits, desired future tree planting locations, tree ordinance information, and a QR code linking to the tree survey.
- Hanford’s UFMP webpage (<https://www.cityofhanfordca.com/1594/Urban-Forest-Management-Plan>), detailing project updates, public meeting and UFMP review notifications, and other community resources.
- Social media outreach through the City of Hanford channels (Instagram, Facebook, and NextDoor).
- An Urban Forest Informational Open House hosted in November 2025 to inform attendees on the status of Urban Forest Management Plan, tree inventory and canopy cover analysis results, and to gather general feedback on the recommended updates to the Trees and Shrubs Ordinance and Hanford’s UFMP Strategic Plan (XX attendees).
- A Working Group made up of various local organizations and community members who helped craft the vision statement, and guiding principles for the Strategic Plan (3 meetings, 12 members)

Summary of Stakeholder Input

Online Surveys

An online survey was created to identify the public’s perception and understanding of the City’s trees, and to offer a space for public feedback on the City’s Trees and Shrubs Ordinance (Ch 12.12). The 22-question survey was open between April 1, 2025 and July 31, 2025, and was distributed through various City social media outlets, local newspapers, and Thursday Night markets. The survey had a total of 69 respondents, which is a fairly low level of participation. Of the combined 69 respondents, XX% live in Hanford, XX% work in Hanford, and 8% go to school in Hanford (**Table C-1**). **Table C-2** highlights other relevant survey respondent demographics, and how they compare to City data from the US Census Bureau. The survey responses only reflect the opinions of small porion of Hanford’s residents. During the implementation phase of the UFMP, it will be important to continue to outreach to City residents to ensure that diverse prospectives are heard and valued. **The full survey response results can be found at the end of this Appendix.**

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

Response	Percent of Respondents
Live in Hanford	84%
Work in Hanford	36%
Go to school in Hanford	7%

Source: Hanford UFMP Community Survey 2025

Table C-2. Demographics of Survey Respondents Compared to Demographics of the City of Hanford

Category	Demographics of Survey Respondents		U.S. Census Demographics of City of Hanford 2023	
Age	65 or older	19%	65 or older	13%
Age	Between 18 and 65	77%	Between 18 and 65	58%
Age	Under 18	3%	Under 18	29%
Housing Status	Homeowner	70%	Homeowner	62%
Education	Bachelor's degree or higher	52%	Bachelor's degree or higher	24%

Source: [U.S Census Bureau 2023](#)

Survey Results Limitations and Need for Ongoing Community Engagement

The community survey conducted as part of this UFMP process offers a glimpse into how residents perceive and engage with Hanford's urban forest and related ordinances. It's important to acknowledge that the number of respondents (69) was a small fraction of the City's total population of 60,000 people. This means the survey doesn't reflect a statistically representative cross-section of the community. Instead, it likely reflects the views of individuals who are already interested or invested in urban forestry issues. Their feedback, while not comprehensive, is still valuable as it highlights the concerns and priorities of engaged residents who took the time to share their thoughts.

Rather than drawing broad conclusions, the survey results can be used to identify recurring themes and areas of interest. These included concerns about tree maintenance responsibilities, desires for more trees and shade in public spaces, and interest in educational resources for tree care. Such patterns can help guide future outreach and planning efforts, especially when paired with other data sources like canopy coverage maps or neighborhood demographics.

Ultimately, the survey serves as a starting point. It underscores the need for ongoing and deeper engagement using more inclusive outreach strategies to ensure that future efforts reflect the diversity of Hanford's residents and their viewpoints. At the same time, it provides a foundation of community input that can inform early steps in urban forest planning and help shape conversations moving forward.

Urban Forest In-Person Public Engagement

Dudek tabled at three separate in-person events including an Easter Egg Hunt in Civic Park on April 18, 2025, and two Thursday Night Markets in Civic Park on May 1, 2025 and June 12, 2025. The Project Team had a table with information on poster boards that introduced residents and other attendees to the UFMP and the City's Trees and Shrubs Ordinance, encouraged participation in the online community survey, asked which areas around the City could use more trees, asked what people's favorite benefit was from trees, and created a venue for residents to voice their opinions and perceptions about the City's urban forest. The combined attendance from the three in-person outreach is estimated to be over 100 individuals who stopped by the tables and/or participated in one of the poster board activities. The poster board responses were digitized and are detailed in **Table C-3** and **Figures C-1a-c**.

Table C-3. Urban Forest Engagement Responses to Poster 1 - What Do You Love Most About Trees?

Poster 1: What Do You Love Most About Trees?	04/18/25 Easter Egg Event	05-01-2025 Thursday Night Market	06-12-2025 Thursday Night Market	Total Votes	% of all Votes
Cleaner Air	8	4	14	26	32%
Shade	11	1	9	21	26%
Energy Savings	3	0	4	7	9%
Beauty	2	1	6	9	11%
Wildlife Habitat	2	0	2	4	5%
Food	1	0	2	3	4%
Healthier Communities	1	2	4	7	9%
Stormwater Mitigation	0	1	3	4	5%
Connecting with Neighbors	0	0	1	1	1%
			Total Votes	82	

Table C-4. Urban Forest Engagement Responses to Poster 2 - Where do We Need More Trees?

Poster 2: Where Do We Need More Trees?	04/18/25 Easter Egg Event	05-01-2025 Thursday Night Market	06-12-2025 Thursday Night Market	Total Votes	% of all Votes
Parks	5	1	10	16	22%
Schools	12	1	2	15	20%
Parking Lots	5	0	5	10	14%
Sidewalks	6	0	4	10	14%
Front and Back Yards	5	0	3	8	11%
Transit Stops	4	0	1	5	7%
Apartment Communities	0	0	6	6	8%
Retail Areas	3	0	1	4	5%
			Total Votes	74	

Figures C-1a - c. Poster Boards and Table at the In-Person Community Engagement Events



Urban Forest Open House (To be completed after open house event)

Working Group

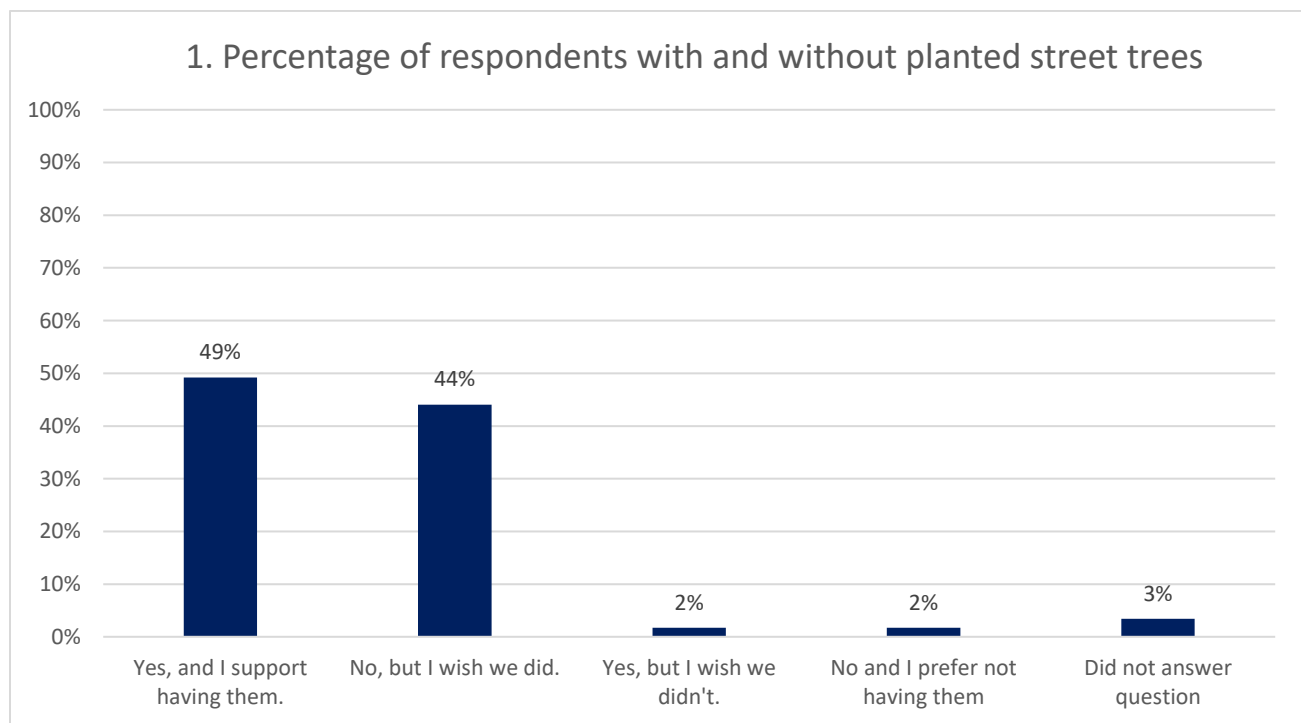
The consultant team formed a working group of various community stakeholders (**Table C-5**) that met three times during the plan development process. The three meetings provided an opportunity for the consultant team to relay key findings to the working group, get feedback on the draft plan, and discuss and prioritize strategies and actions for addressing current issues and achieving Hanford's future urban forestry goals. The result was the creation of the UFMP's vision statement, guiding principles, and the strategic, implementation and monitoring plans.

Table C-5. Hanford's Working Group Participants

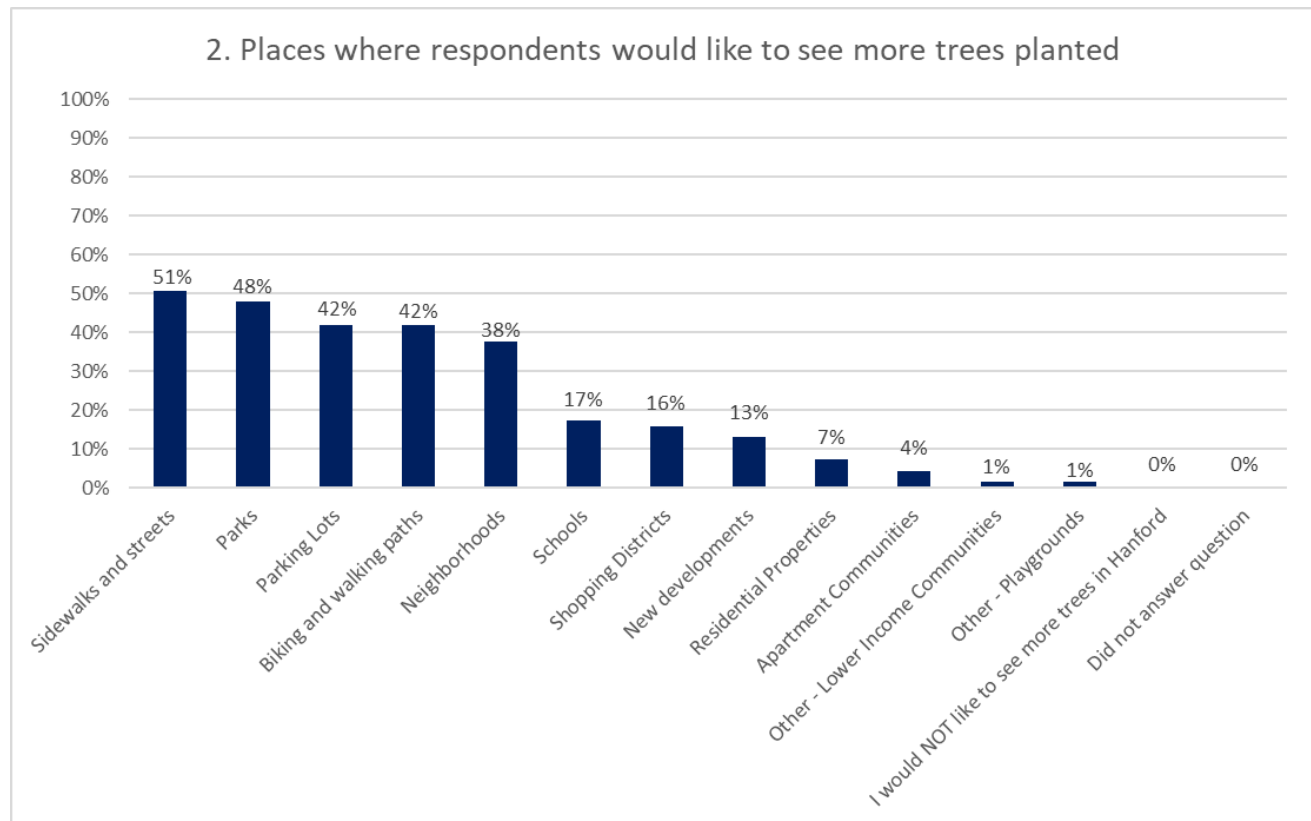
Participant	Organization/Affiliation
Bradley Albert	City of Hanford
Brian Johnson	City of Hanford
Kevin Cullinen	Dudek
Kanami Otani	Dudek
Joe Castaneda	Hanford Parks and Recreation Commission
Victor Rosa	Hanford Joint Union High School District
Daniel Pierotte	Hanford Elementary School District
Todd Barlow	Kings County Office of Education
Jeff Garner	Kings County Action Organization
Marilyn Castaneda	King's Partnership
Carson DeBlieck	Resident
Greg Mendonsa	Urban Tree Foundation

CITY OF HANFORD –UFMP SURVEY RESULTS 08-05-2025 (69 TOTAL RESPONDENTS)

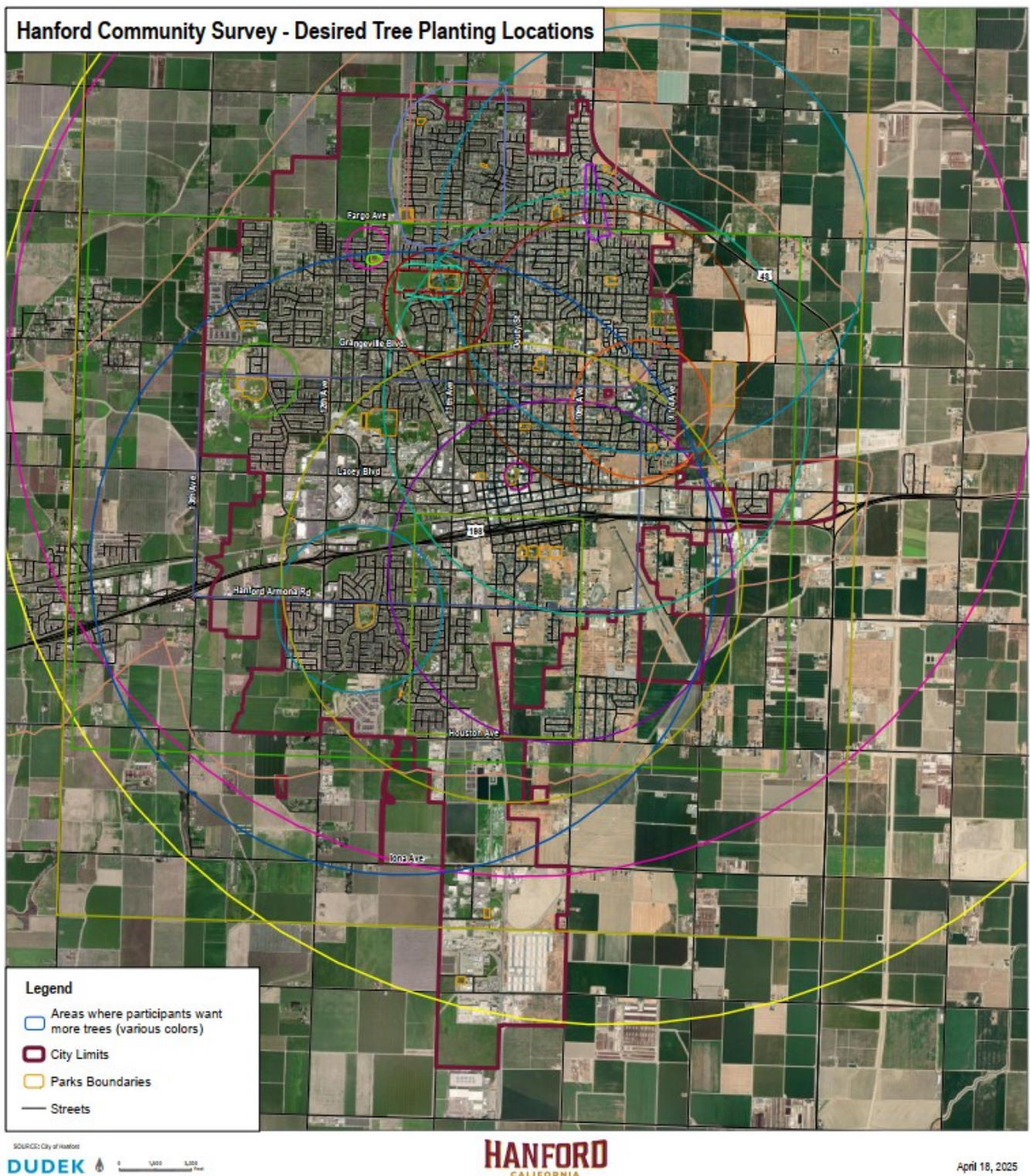
1. Does your neighborhood have planted street trees (street trees- any tree that is planted in the public right-of-way near and along the roadways which shade sidewalks and grow over the road)?		
Feelings on Planted City Trees Category:	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Yes, and I support having them.	32	46%
No, but I wish we did.	33	48%
Yes, but I wish we didn't.	1	1%
No and I prefer not having them	1	1%
Did not answer question	2	3%



2. Where would you like to see more trees planted in Hanford?		
Where respondents would like trees planted category (full description):	Number of survey respondents who selected this option:	Percentage of respondents who selected this option out of total participants
Sidewalks and streets	35	51%
Parks	33	48%
Parking Lots	29	42%
Biking and walking paths	29	42%
Neighborhoods	26	38%
Schools	12	17%
Shopping Districts	11	16%
New developments	9	13%
Residential Properties	5	7%
Apartment Communities	3	4%
Other - Lower Income Communities	1	1%
Other - Playgrounds	1	1%
I would NOT like to see more trees in Hanford	0	0%
Did not answer question	0	0%

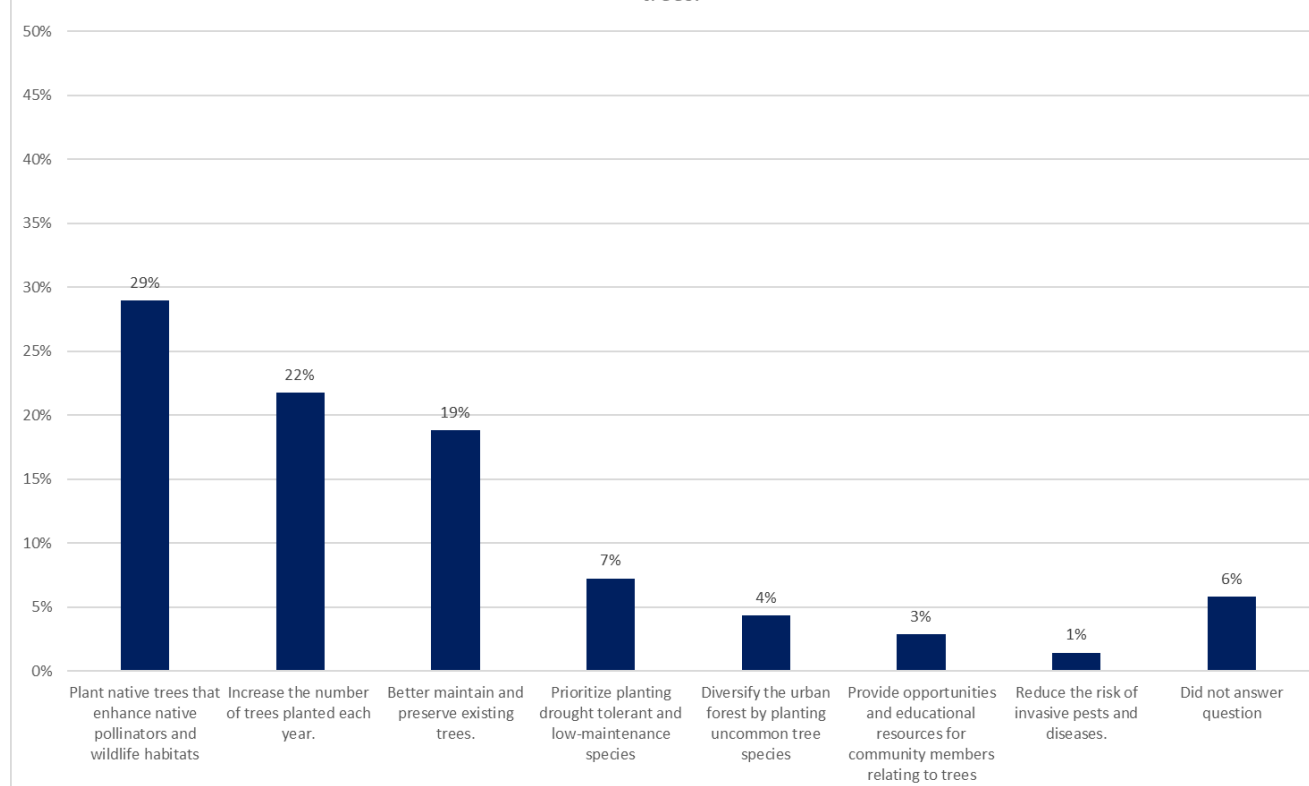


3. Where should the City of Hanford plant more trees?

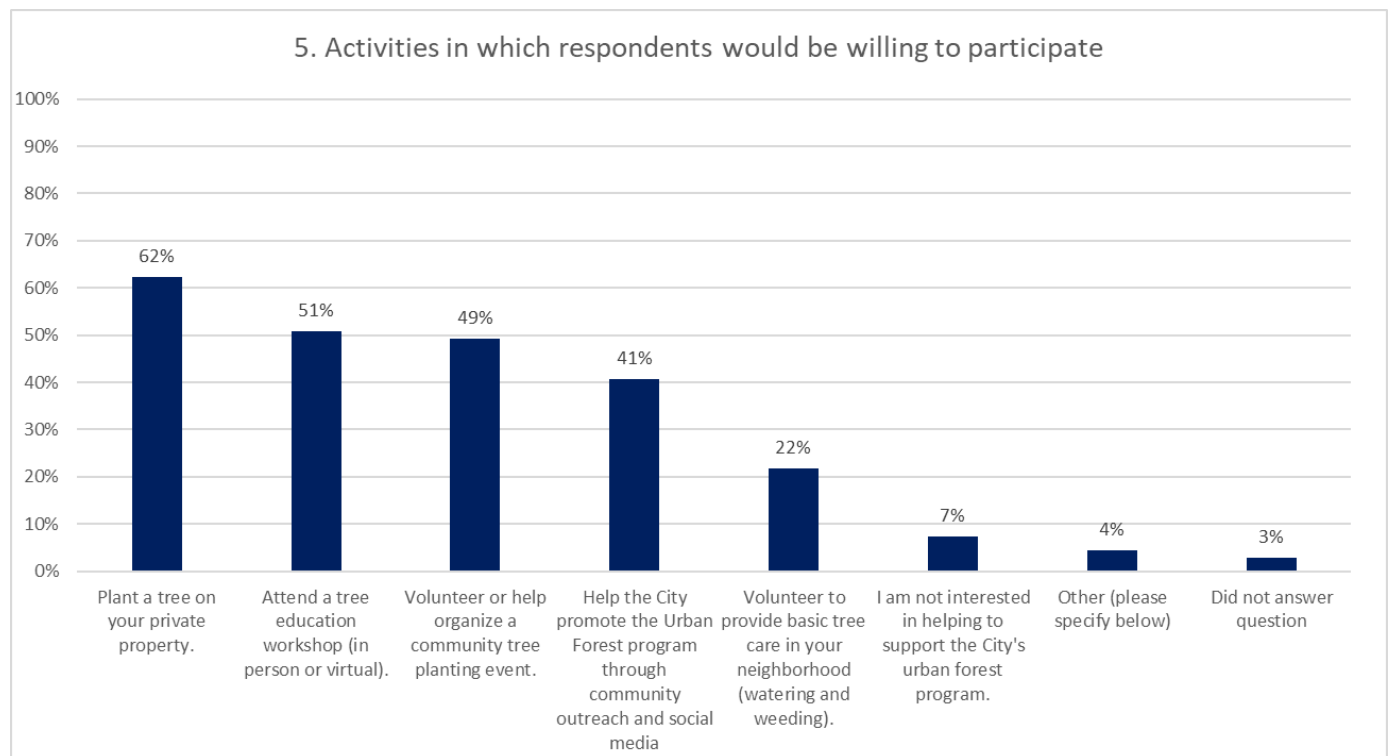


4. Rank the City's management of trees in Hanford from highest priority (number 1) to lowest priority (number 7).

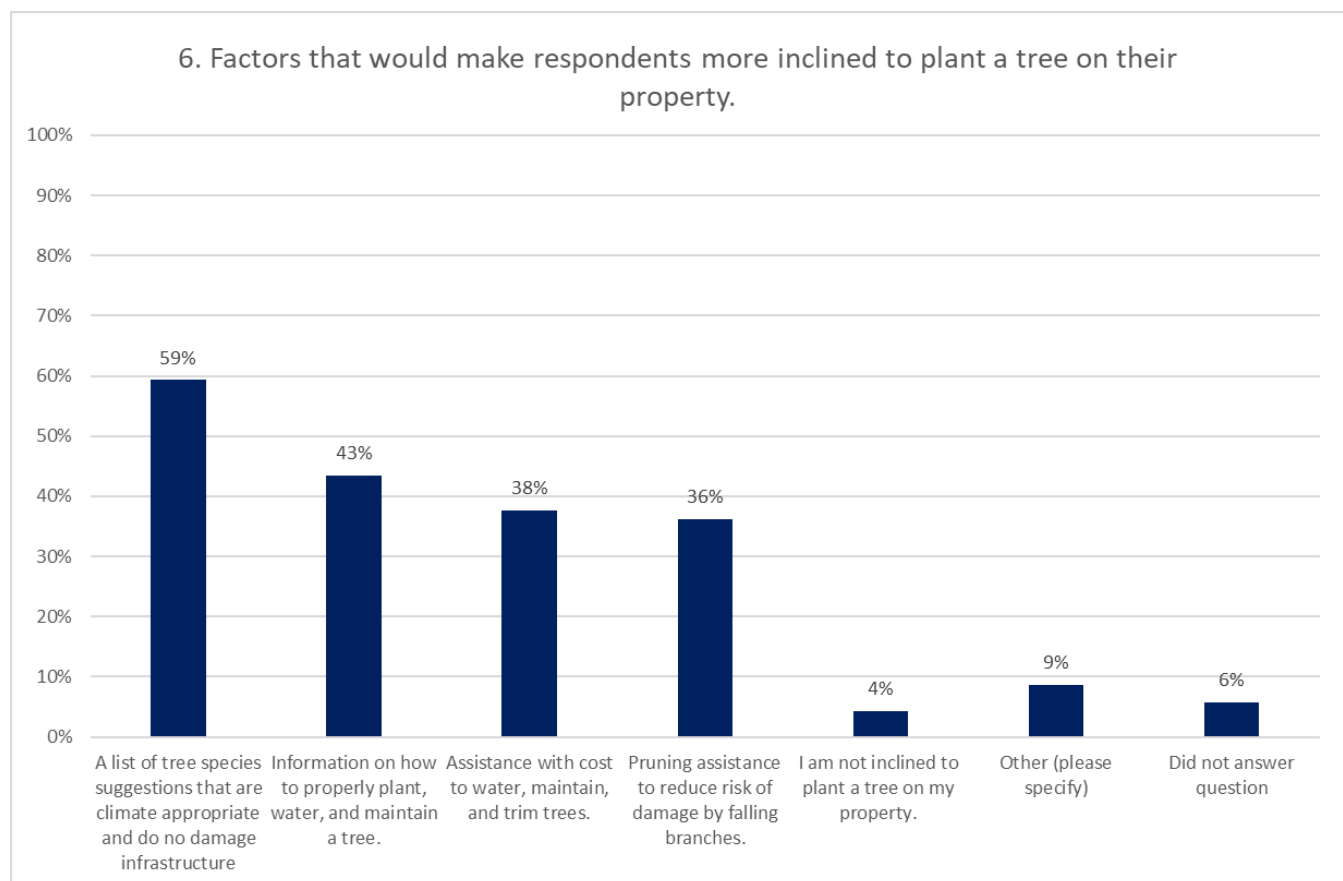
Preferences for City Priorities in UFMP (full description):	Number of survey respondents who selected the following UFMP Prioritization category as #1 choice:	Percentage of respondents who selected this option out of total participants
Plant native trees that enhance native pollinators and wildlife habitats	20	29%
Increase the number of trees planted each year.	15	22%
Better maintain and preserve existing trees.	13	19%
Prioritize planting drought tolerant and low-maintenance species	5	7%
Diversify the urban forest by planting uncommon tree species	3	4%
Provide opportunities and educational resources for community members relating to trees	2	3%
Reduce the risk of invasive pests and diseases.	1	1%
Did not answer question	4	6%

4. Top choice that Respondents want for the City to prioritize for the management of Hanford's trees.


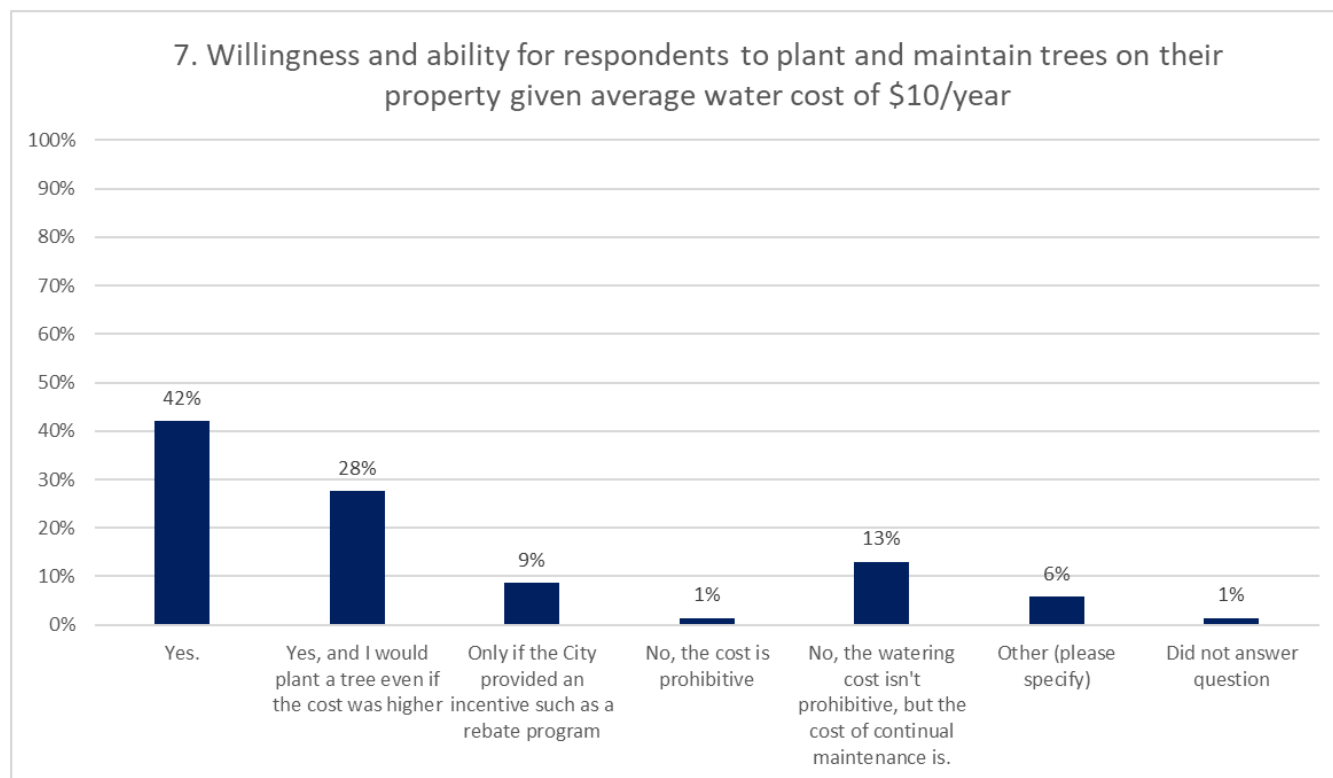
5. Which of the following activities would you be willing to participate in?		
Activities that respondents would do Category (full description):	Number of survey respondents who selected this option:	Percentage of respondents who selected this option out of total participants
Plant a tree on your private property.	43	62%
Attend a tree education workshop (in person or virtual).	35	51%
Volunteer or help organize a community tree planting event.	34	49%
Help the City promote the Urban Forest program through community outreach and social media	28	41%
Volunteer to provide basic tree care in your neighborhood (watering and weeding).	15	22%
I am not interested in helping to support the City's urban forest program.	5	7%
Other (please specify below)	3	4%
Did not answer question	2	3%



6. What factors would make you more inclined to plant a tree on your property?		
Factors that would make respondents more inclined to plant a tree on their property Category (full description):	Number of survey respondents who selected this option:	Percentage of respondents who selected this option out of total participants
A list of tree species suggestions that are climate appropriate and do no damage infrastructure	41	59%
Information on how to properly plant, water, and maintain a tree.	30	43%
Assistance with cost to water, maintain, and trim trees.	26	38%
Pruning assistance to reduce risk of damage by falling branches.	25	36%
I am not inclined to plant a tree on my property.	3	4%
Other (please specify)	6	9%
Did not answer question	4	6%

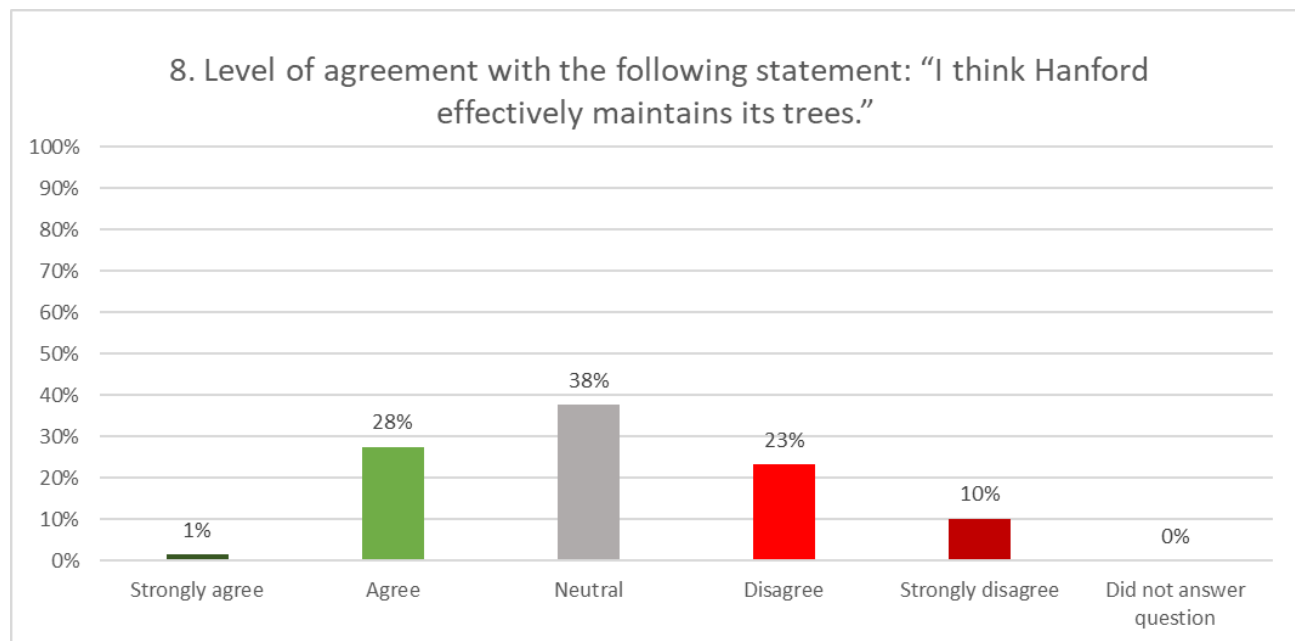


7. It typically costs under \$10 a year to water a newly planted tree. Does this information make it more likely that you would plant a tree on your property?		
Feelings on Planted City Trees Category (full description):	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Yes.	29	42%
Yes, and I would plant a tree even if the cost was higher	19	28%
Only if the City provided an incentive such as a rebate program	6	9%
No, the cost is prohibitive	1	1%
No, the watering cost isn't prohibitive, but the cost of continual maintenance is.	9	13%
Other (please specify)	4	6%
Did not answer question	1	1%



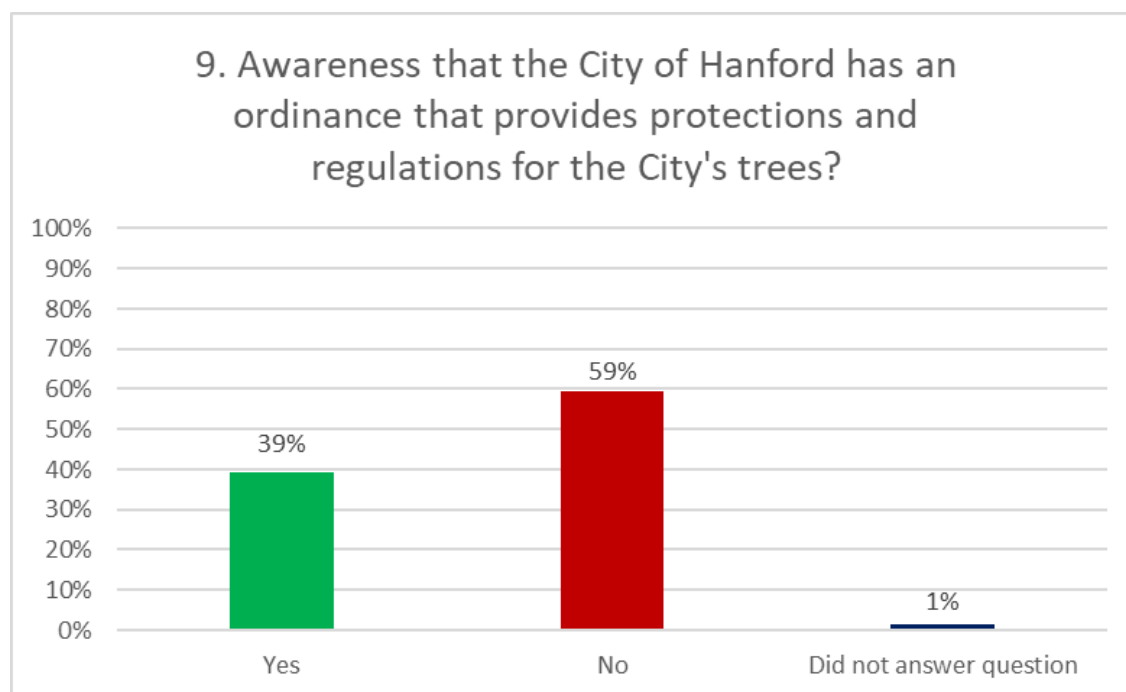
8. Please select your level of agreement with the following statement: "I think Hanford effectively protects its trees."

Level of agreement on statement: "Hanford effectively protects its trees" Category:	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Strongly agree	1	1%
Agree	19	28%
Neutral	26	38%
Disagree	16	23%
Strongly disagree	7	10%
Did not answer question	0	0%



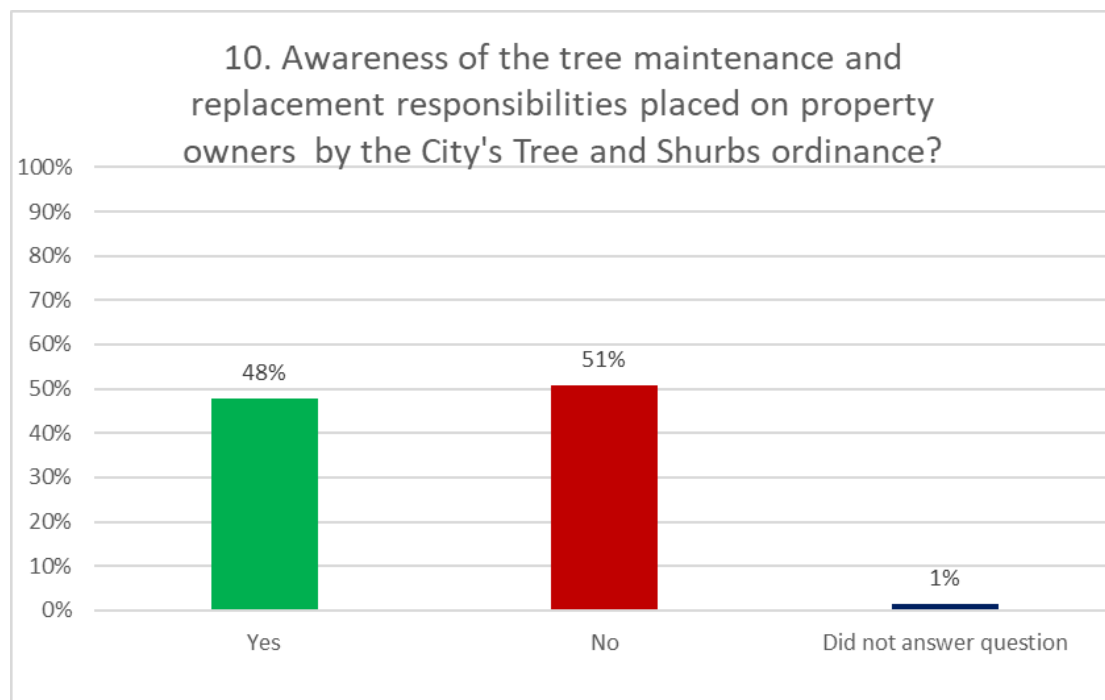
9. Before taking this survey, I was aware that Hanford has an ordinance that provides protections and regulations for the City's street trees.

Awareness that the City of Hanford has an ordinance that provides protections and regulations for the City's trees?	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Yes	27	39%
No	41	59%
Did not answer question	1	1%

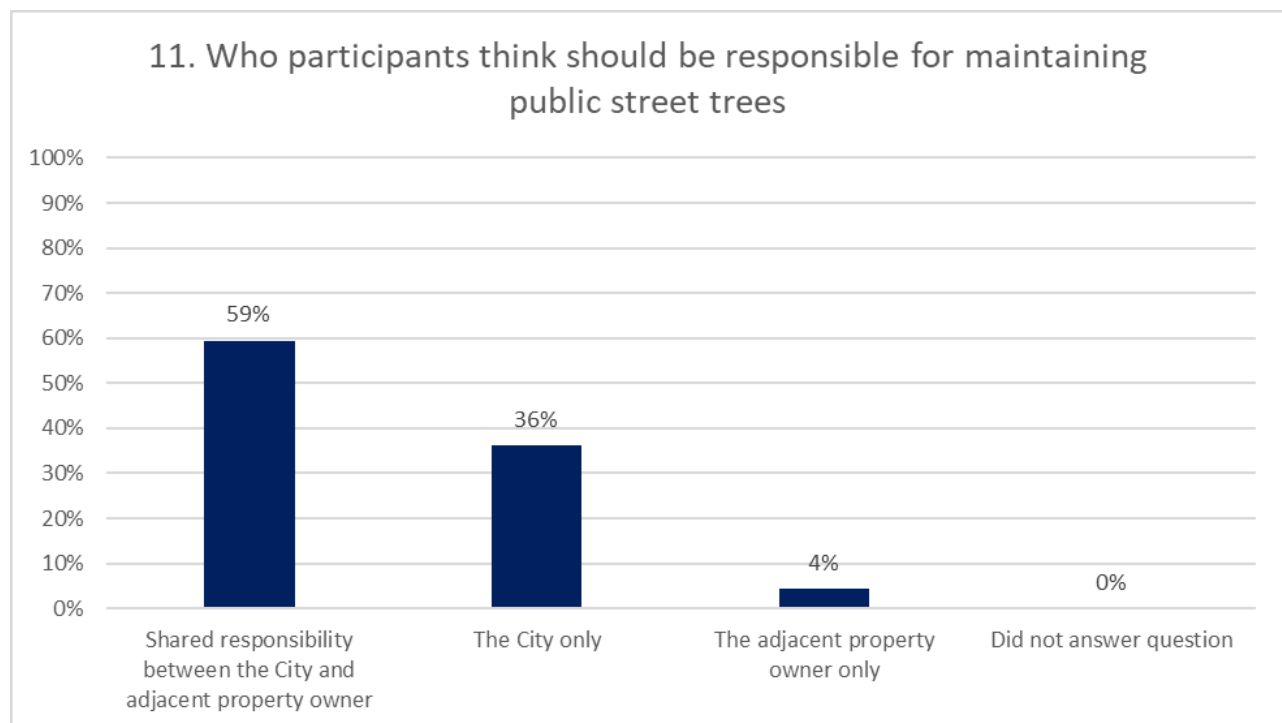


10. Before taking this survey, I was aware that property owners who have a public street tree or shrub in front of their property are responsible for watering, pruning, maintaining, and replacing those public street trees and are liable for all damages and/or injuries caused by their failure to maintain those street trees and shrubs.

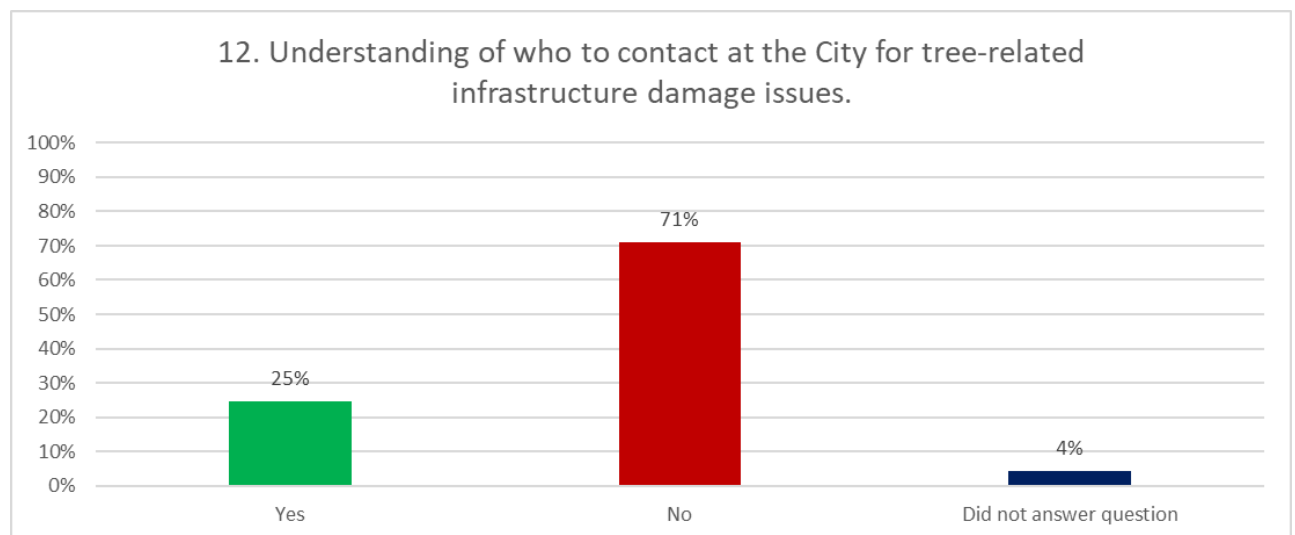
Awareness of the tree maintenance and replacement responsibilities placed on property owners who have a public street tree adjacent to their property by the City's Tree and Shrubs ordinance?	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Yes	33	48%
No	35	51%
Did not answer question	1	1%



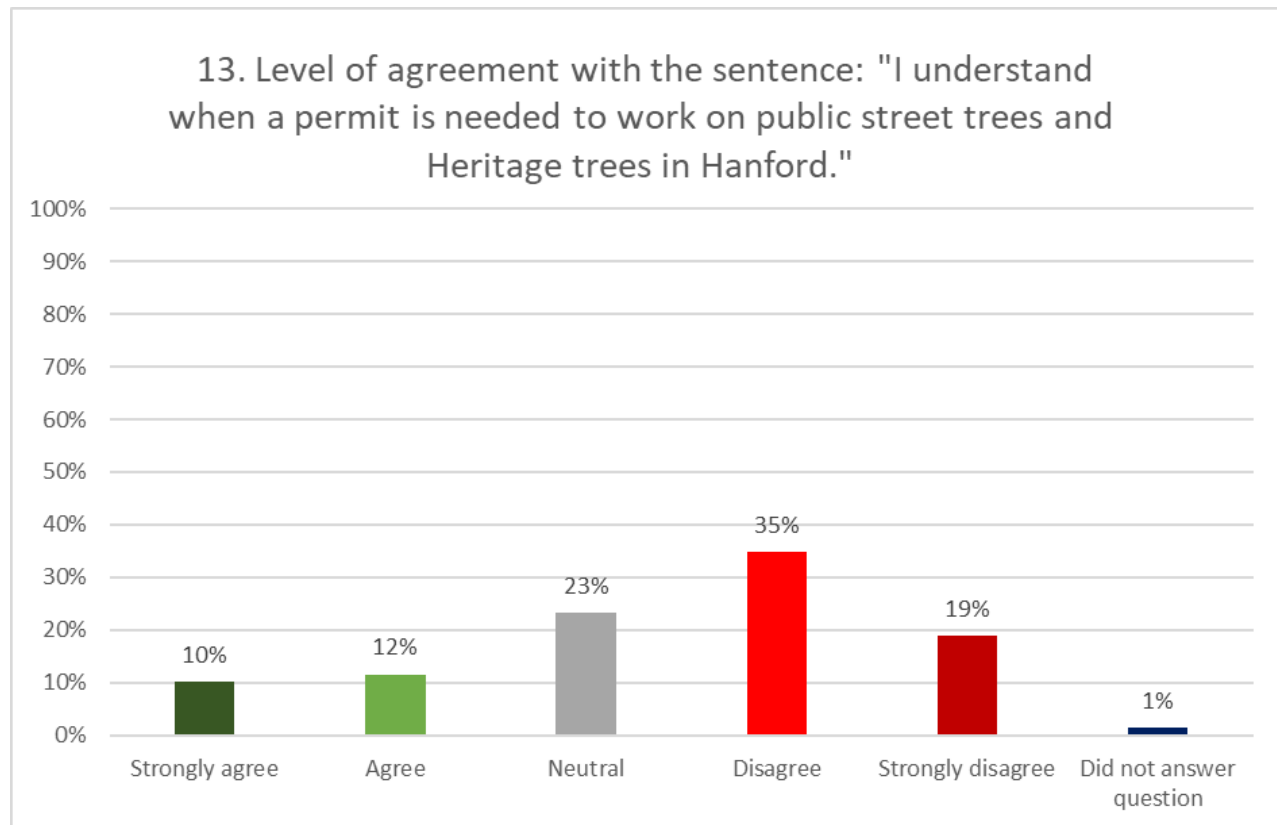
11. Who do you think should be responsible for maintaining public street trees?		
Who participants think should be responsible for maintaining public street trees (full description):	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Shared responsibility between the City and adjacent property owner	41	59%
The City only	25	36%
The adjacent property owner only	3	4%
Did not answer question	0	0%



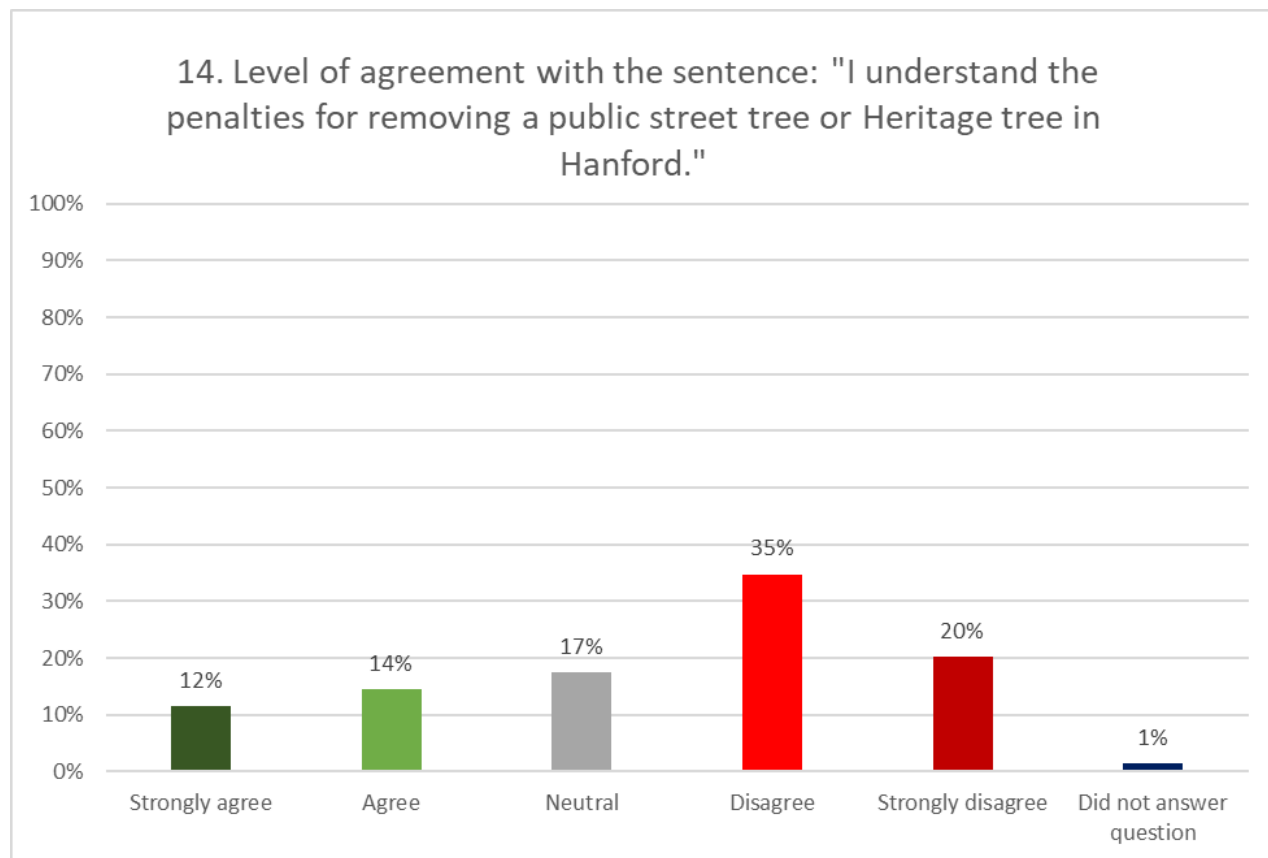
12. I understand who to contact at the City if a street tree adjacent to my property is damaging a sidewalk, driveway, etc.?		
Understanding of who to contact at the City for tree-related infrastructure damage issues.	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Yes	17	25%
No	49	71%
Did not answer question	3	4%



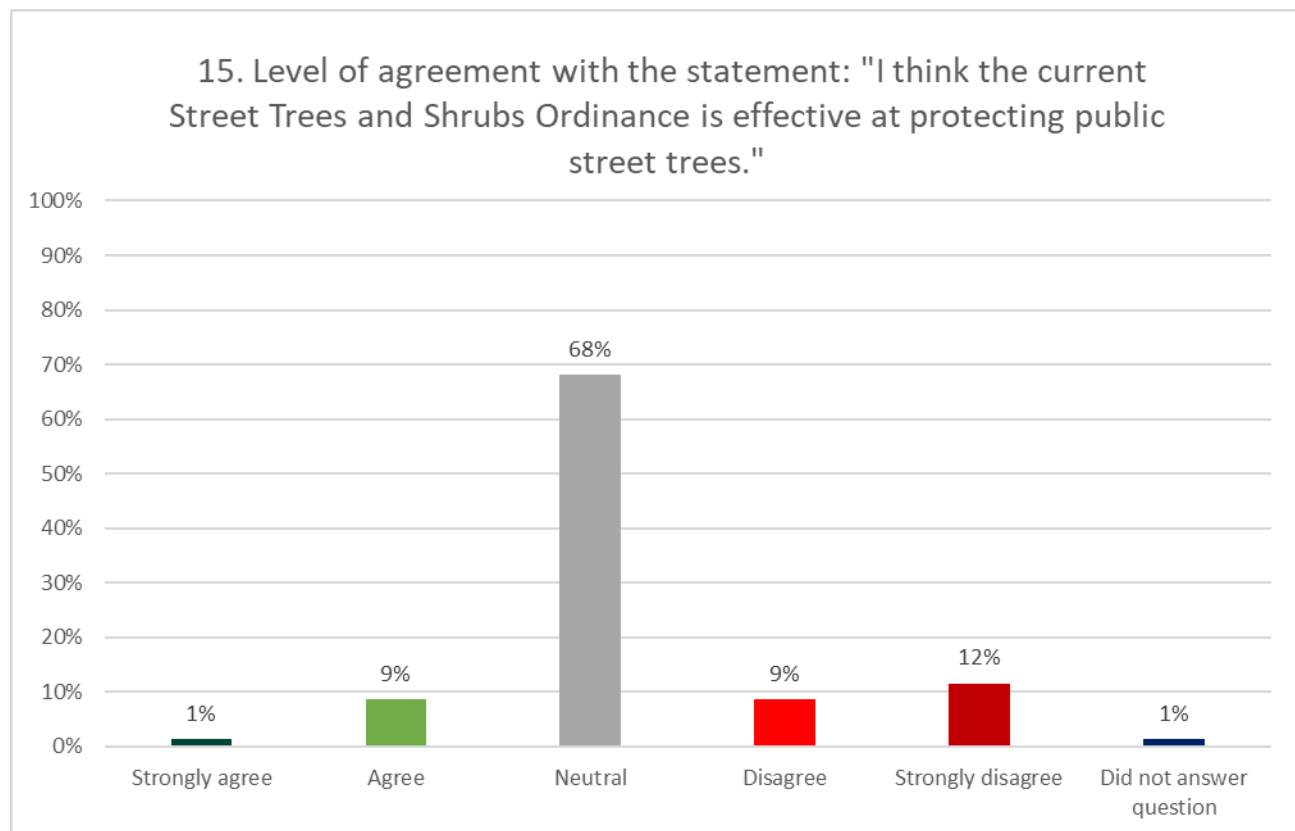
13. I understand when a permit is needed to work on public street trees and Heritage trees.		
Level of agreement with the sentence: "I understand when a permit is needed to work on public street trees and Heritage trees."	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Strongly agree	7	10%
Agree	8	12%
Neutral	16	23%
Disagree	24	35%
Strongly disagree	13	19%
Did not answer question	1	1%



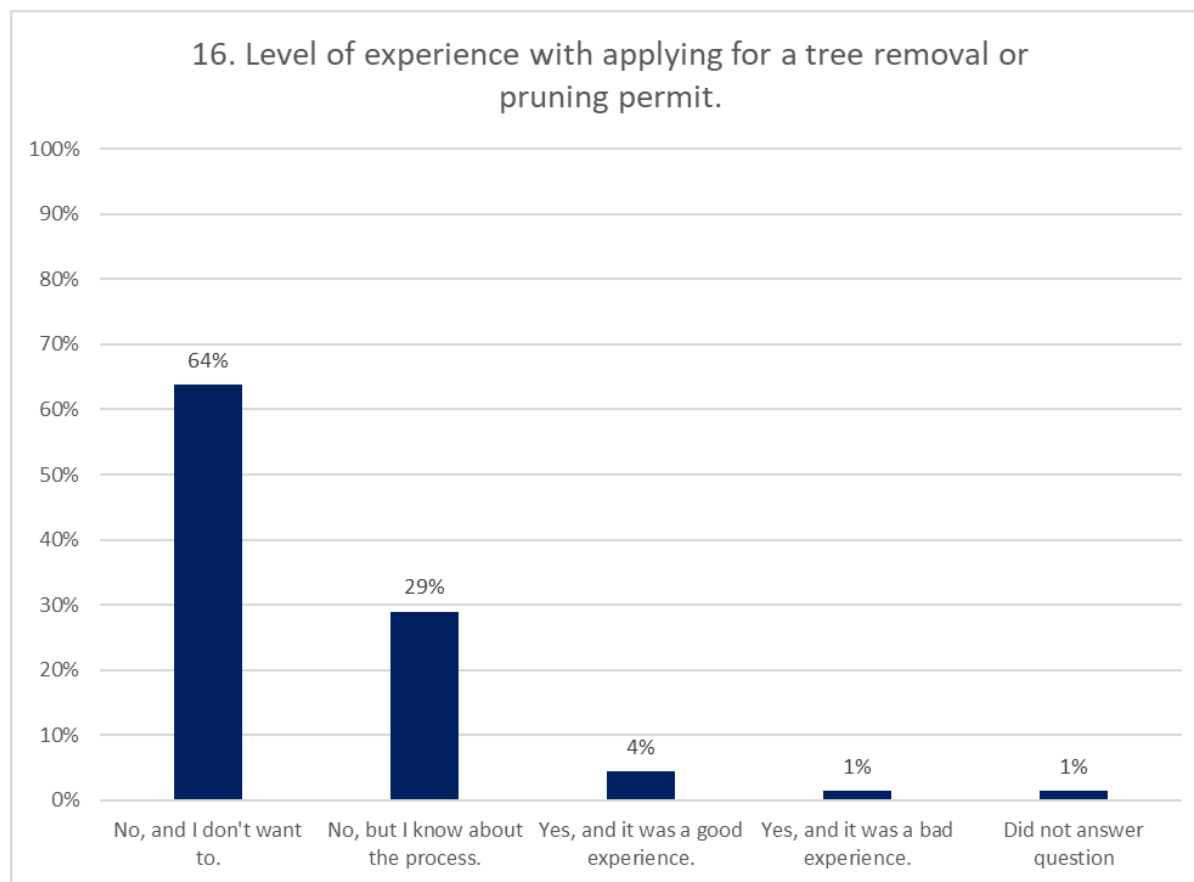
14. I understand the penalties for removing a public street tree or Heritage tree.		
Level of agreement with the sentence: "I understand the penalties for removing a public street tree or Heritage tree in Hanford"	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Strongly agree	8	12%
Agree	10	14%
Neutral	12	17%
Disagree	24	35%
Strongly disagree	14	20%
Did not answer question	1	1%



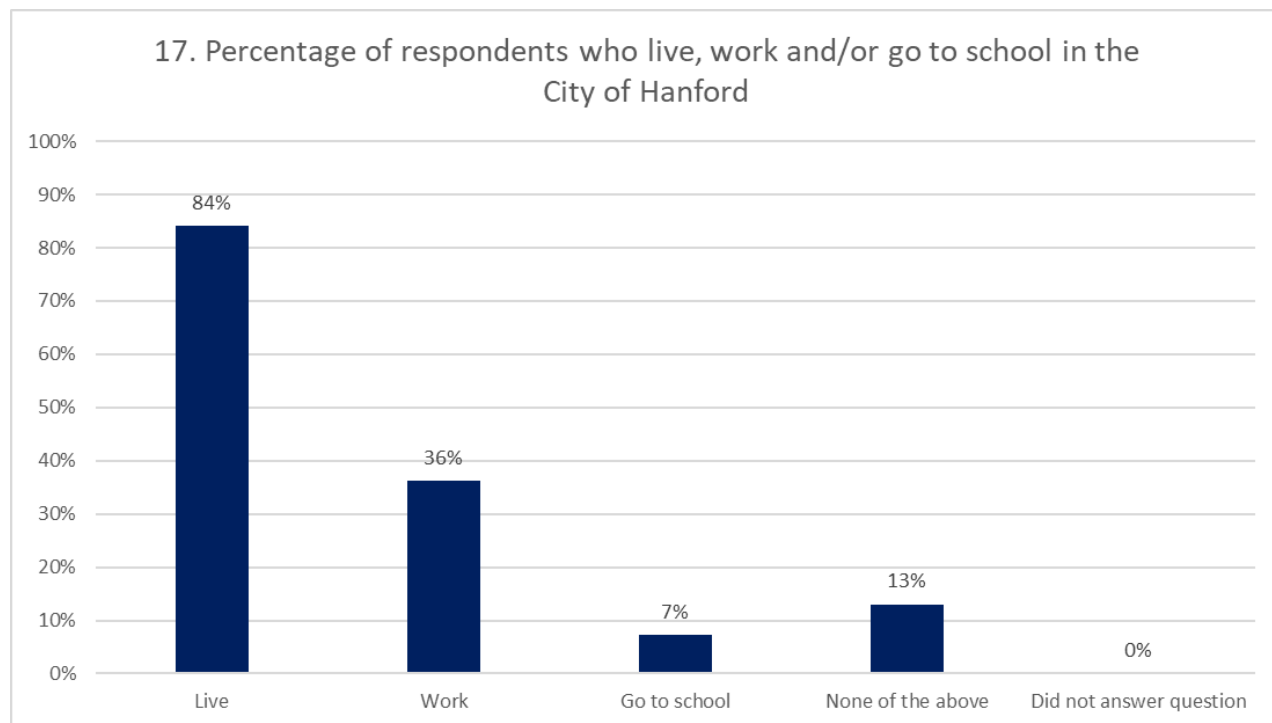
15. I think the current Street Trees and Shrubs Ordinance is effective at protecting public street trees.		
Level of agreement with the statement: "I think the current Street Trees and Shrubs Ordinance is effective at protecting public street trees"	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Strongly agree	1	1%
Agree	6	9%
Neutral	47	68%
Disagree	6	9%
Strongly disagree	8	12%
Did not answer question	1	1%



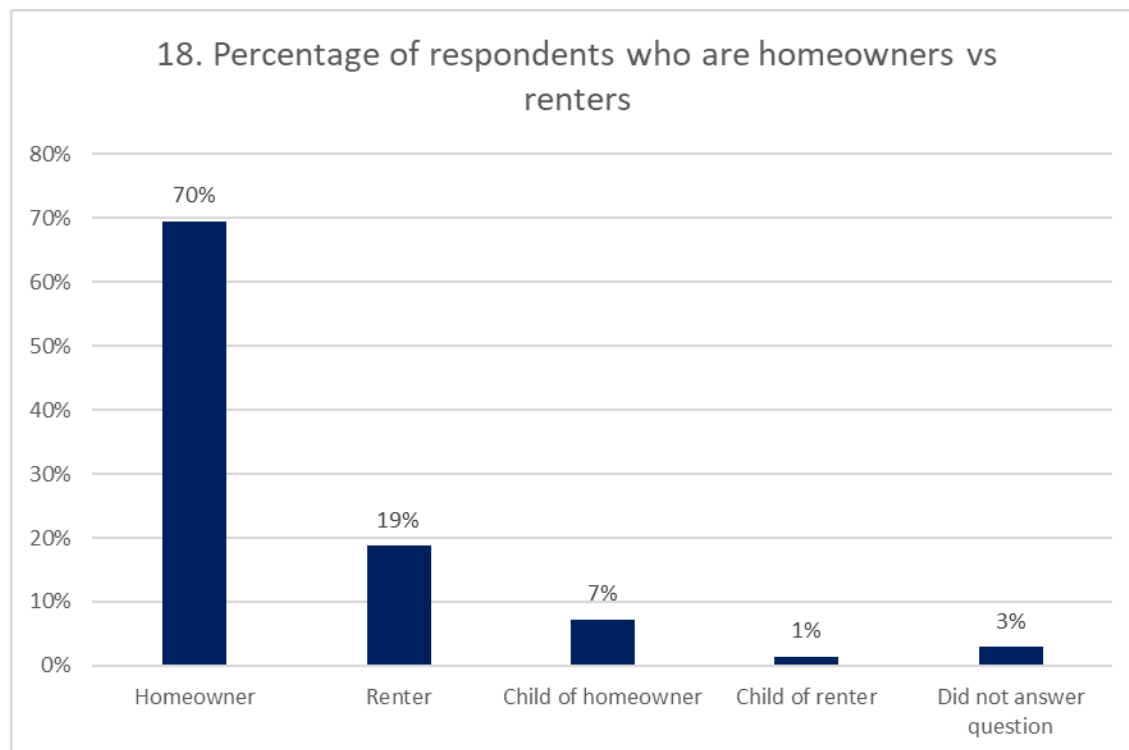
16. Have you had experience applying for a permit to remove or replace a public street tree or Heritage tree?		
Level of experience with applying for a tree removal permit.	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
No, and I don't want to.	44	64%
No, but I know about the process.	20	29%
Yes, and it was a good experience.	3	4%
Yes, and it was a bad experience.	1	1%
Did not answer question	1	1%



17. Do you live or work or go to school in the City of Hanford?		
Do you live, work, and/or go to school in City of Hanford Category:	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Live	58	84%
Work	25	36%
Go to school	5	7%
None of the above	9	13%
Did not answer question	0	0%

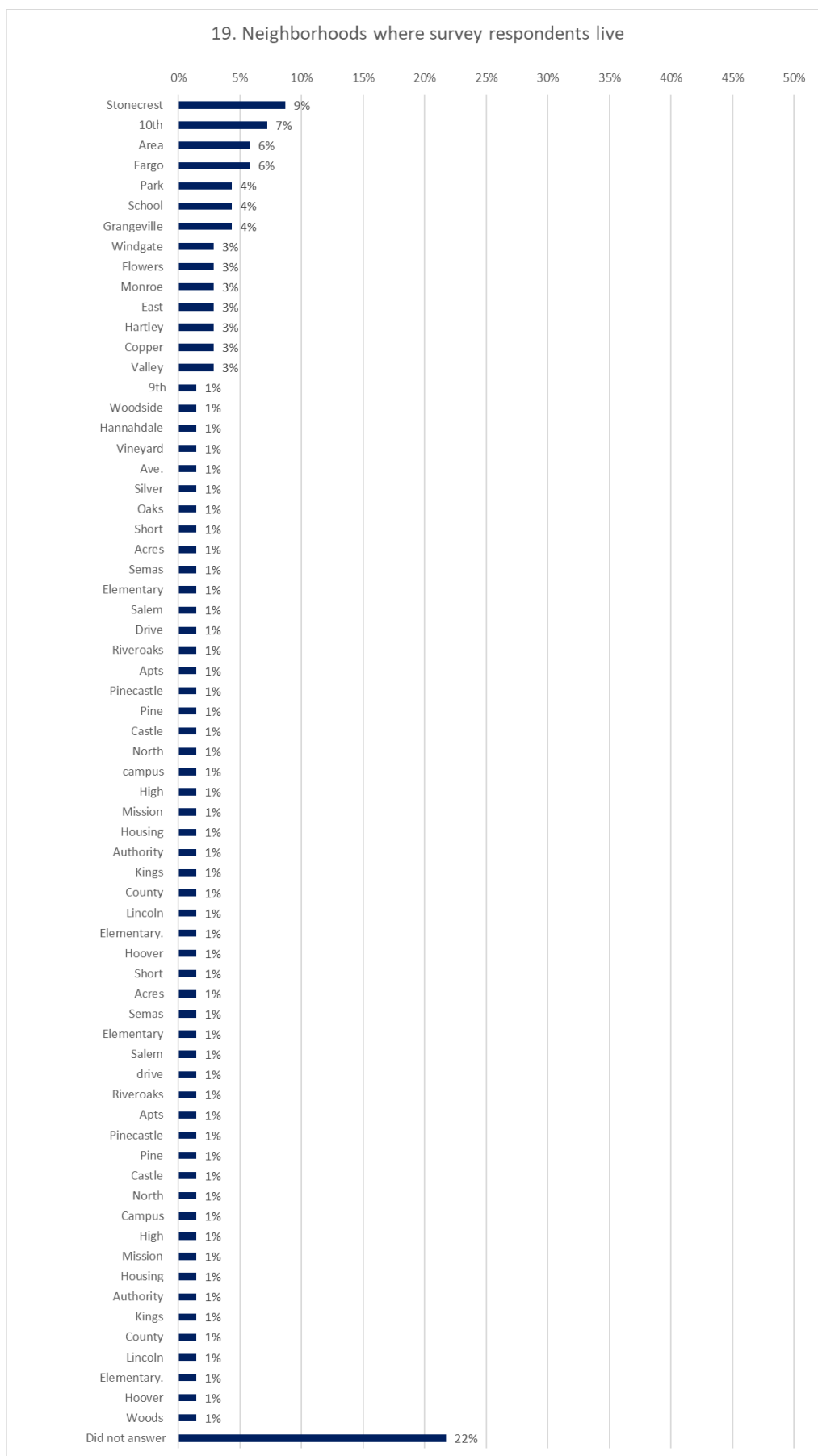


18. Which best describes your current housing situation?		
Current housing situation Category:	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Homeowner	48	70%
Renter	13	19%
Child of homeowner	5	7%
Child of renter	1	1%
Did not answer question	2	3%

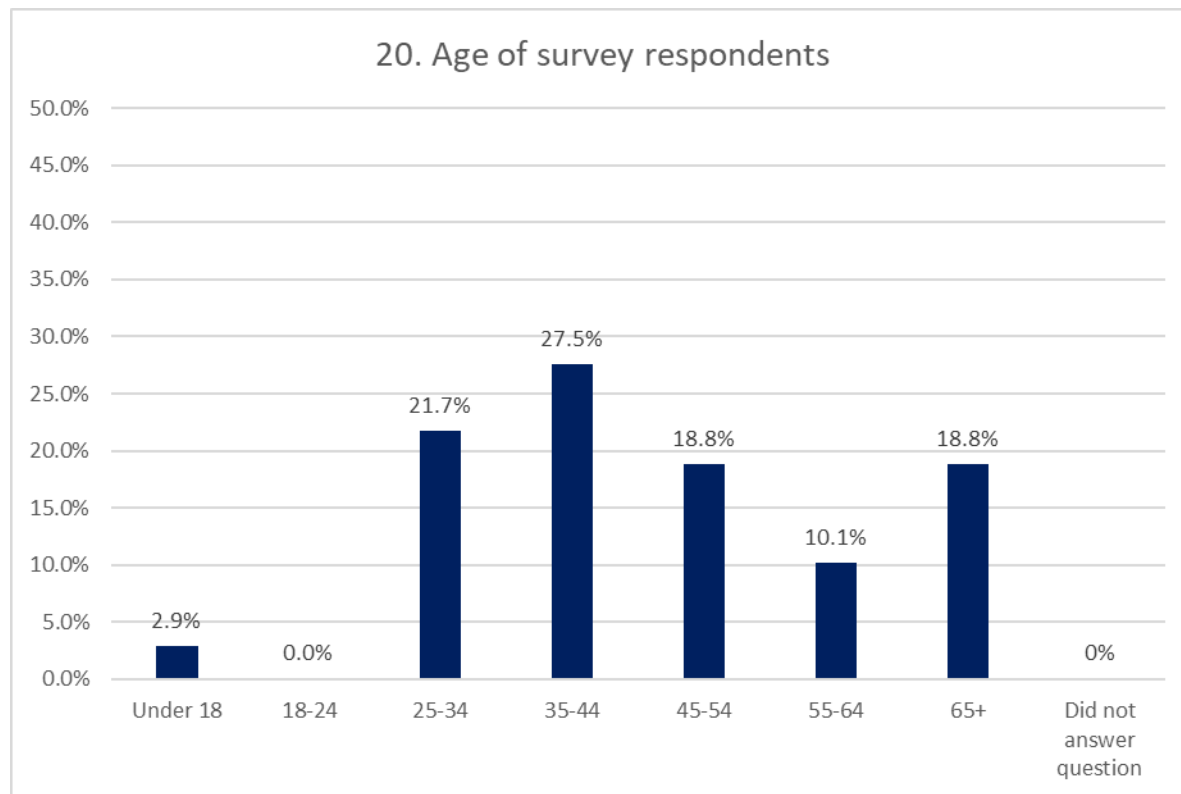


19. What neighborhood do you live in?		
Neighborhood	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Stonecrest	6	9%
10th	5	7%
Area	4	6%
Fargo	4	6%
Park	3	4%
School	3	4%
Grangeville	3	4%
Windgate	2	3%
Flowers	2	3%
Monroe	2	3%
East	2	3%
Hartley	2	3%
Copper	2	3%
Valley	2	3%
9th	1	1%
Woodside	1	1%
Hannahdale	1	1%
Vineyard	1	1%
Ave.	1	1%
Silver	1	1%
Oaks	1	1%
Short	1	1%
Acres	1	1%
Semas	1	1%
Elementary	1	1%
Salem	1	1%
Drive	1	1%
Riveroaks	1	1%
Apts	1	1%
Pinycastle	1	1%
Pine	1	1%
Castle	1	1%
North	1	1%
campus	1	1%
High	1	1%
Mission	1	1%
Housing	1	1%
Authority	1	1%

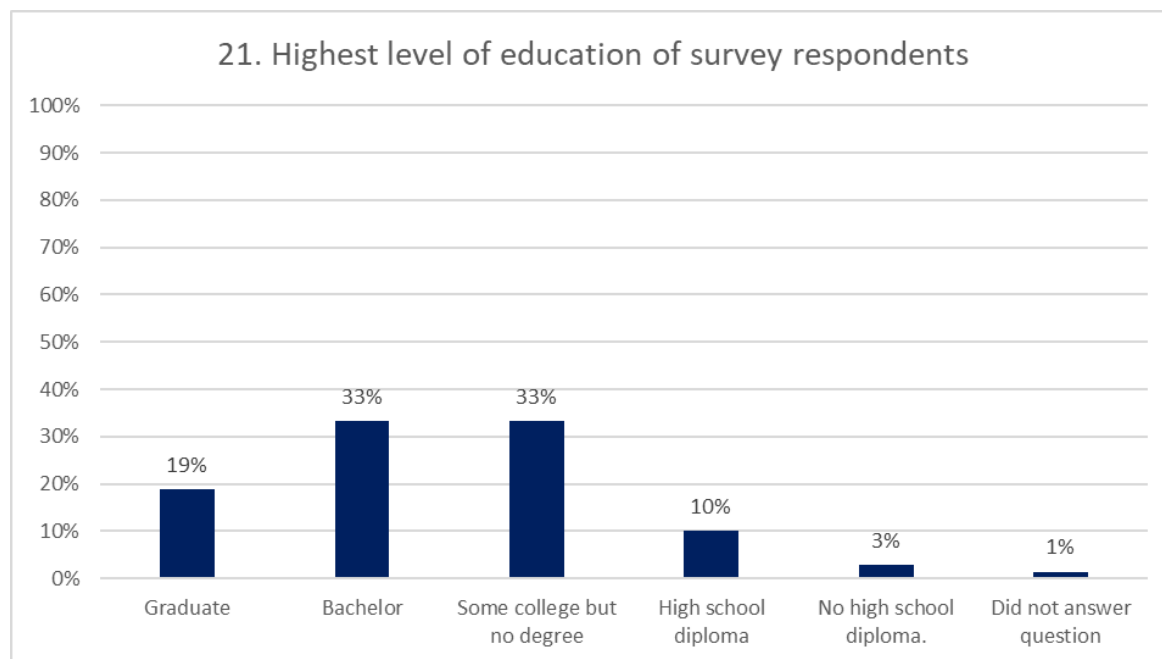
Kings	1	1%
County	1	1%
Lincoln	1	1%
Elementary.	1	1%
Hoover	1	1%
Short	1	1%
Acres	1	1%
Semas	1	1%
Elementary	1	1%
Salem	1	1%
drive	1	1%
Riveroaks	1	1%
Apts	1	1%
Pinecastle	1	1%
Pine	1	1%
Castle	1	1%
North	1	1%
Campus	1	1%
High	1	1%
Mission	1	1%
Housing	1	1%
Authority	1	1%
Kings	1	1%
County	1	1%
Lincoln	1	1%
Elementary.	1	1%
Hoover	1	1%
Woods	1	1%
Did not answer	15	22%



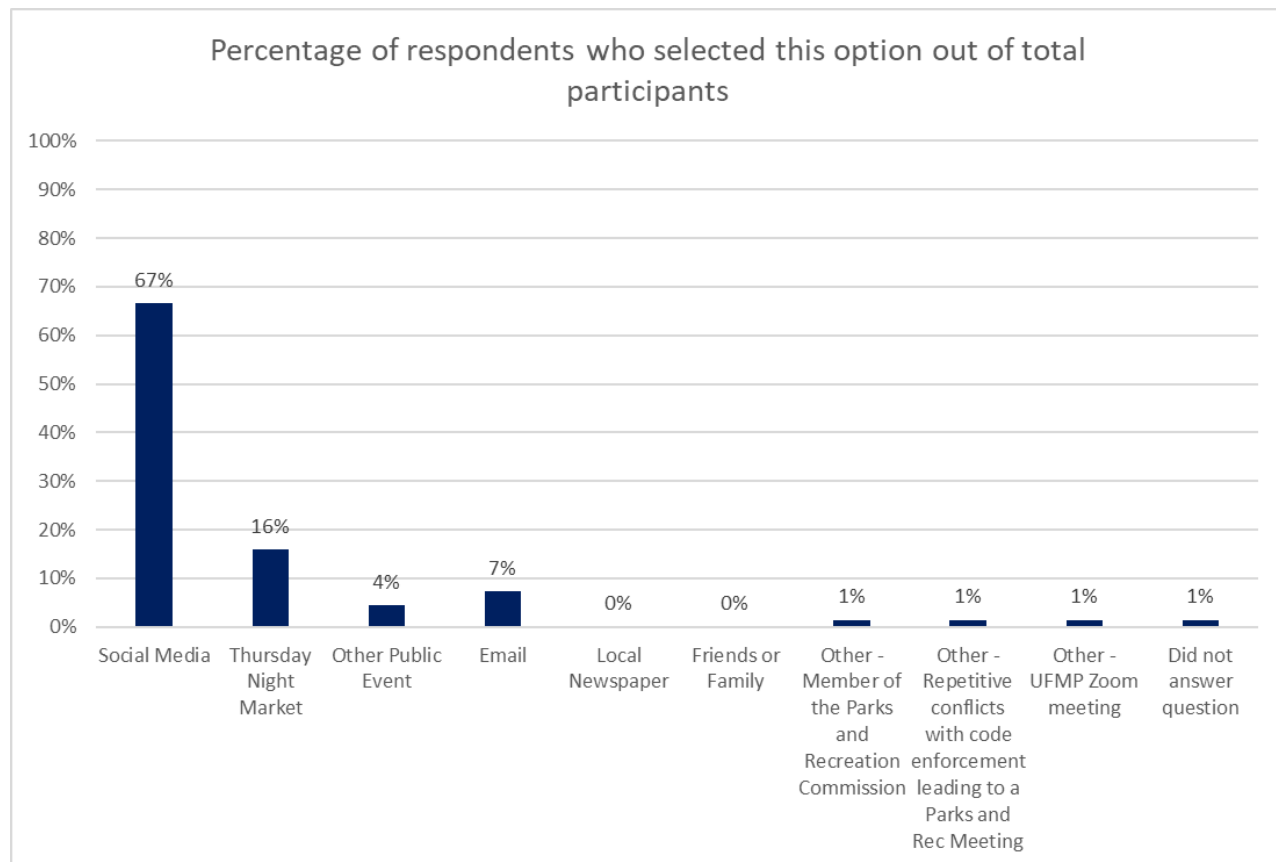
20. Which of the following age groups are you a part of?		
Age Category:	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Under 18	2	2.9%
18-24	0	0.0%
25-34	15	21.7%
35-44	19	27.5%
45-54	13	18.8%
55-64	7	10.1%
65+	13	18.8%
Did not answer question	0	0%



21. What is the highest level of education you have attained?		
Highest level of education Category:	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Graduate	13	19%
Bachelor	23	33%
Associates	23	33%
Some college but no degree	7	10%
High school diploma	2	3%
No high school diploma	1	1%
Did not answer question	13	19%



22. How did you hear about this survey?		
Where did participant hear about survey Category:	Number of survey respondents who selected this option	Percentage of respondents who selected this option out of total participants
Social Media	46	67%
Thursday Night Market	11	16%
Other Public Event	3	4%
Email	5	7%
Local Newspaper	0	0%
Friends or Family	0	0%
Other - Member of the Parks and Recreation Commission	1	1%
Other - Repetitive conflicts with code enforcement leading to a Parks and Rec Meeting	1	1%
Other - UFMP Zoom meeting	1	1%
Did not answer question	1	1%



Appendix F

Hanford Vibrant Cities Lab Self-Assessment Monitoring Plan

Community Assessment and Goal-Setting Tool

The Community Assessment and Goal-Setting Tool was created by the Vibrant Cities Lab to provide a quantifiable method for a city to track its progress towards a sustainable urban forest. Vibrant Cities Lab is a collaboration of partners which includes the United States Forest Service, American Forests, and the National Association of Regional Councils, and serves as an online hub of urban forest and tree research, best practices, and planning tools (<https://old.vibrantcitieslab.com/assessment/>). The Assessment and Goal-Setting Tool is based on research of urban forest sustainability and establishes criteria and indicators to measure urban forest sustainability. The tool is used as an assessment to define the City's current state of a specific area of urban forest sustainability. The user decides what the City's current state of the metric is and then sets where the goal metric should be. Each metric is assigned a point value, and the City is assigned a "Total Current Score" and a "Gap Score", or how far off the current state is from the desired goal. A city that has a gap score between 20 to 40 is not far from achieving the goals of its urban forest program. Conversely, gap scores of 40+ indicates that a City is still implementing programs and policies to close the gap and develop a sustainable urban forest.

Hanford's assessment was conducted on August 6 2025, by City staff and the consultant team. **Table M-1** provides the results from the first assessment, which set the baseline for the City's "Total Current Score" at its pre-UFMP metrics. Staff used Vibrant Cities Lab's rating descriptions to determine Hanford's status (prior to the UFMP process) for the various categories and then chose the goals they want to achieve in each category to determine the gap between the two ratings.

Based on this first assessment, the City has a current rating of 19, with a gap score of 72. The City's UFMP monitoring plan should be based around the Vibrant Cities Lab Community Assessment and Goal Setting Tool and be retaken each year to track, measure, and highlight progress. The assessment can also be used to demonstrate successes and justify additional funding asks to City Council.

Table M-1. Tree Canopy Goal Assessment Summary (Mid-UFMP)

Category	Current Rating		Goal Rating		Gap
Canopy cover	The existing canopy is 50%-75% of desired.	1	The existing canopy is >75%-100% of desired – at individual neighborhood level as well as overall municipality.	4	3
Inventory	Complete or sample-based inventory of publicly owned trees.	1	Inventory guides planning, management decisions.	2	1
Assessment Methodology	The existing canopy is 50%-75% of desired+B3:B4.	3	Complete, detailed, and spatially explicit, high-resolution Urban Tree Canopy (UTC) assessment based on enhanced data (such as LIDAR) – accompanied by comprehensive set of goals by land use and other parameters; all utilized effectively to drive urban forest and green infrastructure policy and	4	1

Table M-1. Tree Canopy Goal Assessment Summary (Mid-UFMP)

Category	Current Rating		Goal Rating		Gap
			practice municipality-wide and at neighborhood or smaller management level.		
Publicly owned trees	Complete tree inventory that includes detailed tree condition ratings.	2	Complete GIS tree inventory that includes detailed tree condition and risk ratings.	4	2
Publicly owned natural areas	Identified only in natural area survey.	1	Ecological structure and function of all natural areas assessed and documented.	3	2
Private property trees	Aerial, point-based assessment – capturing extent and location.	1	Bottom-up sample-based assessment, as well as basic aerial view	4	3
Relative performance index by species	Half of the six most common species have higher RPI scores than the average of all species in community. (>1.)	2	All of the six most common species have higher RPI scores than the average of all species in the community	4	2
Use of native vegetation	Voluntary use of native species on publicly and privately owned lands; invasive species are recognized.	1	Native species are widely used on a project-appropriate basis in all areas; invasive species are proactively managed for eradication to the full extent possible.	4	2
Align municipal departments	Municipal departments/agencies take actions impacting urban forest with no cross-departmental coordination or consideration of the urban forest resource.	-1	Municipal policy implemented by formal interdepartmental/interagency working teams on all municipal projects.	4	5
Engage residents in planning and implementation	Some neighborhood groups engaged across the community but no minimal outreach to assure underserved neighborhoods participate effectively.	1	Proactive outreach and coordination efforts by municipality and NGO partners resulting in widespread citizen involvement and structured engagement among diverse neighborhood groups.	4	3
Environmental equity	Planting and outreach includes attention to low canopy neighborhoods or areas.	1	Equitable planting and outreach at the neighborhood level is guided by strong resident involvement in low canopy/high need areas. Residents participate actively in identifying needs for their neighborhoods, planning, implementation and monitoring	4	3
Trees acknowledged as vital community resource	Trees generally recognized as important and beneficial.	1	Urban forest recognized as vital to the community's	4	3

Table M-1. Tree Canopy Goal Assessment Summary (Mid-UFMP)

Category	Current Rating		Goal Rating		Gap
			environmental, social, and economic well-being.		
Engage large private landowners and institutions	Large private landholders are generally uninformed about urban forest issues and opportunities	-1	Municipality educates landowners, provides technical assistance, sets goals and provides incentives for managing resources in accordance with plan	1	2
All utilities work with municipality, employ best management practices	Utilities take actions impacting urban forest with no municipal coordination	1	Utilities are included in informal municipal teams that communicate regularly and collaborate on a project-specific basis.	3	2
Green industry embraces goals, high standards	Little or no cooperation among segments of green industry or awareness of municipality-wide urban forest goals and objectives.	-1	Specific collaborate arrangements across segments of green industry in support of municipality-wide goals and objectives.	2	3
Develop urban forest management plan	New or recent urban forest and green infrastructure management plan which targets public tree planting sites, protection and maintenance based on assessment of anticipated benefits ranging from stormwater to heat island mitigation, public health, etc.	3	New or recent urban forest and green infrastructure management plan which targets public and private tree planting and protection based on assessment of anticipated benefits - and assures these benefits are distributed equitably among neighborhoods.	4	1
Cooperative planning with other municipalities	Municipalities have no interaction with each other or the broader region. No regional planning or coordination on urban forestry.	-1	Some urban forest planning and cooperation across municipalities and regional agencies.	2	3
Forestry plan integrated into other municipal plans	Urban forestry plan mentions how it could meet other municipal objectives or inform other planning efforts.	-1	Once completed, urban forestry planning team works with other agencies to align current and future objectives.	2	3
Urban forestry program capacity	Lack of staff training and/or access to adequate equipment limits effectiveness.	1	Team has capacity and will in the future work to achieve all goals of the urban forest management plan, to maintain the resource over time, and adapt management as circumstances change.	4	3

Table M-1. Tree Canopy Goal Assessment Summary (Mid-UFMP)

Category	Current Rating		Goal Rating	Gap
Municipality-wide urban forestry funding	Ad hoc funding for emergency; reactive management.	1	Sustained, long-term funding from multiple municipal, regional, and/or state agencies, along with private sources to implement a comprehensive urban forest management plan and provide for maintenance and adaptive management as circumstances change.	4 3
Growing site suitability	Appropriate tree species are considered in site selection	1	All trees planted in sites with adequate soil quality and quantity, and with sufficient growing space and overall site conditions to achieve their genetic potential and thus provide maximum ecosystem services. Where growing conditions are poor, guidance provided on how to improve soil volume, quality, other factors.	4 3
Tree establishment and maintenance	Some tree planting and establishment occurs, but with limited overall municipality-wide planning and post-planting care.	-1	Comprehensive tree establishment plan provides concrete guidance on most of the following criteria: site selection, size, age class, diversity of species, native plant choice, planting protocols, and young tree care.	4 5
Management of publicly owned natural areas	Only reactive management to facilitate public use, e.g. hazard abatement, trail maintenance.	1	Management plan in place for each publicly owned natural area to facilitate appropriate public use.	2 1
Policies that foster good urban forestry on private lands	No tree protection ordinance, or one that's weak and rarely enforced.	-1	Policies regarding stormwater, site and subdivision planning, zoning and other issues that affect private forests are included in management plan.	2 3
Tree protection policy and enforcement	Policies in place to protect public trees and employ industry best management practices, but rare or inconsistent enforcement/	1	Integrated municipality-wide policies and practices to protect public and private trees, consistently enforced and with penalties sufficient to deter violations.	4 3
Monitoring	Monitoring is infrequent and reactive to reported changes in tree health, site condition.	1	Monitoring on a regular basis with rotating schedule for each area. Monitors are professionals or volunteers trained to collect specific data required by municipality. Multi-	2 1

Table M-1. Tree Canopy Goal Assessment Summary (Mid-UFMP)

Category	Current Rating		Goal Rating		Gap
			year data available for trend analyses		
Tree risk management	Citizens and city staff report tree safety issues to the forestry department or manager (e.g., 3-1-1 system, online form, etc.). System tracks the time between damage report and mitigation action.	1	Includes "better" but with TRAQ-qualified contractors on city projects. Educate tree care companies and public about importance of TRAQ qualifications.	4	3
Urban wood and green waste utilization	While most green waste does not go to landfill, uses are limited to chips or mulch.	1	The majority of green waste is reused or recycled - for energy, products, and other purposes beyond chips or mulch.	2	1
Total Current Score		19	Total Goal Rating	91	
Total Gap Score					72

Appendix G

Potential Resources

Potential Resources

Funding Sources

The City of Hanford (City of Hanford) needs to increase their annually allocated urban forestry budget to meet their urban forestry goals. Currently, the urban forestry budget is funded through a combination of Landscape Assessment Districts (LAD), the General Fund, and grant funding as it is available and awarded. Funding strategies may include incurring fees throughout urban forestry operations, pursuing various grant funding sources, collaborative funding through partnerships with internal departments, and identifying community resources that may be interested in participating in urban forestry efforts.

Fees, Assessments, and Taxes

Voter approved fees, assessment, or tax measures can be one method to generate the additional revenue needed for the care of the urban forest. The level of funding required varies with the selected strategy. Details regarding potential methods are found in **Table G-1**.

Table G-1. Fees, Assessments, Taxes

Mechanism	Description
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 need not be directly related to the benefits provided (ILG 2008). 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 (CTD 2012a). 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.
General Obligation Bonds*	Local governments commonly use General Obligation (GO) bonds to fund 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 pay debt service from GO bonds through ad valorem property taxes, where assessments are based on property value. As a result, the issuance of GO bonds requires two-thirds voter approval (State Treasurer 2008).
Community Benefit Districts*	Community Benefit Districts (CBDs) are used to finance neighborhood revitalization, commonly in commercial areas. Special benefits typically include public safety, economic development, beautification, and streetscape improvements. Formation of a CBD requires property owners to petition the appropriate local agency and demonstrate an interest in paying for additional services. A non-profit Board of Directors typically comprised of property owners, businesses, and government representatives administers a CBD. While CBDs may include street tree planting and maintenance, this is rarely the focus. The City of Hanford is currently modifying their Landscape Assessment Districts to Community Benefit Districts.

Annexation of Existing Neighborhoods to Community Facilities Districts	Currently State law requires a 2/3 majority support on the ballots returned to form a new maintenance district or to annex property into an existing maintenance district under Mello-Roos law. This approach creates a new special tax to be levied, with revenue collected being limited to the specific neighborhood and for the specific services noted at time of formation or annexation. Funds would be protected specifically for the street trees or park trees within the boundary of the CFD annexation.
Enhanced Infrastructure Financing Districts (EIFD)	A certain geographic boundary of the City would be established as an EIFD, where a portion of the tax increment could be designated for urban forest maintenance along with other services benefitting the district. Recognizing the argument that healthy, well maintained urban forests of streetscapes, parks and greenways increase property values, allocating a portion of tax increment could be one consideration as a funding strategy.

Permit Fees and Violation Penalties

The City of Hanford requires a tree removal permit to be filed for trees on public land, including the utility right-of-way. However, the parameters of the Street Trees and Shrubs Ordinance (Chapter 12.12) is not widely known among community members, resulting in trees being removed on public land without being replaced with new trees. As the Ordinance is updated, associating a cost with tree removal permit administration may help incur costs for the urban forestry program. Updating the Ordinance to include enforceable parameters and penalties for violation may be a strategy to recover funds to repopulate the urban forest when the Ordinance is violated.

In-Lieu Fee Fund

When a tree is removed and there is no viable vacant site on the property of the removal, an in-lieu fee fund can be created. Private property owners that are unable to plant a replacement tree can contribute to an in-lieu fund. Once funds are in the in-lieu fund, fees should be allocated towards the urban forestry program to distribute new tree planting in public areas with low canopy cover. This funding can be used to plant new trees in the 'right tree, right place', on public land, decreasing costs for the City while providing a pathway for residents to contribute to the urban forestry program when their property does not allow for a mitigation tree. The in-lieu fee should be seen as a last resort and on-site verification to confirm that an appropriate planting site is not available is a protective measure the City can use so the in-lieu fee is used as intended.

Grant Opportunities

State and Federal entities such as the US Forest Service, Environmental Protection Agency, California Natural Resources Agency, and CalFire may fund urban forestry efforts as part of their projects. Topics for funding typically include stormwater management, green infrastructure, urban greening, green schools, environmental education, urban and community forestry, wood innovation, workforce development, and youth engagement, among others. Public funding sources often target disadvantaged communities based on state or federal assessment tools. The City of Hanford is identified as such through tools such as CalEnviroScreen 4.0 and the DAC Mapping Tool by the Department of Water Resources, meaning the City is a target for state and federal grant programs and is likely to be competitive for funding.

Exploring partnerships with regional entities and other community-based organizations for grant projects where urban forestry efforts are an eligible expense is one strategy to increase competitiveness and may reduce the administrative burden placed on the City should a grant be awarded.

As of 2025, the availability of future federal and state grant programs is uncertain, and grant funding should not be seen as a replacement to allocated funding for an urban forestry program. **Table G-2** details various grant programs which have historically been funded and align with urban forestry efforts. Some of the opportunities listed in Table G-2 are not available at the time of UFMP development but were included due to uncertainty of these funds being reinstated.

Table G-2. Federal or State Grant Funding

Funding Program	Agency	Description
Proposition 4	Governor's Office of California	In November 2024, voters approved Proposition 4, a \$10 billion bond measure focused on increasing the state's resilience to the impacts of climate change. The Governor has proposed a multiyear spending plan to implement the bond, including appropriations totaling \$2.7 billion in 2025-26. Funding will likely be allocated through other State agencies like CAL FIRE and will go to programs that address wildfire and forest resilience, extreme heat mitigation, and biodiversity and nature-based solutions, among others.
Urban and Community Forestry Grants	CAL FIRE	Funding available for tree planting, tree inventories, urban wood and biomass utilization, blighted urban lands improvements, urban forest planning, and green schoolyards to advance the goals and objectives of supporting healthy urban forests and reducing greenhouse gas emissions. The City's existing grant funding for the UFMP comes from this grant program.
Green Schoolyards Grant	CAL FIRE	One of the grants under the CAL FIRE Urban and Community Forestry Grant program that is specifically targeted towards improving tree canopy on school facilities.
Active Transportation	California Department of Transportation	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. Disadvantaged Communities are guaranteed a minimum of 25% of the entire program's funding.
Sustainable Transportation Planning Grants	Caltrans	This program has \$34.8 million annually in grant funds and is meant to help communities implement Regional Transportation Plans (RTP). It encourages sustainable communities strategies to achieve California's GHG reduction targets of 40% by 2030 and 80% by 2050 (compared to 1990). Projects must have a transportation nexus and align with state goals for sustainability and climate resilience.
Community Wildfire Defense Grants	US Forest Service	The Bipartisan Infrastructure Law authorizes the \$1 billion, five-year CWDG Program funding. This program funds the development or revision of Community Wildfire Protection Plans (CWPP) and to implement projects described in a Community Wildfire Protection Plan that are less than ten years old. The program prioritizes at-risk communities: - In an area identified as having high or very high wildfire hazard potential, - Are low income, - Have been impacted by a severe disaster that affects the risk of wildfire.

		Due to a lack of wildfire urban interface/intermix areas identified in Hanford, the City may not be competitive for a CWDG grant. However, CWPPs may create a pathway for future funding and should be explored with the Fire Department.
Wood Innovations, Community Wood, and Wood Products Infrastructure Assistance	US Forest Service	Grant funding will support proposals that increase demand and create new and innovative uses for sustainably sourced wood. Funded proposals include converting heating systems in schools to sustainable biomass boilers, installing cutting-edge equipment in sawmills and processing facilities to increase efficiency, supporting innovative housing using mass timber, and more.
Urban Wood Reuse	CAL FIRE	CAL FIRE has a grant assistance program that awards funding for Cities and non-profit organizations to develop an urban wood reuse program. Example projects include providing lumber and other wood products to local makers and artisans, generating funding to support operations and contributing to local economic development.
Environmental Enhancement and Mitigation	California Natural Resources Agency	This program was created by California Streets and Highways Code Section 164.56 (Article XIX, Section 1, of the State Constitution), which authorizes the legislature to allocate up to \$7 million each fiscal year from the Highway Users Tax Account (Motor Vehicle Revenues, Section 2100) for environmental enhancement and mitigation projects that are directly or indirectly related to the environmental impact of modifying existing transportation facilities or for the design, construction, or expansion of new transportation facilities. The applicant entity is not required to be a transportation- or highway-related organization, and partnerships are encouraged. Urban forestry projects designed to offset vehicular emissions of carbon dioxide are eligible.
Urban and Community Forest Sustainability Standard	Sustainable Forestry Institute (SFI)	This grant program is being modified new guidelines are planned to be released. The prior grant funding allowed a city to benchmark their urban and community forest against the new SFI urban and community forestry sustainability standard.
Affordable Housing and Sustainable Communities (AHSC)	California Strategic Growth Council	Urban Greening is a threshold requirement for all AHSC funded projects. Eligible urban greening projects include, but are not limited to, rainwater recycling, flow and filtration systems including rain gardens, stormwater planters and filters, vegetated swales, bioretention basins, infiltration trenches and integration with riparian buffers, shade trees, community gardens, parks and open space.
Extreme Heat and Community Resilience Program (EHCRP)	California Governor's Office of Land Use and Climate Innovation	Reduce the impacts of extreme heat. Maintenance and watering for nature-based solutions and any staff training necessary to ensure landscapes are maintained to achieve desired outcomes. is an eligible activity for this grant program. Parking space, asphalt, and/or other impervious and/or low albedo surface removal with trees or shade replacement is an eligible activity.

Partnerships

Municipal Partnerships

Cities are often siloed in their operational practices. However, some cities take the initiative to identify departments addressing similar issues and explore if a partnership can be developed to most effectively use public resources. Collaborating with streets departments to cost share on repairing tree and infrastructure conflicts is one method. Other examples include hosting water-wise events in partnership with water providers, to educate the community on how to properly water trees and conserve water, cross marketing opportunities such as rebate or tree give away programs to reduce water use, and working with Fire Departments on tree maintenance education to reduce risk.

Community Resources

National community-based organizations such as American Forests, the Arbor Day Foundation, the National Wildlife Federation, and regional groups such as the California Urban Forests Council and California ReLeaf, at times, invest in programs to assist in urban forestry efforts. These organizations have hosted programs that give residents free trees to plant on their private property. Increasing canopy cover on private property is a continued challenge for many public entities, and public funding sources do not fund private property enhancements. These partnerships help to fill that gap and provide free urban forestry resources, education, and trees for private property.

Volunteer tree planting events are a popular activity among communities. Groups like Kiwanis, Rotary Clubs, beautification groups, and school and religious groups have historically supported volunteer efforts including tree planting and providing urban forestry education, canvassing for adopt-a-tree programs, and may be interested in collaboration as the City explores the community's appetite for urban forestry advocacy.

When trees and infrastructure conflict, a public tree or a private tree may be causing damage to potentially both public and private infrastructure. Although cities continuously address and mitigate these issues, the time from the initial inquiry to repair may be lengthy and cumbersome. Some residents may be interested in prioritizing the repair of the infrastructure in front of their home, with a desire to provide funding for prioritization. In these cases, some cities have obliged to this request and share the repair cost with residents. Although this will increase the administrative burden on staff, cost-sharing may be an appealing method for the City, as the cost is supplemented, and resident satisfaction increases.

Table G-2. Potential Partnerships to Enhance Urban Forestry

Community Partner	Examples	Potential Collaboration
Volunteer Groups	Hanford Rotary Club, Boy and Girl Scouts of America, high school Key clubs, educational institutions, religious groups	Rotary clubs and other service-based organizations are known to donate volunteer time for urban forestry efforts such as volunteer tree planting. Some organizations identify an annual priority and these groups have historical prioritization of urban forestry efforts.
Health care providers and facilities	Tree Campus Healthcare Arbor Day Foundation	National recognition program through the Arbor Day Foundation to celebrate healthcare facilities using trees as a tool for community wellness.

Fee for Service Groups	The Corps Network, Kings County Parks Youth Conservation Corps	Workforce development or youth job training organizations may offer a lower fee-for-service for tree planting, watering, or concrete removal efforts. Partnering with these groups in a grant application also supports workforce and economic development goals and may increase competitiveness of proposals.
Adventist Health Central Valley Community Partnership	Adventist Health Group	Sponsorships ranging from \$100 to \$1,000 based on availability of funds and alignment with Adventist Health mission and values.
Corporate Sponsorships	Costco Wholesale, Target, Inc., Del Monte Foods Inc., Keller Ford, Walmart Supercenter, etc.	For-profit businesses may be interested in sponsoring tree planting or Arbor Day events in a variety of ways including providing employees as volunteers, donating refreshments for volunteers, or providing tree planting or watering costs in exchange for a marketing opportunity. Reaching out to these corporations with local locations or offices through either city outreach or through a non-profit partnership (and a donation letter) may encourage sponsorship.
Identify/join potential partnership with community foundations to seek funding	Central Valley Community Foundation Central Valley Joint Venture Conserving Bird Habitat	The Central Valley Community Foundation is the only nationally accredited community foundation serving Merced, Mariposa, Madera, Fresno, Tulare and Kings counties. The organization offers donors innovative and flexible charitable tools and help maximize the impact of their giving. Focus on conserving bird habitat. Access to funding to support restoration activities on private land. Staff is available to help identify appropriate conservation projects and associated funding sources.

Appendix H

Arboriculture Best Management Practices

- H1 - Nursery Stock Standards
- H2 - Tree Spacing Guidelines for Residential Yards and City Streets
- H3 - Tree Planting Guidelines
- H4 - Tree Staking Guidelines
- H5 – Tree Watering Guidelines
- H6 - Young Tree Pruning Guidelines
- H7 - Mature Tree Pruning Guidelines
- H8 - Tree Risk Assessment Qualification (TRAQ)
- H9 - Trees and High Wind
- H10 - Mature Tree Protection During Construction Guidelines
- H11 - Tree Care for Wildlife and Migratory Bird Treaty Act
- H12 - Tree Replacement to Expand Canopy Cover

Appendix H1

Nursery Stock Standards

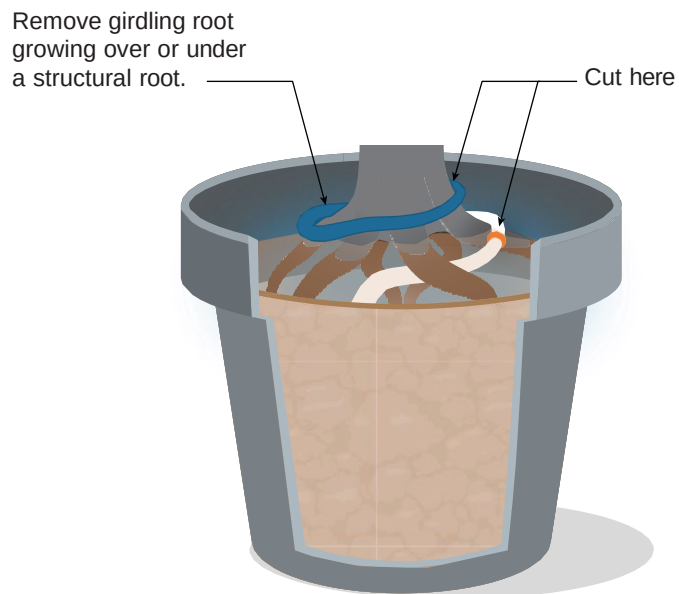
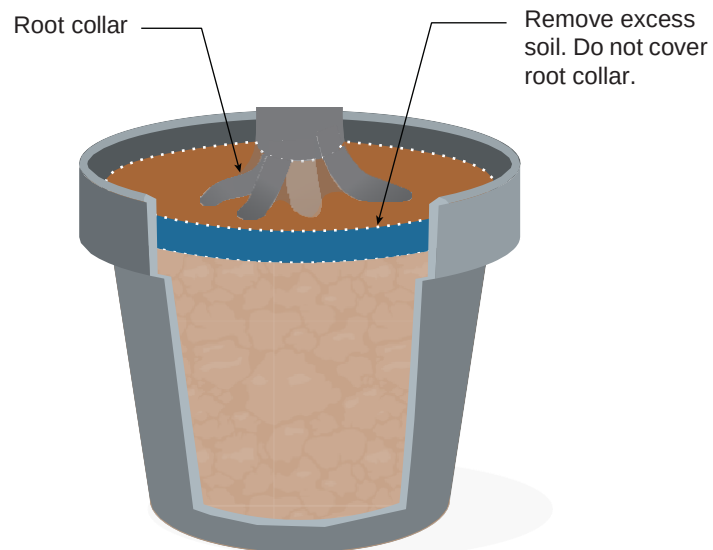
Introduction

The quality of nursery stock has lasting effects on tree longevity, highlighting the importance of nursery stock inspection and selection. This appendix visually displays the nursery selection ISA BMPs and provides explanations on why this practice is important for tree longevity.

Table H-1. Nursery Stock Characteristics

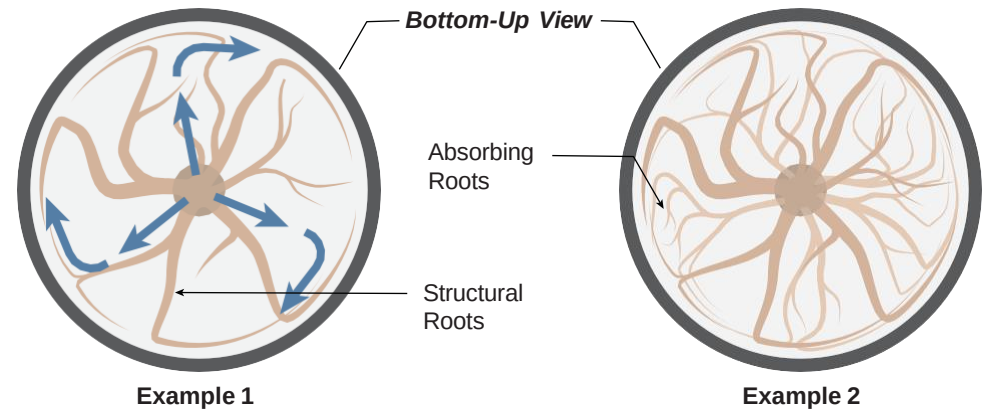
Characteristic	Reasoning	Relation to Longevity
Root ball	Inspect root ball to ensure roots are white in color.	Healthy roots are necessary for tree roots to efficiently absorb water and nutrients and provide the entire tree with resources for tree growth and health.
	Reject stock that have roots with a sour smell.	
	Remove girdling roots at the time of planting or reject stock.	Girdling roots restrict the tree's water and nutrient flow from roots to the rest of the tree reducing growth and health.
	Ensure structural roots are horizontal and reach the root ball periphery.	Trees with horizontal roots and balanced root structure enable the roots to access larger soil areas which may contain more nutrients and water to provide to the tree.
Branching structure	Look for specimens with a strong, central leader, branch aspect ratio less than 1/3 rd of the trunk for each primary branch, with even branch distribution both radially and vertically.	Trees with optimal structure will have less defects to correct as the tree establishes into landscape. When trees are pruned or corrected for defects at the time of planting, trees need resources to compartmentalize the wound and heal. By avoiding these defects, trees will be able to establish without a need for greater resources including water.
Quality of stock	Trees should be healthy and vigorous with no signs of drought stress, die-back, pest or disease, and no signs of mechanical injury.	Healthy trees with no signs of stress establish into the landscape more readily.

Root Correction for Container Grown Trees

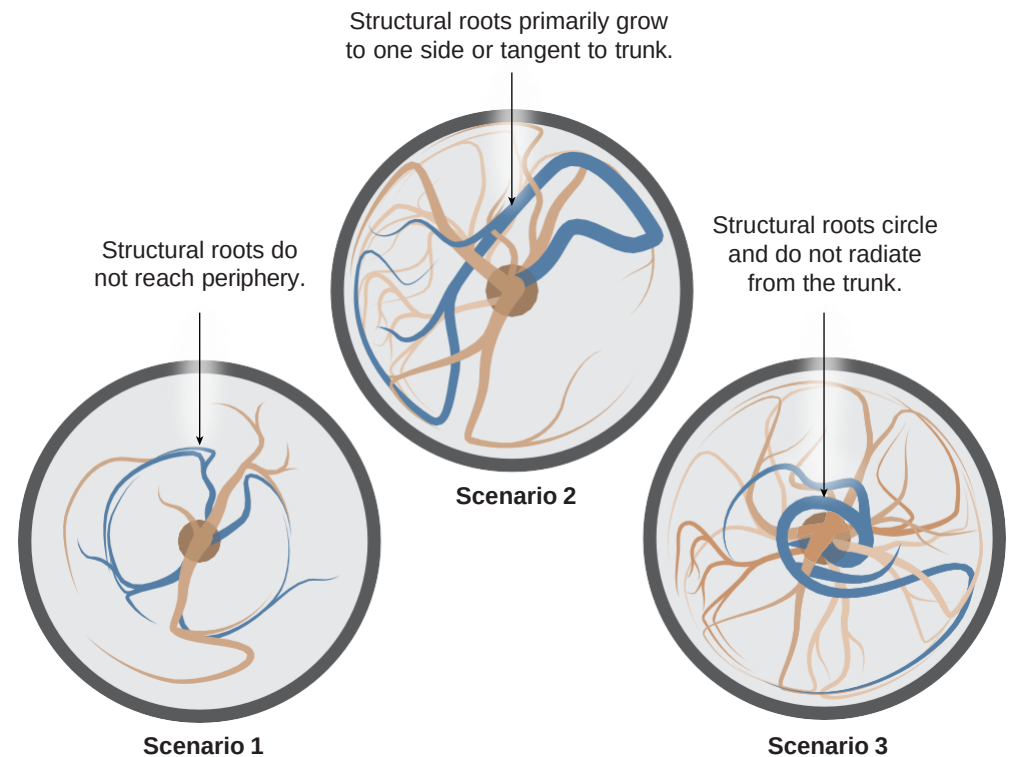


Accept

Roots radiate from trunk and reach each side of root ball without deflecting down or around.

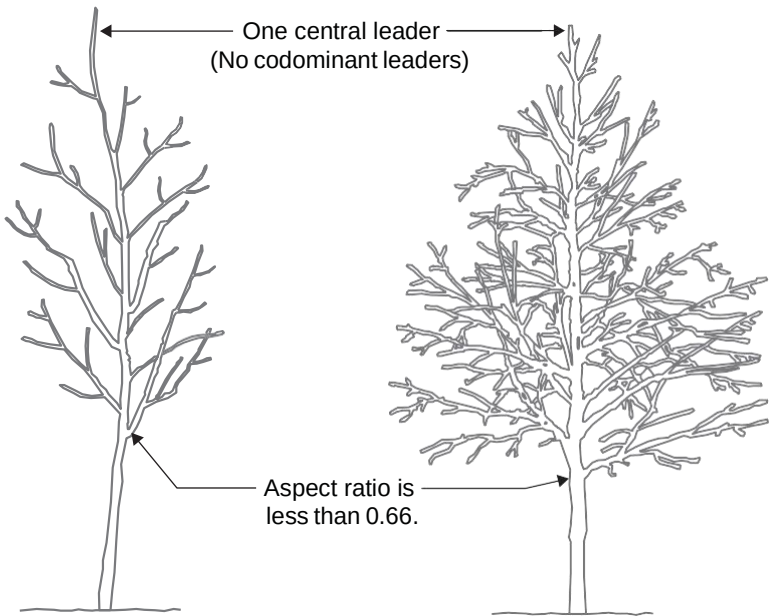


Reject

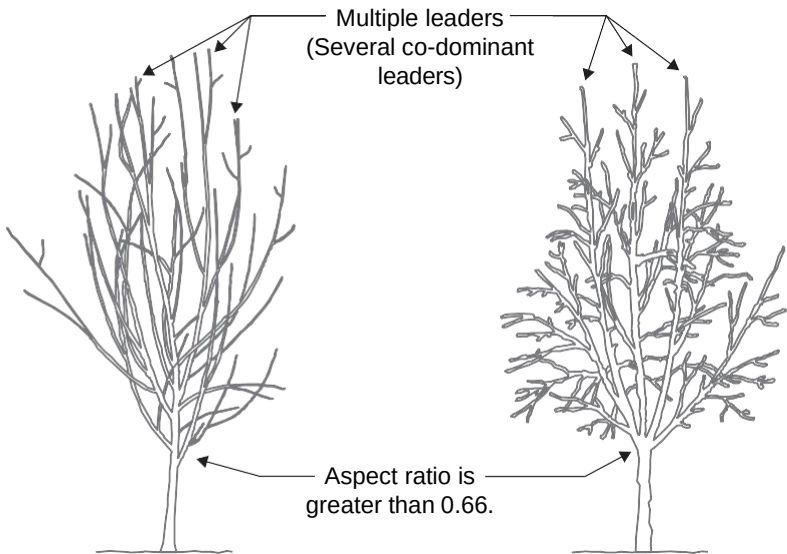


Nursery Stock Selection

Accept

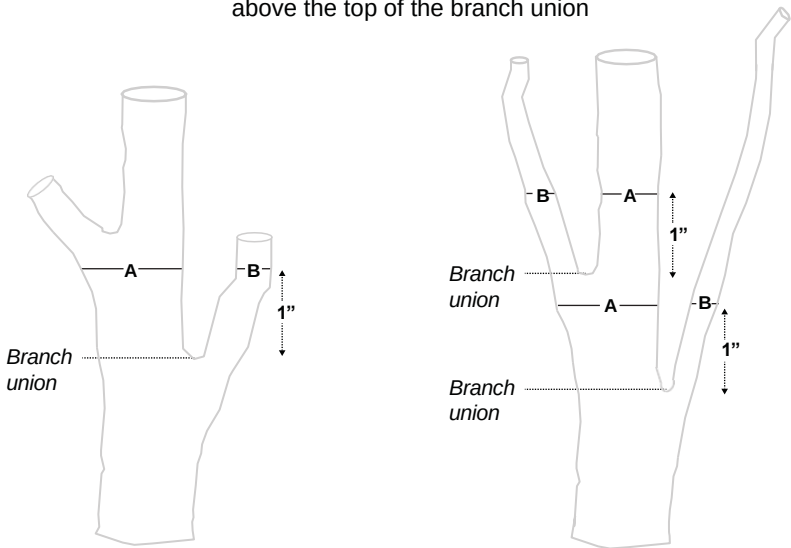


Reject



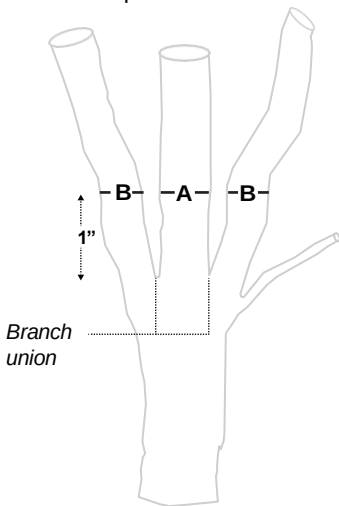
Accept

Aspect ratio of B:A less than 0.66 as measured 1" above the top of the branch union



Reject

Aspect ratio of B:A greater than or equal to 0.66 as measured 1" above the top of the branch union.



NOTE: 1. Nursery stock with significant mechanical injury, serious root defects, and trees that show signs of dehydration are to be rejected. 2. Aspect ratio shall be less than 0.66 on all branch unions. Aspect ratio is the diameter of branch (B) divided by the diameter of the trunk (A) as measured 1" above the top of the branch union. 3. Any tree not meeting the crown observations detail may be rejected.

Appendix H2

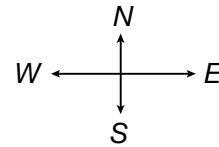
Tree Spacing Guidelines for Residential Yards and City Streets

Spacing Guidelines for Residential Yard Trees

Knowing the type of soil, water needs, and eventual size of the tree will help you select the best tree for your yard.

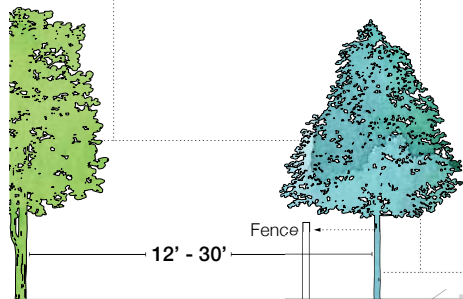
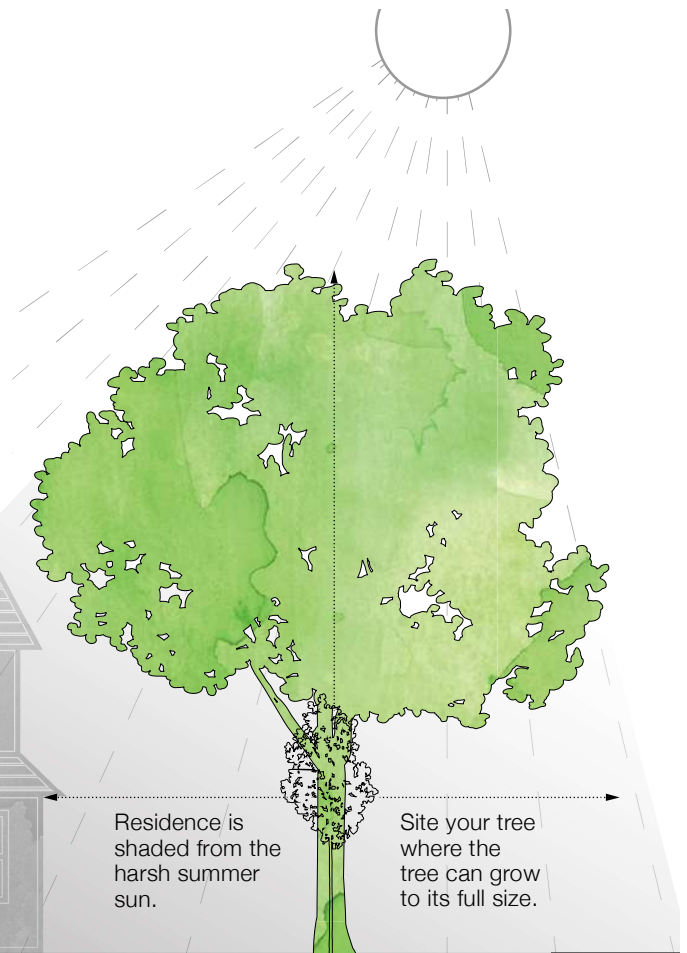
If you plant more than one tree, make sure they are sited far enough apart to allow full growth of both trees. Trees should be placed 12 to 30 feet apart depending on their ultimate size

Plant at least 8 feet from sidewalks and driveways, 15 feet from home foundations and swimming pools, and 6 feet from fences.



Deciduous trees (trees that lose their leaves) will help cool your home in the summer and allow the sun to warm it in the winter.

Planting the right tree on the South, West, and East side of your home allows trees to shade your home and lower energy costs.



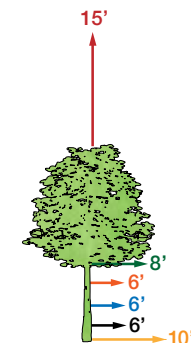
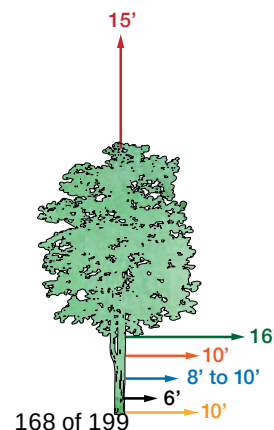
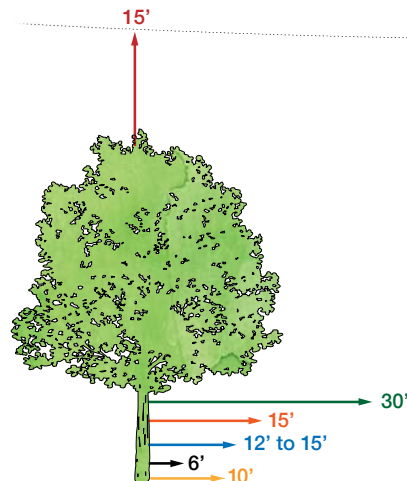
Spacing requirements by tree size

Large 45' tall and higher

Medium 25' to 45'

Small Up to 25'

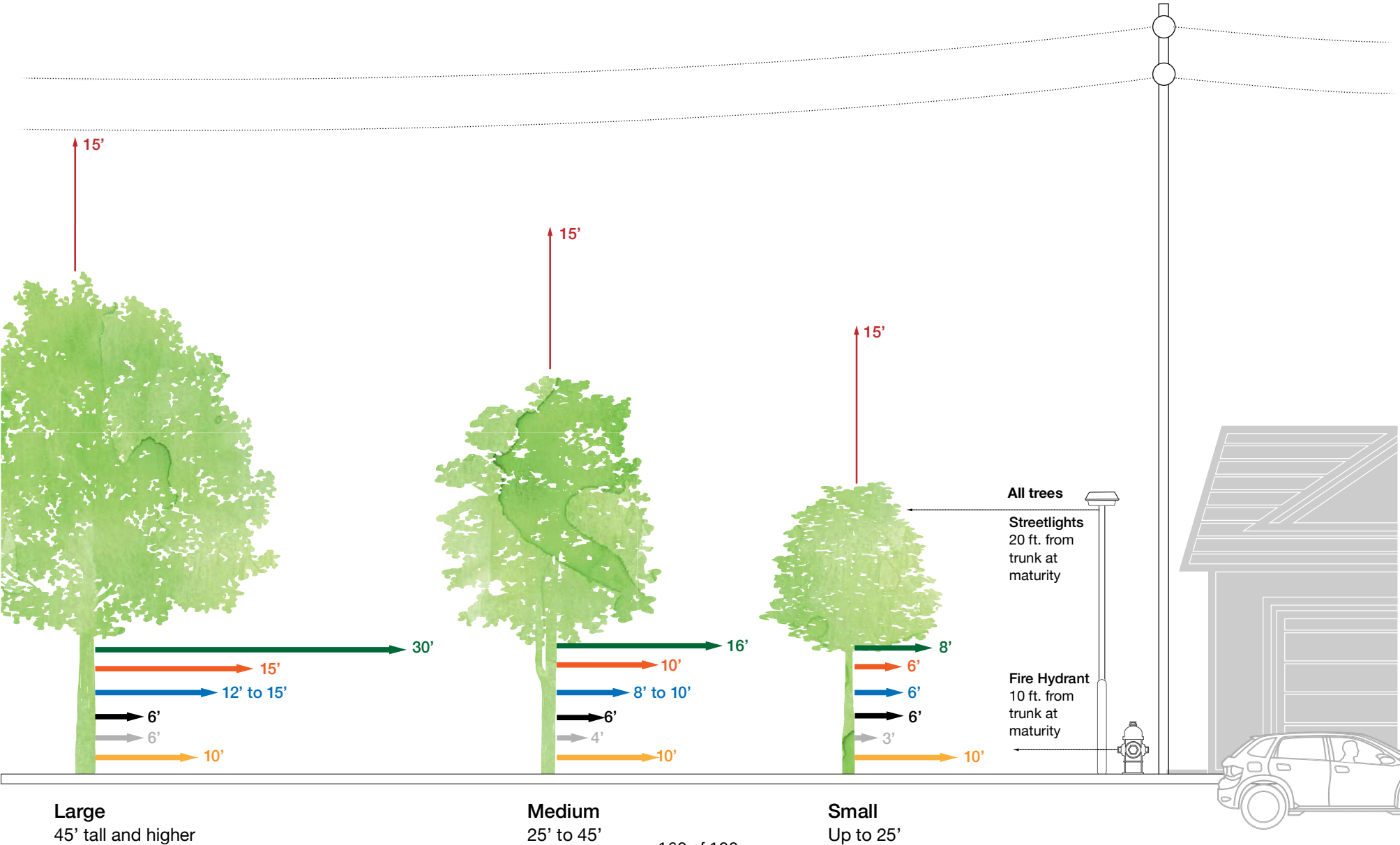
- Spacing from other trees
- Spacing from building foundations
- Spacing from sidewalks, curbs and driveways
- Spacing from limbs to overhead wires
- Spacing from trunk at maturity to in-ground electrical lines
- Spacing from trunk at maturity to in-ground gas lines



**BEFORE
YOU DIG
CALL 811**

Spacing Guidelines for Street Trees

- Spacing from other trees
- Spacing from building foundations
- Spacing from sidewalks, curbs and driveways
- Spacing from sides of median
- Spacing from limbs to overhead wires
- Spacing from trunk at maturity to in-ground electrical lines
- Spacing from trunk at maturity to in-ground gas lines



Appendix H3

Tree Planting Guidelines

Introduction

Tree establishment and long-term survival can be impacted greatly by the actions taken during planting, such as the width and depth of the planting hole, placing the tree at the right depth, and proper staking. Refer to this appendix covers tree planting details and use the appendix for tree spacing guidelines to minimize future infrastructure conflicts. The table below provide explanations on why these practices are important for tree longevity.

Table H-2. Tree Planting Characteristics

Characteristic	Reasoning	Relation to Longevity
Planting depth	Planting a tree too deep or too shallow will inhibit the tree's establishment and growth.	If planted too shallow, tree roots will not have soil to establish in, decreasing the water and nutrients available to the tree overall. Planting a tree too deeply, may cause roots to suffocate and cause root rot.
Water at planting	Ensure newly planted trees receives 15 gallons of water, applied slowly upon planting.	Watering a tree after planting reduces transplant shock experienced by the tree and its roots, helping establishment.
Staking at planting	Trees that lean at the time of planting should be staked with one, two, or three stakes and supported by flexible ties. Each stake and tie shall allow movement of the tree trunk to develop trunk taper.	Leaning trees can be corrected to grow vertically with the support of stakes and ties. Trees that grow with a lean into maturity can potentially cause conflicts with pedestrian or vehicle paths of travel. Tying stakes to a tree too tightly will prevent movement of the tree, slowing the growth of the trunk and inhibiting establishment of a strong root system that can support the tree during high wind events.
Plant early in the planting season	Plant trees in winter months while rain events are likely and high heat events are less frequent.	Planting new trees in winter months will allow the tree to take advantage of rain events and limited heat stress. Providing water to newly planted trees through the planting season when not naturally occurring, assist the tree in the early phases of establishment.

Tree Planting and Mulching

Planting hole shall be dug no deeper than the root ball and root collar is to be 1 to 2 inches above finished grade.

Keep mulch 4 to 6 inches away from trunk.

Round-topped soil berm 4 inches high by 8 inches wide above root ball surface shall be constructed around the root ball. Berm shall be built 6 to 12 inches outside of root ball.

Finished grade

Ensure root collar is visible

After backfilling, slowly water to saturate the root ball.

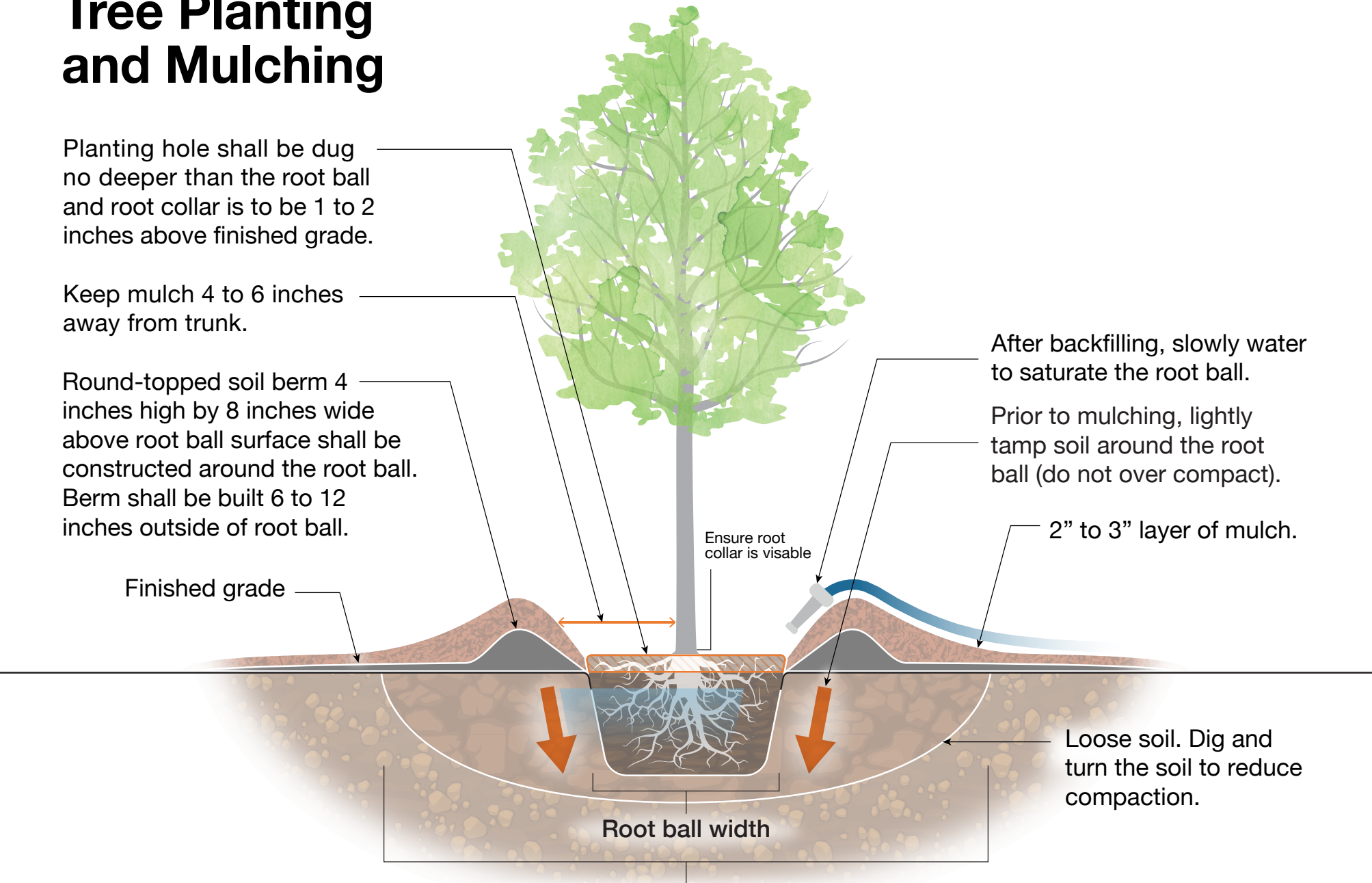
Prior to mulching, lightly tamp soil around the root ball (do not over compact).

2" to 3" layer of mulch.

Loose soil. Dig and turn the soil to reduce compaction.

Root ball width

Planting hole 2-3 times width of root ball



Appendix H4

Tree Staking Guidelines

Tree Staking Care Guidelines



Install two stakes outside of the root ball.

Place non-abrasive tree ties in the middle to lower portion of the tree to allow 3-4" of tree sway in each direction.

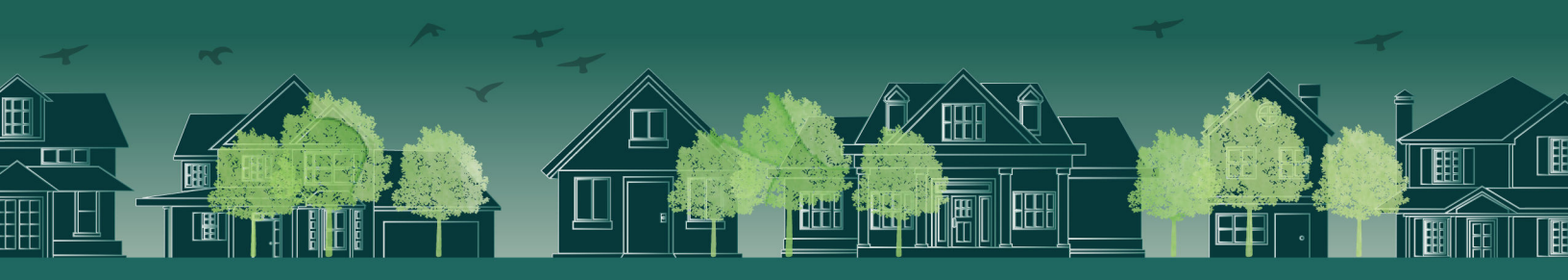
Tree stakes should be firmly secured vertically in the soil 2 feet deep.

Remove nursery stake.

Stake location shall not interfere with permanent branches.

Appendix H5

Tree Watering Guidelines



Watering Guidelines



Watering for Wet Seasons

- Prolonged saturated soil can lead to tree mortality
- Turn off irrigation during rain events
- To avoid over watering a newly planted tree, monitor soil moisture after rain events
- If soil is saturated, stop watering. Resume watering when soil is dry

Watering Guidelines for Hot and Dry Seasons

- Prolonged and unexpected extreme heat waves can threaten a newly planted trees survivability by depleting the available water inside the tree and in the soil
- During these periods trees may need additional watering once or twice a week to be sustained
- It is critical to provide additional water as soon as possible during extreme heat events to maintain tree health and vigor

Tree Age	Frequency	Quantity
■ First 3 months after planting	Deep water by filling basin twice a week	10-15 gallons per watering
■ 4-12 months following planting	Fill the water basin every week or every other week	10-15 gallons
■ ■ ■ Year 2-3	Every 2 - 4 weeks May through October	15-20 gallons
■ ■ ■ ■ Year 4-7	Once a month May through October	Deep watering



Appendix H6

Young Tree Pruning Guidelines

Pruning to Improve Young Tree Structure

- 1 Remove broken branches.
- 2 Select central leader and remove competing leaders.
- 3 Select lowest permanent branch.
- 4 Select scaffold branches.
- 5 Select low temporary branches. Cut back and leave as temporary.

BEFORE PRUNING

1 Broken branch

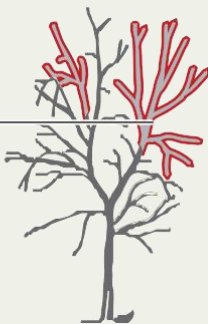


2 Central leader

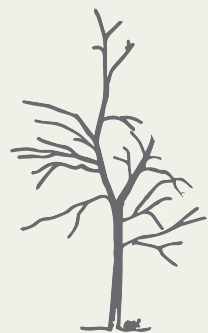


WHAT TO PRUNE

Competing leader



AFTER PRUNING



4 Scaffold branch



5 Temporary branch



3 Lowest permanent branch

NOTE: 1. At the time of planting, limit pruning to removal of broken, dead, or diseased branches only.
2. Young Tree Structural Pruning is to occur only after trees establish and resume normal growth rates following planting.

Appendix H7

Mature Tree Pruning Guidelines

Tree Pruning

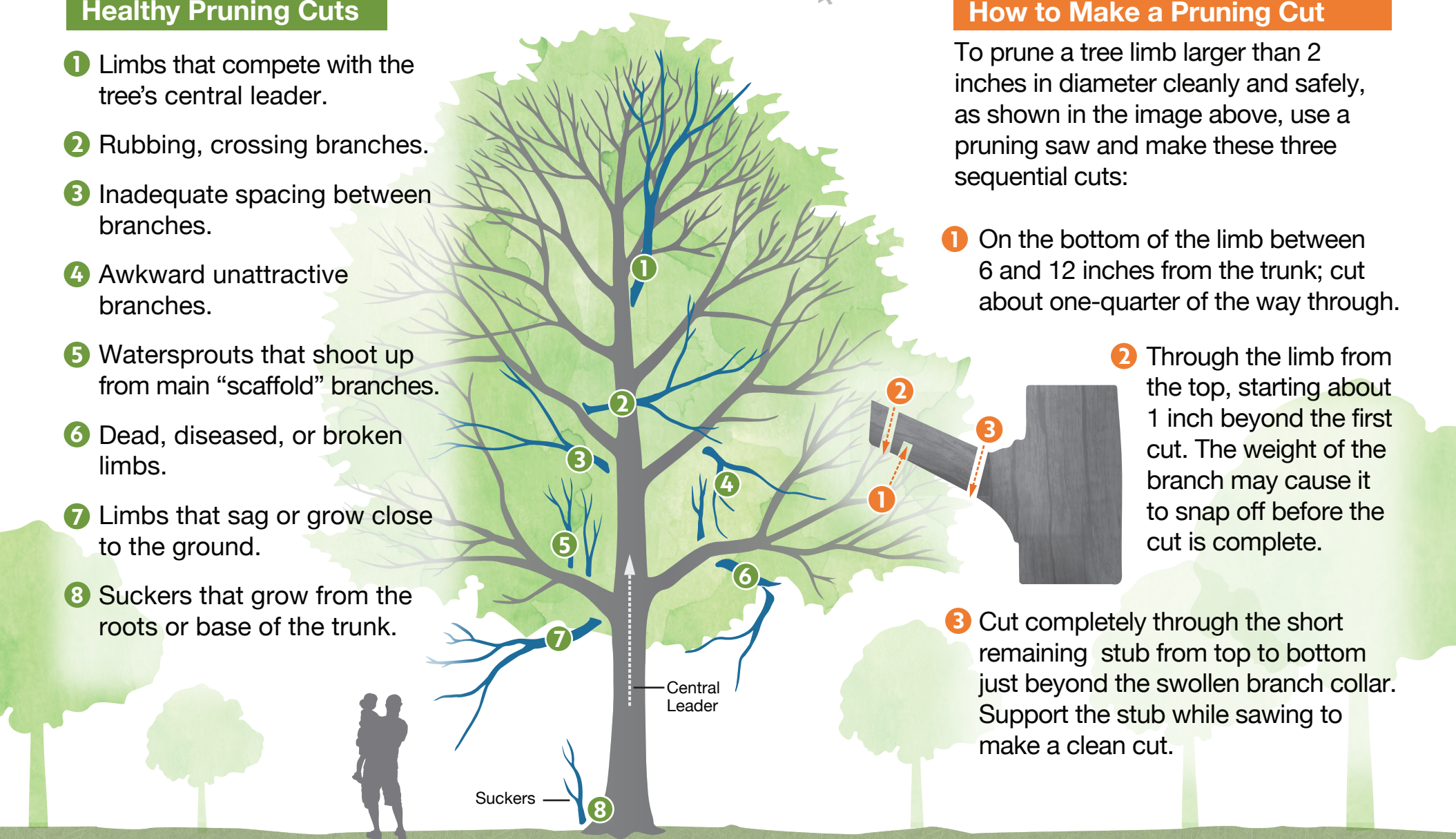
Healthy Pruning Cuts

- 1 Limbs that compete with the tree's central leader.
- 2 Rubbing, crossing branches.
- 3 Inadequate spacing between branches.
- 4 Awkward unattractive branches.
- 5 Watersprouts that shoot up from main "scaffold" branches.
- 6 Dead, diseased, or broken limbs.
- 7 Limbs that sag or grow close to the ground.
- 8 Suckers that grow from the roots or base of the trunk.

How to Make a Pruning Cut

To prune a tree limb larger than 2 inches in diameter cleanly and safely, as shown in the image above, use a pruning saw and make these three sequential cuts:

- 1 On the bottom of the limb between 6 and 12 inches from the trunk; cut about one-quarter of the way through.
- 2 Through the limb from the top, starting about 1 inch beyond the first cut. The weight of the branch may cause it to snap off before the cut is complete.
- 3 Cut completely through the short remaining stub from top to bottom just beyond the swollen branch collar. Support the stub while sawing to make a clean cut.



Appendix H8

Tree Risk Management

Introduction

The International Society of Arboriculture (ISA) developed a specialized Tree Risk Assessment Qualification (TRAQ), training arborists to effectively assess tree risk using a systematic and documented process. TRAQ arborists are equipped to systematically assess tree health, structural integrity, likelihood of tree failure, time frame in which failure may occur, likelihood of impact to target (e.g., people, home, car), and severity of impact should it occur. TRAQ arborists are trained to consider solutions to mitigate tree risk prior to considering removal as a recommendation.

Tree risk management begins with the tree owner establishing an acceptable level of risk (ISA 2017) and identifying the appropriate level of assessment to determine the risk of individual trees. Three levels of risk assessment exist in the ISA TRAQ program which vary in detail and equipment used to complete the assessment: level 1 limited visual assessment, level 2 basic assessment, and level 3 advanced assessment (shown in the table below). Municipalities often utilize all levels of assessment throughout the City to balance risk assessment programs with responsible use of public funds. A level 1 assessment is often used to first identify trees that are high risk. Once high-risk trees or areas of concern are identified, a level 2 assessment occurs for individual trees and mitigation follows. A level 3 assessment is typically reserved for trees of significance, protected trees, or large mature trees that provide value to the community with costly replacement. Effective risk management depends on tree risk assessments being conducted on a regular basis, occurring every 3-5 years as tree risk conditions may develop as trees continue to mature. By utilizing these three assessment levels, the City can manage tree risk prior to failure and retain trees where risk can be mitigated.

Table N-1. ISA Tree Risk Assessment Levels

Risk Assessment Level	Description
Level 1	‘Windshield’ survey to identify high risk trees while driving or walking. Only major defects or concerns are observed and recorded.
Level 2	360-degree observation of the crown, limbs, and trunk. Determination of targets (homes, people, cars) that may be impacted by tree or limb failure. Level of damage to the target should impact occur.
Level 3	Advanced assessments of the roots, stem, or crown. Analyze internal aspects of trees using sophisticated tools and technology.

Appendix H9

Trees and High Wind

Introduction

Minimizing wind related damage from trees is a priority for the City. The table below exhibits tree characteristics and management practices that influence tree risk in high wind areas. Findings are based on arboricultural best management practices and wind and tree management research studies. However, it should be noted that in extreme weather events, many tree failures are unexpected and happen to healthy trees.

Table O-1. Findings For Tree Care in High Wind Areas

Findings	Considerations
Damage to roots from construction can impact a tree's structural stability for decades following.	Susceptibility to windstorms may warrant more stringent protection criteria such as larger Tree Protection Zones (TPZs) than other municipalities.
Certain pruning methods of branches and roots can have detrimental effects on a tree's structural integrity.	Pruning methods such as topping and lion tailing should be prohibited. Pruning trees to establish structurally sound trees with proper trunk and branch taper decrease risk of failure in high wind areas. Exercise caution and consider long term impacts when root pruning on the windward side of a tree.
Most trees fall in the same direction as the prevailing winds during the storm.	Use data from past storms to analyze potential targets at risk based on historic wind direction.
Each species of tree has specific traits such as root vigor, wood composition, and branch structure.	Use the species list, observations from past storms, and online resources to discern which species are suitable to plant in areas vulnerable to high winds.

Source: Gilman, Ed (2015). Storm Damage Prevention: Lessons Learned. Web. Accessed March 2024. International Society of Arboriculture (2017). Tree Risk Assessment, Second Edition.

Appendix H10

Mature Tree Protection During Construction Guidelines

Introduction

Construction for development, maintenance, and renovation can pose threats to tree survivability in numerous ways. Threats include injury to roots, trunks, and branches; soil compaction; soil contamination; and improper pruning. Including an arborist in the planning stages of construction helps avoid damage when trees intersect with the built environment. Arborists identify which trees will be retained or removed, create site-specific tree protection protocols, and establish areas where replacement trees will be planted. Pleasanton's Municipal Code (§17.16.070) provides guidelines for the mandatory tree protections during construction. Further detail for tree protection requirements may have significant benefits on the urban forest, as described below:

1. **Tree Protection Zones:** A Tree Protection Zone (TPZ) is an area surrounding a tree and its critical root zone where no grading, excavation, construction activity, equipment storing, or vehicle parking is to occur. The purpose of the TPZ is to protect all parts of the tree, both above and below ground. The size of TPZ ranges between tree owners; however, research suggests that a TPZ should be at least 1.5 feet (18 inches) wide per every inch of diameter at standard height (DSH), and 18:1 ratio. (Day et al. 2010). A successful TPZ is surrounded by signed fencing that reads "Keep Out: Tree Protection Zone."
2. **Reducing Compaction:** When soil is compacted, water and oxygen available to tree roots is limited, leading to detrimental issues for a tree. In construction areas, compaction occurs purposefully through mechanical compaction or incidentally through the passage of vehicles and construction equipment over soil containing a tree's roots.
3. **Minimizing Effects of Grade Changes:** The optimal zone for root growth is within the first 12 inches of soil depth. Any change in grade within a tree's rooting zone will likely cause negative impacts for tree health. The degree to which these impacts affect the tree depends on the age of the tree, species, prior stressors, and environmental factors.
4. **Inspection:** Trees impacted during construction, maintenance, or renovations, should be monitored for decline annually by an ISA Certified Arborist for the first 5 years after construction. Monitoring should include photographs, annual reports, and mitigation techniques if necessary.

References:

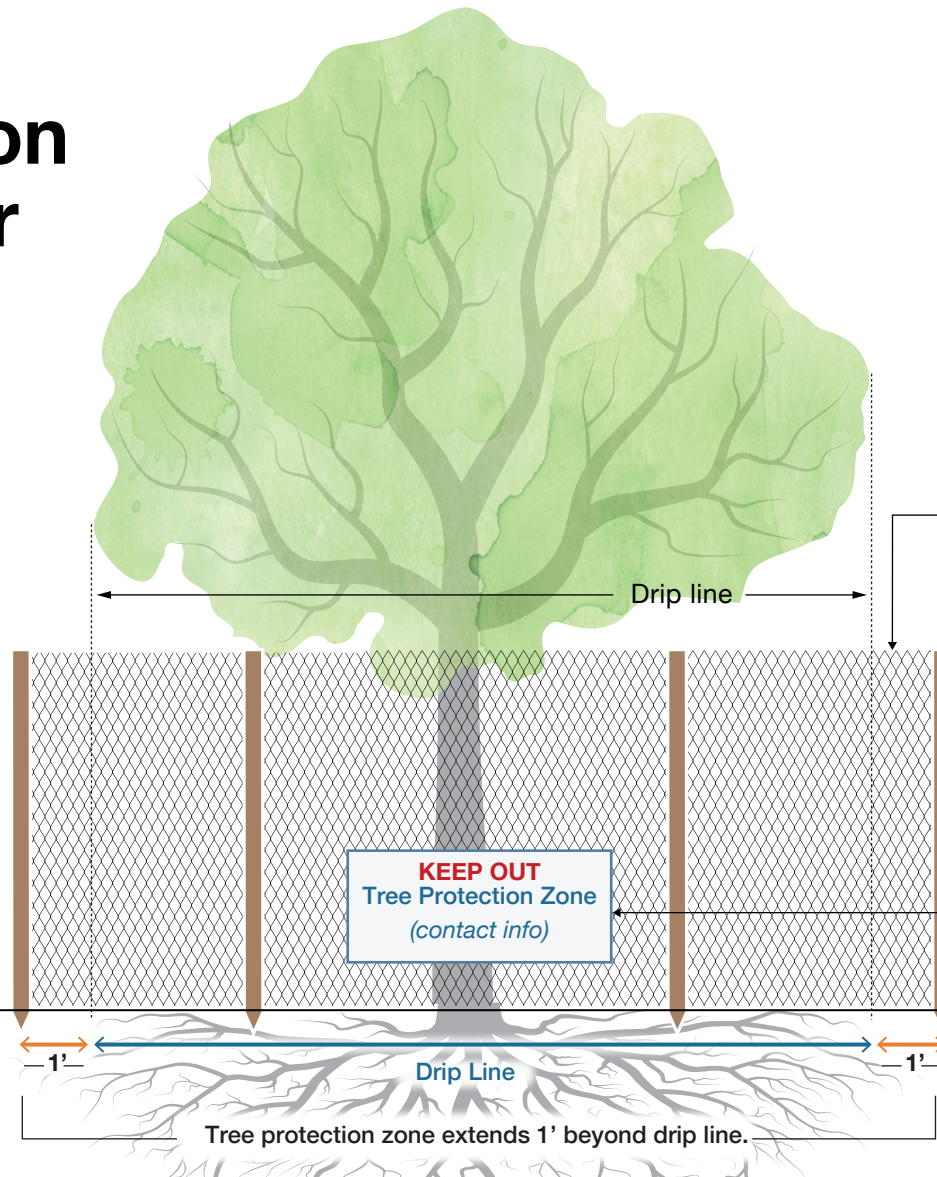
Day, Susan, Wiseman, Phillip & Dickinson, Sarah & Harris, J. (2010). Contemporary Concepts of Root System Architecture of Urban Trees. *Arboriculture and Urban Forestry*. 36. 10.48044/jauf.2010.020. https://www.researchgate.net/publication/265246704_Contemporary_Concepts_of_Root_System_Architecture_of_Urban_Trees

Tree Protection Guidelines for Construction

Tree protections shall be in place prior to any construction equipment or materials being on site. Fencing shall remain in place until construction equipment, materials, and debris have been removed from the site and approval from the City Landscape Architect has been given for removal.



6 ft



A substantial construction fence, such as a non-movable chain link fence, must be placed around the Tree Protection Zone of each Protected Tree.

No vehicles, construction equipment, material, debris, paint or paint products, pallets, chemicals, contaminated water or other foreign material shall be allowed to be placed, poured, piled, pushed, or stored within the Tree Protection Zone of any tree.

Laminated sign with contact info.

URBAN TREE FOUNDATION
ADAPTED BY DUDEK

Appendix H11

Tree Care for Wildlife and the Migratory Bird Treaty Act

Introduction

Tree care professionals need to be aware of their impact on wildlife because their activities can directly or indirectly harm animals. Direct harm includes injuring or killing wildlife or removing nests with eggs or young. Indirect harm involves actions like removing vegetation that protects nests from weather or predators. Understanding these impacts helps arborists balance their work with wildlife care, ensuring they minimize harm while maintaining and creating habitats. This awareness is crucial for preserving urban biodiversity and supporting species that depend on specific tree structures, like dead branches.

Migratory Bird Treaty Act

The [Migratory Bird Treaty Act of 1918](#) (MBTA) (16 U.S.C. 703-712) plays a significant role in tree care by protecting migratory birds from harm during tree care activities. Here are some key points:

Protection of Birds: The MBTA makes it illegal to harm, kill, or disturb migratory birds, their nests, or their eggs without a permit. This includes both direct harm (e.g., cutting down a tree with an active nest) and indirect harm (e.g., removing vegetation that protects a nest).

Industry Standards: Tree care professionals must follow best practices to comply with the MBTA. This includes conducting pre-work inspections to identify and avoid disturbing active nests.

Minimizing Impact: The MBTA encourages arborists to adopt methods that minimize the impact on bird habitats. This can involve timing tree care activities to avoid nesting seasons (birds in California generally nest between February and August) and using techniques that reduce the risk of disturbing birds.

Legal Implications: Violating the MBTA can result in significant fines and penalties. Therefore, municipalities and tree care companies must be diligent in their practices to avoid unintentional harm to migratory birds.

By adhering to the MBTA, tree care professionals can help protect bird populations and contribute to the conservation of biodiversity in urban environments.

Minimizing Impacts to Wildlife During Tree Care:

Tree care work varies in its risk to wildlife, and proper preparation and on-site actions can reduce these impacts. Best management practices for minimizing impacts for wildlife are organized into the following categories:

Training:

Ensuring tree care workers are aware of wildlife and can involve trained professionals when needed. Training levels range from basic awareness to Wildlife Trained Arborists to Wildlife Biologist with specialized knowledge in wildlife protection and habitat assessment.

Project Preparation:

Assessing the breeding season and habitat value of a site to categorize the work and minimize impacts. This involves desktop reviews and site visits to understand potential wildlife presence. In California, nesting season for birds is generally from February through August. For standalone projects involving trees, work

should be done outside of these nesting season months if possible. For municipalities that need to prune thousands of trees each year, it is usually not possible to conduct pruning and removal activities only during the non-nesting season months, so measures should be implemented to minimize impacts to birds and other wildlife.

Tree care work can be roughly divided into three categories, based on the level of expertise and caution required to mitigate impacts to wildlife:

	Low Habitat Value	High Habitat Value	Sensitive Habitat
Non-breeding Season	Category 1	Category 2	Category 3
Breeding Season	Category 2	Category 3	Category 3

Summary of Categories for Minimizing Impacts to Wildlife:

- **Category 1:** Low value habitat during the non-breeding season. Nesting wildlife are least likely to be encountered. A pre-work inspection by a tree care worker with awareness training is recommended.
- **Category 2:**
 - Low value habitat during the breeding season, where nesting wildlife are more likely to be encountered.
 - High value habitat during the non-breeding season, where valuable habitats are more likely to be encountered.
 - A pre-work inspection by a Wildlife Trained Arborist is recommended.
- **Category 3:**
 - High value habitat during the breeding season or sensitive habitat at any time of the year, where nesting wildlife and valuable habitats are more likely to be encountered.
 - Best practice is to contact a Wildlife Biologist for direction. Companies with a programmatic approach may use a well-trained arborist to minimize impacts.
 - The Wildlife Biologist will provide recommendations on how the project can proceed, which may include timing or methodological changes. Permits from regulatory agencies may be required for work in sensitive areas.

Note: Wildlife can nest year-round in any habitat, so the assessed category may change during fieldwork. Signs of wildlife encountered during fieldwork may require further expertise.

Fieldwork:

Practices should be implemented based on the project's category to protect wildlife during tree care activities. Staff with the appropriate training should conduct the pre-work inspection as mentioned above. If active nests are found that may be impacted by the tree work, the Wildlife Biologist should delay the work

until the young no longer depend on the nest and work can safely proceed. In some cases the Wildlife Biologist may be able to suggest alternative methods to use near the nest, which are discussed below.

Considerations for Work Performed Near Active Bird Nests:

Special guidelines for working near nests to avoid disturbing breeding wildlife include:

- The duration of the work to be completed
- The tools being used
- The species involved
- The distance of the work to the active nest
- The status of the nest (e.g. eggs present, parent incubating, young unable to fly, mature nestlings close to fledging),
- The location specifics (e.g. urban vs. rural)
- The environmental conditions (temperature and wind)

Many nests require sufficient cover to provide protection from the elements and disguise from predators so vegetation removal should be minimized around nests. Additionally, a no-activity buffer, or an area in which no work should occur, should be established around the nest where possible.

Emergencies:

Wildlife emergencies during tree work involve situations where wildlife are injured, orphaned, or in danger, or where nests are abandoned or disturbed. The priority is to avoid these emergencies, but appropriate responses are crucial when they occur:

- **Contacting Wildlife Rehabilitators:** If wildlife are injured or abandoned, contact a local wildlife rehabilitator. Provide detailed information about the situation and species involved. The rehabilitator will guide the next steps, which may include doing nothing to allow parents to return or safely transporting the wildlife.
- **Continuing Work:** After a wildlife emergency, consult a Wildlife Biologist before resuming work. If no emergencies occur and no nesting wildlife are observed, continue working while remaining vigilant. Contact a Wildlife Trained Arborist or Wildlife Biologist if unsure how to proceed.
- **Human Health and Safety Emergencies:** These involve immediate risks to human health or safety. A Wildlife Biologist can help coordinate permission to remove active nests with the US Fish and Wildlife Service and other agencies. In extreme situations, action may be taken before permission is received, but this should be a last resort.

These guidelines help ensure that tree care activities are conducted responsibly, minimizing harm to wildlife while addressing emergencies effectively.

Municipalities and contractors can adopt a programmatic approach to consistently apply these practices across multiple sites. The goal is to balance tree care with wildlife protection, ensuring minimal harm while maintaining habitat value.

References:

U.S. Fish And Wildlife Service. "Migratory Bird Treaty Act of 1918." Accessed October 9, 2024.

<https://www.fws.gov/law/migratory-bird-treaty-act-1918>

Basset, Corey; Donohue, Kara; Gilpin, Ryan. 2022. Tree Care for Wildlife Best Management Practices with Western Chapter ISA Appendices. <https://treecareforbirds.com/wp-content/uploads/2022/04/Tree-Care-for-Wildlife-BMPs-4.13.22-2.pdf>

Appendix H12

Tree Replacement to Expand Canopy Cover

TREE REMOVAL AND REPLACEMENT TO EXPAND CANOPY COVER



IF YOU REMOVE...

1x Large Tree

Height: 55'+

Example Species:

- Coast Live Oak (*Quercus agrifolia*)
- Aleppo Pine (*Pinus halpensis*)
- Engelmann Oak (*Quercus engelmannii*)

Benefits:

Large trees should be planted wherever space allows. A large tree provides six times more shade, stores seven times as much carbon, and captures five times more water than a small tree.

...REPLACE WITH:

2x

LARGE TREES

OR

4x

MEDIUM TREES

OR

6x

SMALL TREES



1x Medium Tree

Height: 35' to 55'

Example Species:

- Box Elder (*Acer negundo*)
- Jacaranda (*Jacaranda mimosifolia*)
- Australian Willow (*Geijera parviflora*)

Benefits:

Medium trees strike a balance between the benefits of larger trees and the spatial requirements of small trees. Medium trees are beneficial to have along parkways and in commercial space that may not allow large trees.

2x

LARGE TREES

OR

3x

MEDIUM TREES

OR

4x

SMALL TREES



1x Small Tree

Height: Under 35'

Example Species:

- Toyon (*Heteromeles arbutifolia*)
- Desert Willow (*Chilopsis linearis*)
- Western Redbud (*Cercis occidentalis*)

Benefits:

Small trees are best used when a larger tree may conflict with surrounding infrastructure such as powerlines or nearby buildings. Small trees are also used to fill in gaps in the landscape and create visual interest.

1x

LARGE TREE

OR

2x

MEDIUM TREES

OR

3x

SMALL TREES

Appendix I

Hanford Recommended Tree Species List

City of Hanford Tree Species Selection Guide

This Appendix provides more detail on each tree species from the approved tree species list linked above. The matrix contains 8 attributes for each tree species. The Tree Species Selection Guide table below contains explanations for some attributes found in this appendix.

Table I-1. Tree Species Selection Guide

Attribute		Explanation
Tree size	Height at maturity	These attributes should be the primary factors considered when finding the right species for a planting location. Before planting a tree, one should consider how large it will grow in the coming decades and choose a species that fits the available space at maturity.
	Canopy spread at maturity	
	Trunk Diameter	
	Planting Area requirement	
Water Use Rating		As California and the City of Hanford continue to cycle through extended periods of drought and extreme heat, tree species that require low amounts of water are likely to be suitable for the City's environmental conditions.
Hardscape Damage Potential		The hardscape damage potential is a metric for a species' known ability to cause damage to sidewalks, streets, curbs, and gutters.
Pest and Disease Vulnerability		There are an array of arboreal pests and diseases that affect tree health. Certain pests and diseases can have detrimental affects on certain species trees. Notes about pest and disease susceptibility are included for each species in the tree list.

Species Recommendations

Selecting the appropriate tree species for their designated planting locations can drastically simplify the task of maintaining a sustainable urban forest. Proper attention should be given to making the right species choice because decisions made at this stage have lasting impacts on the health and resiliency of a city's urban forest. Hanford aims to follow the principles of "right tree, right place" when choosing which type of tree to plant and where to plant it.

The Recommended Tree Species List below has been developed to assist with the tree selection process and should be referenced whenever trees are being planted in the City of Hanford. All species included in this list have been filtered through the following considerations:

- **Tree canopy.** The City of Hanford aims to maintain and grow the Urban Forest. Therefore, trees that provide large, lush canopies must be included in the tree list and planted wherever feasible. However, some sites don't have the available space for a large tree to grow. Trees with small- and medium-sized canopies have also been included.
- **Species diversity** helps provide resiliency to pest and pathogen infestations. The tree list has been designed to maximize species options for all of the various site scenarios that exist in Hanford. The

City of Hanford intends to maintain species diversity of its inventory such that no one species represents more than 5%, and no one genus comprises more than 10% of the total City inventory population (See *species diversity sustainability goals in Section 1.4.2*).

- **Physical constraints such as the size of the planting soil area, canopy spread,** and nearby powerlines or underground utilities, must be considered when choosing the appropriate species for a given planting site.
- **Projected suitability and low maintenance costs.** Individual trees should not require extraneous maintenance requirements to maximize the urban forest benefits throughout the city. Trees that are well-suited for their site will require less maintenance than trees in unsuitable locations.
- **Wildlife Habitat.** Trees that maximize wildlife habitat should be prioritized. In many cases, such as parks and large planting sites, this includes native trees. It must be noted, however, that native trees that thrive in wildland habitats may not thrive in some adjacent urban sites where a tree's access to groundwater may be limited and the soil is generally more acidic, saline, compact, and devoid of symbiotic microorganisms that the tree may benefit from. In such cases, a non-native tree able to provide long-term urban forest benefits may be prioritized.
- **Aesthetic criteria of the planting.** Involve the consideration of species-specific features including fruits, litter, thorns, and seasonal color when selecting tree species.

Table I-2. City of Hanford Recommended Tree Species List

Common Name	Botanical Name	Tree Stature	Max. Mature Height (ft)	Max. Canopy Diameter (ft)	Hardscape Damage Potential	Water Use	CA Native	Utility Friendly
2-4 ft Planter Well								
Ray Hartman ceanothus	<i>Ceanothus 'Ray Hartman'</i>	Small	20	15-20	Low	Low	✓	✓
Mexican redbud	<i>Cercis canadensis subsp. mexicana</i>	Small	40	15	Low	Medium		✓
western redbud	<i>Cercis occidentalis</i>	Small	25	10-20	Low	Medium	✓	✓
desert willow	<i>Chilopsis linearis</i>	Small	30	10-20	Low	Medium	✓	✓
smoke tree	<i>Cotinus coggygia</i>	Small	15	10-20	Low	Low		✓
crape myrtle	<i>Lagerstroemia indica</i>	Small	25	25	Low	Medium		✓
desert museum palo verde	<i>Parkinsonia × 'Desert Museum'</i>	Small	20	20-25	Low	Medium	✓	✓
4-7 ft Planter Well or Parkway								
Kurrajong bottle tree	<i>Brachychiton populneus</i>	Medium	50	30	Moderate	Low		
bottle tree	<i>Brachychiton rupestris</i>	Medium	40	20-30	Moderate	Medium		
eastern redbud	<i>Cercis canadensis</i>	Small	30	25-36	Low	Medium		✓
chitalpa	<i>Chitalpa tashkentensis</i>	Medium	35	30	Low	Medium		✓
Australian willow	<i>Geijera parviflora</i>	Large	60	20	Low	Medium		
Tecate cypress	<i>Hesperocyparis forbesii</i>	Small	25	20	Moderate	Low	✓	✓
toyon	<i>Heteromeles arbutifolia</i>	Small	25	8-15	Low	Medium	✓	
sweet bay	<i>Laurus nobilis</i>	Medium	40	15-30	Moderate	Medium		
fruitless olive	<i>Olea europaea 'Wilsonii'</i>	Small	25	25	Moderate	Low		✓
Canary Island pine	<i>Pinus canariensis</i>	Large	60	40	Moderate	Medium		
Aleppo pine	<i>Pinus halepensis</i>	Large	60	20-40	Moderate	Low		
Chinese pistache	<i>Pistacia chinensis</i>	Medium	40	25-35	Low	Low		
coast live oak	<i>Quercus agrifolia</i>	Large	70	30-70	High	Very Low	✓	
Engelmann oak	<i>Quercus engelmannii</i>	Large	70	75-80	Moderate	Low	✓	
cork oak	<i>Quercus suber</i>	Large	70	70	Moderate	Low		

>7 ft Planter Space, Yard, or Park								
Illawarra flame tree	<i>Brachychiton acerifolius</i>	Large	60	30-40	Moderate	Low		
pink flame tree	<i>Brachychiton discolor</i>	Large	70	30	Moderate	Medium		
floss silk	<i>Cebia speciosa</i>	Large	60	40-50	Moderate	Low		
jelecote pine	<i>Pinus patula</i>	Large	70	20-30	Moderate	Medium		
Mexican sycamore	<i>Platanus mexicana</i>	Medium	50	30	Moderate	Medium		
California sycamore	<i>Platanus racemosa</i>	Large	80	20-50	Moderate	Medium	✓	
London plane	<i>Platanus x hispanica</i>	Large	80	50	High	Medium		
blue oak	<i>Quercus douglasii</i>	Large	70	40-50	Low	Very Low	✓	
Hungarian oak	<i>Quercus frainetto</i>	Large	60	70	Moderate	Medium		
California black oak	<i>Quercus kelloggii</i>	Large	70	30-50	Moderate	Low	✓	
valley oak	<i>Quercus lobata</i>	Large	70	50	Moderate	Low	✓	
Bur oak	<i>Quercus macrocarpa</i>	Large	80	30	Moderate	Medium		
Chinquapin oak	<i>Quercus muhlenbergia</i>	Large	60	50-70	Low	Medium		
Mexican blue oak	<i>Quercus oblongifolia</i>	Large	60	20-30	Moderate	Low		
netleaf oak	<i>Quercus rugosa</i>	Large	60	20-40	Moderate	Low		
island oak	<i>Quercus tomentella</i>	Medium	50	25-40		Low		
southern live oak	<i>Quercus virginiana</i>	Large	80	60-75	High	Medium		
interior live oak	<i>Quercus wislizenii</i>	Large	70	40-75	Moderate	Medium	✓	
Chinese elm	<i>Ulmus parvifolia</i>	Large	60	50-70	Moderate	Low		