CITY OF OAKLAND

URBAN FOREST PLAN 2024

▲ **CAL FIRE staff performing community engagement in Oakland. Credit: CAL FIRE**

▲ **Young oak trees planted in DeFremery Park with support from CAL FIRE and California Climate Investments.**

▲ **Citywide Tree Inventory Staff, Davey Resource Group.**

Oakland Leadership

Mayor Sheng Thao

Rebecca Kaplan
At Large

Dan Kalb
District 1

Nikki Fortunato Bas
District 2
(Council President)

Carroll Fife
District 3

Janani Ramachandran
District 4

Noel Gallo
District 5

Kevin Jenkins
District 6

Treva Reid
District 7

Love Life Acknowledgment

We acknowledge "Love Life" as our motto as we denounce violence in all forms and the conditions that create violence. We commit to working against these conditions to create a safe space for all to operate in love and peace on our streets.

We acknowledge that when we demonstrate love, we also manifest qualities of respect, kindness, grace, truth, understanding, humbleness, and forgiveness towards each other. We commit to acts of love as an intentional force to generate tangible solutions, in regards to all policies, declarations, recommendations, resolutions, appointments, and actions.

We recognize as leaders, we must set an example and precedent for those who have entrusted us with these duties. We accept the responsibility to make our city and community a better place by bringing inspiration instead of insults, contributions instead of complaints, constructive feedback instead of criticism, and even in our passion for all issues no matter how difficult, we lead with the guiding principle of love.

We ask that you share with us in this commitment and practice of exhibiting love, good faith, positive energy, and respect in how you comment, present information, report out, or inform. We appreciate all contributions to this space and even when expressing hurt, harm, disappointment, dispute, or disagreement, we request that we lead with love in your heart.

We acknowledge Love in practice even when there are differences in opinions, strategies, procedures, and processes, and we will seek to find common ground, and tangible solutions that demonstrate love for our city, its residents, our community, and all constituents.

We acknowledge and recognize that when we model this practice of love, it will establish a norm that will resonate and be exemplified throughout our city and create the change we all wish to see in our communities.

We acknowledge that when we lead with love we are able to uplift a thriving city rooted in equity, equality, justice, inclusion, and opportunity for all regardless of race, gender, age, class, socio economic status, nationality, religion, sexual preference, housing status, or political affiliation.

We acknowledge that when we uplift love, we uplift those impacted by violence of all and any kind. We acknowledge that when we uplift love we uplift traditions of our ancestors, our arts, our culture, our businesses, our educators, our unhoused, our civic servants, and all who contribute to the fabric and well being of our community.

We commit to the action of “Love Life” as our motto and mantra.

Table of Contents

Foreword

Dr. Ayodele Nzinga, MFA, Ph.D.
Poet Laureate,
Oakland, California

We often refer to ourselves as stewards of nature. Climate change, one of the most immense challenges we face in modernity, signals we could do a better job. What we do and ignore can profoundly affect the future of those who come after us. We are not called to simply steward nature but to see ourselves as an integral part of it. Our most minor acts can significantly impact the world in which we live.[1]

"those in rented rooms only have rented trees"

–Dr. Ayodele Nzinga

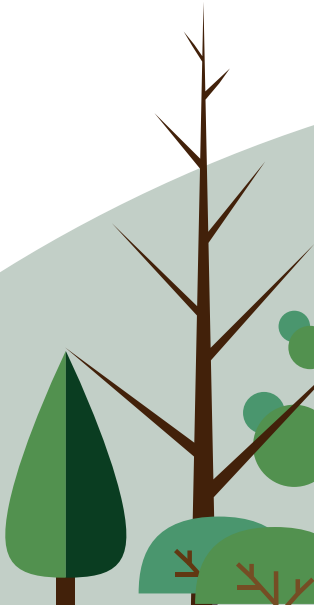
The Urban Forest Plan (Plan) is a condensed history of trees in Huichin, part of the unceded land of the Chochenyo Muwekma Ohlone, known as Oakland. This Plan, filled with facts, graphs, and science clearly outlines the benefit and necessity of trees, and supports robust and intentional investment in equitably greening Oakland.

The Plan's authors want us to think about the Urban Forest in a context that allows for our holistic understanding of the importance of trees in our lives. This Plan shows the correlation between urban trees and restorative pathways to environmental justice, economic gains, and health.

The term "Urban Forest" invites us to think about trees in a particular city setting—distinct from suburban or rural settings. We are considering the intentional greening of the most peopled parts of our built environments. When we think about the design of open spaces and cityscapes, we must look for the opportunity to include trees. They add to the quality of life in tangible and measurable ways.

Trees planted today will significantly impact the health of neighborhoods tomorrow.

Trees are interconnected. They share resources below the surface, strengthening one another and supporting the emerging "under" forest that ensures the perpetuation of trees. People are similarly interconnected; when resources are not evenly shared, the disadvantage will harm the whole. People and trees are interconnected and interdependent. We could learn a lot from trees about equitable distribution and mutual benefit.



"If we represent knowledge as a tree, we know that divided things are yet connected. We know that to observe the divisions and ignore the connections is to destroy the tree."

-Wendell Berry[2]

The Urban Forest Plan in support of the equitable greening of Oakland points out the connections between a lack of tree canopy and the physical, economic, and quality of life of communities. Planning is a precursor to action; the adoption of the Plan lays the foundation for moving forward in an intentional fashion to ensure that all of Oakland benefits from its relationship with nature.

I have a relationship with 'the urban forest' or the lack thereof. Trees matter to me. They matter to all of us whether we live in neighborhoods with adequate canopy or we live in neighborhoods that would benefit from intentional greening—trees or the lack of trees matters.

My oldest daughter Ebony was conscious as a small child of the absence of trees and green space in the part of East Oakland in which we lived. She traveled in the backseat across the High Street Bridge to go to preschool in Alameda. On the way home one day, she remarked that she wished we lived in the park—Alameda. Her yearning for green spaces connects with my memories of simple summer outings on sweltering days in the flatlands. We would pile into the car, buy snow cones and drive from the flatlands up into the Oakland Hills, where the houses were further apart, separated by green open space, flowers, and trees. Our return to the flatlands, where we could see the heat waves rising from the asphalt, was as sobering as the drive into the greenness was soothing.

We were green adjacent – we intuitively sought out green spaces sensing their benefit. I drove my kids to summer camp in Laytonville from the flatlands of formerly redlined communities, South Berkeley, East, and West Oakland.

Traveling North towards the green ruralness of Laytonville provided the same experience for us as the short trips to the Oakland Hills. We could feel the difference in our bodies. On the way to Laytonville, there is a stretch of windy road, distinguished by trees obviously a hundred years or older. They line the road obscuring the houses beyond, creating an ancient border with branches crisscrossing the sky above. We call it the Cathedral of the Trees. One rides through this grove as one walks through an old and stately church with an air of reverence and a sense of place that feels holy. Even short trips to green spaces can have beneficial effects on the human psyche.

▲ Soul Tree Forest by Deanna Van Buren with spoken poetry by Dr. Ayodele Nzinga, Yerba Buena Center for the Arts, San Francisco. Credit: Deanna Van Buren

▲ Self portrait by Dr. Ayodele Nzinga.

"The trunks of trees are separate, but the roots hold on to each other tightly, and the branches at the top are interwoven. They are united at the deepest and the higher level. Men should be like an immense forest."

-Romano Battaglia[2]

Everything is connected.

I raised my children on the edge of greenness in redlined neighborhoods. Maps of these neighborhoods held up against maps that reflect communities with inadequate tree canopy reveal a contested relationship. You can track environmental disparity economically, in health statistics, and life expectancies.

We have a reciprocal relationship with nature that requires our contribution. Trees are essential to life on this planet—they are the earth's lungs – they breathe for us. Think of trees as primordial guardians of the environment. The care and intention we invest in lush green spaces with adequate tree canopy in all Oakland's neighborhoods is an investment in all Oaklanders now and in the future.

As you read the Urban Forest Plan take the description of Oakland from the beginning of the Plan with you through your consideration of the scientific framing of facts, maps, and charts, and hold in mind a curiosity about the actions taken and not taken that bring us to this point. Then ask, what actions are required to reforest Oakland and create the greenest future possible?

▲ Mural depicting Oakland artists as community leaders–51st Street and Shattuck Avenue. Credit: Kev Choice

Executive Summary

Introduction and Purpose

The trees lining Oakland's streets and shading its parks have long been valued as an important community asset and a cultural symbol of the community's strength and unity. Oakland is named after the native coast live oak trees (*Quercus agrifolia*) that once dominated the landscape when this land was known as Lisjan Village and occupied by the native Ohlone people. The oak tree holds a special place in Oakland's identity, as seen in the Jack London coast live oak proudly growing in front of City Hall, the City's tree logo, and the many tree references and images used by Oakland businesses, artists, and community groups.

Today, Oakland's urban forest is made up of over 500 different tree species, and includes 56,000 street trees, 12,000 trees in landscaped parks, and a vast yet unknown number of trees on private property and in open space areas.

Oakland's Urban Forest

Oakland's urban forest is made up of all the trees that surround us every day. From those lining our streets and in City parks, to those growing in our yards, around businesses, and open spaces.

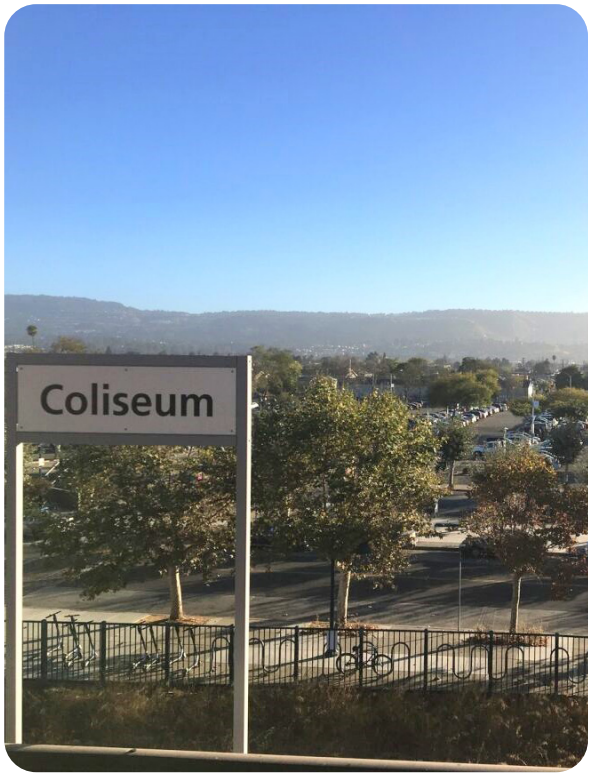
WHY TREES MATTER

Trees are a valuable community resource that provide many benefits to Oakland. They clean the air, create shade, enhance physical and mental health, improve water quality, absorb greenhouse gases, reduce energy use, beautify neighborhoods, foster a sense of community, support wildlife, provide jobs, reduce stormwater runoff, and mitigate climate change. The role that trees play in reducing the effects of climate change is becoming increasingly important as Oakland experiences more days above 90°F. Studies have shown that neighborhoods with large trees in parks, along streets, and yards can see temperatures that are 2° to 9°F cooler than areas without trees.

See Section One for a detailed list of tree benefits.

▲ The historic Jack London Oak in front of Oakland City Hall.

A healthy and abundant urban forest requires investment and long-term management. Over the past fifteen years, the City of Oakland has primarily taken a reactive approach to managing the urban forest. Recognizing the need for a more proactive approach, the city embarked on a comprehensive assessment of its trees and management practices. The ultimate goal was to develop an urban forest plan for Oakland that identifies ways to make lasting investments in the long-term health of the urban forest and ensure that the benefits of trees are distributed equitably throughout the community. An urban forest plan is a tool to identify long-term management recommendations and potential funding mechanisms to grow a healthy and equitable urban forest. It is a guiding document and is not prescriptive by design. It allows for flexibility in implementation based on new information, resources, partners, and funding.



▲ View of East Oakland from BART platform.

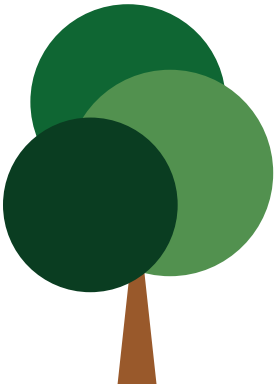
With grant funding from CAL FIRE and California Climate Investments, the City of Oakland engaged with the community and Davey Resource Group, Inc. to create Oakland's first Urban Forest Plan (Plan). The Plan includes five sections:

- **Section 1. Introduction:** Acknowledge the history of Oakland's urban forest and identify the many benefits trees provide to the community.
- **Section 2. An Equity Centered Approach:** Identify equity issues and describe the results of the community engagement process.
- **Section 3. Oakland's Urban Forest:** Urban forest structural and equity analyses based on satellite canopy data and a street and park tree inventory.
- **Section 4. Managing Oakland's Urban Forest:** Analysis of the Oakland Parks & Tree Division operations and hierarchy of needs.
- **Section 5. Implementation:** A collection of goals, strategies, and action items for meeting the needs of the community and equitably growing the urban forest.

Equity is at the Heart of the Urban Forest Plan

Oakland's trees are not equitably distributed, and their benefits are not fairly shared. Oakland's frontline communities — those most vulnerable due to racial discrimination, poverty, disability, housing insecurity, linguistic isolation, and poor air quality — have fewer trees than more affluent parts of Oakland and suffer disproportionately greater environmental injustices because of this. These communities have the least canopy cover but are in the most need of the benefits that trees provide (see Map 1 and Section 3).

The Plan's recommendations prioritize equity by focusing tree planting, tree pruning, community engagement, relationship building, and other services in Oakland's frontline communities. To ensure equity in implementation of broader citywide recommendations, the Plan requires that work begins in frontline communities before moving into other parts of Oakland (see Section 5).



- Tree canopy and access to trees varies widely by neighborhood.

Engagement and Outreach

Engaging the Oakland community is an essential first step in developing an equitable urban forest. To evaluate community values, understanding, and appreciation of trees, a 50-question survey on Oakland's urban forest was developed. The survey was distributed widely with paper copies available at events and on-line versions, in multiple languages, available through a dedicated project website. The website also provided project and urban forestry background information, including links to tree canopy and street and park tree resource assessments, pre-recorded presentations, and interactive tree canopy maps.

The Plan's engagement activities followed best practices by partnering with four local organizations with established relationships within the community:

- California Interfaith Power & Light
- Common Vision
- Forest & Tree
- Trees for Oakland with the Oakland Parks & Recreation Foundation

Partner-led engagement activities emphasized reaching frontline community members and occurred organically at in-person and virtual community events and meetings, as well as through email, social media outlets, and newsletters. The partners shared information about the urban forest and collected survey responses. The survey was open from April 2022 to August 2022 and collected over 2,400 responses (see Section 2 for an overview of the results).

▲ Volunteers and City staff collaborate to plant trees in Union Point Park.

COMMUNITY ENGAGEMENT THEMES

The Urban Forest Plan addresses nine primary themes identified during the community engagement process:

1. The City of Oakland must provide equitable tree planting and pruning services. Proactive, regular tree pruning and hazardous tree removal will cost an average of $17 to $20 million per year with an additional $7.3 million per year for tree planting. Funding needs to be secured to perform this work.
2. Trees can be a public safety issue. Unmaintained trees can create safety hazards while maintained trees enhance public safety, improve sightlines, and reduce tripping hazards underscoring the need for regular maintenance (see #1).
3. The community values the emotional and ecosystem benefits of trees. Adopting and funding this plan is essential to grow and maintain the urban forest to equitably provide the benefits that the community values.
4. The urban forest needs to be sustained for future generations. This is a 50-year plan that is designed to be regularly updated. It includes scenarios for equitably maintaining Oakland's tree canopy.
5. The community wants green job training, education, and volunteer opportunities. This plan identifies concrete actions to increase these opportunities through collaboration between the City, community groups, and local educational institutions.
6. Social justice is critical. Equity is at the heart of this plan and is a core value in all recommendations and actions.
7. Appropriate tree species should be planted. This plan recommends thoughtful tree selection based on research, climate science, and arboricultural best practices.
8. Tree-related sidewalk issues need to be fixed. Action items identify filling vacant City staff positions and collaboration among City departments to implement industry best practices to minimize conflicts between trees and sidewalks.
9. The community is unfamiliar with Oakland's tree protection and planting policies. This plan addresses the City's need to improve community engagement as well as tree-related policies.

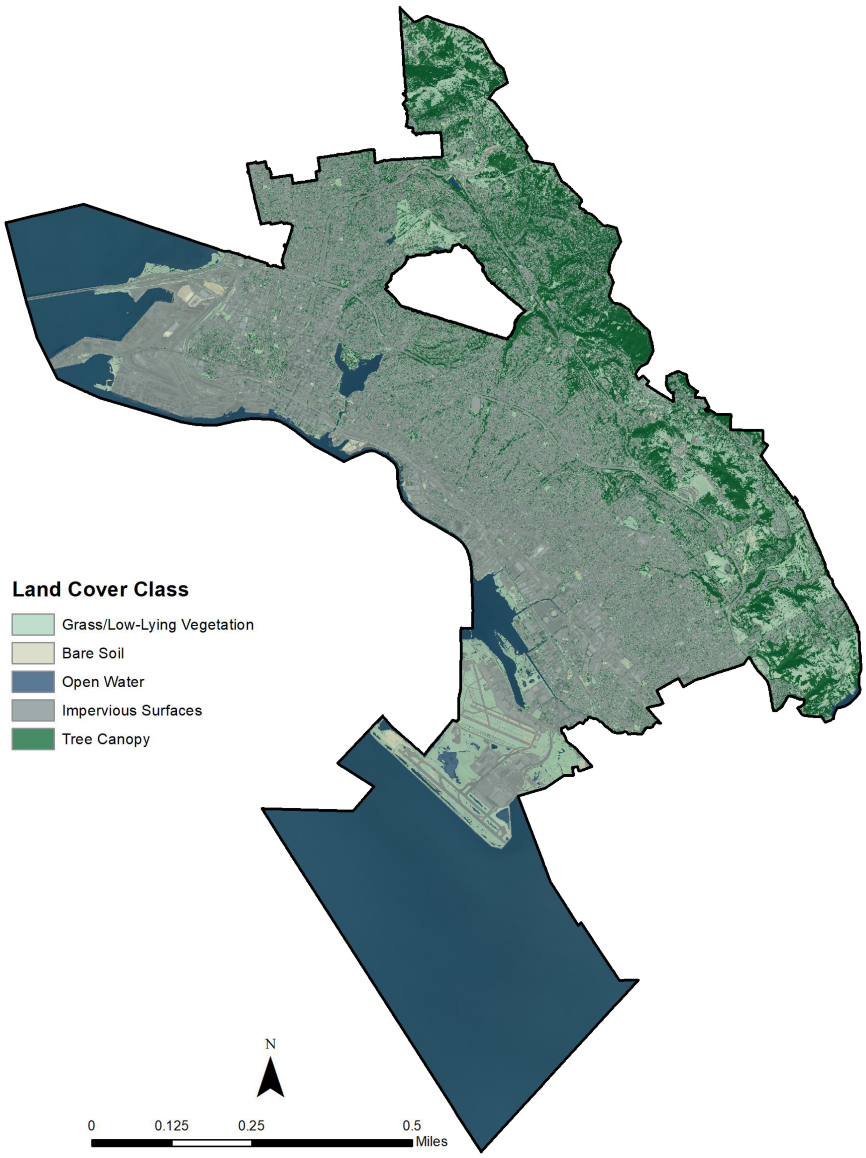
Urban Forest Composition and Function

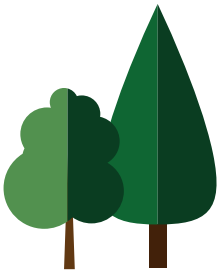
Two assessments of Oakland's urban forest were conducted as part of the development of the Urban Forest Plan (see Section 3 for full details):

- **Tree Canopy and Landcover Analysis.** 2018 satellite imagery was used to determine the amount of Oakland's area that is covered by tree canopy, cement/asphalt/structures (impervious surfaces), grasslands/low-lying vegetation, bare soil, and open water.

  Oakland's overall tree canopy decreased from 22.3% in 2014 to 21.5% in 2018. Based on this trend, we estimate overall tree canopy would be 20.6% in 2024. Furthermore, the canopy is not equitably distributed. Canopy cover ranges from a low of 9% in several frontline communities to a high of 43% in some affluent areas in the Oakland hills (see Oakland Tree Canopy & Landcover Assessment).

OAKLAND LAND COVER





- **Street and Park Tree Inventory.** A team of arborists conducted in-person inspections of 68,000 City street and park trees to record their location, species, size, maintenance need, and other information. They also identified over 29,000 vacant planting sites and over 2,000 tree stumps that could potentially be planted with new trees. Additional assessment of the vacant sites and stumps, including a review of below-ground utilities is needed to determine if sites are suitable for planting. Oakland's street and park tree inventory data was used to calculate the environmental benefits of these trees, including carbon storage, pollution removal, total value, and more (see table below and Section 3). In addition to the benefits that can be quantified, Oakland's urban forest also provides benefits that cannot be quantified such as improvements to mental and physical health, wildlife habitat, and beautifying the city. While these are not included in the dollar amount value, they are important benefits for the community.

The benefits that Oakland's urban forest provides are essential for the quality of life of city residents, however the urban forest is at risk. Oakland's urban forest (and the many benefits that it provides) are threatened by drought, climate change, fire, human development, pests, a lack of regular maintenance, and other forces. The Urban Forest Plan aims to make trees a priority in Oakland and address the forces that threaten its health and sustainability.

QUANTIFIABLE ENVIRONMENTAL BENEFITS OF OAKLAND'S INVENTORIED STREET AND PARK TREES

Annual Benefits		
Gross Carbon Sequestration	(tons/year)	23,429
	($/year)	$101,372
Avoided Runoff	(gallons/year)	25,400,000
	($/year)	$47,637
Pollution Removal	(pounds/year)	26,039
	($/year)	$219,072
Total Annual Benefits	**($/year)**	**$368,081**
Structural Benefits		
Lifetime Carbon Storage	(pounds)	65,832,000
	($)	$5,613,781
Replacement Value	($)	$191,687,400
Total Structural Value	**($)**	**$197,301,181**

City Operations Analysis

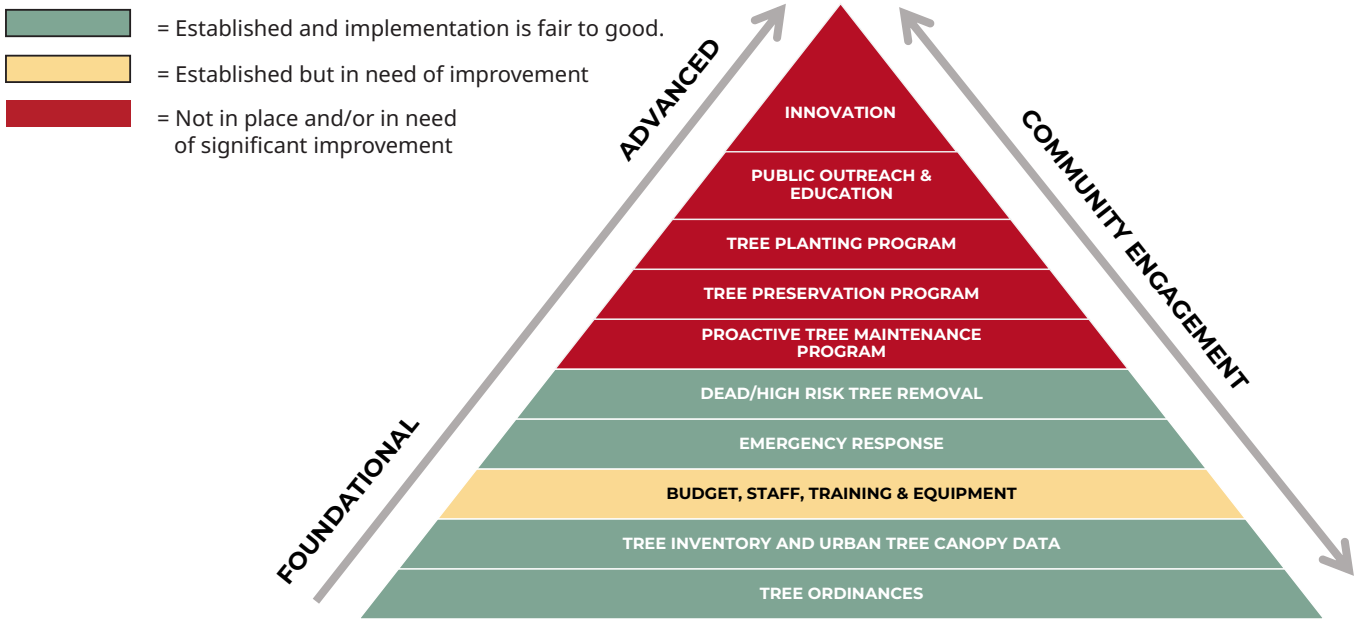
The City's urban forestry operations were analyzed to understand the current care and maintenance levels and provide recommendations for improvement (see Section Four).

Public tree maintenance is the responsibility of Oakland Public Works, Parks & Tree Division. Significant funding reductions since the 1990s have hampered operations, resulting in a substantial backlog of deferred tree maintenance and a shortage of services available to the community. To illustrate, the tree inventory revealed that 92% of Oakland's street and park trees require some level of pruning.

The Plan highlights program deficiencies and also provides recommendations to more equitably, efficiently, and effectively manage Oakland's urban forest.

The image below shows the hierarchy of urban forestry management needs. Needs are color-coded to indicate the Division's successes and areas that require significant improvement. Many of the foundational needs are being met except budget, staff, training, and equipment. The needs further up the pyramid are lacking and need to be addressed to effectively meet the community's desires and sustainably and equitably maintain Oakland's urban forest.

ASSESSING OAKLAND ON THE HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS



▲ The Parks & Tree Division uses a variety of specialized vehicles to perform tree work throughout Oakland. Pictured: crane (left) picks up dead tree stem for removal and disposal, chip truck (middle) collects wood chip debris from a chipper attached to it on the rear (not visible in photo), large aerial (right) allows tree trimmers to safely access trees for pruning and removal work.

The Plan's operational analysis identifies key insights that negatively affect the Parks & Tree Division's operations and the management of Oakland's urban forest:

1. Deferred maintenance amplifies Oakland's emergency workload.
2. There is a major backlog of dead and/or hazardous trees that continues to increase.
3. The Parks & Tree Division is in an operationally reactive position, which is logistically challenging, inefficient, and costly.
4. Lack of tree maintenance is a source of frustration for the community.
5. Lack of tree planting, community engagement, and public outreach programs make it difficult to bring awareness to the urban forest in the face of Oakland's many other competing priorities.

OPERATIONS & TREE CANOPY SCENARIOS

The Plan provides scenarios to improve the Parks & Tree Division operations and tree planting, but implementation requires staffing and a sufficient budget.

Operations Scenarios. The Plan presents two operations scenarios and identifies the tasks, number of staff, required equipment, and costs to effectively manage Oakland's urban forest (Appendix A).

- **Operations Scenario A:** City staff handle routine work while contractors assist with backlog—average cost of $21 million per year.
- **Operations Scenario B:** City staff are assisted by contractors in addressing both routine work and backlog—average cost of $17 million per year.

▲ City staff plant street trees with students.

Tree Canopy Scenarios (see Section 3). Three options for tree canopy goals over a ten-year period (2024-2034) are presented in the Plan. Scenario 1 is provided as a point of reference but is not a viable path forward. Scenarios 2 and 3 will require public-private partnerships to plant trees on different property types. Tree planting will be prioritized in frontline communities.

- **Tree Canopy Scenario 1:** Maintain current trend—plant zero (0) trees, resulting in an estimated reduction of tree canopy to 18.6% by 2034.
- **Tree Canopy Scenario 2:** No net loss—plant 5,903 trees per year to maintain 20.6% canopy cover, with an average annual cost of $7.3 million.
- **Tree Canopy Scenario 3:** Increase canopy to 22.5% - plant 12,536 trees with an average annual cost of $15.6 million.

Adopting and funding an operations scenario and tree canopy scenario will result in:

1. Proactive pruning of all street and park trees (moving away from emergency response which is more expensive and has long-term impacts on the overall health of Oakland's urban forest).
2. Providing equitable services to frontline communities.
3. Planting of approximately 6,000 to 12,500 trees per year by the City and community groups and prioritizing work in frontline communities where trees are needed most. This will set the groundwork for achieving canopy equity.
4. Jobs, education, and additional benefits and opportunities for current and future generations.

Implementation

The Plan's Implementation Section (Section 5) addresses the Parks & Tree Division's challenges and needs, identifying opportunities and recommendations to effectively and equitably maintain and grow Oakland's urban forest in a way that meets community needs. This section identifies nine goals that are categorized into three themes (programs, people, policy). Each goal has two to five strategies, and each strategy has one to six action items. In total, there are over 70 specific action items for equitably improving Oakland's urban forest.

Adopting the Urban Forest Plan is the first step towards growing and sustaining an equitable urban forest in Oakland. However, implementation cannot occur without funding. A variety of potential funding sources are described within the Plan. It is crucial that consistent and relaible funding sources are identified and implemented for the sustained maintenance and care of Oakland's urban forest.

▲ Volunteers planting trees in Sobrante Park.

Section One

Introduction

The City of Oakland is pleased to present its first Urban Forest Plan (Plan). Developed with funding from a California Department of Forestry & Fire Protection (CAL FIRE) Urban and Community Forestry Program and California Climate Investment grant, the Plan focuses on improving inequities in Oakland's tree canopy and the management and care of public trees. Through a dedicated equity-based approach, the Plan's goals, strategies, and actions strive to ensure that all of Oakland's neighborhoods and residents have access to a healthy and abundant urban forest and the many benefits trees provide.

The Plan provides insights into the current state of Oakland's urban forest and its management and outlines recommendations and actions to ensure it is maintained as an equitable and sustainable community asset. It provides the City and its partners with a strategic, equity-based approach for managing and preserving Oakland's trees to enhance and sustain tree benefits as well as the overall aesthetic and livability of the city.

What is the urban forest?

Oakland's urban forest is the network of trees and other vegetation in the city. It includes trees growing along streets, as well as in parks, yards, and private spaces.

"Urban forests are systems of trees, other vegetation, and water within any urban area. They can be understood as dynamic green infrastructure that provides cities and municipalities with environmental, economic, and social benefits. Urban forests are forests for people." (Michael Leff, The Sustainable Urban Forest).

PLANNING FOR THE FUTURE

"The best time to plant a tree was twenty years ago. The second-best time is now."

Popular adage

The Ohlone people, who have inhabited this land for over 7,000 years, have a deep-rooted cultural relationship with the land that exemplifies sustainable practices. Their approach to sustainability far exceeds our contemporary understanding of the term. As a modern city, the Ohlone's approach to sustainability raises the question of whether we can formulate plans that span 1,000 years or even 100 years. While our daily lives may not always prioritize long-term perspectives, it is crucial to recognize that our actions and inactions can have lasting impacts. Embracing a long-term view is essential for the well-being of future generations.

Cities often create plans for different types of infrastructure, but trees are uniquely different because they are biologically alive; and despite our advances in modern technology, you cannot just build a full-size tree. You have to grow it. This requires both patience and foresight.

ALIGNING ACROSS PLANNING EFFORTS

Oakland has a history of planning that has focused directly or partially on the city's urban forest, including:

- GREENSTREETS (1981)
- Oakland Central District Street Tree Study (1984)
- Open Space Conservation and Recreation (OSCAR) Element of the Oakland General Plan (1996)
- Oakland Street Tree Plan (1998 – not formally adopted)
- West Oakland Reforestation Plan (2013)
- Owning Our Air: The West Oakland Community Action Plan (2019)
- East Oakland Neighborhood Initiative (EONI) (2019)
- General Plan (update in progress)
- Equitable Climate Action Plan (ECAP) (2020)
- Oakland Vegetation Management Plan (anticipated 2024)

This Urban Forest Plan is built upon these plans and is a direct outcome of the ECAP action item CR-2: Expand and Protect Tree Canopy Coverage, which specifically calls for the creation of an Urban Forest Plan that:

- "Prioritizes strategies to address disparities among neighborhoods in tree canopy coverage;
- Ensures that carbon sequestration is a major factor in tree planting targets, selection of tree species, and tree management practices;
- Establishes a clear and sustainable funding mechanism for ongoing tree maintenance; and
- Establishes a protocol and goals for community partnerships for tree planting and maintenance."

An Equity Framework

An equity framework recognizes that all communities experience the same level of access to and benefits from resources, services, and opportunity and seeks to address historical and systemic disparities to create more equitable conditions and access to opportunity for communities that have been and are underserved. Oakland's frontline communities include those who are most impacted by racial disparities, including Black, Indigenous, and People of Color (BIPOC) residents, low-income residents, residents with disabilities, those with housing insecurity or linguistic isolation, and others.

"Tree planting is an impactful and achievable solution to buffer frontline communities from the effects of climate change. Advancing environmental justice requires clean air, cooling tree canopies and healthy futures for all communities, and this is a tangible step toward achieving those outcomes in Oakland."

- Darlene Flynn,
Director, Oakland Department of Race & Equity

▲ Street mural in East Oakland, unknown artist.

What Does Equity in Urban Forestry Mean?

The goal of equity-focused urban and community forestry is to achieve equal environmental, economic, social, and cultural urban forest benefits across ALL neighborhoods, regardless of race, income, disability, or other characteristics.

Creating an equitable and healthy urban forest means allocating the resources and opportunities needed to improve the size, quality, number, and maintenance of trees and greenspaces in neighborhoods that may be lacking tree canopy and greenspace. Equitable urban forestry involves:

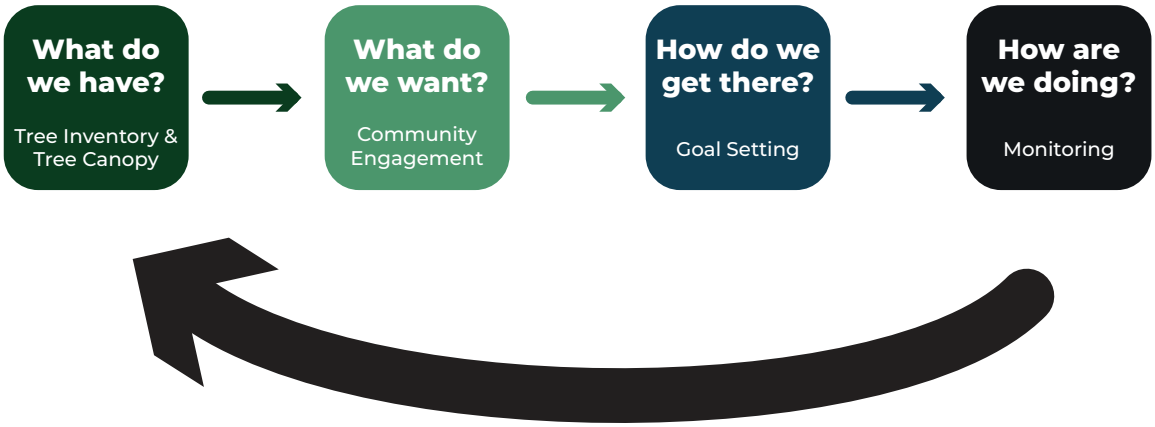
- **Prioritizing tree planting and maintenance efforts in areas with fewer resources** to address tree canopy disparities.
- **Engaging BIPOC and frontline community members and persons with disabilities** in planning and management to ensure that neighborhood needs and priorities are considered, promoting a more inclusive urban forest.
- **Considering environmental justice implications** to ensure that the urban forest does not disproportionately benefit or burden certain community members based on factors such as race, ethnicity, income, or disability.

Following these steps can lead to the creation of an urban forest that is accessible and fair for all.

The Planning Process

The development of the Urban Forest Plan involved:

- **Comprehensive analysis of the existing urban forest**, including the inventory and evaluation of the city's public trees, and an analysis of citywide tree canopy cover and distribution.
- **Assessment of Oakland's current forestry operations**, programs, and policies.
- **Community and stakeholder engagement** to gather input and insights to ensure that the Plan reflects the needs, priorities, and aspirations of the Oakland community.
- Development of specific **goals, recommendations, and strategies** based on data analysis, information assessments, and community feedback together with established industry science and best management practices.
- Establishment of an on-going process to **monitor implementation progress** and allow for continuous adaptation and improvements to the Plan.



DOES THE URBAN FOREST PLAN ADDRESS FIRE PREVENTION?

A significant portion of Oakland is rated “very high” wildfire risk by the California Department of Forestry & Fire Protection (CAL FIRE). The areas rated as having a “very high” wildfire risk are also home to the majority of Oakland’s tree canopy — the Oakland Hills — making Oakland’s urban forest and its benefits vulnerable to loss due to wildfire. The loss of trees from the 1991 Oakland Hills Fire alone led to a decrease in Oakland’s tree canopy from 21% to 19% (Nowak, 1993, p. 315).

THE 1991 OAKLAND HILLS FIRE (“THE TUNNEL FIRE”)

Initially sparked by a vehicle fire on October 19, 1991, the fire quickly spread through the hills above Oakland, fueled by high winds and tinder-dry vegetation.

The fire burned for several days, and eventually destroyed more than 3,000 homes and killed 25 people. The damage caused by the fire was estimated to be around $1.5 billion, making it one of the costliest natural disasters in California's history up to that time.

▲ Aftermath of 1991 Oakland Hills Fire.

In addition to the loss of life and property, the 1991 Oakland Hills fire also had a significant impact on the local community. Many residents were displaced and left homeless, and the loss of homes and personal possessions had a lasting psychological impact on those affected. The fire also had a major impact on the local ecosystem, as many of the trees and vegetation in the affected area were destroyed. This led to increased erosion and sedimentation in local waterways and a decline in the local population of wildlife.

VEGETATION MANAGEMENT PLAN

While we acknowledge that the topics of wildfire prevention and urban forestry overlap in this sense, **the Urban Forest Plan does not speak specifically to wildfire prevention.** This topic is **covered in the Oakland Vegetation Management Plan.**

▼ The 1991 Oakland Hills Fire caused major destruction to property and the city's ecosystem.

A Brief History of the Land We Now Call Oakland

This section reflects on Oakland's past to help gain a better understanding of where Oakland is today.

▲ View of the San Francisco Bay sunrise from the North Oakland Hills.

The Land

Imagine an abundant coastal landscape of old-growth oak and redwood forests, meadows, wildflowers, and creeks running down hills into marshlands and tall grasses. The hills are bare of trees but teeming with native shrubs and grasses. The redwoods tower over hilly valleys and the oaks stretch across flatlands. The plants provide shelter and food for a great diversity of wildlife, including grizzly bears, elk, coyotes, wolves, jaguars, bobcats, condors, and small mammals and reptiles. Sea lions and mussels line the coasts, the open bay teems with fish and crustaceans, and salmon traverse freshwater creeks and open waters. The air is clean, the land is free of pollution, and you can drink clean water out of all freshwater streams. This land we are describing is what we now call "Oakland, California," approximately 250 years ago.[3, 4, 5]

Pre-1800s

The Ohlone people inhabited the region for 7,000+ years, relying on native oak tree acorns for sustenance. They sustainably tended to the land, employing controlled fires to enhance acorn yield. The Ohlone and fellow Bay Area Indigenous communities faced cultural assimilation, European diseases, and harsh living conditions upon the arrival of Spanish explorers and missionaries (Bay Area Equity Atlas).

Late 1700s to 1848

Logging results in the loss of thousands of redwood trees.

1850s–1890s

Logging continues during the Gold Rush for mining purposes and for the building boom in San Francisco. One old-growth redwood, Old Survivor, remains in Oakland today.

BAY AREA'S NATIVE CULTURE RESURGENCE

In the 20th century, the Bay Area saw a resurgence of Indigenous culture and activism as Native American communities worked to reclaim their heritage and assert their rights. In the 1960s and 1970s, the American Indian Movement (AIM) emerged as a powerful force for Indigenous rights, and the Bay Area was home to AIM chapters (Eskew, 2010, pp. 150-154). Today, the Ohlone, Miwok, and Pomo, and other Bay Area Native American communities are working to preserve and promote their cultural traditions and histories.

▼ Demonstration Against Anti-Indian Legislation. Credit: Victor Ochoa, California Ethnic and Multicultural Archives, UCSB

In 2022, the City of Oakland returned Rinihmu Pulte'irekne (Sequoia Point), five acres of land in Joaquin Miller Park, to the Ohlone people through the Sogorea Te' Land Trust (Gómez-Van Cortright, 2022). This is a cultural conservation easement that gives the Confederated Villages of Lisjan "nearly full control over the use of the land, for cultural, environmental, and educational uses, in perpetuity" (Orenstein, 2022). Such an easement is one of the first instances where a U.S. city has ceded land back to native peoples for their cultural use.

◀ Ohlone map of San Francisco Bay Area. Credit: UC Berkeley Centers for Educational Justice & Community Engagement

1850s
Oakland passes an ordinance to prohibit the removal of oak trees to help preserve existing trees.

1853
The Fruitvale District (then Fruit Vale) is named and the first orchard is planted. The area became a major fruit growing region (Marshall, A. S. (2017). East Bay Hills: A brief history. The History Press).

1860
Oaklander Stephen Nolan begins selling Eucalyptus seeds and nursery stock to the public, resulting in the first distribution program for Eucalyptus landscape trees through the state.

1869
Oakland is chosen as the western terminus of the Transcontinental Railroad, securing its future as a city and major port.

The People

The San Francisco Bay Area has a rich and complex history that stretches back thousands of years, with a diverse array of Indigenous cultures and communities that have shaped the region.

The Ohlone people were the first known inhabitants of the Bay Area, with a history that dates back at least 7,000 years. The Ohlone are a group of Native American tribes known for their sophisticated and diverse cultures, as well as complex system of governance.

A network of villages spanned the region, providing opportunities to interact with each other, trade resources and technology, and share culture. The Lisjan Village occupied the land known as today's Oakland and nearby Alameda, Emeryville, and Berkeley.

▲ Life in an Ohlone Village near the San Francisco Bay. Credit: Amy Hosa and Linda Yamane, San Mateo Historical Society.

1886

Joaquin Miller plants 69 acres of trees in what was once tree-less hills.

1900s–1920s

The "City Beautiful" movement in Oakland has a dual impact on trees. It brings about positive changes through the planting of new trees for urban enhancement. However, it also has a negative aspect as numerous established street trees are removed to facilitate street expansion (Tarver, 2015, pp. 69-70).

1903

The "City Beautiful" Movement inspires a citizen-led action committee, and many new trees are planted throughout Oakland's streets and parks.

1910

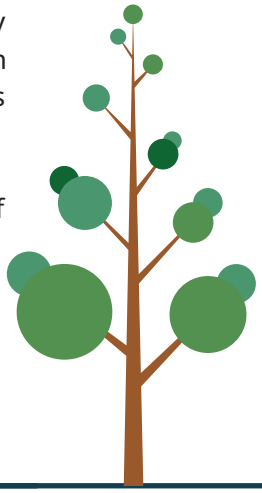
The new Park Commission publishes a report identifying opportunities for tree planting and preservation in City parks, including preserving existing stands of oak trees in Lakeside Park (the largest park in the City at the time).

The Ohlone are physically, culturally, and spiritually connected to their natural environment. Their cultures include ceremonies and stories involving land and animal spirits. As the first known inhabitants, they worked with and respected the region's abundant landscape to provide them with food, shelter, and their essential needs. They used techniques to manage and grow the populations of plants and animals that they gathered, cultivated, hunted, and fished. Their reciprocal relationships with nature helped sustain them from generation to generation. We can learn much from native cultures to inform what we may refer to today as "sustainability goals." Their societies flourished for many generations due to a deep consciousness and respect for the land, which guided their culture and actions.[6]

California's early American history was shaped by exploitation of the land and native people. Gold was discovered in California in 1848, soon after the territory was annexed to the United States (California achieved statehood in 1850). During this time, old growth redwood forests were logged, and oak woodlands were cleared for a growing city. [7] The Ohlone people were forced to leave their ancestral lands and move to missions located in San Francisco, and San Jose (Fremont), where they were forced into labor and converted to Christianity. Many died from disease or abuse.

▲ Painting of three Ohlone people in a tule boat in the San Francisco Bay by Louis Choris, 1822

In 1850, the State legislature implemented the Indentured Servitude Act which authorized the capture of Indians for use as slaves. Vigilantes hunted California Indians, with financial sponsorships and rewards provided by the U.S. Government. Orphaned Indian children were forced into slavery. Laws were passed to prevent anyone with one-quarter or more Indian blood from testifying in court.[8] This period of colonization had a significant impact on the Ohlone population, culture, and way of life, and many of their traditions were lost.[5,9]



1910–1913
Frank Haven plants nearly 8 million trees (mostly blue gum eucalyptus) in the Oakland Hills for lumber production, only to discover the species is not suitable for lumber.

1930s
The City of Oakland begins providing tree-related services, including planting, maintenance, removal, and sidewalk repair.

1930–1960
The Federal Housing Administration and Home Owner's Loan Corporation's redlining policy contributes to urban decay of marginalized communities in cities across the U.S., including Oakland. People of color are excluded from home ownership, a significant wealth-building opportunity. Redlining is outlawed in 1968, but the effects of these racist policies continue to exist today.

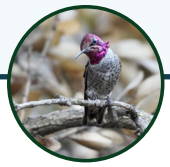
1932
Oakland adopts its first tree protection ordinance.

A Brief History of the City of Oakland

Oakland derived its name from the abundance of coast live oak trees that once dominated the landscape. Father Juan Crespí, an early Spanish explorer, described the area as "Llanura de Robles" or "plain of oaks" on a map during an expedition in 1772 with Juan Fages.[3] When the State Legislature incorporated the City of Oakland in 1852, State Senator Don Mariano Guadalupe de Vallejo referred to the land as "Encinal del Temescal," meaning "the oak grove near the sweat lodge" (referring to the sweat lodge present in the area that is now Lake Temescal). [9,10] Initially, Oakland was a small area west of Lake Merritt, strategically chosen for its coastal location on the interior of the San Francisco Bay, which made it an ideal port. Over time, Oakland gradually expanded as neighboring townships were annexed.

▲ Engraving title “The Oaks of Oakland” from: Bryant, William Cullen. Ed. (1874). Picturesque America, or the Land We Live In. Cassell, Petter, Galpin & Co.

▲ Joaquin Miller’s house (the Abbey) then and now. Credit (Left): Oakland Public Library



1934
15,000 public trees are planted through the Works Progress Administration (WPA).

1939–1945
Federal funding used for tree planting in Oakland is no longer available due to World War II.

1940
The adoption of the “Official Tree Designation List” results in the removal (or proposed removal) of many large trees that are not recognized as “official trees” in order “to facilitate street tree maintenance” (Oakland Tribune, April 1, 1940).

1950s
City led tree planting efforts predominantly exclude the Black neighborhoods of North and West Oakland.

Once a small town, now a bustling and diverse metropolis. Oakland remained a small community of 1,500 people into the 1860s, when its population began to boom. In 1869, Oakland was chosen as the western end of the Transcontinental Railroad and by 1870 the population had grown to 10,500 people. The city and population continued to grow as the Port of Oakland developed and grew in the late 1800s and Oakland International Airport was created in the early 20th century. These modes of transportation helped define Oakland as a hub of industry and commerce, inspiring continued growth and attracting manufacturing business.

▲ E 14th St (International Blvd) in Fruitvale, circa 1910. Credit: Oakland Public Library

FRUIT TREES IN OAKLAND

The mild Mediterranean climate and fertile soil make Oakland an ideal location for fruit cultivation.

Fruit crops, including apples, pears, and cherries, were among the first to be grown in the area.

Today, front and backyards easily grow a wide variety of fruit trees from around the world.

African Americans moved to Oakland, many from the Jim Crow South (the "Great Migration"), during the early and mid-1900s, due in part to the job opportunities available in Oakland's railroads, shipyards, and war-related and manufacturing industries. Some of the earliest residents settled here because the Pullman's Palace Car Company had a policy to hire African Americans as porters for their railroad cars, creating a large African American population in Oakland starting in the 1870s. The construction of railroads brought Chinese immigrants, who resided in the area that is presently Jack London Square and along the bay in West Oakland. Many Europeans immigrated to Oakland during the last 1800s and early 1900s to various parts of Oakland as well. The earliest being Irish in West Oakland, Germans in Fruitvale, and Italians in Temescal.[9]

1957

Cypress Street Viaduct (part of Interstate 880) is constructed through the middle of Oakland's African American community, creating an economic disadvantage by separating it from downtown and disrupting its unity. Many homes and businesses in the community are demolished to make the construction possible (City of Oakland, Brisbane and Lippman).

1960s

Urban renewal projects, like BART and the Main Post Office, continue to affect marginalized communities in Oakland. Many African American and Latino families in West Oakland are displaced as a result (City of Oakland). No African Americans are hired to work on the construction of either the Post Office or BART (Rothstein, 2017, pp. 168-169).

1970–1973

The City of Oakland participates in the federal "Model Cities" program and plants 2,000 trees in West Oakland without the involvement of the community. Every tree is removed by residents (Tarver, 2015, p. 58 & 91).

▼ May 7, 1977: Discrimination against people with disabilities is barred in all buildings and facilities receiving federal funding.


Dellums Blasts Carter On Jobs For Youth

THE BLACK PANTHER
INTERCOMMUNAL NEWS SERVICE

Pressure Forces Califano To Sign 504 Regulations

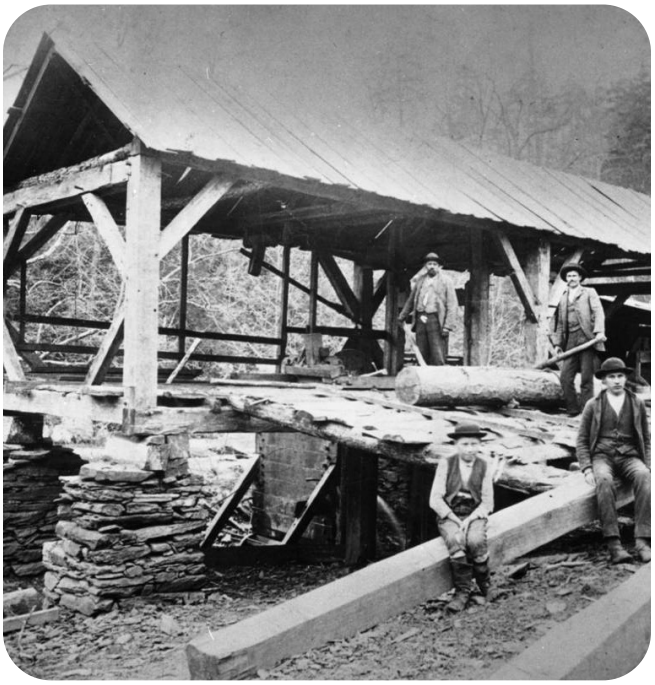
HANDICAPPED WIN DEMANDS-END H.E.W. OCCUPATION

By the 1960s, the city had one of the largest African American populations in the country. In the 1960s and 1970s, Asian and Latinx immigrants, particularly from Mexico, Central America, and the Philippines moved to Oakland. They settled in neighborhoods throughout the city and brought their cultures, languages, and traditions. Oakland also became home to a large and diverse population of people with disabilities, who brought their own unique cultures and perspectives to the city.

The cultural shifts in Oakland's population played a significant role in shaping Oakland's history in the Civil Rights and disability rights movements and contributed to Oakland's vibrant cultural diversity. These many groups have created a cultural richness that has made Oakland a more inclusive and welcoming city for everyone.

Oakland's changing landscape.

From the early days, the expanding city was a threat to the oak groves Oakland was named after and most were cleared away in the name of progress. The redwood population in the hills had already been decimated by this time because of the need for wood for the building (and rebuilding) of San Francisco, Oakland, and other cities starting in the mid-1800s.[9,12,13, 14]



▲ First sawmill in Oakland on Palo Seco Creek near Dimond Canyon, circa 1880. Credit: Oakland Public Library

1972
Fuel breaks are created due to concern of freeze-impacted eucalyptus trees in the Oakland Hills.

1978
Proposition 13 is passed, severely limiting the tax income California cities receive.

1978–1979
A tree inventory is conducted of all existing trees within Community Development Districts. The inventory shows that 70% of districts lack street trees.

1978–1984
The Oakland Tree Task Force and Oakland Neighborhood Tree Organizing Program (ONTOP) initiates community tree planting programs in West and North Oakland.

1980s
The "green the flatlands" initiative leads to the planting of more than 7,000 trees over a ten-year period with a goal to distribute the canopy equally across Oaklands' flatlands.

The flatlands were built out rapidly, first for railroad, shipping, and wartime workers, and then returning veterans and their families. The speed of growth combined with redlining created relatively compact neighborhoods dominated by concrete and little to no tree canopy cover.

Images from the early 1900s show the East Bay hills as primarily tree-less but were soon planted with blue gum eucalyptus (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), and Monterey cypress (*Hesperocyparis macrocarpa*) by Joaquin Miller, California's first poet laureate who owned land in the hills that includes today's Joaquin Miller Park. Between 1910-1913, real estate developer Frank C. Havens planted 8 million blue gum eucalyptus in the Oakland and Berkeley Hills with the intentions of producing a quick source of lumber.[13]

Unfortunately, this species of eucalyptus is not suitable for lumber and the groves were abandoned. Without active management, blue gum eucalyptus soon naturalized in the landscape.[7] Hundreds of thousands of non-native trees were planted in the Oakland Hills by other real estate developers to make the area more appealing. Today, many of these trees have reached maturity, creating a human-made forest landscape, that is home to the majority of Oakland's overall tree canopy.

▲ Eucalyptus groves are common in Oakland Hills.

1981

GREENSTREETS: The Street Tree Plan for Oakland is published. It establishes "GREENSTREETS," the official street tree coordination center, to implement and monitor the Street Tree Plan.

1984

Central District Street Tree Study is published by the Oakland Planning and Park Services Departments, which establishes design standards and guidelines for street tree selection for major streets and neighborhood streets.

1986

Oakland becomes a Tree City USA® — a status it has maintained for 35 years and counting.

1990

The Americans with Disabilities Act (ADA) is passed to ensure that people with disabilities have equal access to all areas of public life, including safe and accessible access to the sidewalk and public rights of way.

Tree-lined streets and forested hilltop vistas overlooking the San Francisco Bay are a big part of Oakland's appeal. They give the city character, beauty, identity, and set it apart from other cities in the Bay Area. Oakland is the only major metropolitan city with real redwood forests (second growth). In a 20-minute (or less) car ride northeast from downtown, the landscape changes dramatically from urban to forested and rustic. The northern perimeter of the City is lined with a regional park system of forests including native (and non-native) plants, hills, streams, and miles of hiking trails.

▲ View of East Oakland from the Oakland Hills.

1991

The Tunnel Fire burns 1,520 acres in the Oakland Hills, including over 3,000 residences. The fire reduces Oakland's tree canopy from 21% to 19%.

1992

Oakland's first Vegetation Management Plan is adopted to reduce fire fuel loads and minimize wildfire hazards.

1996

The *City of Oakland Open Space Conservation and Recreation: An Element of the Oakland General Plan* ("OSCAR") is published and includes goals to improve the care of street trees and to prioritize tree planting in neighborhoods with the highest priority for street trees.

1998

Urban Releaf, a community-led, urban forestry non-profit organization is founded by Kemba Shakur. It has planted more than 15,000 trees in under-served neighborhoods around the East Bay.

Oakland today, a city of vibrant culture and natural beauty contrasted by inequities.

Home to major economic and cultural institutions and a population of just over 440,600 residents (2020 U.S. Census), Oakland today is a significant global contributor to innovation, music, and art. Its proximity to San Francisco, Silicon Valley, and the growing regional technology industry has led to economic opportunity as well as increased population and demand for real estate. The San Francisco – Oakland – Hayward metropolitan area is considered to have one of the highest costs of living in the United States. This has led to inequity among Oakland's who benefit from these opportunities.

The Oakland's BIPOC communities are disproportionally impacted by these inequities and quality of life issues, many of which stem from a history of discriminatory practices (redlining) in city politics and real estate.

▲ Murals are used for artistic expression and activism in Oakland.

1998

The Street Tree Management Plan is developed to revise tree policies and reduce costs. Goals include maximizing the lifespan of park and city trees, planting a diverse palette of trees, planting large trees wherever possible, maintaining trees, encouraging active participation in all aspects of the tree program, and increasing the total inventory of "official" street trees.

2007–2009

The Great Recession reduces already limited city budgets across the country and beyond. Urban forestry budgets are cut in many cities, including Oakland.

2013

The West Oakland Reforestation Plan is published by the West Oakland Green Initiative (WOGI) to support increased planting and maintenance of trees in West Oakland.

2015

Oakland launches the Department of Race and Equity, becoming the first department of its kind in any city in California (Bordne and Johnson, 2020).

TREES AS INSPIRATION

Trees have long been a symbol of nature's beauty and resilience. Their majesty has inspired artists in Oakland and beyond to create works of art that capture their essence.

▲ Self portrait by Dr. Ayodele Nzinga.

Visual Art. Trees have been a popular subject for paintings, sculpture, and photography throughout history. They have been depicted in a wide range of styles, from realistic to abstract. Famous examples include Diego Rivera's *Symbolic Landscape*, **Vincent van Gogh's** *The Olive Trees*, **Gustav Klimt's** *The Birch Forest*, **Maya Lin's** *What is Missing?*, **Andy Goldsworthy's** *Tree Fall*, **Ansel Adams'** *Autumn, Yosemite National Park*, **David Hockney's A Bigger Splash, and Ali Shokri's** *The Passion of Trees*.

Music: Trees have been featured in a wide range of songs and compositions, including Fantastic Negrito's "Root City," a song about Oakland, and Joni Mitchell's "Big Yellow Taxi," an activist song referencing tree preservation. Trees have also been represented in music through the use of instruments made from wood, such as guitars and drums.

Trees as art themselves. Tree pruning and growing techniques can also be an art form, such as Pearl Fryar's abstract topiary garden in Bishopville, South Carolina, and Axel Erlandson's "circus" trees at the Gilroy Gardens in Gilroy, California. Urban wood reutilization and live-edge tree furniture are examples of incorporating the natural beauty of trees into furniture and everyday items.

2018

Oakland Equity Indicators Report is released and used as a guide for addressing disparities in the community. Oakland received grant funding from the California Department of Forestry & Fire Protection to perform a street tree inventory, plant 700 trees, and write the Urban Forest Plan.

2020

Oakland adopts the Equitable Climate Action Plan (ECAP) that establishes goals and actions to equitably mitigate and adapt to Oakland's changing climate.

2024

Oakland's Urban Forest Plan is completed, providing a path forward for effective management of the City's trees for the next fifty years.

Poetry and Literature. Trees have inspired countless works of writing over the years; well-known examples include Shel Silverstein's *The Giving Tree*, and Maya Angelou's "When a Tree Falls." Many authors have found inspiration from adventures in nature, including Jack London, author of *The Call of the Wild* and *White Fang*, and Joaquin Miller, California's first Poet Laureate. The California Writer's Club, founded in Oakland in 1903, was instrumental in purchasing the land for the creation of Joaquin Miller Park, which continues to attract and inspire authors for over 100 years.

Immersive Art: Trees are used to create immersive art, such as Deanna Van Buren's and Ayodele Nzinga's Soul Tree Forest, and My-Linh Le and Alex Abalos' Anima which were featured at the Yerba Buena Center of the Arts "dreamseeds" exhibit in 2022. Oakland Autumn Lights Festival is an annual event at the Gardens of Lake Merritt where hundreds of artists reinterpret trees and plants with lights and structures. The 2021 exhibit "Palm Reflections" used the electricity created by palm trees to generate ambient music and lights.

▲ "Anima" at Yerba Buena Center of the Arts. Credit: My-Linh Le

▲ Oakland Autumn Lights Festival in the Gardens of Lake Merritt.

i have known trees
Dr. Ayodele Nzinga

i have known trees
they mark the trails I took
some i planted
others i cared for
some i dreamed upon
some pointed the way

the eucalyptus in the morning
in the low rolling hills
old hills sliding down on themselves
high thistle grass & the smell of tall trees
close your eyes and breathe

acorns under foot like
children often are in
a community of oaks
remembering the power
in small things we breathe

lottie's bell tree
ripped out after replanted
under the weeping willow
by a gardener with no dirt
the willow weeps still

the fig tree the gardener
inherited nursed to bear
& was forced to leave
those in rented rooms
only have rented trees

the avocado tree in
the nun's backyard where
trees became a stage
& the gardener dreamed of roots
while learning to sow seeds

lemon trees in pots
dreaming of dirt
sweet smell on the porch
breathe though transitions
trees travel with me

the apple tree bird feeder
stalked by feral cats
green hard apples
turn red if birds let them
whose tree is this

the orange tree
the feral cats
were birthed beneath
in the hole dog dug
odd shaped oranges no one eats

magnolia trees
victorian houses
west Oakland sings
the south fluffy blooms
feed the wind

loquat trees
behind fences
sweet meat if you know
like the fruit remembered
in eucalyptus summers

FOR THE LOVE OF TREES

Why do we love trees? Let us count the ways.

- **Cultural Symbolism.** Trees are an important part of many people's heritage and can connect them to their history, religion, and traditions. Trees symbolize peace, strength, resilience, history, and family and are linked to longstanding traditions and holidays, like the Tree of Knowledge, Christmas Tree, Bodhi Tree, Celtic Tree of Life, and Tu B'Shvat (ט"ו בשבט).
- In Oakland, the oak tree, often depicted with its strong expansive roots, is the symbol of the City's many virtues. It is often used by businesses, sports teams, and artists to represent their connection with and pride for Oakland.
- **Food Source**. Trees have been an important source of food for humans for thousands of years. Fruits, acorns, and other nuts have provided sustenance for generations.
- **Sense of Place.** Trees create a feeling of being connected to something beyond the man-made structures and constructs of our daily lives. As one writer put it, "Nature is not simply a luxury – or something to do once a year on a vacation – but an essential element of our ability to thrive on a daily basis as humans." (Gruber, as cited in O'Hare, 2019)

▲ The iconic oak tree logo re-imagined as street art, artist unknown.

- **Connection to Nature and Outdoors.** Trees and forests provide a peaceful retreat from the stresses of daily life and can help reduce anxiety and promote feelings of calm and well-being. The Japanese practice of Shinrin-Yoku, or forest bathing, involves engaging the senses with the forest to connect with the natural world and improve health.
- **Health.** Research shows that exposure to trees and nature has positive effects on human health, including relaxation, lowering blood pressure, improving sleep and mood, boosting immunity, supporting mental health, and reducing the need for some medications.
- **Emotional Connection**. People feel a strong emotional connection to trees, which can inspire them to take action to protect and preserve them.

It is important to recognize that the benefits of trees have been known and regarded by Indigenous peoples for thousands of years and much can be learned from their wisdom, cultures, and respect for nature.

Addressing Inequities in Oakland

In 2015, the City of Oakland established the Department of Race & Equity (Race & Equity) with a mission to "create a city where diversity has been maintained, racial disparities have been eliminated, and racial equity has been achieved." The Department's goals include:

- "*Eliminate systemic causes of racial disparities in City Government.*"
- *"Promote inclusion and full participation for all residents of the City."*
- *"Reduce race-based disparities in our communities*."

Race & Equity trains Oakland City staff on the causes and effects of systemic racism and provides tools, educational resources, and programming to address them.

In 2022, Oakland declared racism a public health crisis. Due to a citywide focus on this issue, equity is now a cornerstone of all Oakland's plans and processes, including Oakland's Equitable Climate Action Plan (ECAP, adopted 2020), the General Plan 2045 update, and this Urban Forest Plan.

Oakland community members have taken ownership of planning processes to improve their neighborhoods, especially those hardest hit by environmental pollution and a historic lack of investment due to discriminatory practices. **The Urban Forest Plan aims to build from community voices with a focus on growing Oakland's urban forest and addressing inequities**. Section Two describes the equity-based approach used in developing this Plan.

COMMUNITY-LED PLANNING EFFORTS TO BUILD RESILIENCE & IMPROVE NEIGHBORHOOD ENVIRONMENTS

The East Oakland Neighborhoods Initiative (EONI) and the West Oakland Community Action Plan (WOCAP) address environmental justice disparities and include strategies for using trees and landscapes as pollution buffering, beautification, and job creation strategies.

In 2013, the West Oakland Green Initiative produced The West Oakland Reforestation Plan to improve environmental conditions in West Oakland by planting more street trees.

▲ Fall street tree planting at Bridges Academy with students and City staff.

The Benefits of Trees

For hundreds of thousands of years, humans have enjoyed the benefits of food, shelter, fuel, medicine, and other resources that trees provide. In urban areas like Oakland, landscapes are defined by concrete, asphalt, buildings, and other hard surfaces that reflect heat and do not absorb water. The proper selection, planting, and care of trees following arboricultural best practices make cities more livable.

TREES CLEAN THE AIR.

Trees improve air quality by absorbing carbon dioxide (a greenhouse gas), releasing oxygen into the atmosphere, and filtering out pollutants such as ozone, dust, ash, pollen, and smoke from the air we breathe. This has a positive impact on public health, as poor air quality can lead to respiratory issues and other health problems. Particulate matter from fossil fuel-powered vehicles and other pollution sources poses one of the highest health risks to people, especially those who live near centers of industry or along freeway corridors.[15] In Oakland, there are fewer trees along the Interstate 880 corridor, which has the highest concentration of pollutants in Oakland, disproportionately affecting the frontline community residents who live in the area.[16]

Research has found that by intercepting particulate matter, **trees save over 850 lives and prevent 670,000 incidents of acute respiratory symptoms in the United States each year.**[17]

▲ Looking up at a cork oak in Mosswood Park. Credit: Kerstin Firmin

TREES COOL THE CITY.

Large, healthy trees help lower hot summer temperatures through shading and transpiration. Shading reduces summer temperatures beneath trees by 2 to 9°F, while transpiration reduces air temperature as water evaporates from leaf pores. [18,19] **Trees have been shown to prevent 1,200 heat-related deaths each year in the U.S.**[20]

The **2030 Equitable Climate Action Plan (ECAP)** identified increasing temperatures and extreme heat as community hazards in Oakland. The Bay Area has experienced a 1.7°F increase in temperature between 1950 and 2005. Temperatures are projected to increase another 3.3°F by mid-century.[21] With 53.8% of Oakland's land covered by hard surfaces like roads and buildings, urban heat island impacts from these temperature increases can be significant. An urban heat island happens when the buildings, roads, and concrete soak up the sun's heat during the day

and release it slowly at night, making the city hotter than surrounding areas that have more trees and greenspace. Hot days lead to warmer nights, where temperatures do not fall below 75°F. Warm nights do not allow buildings and paved surfaces to cool off as quickly after hot days and can increase the risk of heat-related illnesses in city residents.[22] Heat-related illnesses cause more deaths in the United States each year than any other weather event, including hurricanes, lightning, tornadoes, and floods.[23] For every 1°F increase in temperature during a heat wave, there is a 2.5% increase in the risk of heat-related mortality, in addition to respiratory difficulties, heat stroke, or exacerbation of existing chronic health problems.[24,25,]

Many homes in Oakland do not have air conditioning or adequate insulation, especially in frontline communities. More tree canopy cover and green spaces in areas where people live and work can help address issues of "heat equity" and provide relief to those who are most at risk during heat waves.[26]

WELL-MAINTAINED TREES INCREASE SAFETY AND COMMUNITY.

Trees have been shown to enhance neighborhoods by increasing actual safety, providing an overall sense of safety, and strengthening ties between neighbors.[27] **A 10% increase in neighborhood tree canopy cover has been associated with a 12 to 15% reduction in violent and property crimes.**[28,29] Trees growing along streets also help slow traffic, making streets safer for pedestrians and cyclists.[30,31,]

In contrast, unmaintained trees block street lighting and pedestrian sightlines, causing people to feel less safe in their neighborhoods.[32] Unmaintained trees can also create hazards for people with mobility needs and visual impairments. Regular maintenance of city trees will improve public safety and help ensure streets and sidewalks are accessible.

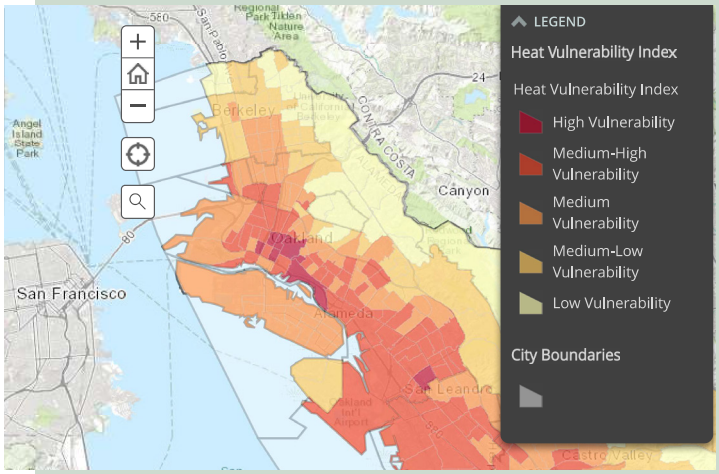
OAKLAND'S CLIMATE RISKS: EQUITABLE CLIMATE ACTION PLAN

As a result of the climate crisis, Oakland is already facing several challenges that are increasing over time, including:

- **Extreme Heat**
- **Changes in Precipitation**
- **Wildfire**
- **Sea Level Rise**

Extreme heat and heat island effect identified in Oakland's Local Hazard Mitigation Plan (2021) and Equitable Climate Action Plan (2020) are critical hazards that Oakland needs to plan for and mitigate.

Planting climate-appropriate trees and caring for them and established trees are crucial tools in mitigating the impacts of these climate risks, particularly in Oakland's frontline communities that are most susceptible to the effects of climate change.



▲ Heat Vulnerability Index is too often a map of income and race demographics. Credit: Alameda County, California

TREES IMPROVE WATER QUALITY AND REDUCE FLOODING.

Existing stormwater management systems are not always adequate to accommodate runoff, especially during heavy rains, such as those during the winter of 2022-2023. When a system is overloaded, stormwater may back up and cause flooding. **Trees help prevent this backup by intercepting rainfall in their canopies,** which reduces intensity of rainfall and runoff at ground level. Underground, tree root growth and decomposition create spaces in the soil that help increase the amount of water that the soil can store, allowing for greater absorption of rain.[33] **Intercepted rainfall evaporating from leaves or slowly soaking into the ground reduces stormwater runoff and pollutants by 20-60%**.

As heavy rain events in Oakland are predicted to increase in frequency and severity due to climate change, Oakland's ECAP identifies trees and green infrastructure as an adaptation strategy (A-6) for mitigating stormwater runoff. [34]

TREES MITIGATE CLIMATE CHANGE.

Trees reduce greenhouse gases that can trap and retain heat in the atmosphere and cause the city to get warmer. Carbon dioxide is absorbed (sequestered) in tree trunks, branches, leaves, and roots during photosynthesis. The amount of carbon that can be stored by a tree is directly related to its size. Larger trees store more carbon.

Proper investments in tree planting, care, and preservation can ensure that Oakland's trees reach maturity, when they are most effective at greenhouse gas capture. **Oakland's urban forest sequesters 13,280 tons of carbon each year, which is equivalent to the amount of carbon dioxide emitted each year by 3,018 gasoline-powered cars in Oakland.** This benefit can help advance Oakland's goal to become carbon neutral by 2045 and supports the ECAP's carbon removal (sequestration) goal through the protection and expansion of tree canopy cover (CR-2).

▲ Tree lined streets can reduce summer temperatures by 2-9 degrees F.

▶ The black crowned night heron is the official bird of Oakland.

TREES SUPPORT WILDLIFE.

Trees provide critical wildlife habitat for birds, mammals, reptiles, insects, fish, and other aquatic species. For birds in particular, the City's trees play a vital role. **The Bay Area is home to a variety of bird species, including California quail, hummingbirds, woodpeckers, peewee, and nuthatches that use trees for nesting, food, and cover.**[35] Oakland is located within the Pacific Flyway for migrating birds providing nesting, feeding, and stopover points for a variety of native bird species. Tree flowers provide pollen and nectar to hundreds of species of native bees and other pollinators, and canopies provide both food and shelter to a variety of wildlife, increasing the biodiversity of the urban forest. Wildlife can help manage insect pests, remove carrion, and disperse seeds. Trees can help meet the ECAP Action A-6 to "expand and protect green infrastructure and biodiversity."

TREES IMPROVE HUMAN HEALTH.

Trees are an important tool in reducing stressors that impact vulnerable populations (such as heat, poor air quality, and flooding) and helping to build adaptive capacity. People who live in neighborhoods with more tree canopy cover have better overall health, including lower rates of obesity, more social cohesion, less stress, and lower blood pressure.[36,37,] In one study, the number of residents who reported poor mental health decreased 63% within 18 months after vacant lots near their homes were planted with grass and trees.

RESILIENCY IN COMMUNITIES AFTER STRESS AND TRAUMA (ReCAST)

▲ A ReCast-sponsored ecotherapy retreat in Joaquin Miller Park.

"Nature-based interventions, which includes interaction with trees, are underutilized as a mental health strategy despite abundant research demonstrating the beneficial effects of nature on our cognitive, emotional, spiritual, and physical wellbeing. Because of the role nature plays in healing, the City of Oakland's Human Services Department incorporates ecotherapy in its implementation of the U.S. Department of Health's Substance Abuse and Mental Health Services Administration's ReCAST program. The Human Services Department understands that providing opportunities for city staff and community members to engage with ecotherapy modalities deepens participants' connection with nature and can be replicated frontline communities as a relatively easy and cost-effective mental health intervention."

-Desralynn Cole, ReCAST Program Director, Human Services Department

WHAT IS GREEN GENTRIFICATION?

While an increase in property values is a benefit of trees, it also has important equity implications. Increases in value positively impact property owners but can negatively impact renters in the form of increased rent prices. These increases can price out vulnerable residents and disrupt frontline communities (green gentrification).

To prevent "green gentrification," the Urban Forest Plan calls for:

1. Proactive relationship-building between Oakland City departments, including Oakland Public Works, Planning and Building Department, the Department of Transportation, and the Department of Race & Equity.
2. Strengthening and developing partnerships with organizations in frontline communities to engage with residents in fair and culturally appropriate ways, such as the Black Cultural Zone, East Oakland Neighborhood Initiative, West Oakland Environmental Indicators Project, West Oakland Green Initiative, Trees for Oakland, Planting Justice, The Unity Council, and others.

To redress a legacy of displacement and disenfranchisement of BIPOC communities, it is vital that future planning programs intentionally implement practices and policies aimed to keep residents in their neighborhoods. The implementation of the Urban Forest Plan aims to ensure that decision-making involves the priorities and values of BIPOC communities.

The transit-oriented redevelopment of the Fruitvale neighborhood is considered a model of redevelopment without displacement (Barreto, et al., 2018). Unlike other redevelopment projects, the work in Fruitvale was led by a local social equity development non-profit (The Unity Council) and did not displace existing cultural groups or cause gentrification. Following a similar approach for urban forestry can reduce green gentrification.

▲ Street trees in Fruitvale Village. Credit: Eric Fredericks

Other studies demonstrate links between trees and increased life expectancies. Evidence shows that a person's proximity to greenness reduces non-genetic factors that affect human aging, potentially increasing longevity. This study accounted for different races and genders, finding that these effects are more pronounced for BIPOC community members living in disadvantaged communities.[38] Trees are also linked to reductions in accident-related deaths, with larger, older trees showing a greater association, especially for men and people aged 65 and older.[39]

Trees also improve human health by encouraging physical activity. **Residents are three times more likely to be physically active when they live in areas with high levels of trees and vegetation**.[40] Tree canopy's ability to reduce surface temperatures allows for more comfort in walking, biking, and using public transit, and increases the appeal of cycling routes. A top priority of the **ECAP is prioritizing investment in urban forestry and green infrastructure to address health disparities.**[41]

TREES CAN LOWER UTILITY BILLS.

By providing shade in the hot summer months and windbreaks in the winter, trees can make a significant difference in building energy usage. **Properly placing three trees around a home can reduce energy costs for the average household by at least $100 to $250 per year**, while shading air conditioning units can help them run up to 10% more efficiently.

The U.S. Department of Energy found that low-income households spend three times more (nearly 9% of their household income) on energy bills, compared to 3% of household income for non-low-income households.42 Less electricity use also leads to fewer greenhouse gases emitted by power plants.

TREES INCREASE PROPERTY VALUES AND BUSINESS.

Mature, healthy trees can increase property values for both residential and commercial properties by an average of 10%.[43] A study in Riverside, California found that the **property value of a residential lot adjacent to a preserved oak woodland was 17% higher** than a property that was 1,000 feet away from it. The **preserved oak woodland also increased the overall value of the community.**[44]

Studies have shown that a healthy tree canopy also increases business revenue. Shoppers spend more time and money in shopping districts with mature, healthy tree canopies and are willing to spend 9-12% more for products, services, and parking at businesses with trees in front of them.[45,46,]

Oakland can reduce the possible negative effects of increased property value on community members through proper planning and community engagement (see "What is Green Gentrification" on page 46).

TREES PROVIDE JOBS.

Tree planting, care, and management activities in cities require people to do the work, so managing an urban forest effectively will create job opportunities starting at entry level to advanced managerial roles in both the public and private sectors. Tree-related workforce development programs such as the urban arboriculture program at Merritt College serve to train individuals for these jobs. Organizations like the Tree Equity Workforce Network are increasing equity by helping members of underrepresented communities get these jobs.[47]

Section Two

An Equity-Centered Approach

Oakland is a city with a diverse history, but, unfortunately, racism and discriminatory practices have resulted in racial divides. Despite being consistently ranked as one of the top ten most ethnically diverse cities in the United States, BIPOC community members continue to have less access to opportunities than their white counterparts due to historical discrimination in housing and neighborhood planning. [48,49]

The geographic and racial disparities in Oakland are mirrored in the distribution of tree canopy cover. Wealthy, historically white neighborhoods boast forested hills and tree-lined streets, while frontline communities like West and East Oakland have minimal tree cover and few trees along their streets. **While trees provide physical, mental, and social health benefits for urban residents, these benefits are not equitably distributed.** Frontline community residents have limited access to trees and the benefits they provide, perpetuating environmental injustice in these communities. [50,51]

The lack of trees and greenspace is as much of an environmental injustice as the air pollution that plagues frontline communities.[52]

The City of Oakland took proactive steps to center equity in the Urban Forest Plan by setting goals, strategies, and actions to address these disparities in ways that will benefit all residents. To center equity in the Plan, it was necessary to engage in thoughtful and reflective processes to ensure that the voices of frontline communities were heard, acknowledged, and integrated into it. This section describes the process and what was heard.

▲ International Boulevard (East Oakland) lacks tree canopy.

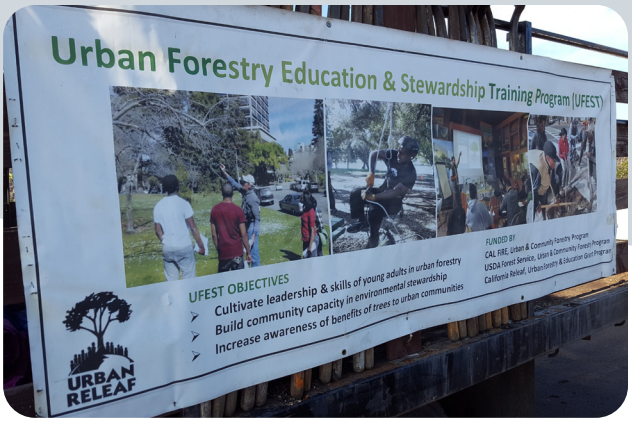
A Legacy of Community Tree Stewardship

Oakland has a long history of community involvement in the planting and care of its urban forest. The following is an incomplete history of known citizen action in urban forestry:

- During the City Beautiful Movement of the early 1900s to 1920s, many streets and parks, such as Lakeside Park, DeFremery Park, and Raimondi Park (then called Bayview Park), were planted with oaks, redwoods, and a variety of other trees.
- The Oakland Parks Commission was established in 1909 and planted oaks in Lakeside Park. [53]
- Between 1978 and 1985, the Oakland Tree Task Force (OTTF) collaborated with the Oakland Citizens Committee for Urban Renewal (OCCUR) to initiate public tree planting programs in West and North Oakland. The program evolved into the Oakland Neighborhood Tree Organizing Program (ONTOP), which planted 15,000 to 16,000 trees in public spaces, primarily in West and North Oakland. ONTOP was instrumental in developing the citywide tree planting plan for Oakland, called GREENSTREETS, in 1981.

▲ Volunteers plant trees on Martin Luther King Jr. Day to honor his legacy of service. Credit: CAL FIRE

- Since the early 1990s, numerous non-profit organizations and community groups have taken the initiative to plant trees in Oakland's streets, schools, and parks. These groups have used a variety of funding sources, including federal and state grants, to carry out their efforts. One such non-profit is Urban Releaf, which began in 1998 with the aim of planting trees to beautify frontline communities and provide job training for young people in these neighborhoods.[54]
  The local chapter of the Sierra Club has also planted trees in public spaces, particularly in frontline communities, and formed a new group called Trees for Oakland that is affiliated with the Oakland Parks and Recreation Foundation (OPRF). Trees for Oakland and OPRF plant street trees and provides support for City-led tree planting and tree care efforts, including the "Better Neighborhoods, Same Neighbors" Transformative Climate Communities project. Other non-profits and community groups actively plant trees in public parks, schoolyards, and on private property, such as Common Vision and Planting Justice. Neighbors also organize to plant trees on public and private property in their neighborhoods.
- Many community groups have incorporated strategic tree planting goals into their community plans. The West Oakland Environmental Indicators Project and East Oakland Neighborhoods Initiative call for strategic planting of trees to improve air quality, sequester carbon, and beautify communities.
- The Oakland Urban Forestry Forum (OUFF) is a collaboration between community members, non-profits, City staff, and State agency representatives. The forum, established in 2011 with the assistance of CAL FIRE, is focused on promoting tree canopy equity, partnerships, and public education related to trees. Members of OUFF advocate for investment in Oakland's urban forest and have contributed to City planning efforts.



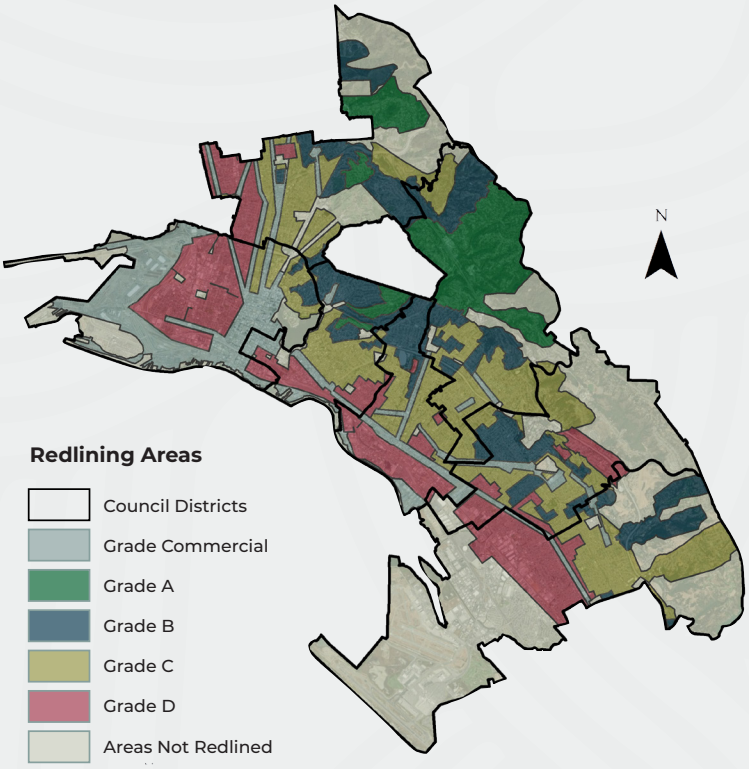
▲ Urban Releaf and CAL FIRE partnered for many years to plant trees throughout Oakland's frontline communities. Credit: CAL FIRE

UNDERSTANDING INEQUITY IN OAKLAND

Over the decades, racist programs and policies exacerbated inequities in Oakland, including:

Real Estate Redlining. Redlining is a discriminatory real estate practice in the U.S. where certain neighborhoods were denied financial services, including mortgages, based on their racial or ethnic composition. The term "redlining" comes from the practice of drawing a red line on a map to indicate areas where these financial services were not available. The practice dates back to the 1930s when the Federal Housing Administration (FHA) developed underwriting guidelines that rated neighborhoods on perceived stability and desirability, with less stable and desirable neighborhoods being redlined on different maps created by both the FHA and the Home Owners' Loan Corporation (Rose, 2022). The practice disproportionately affected African Americans and other non-white people and led to the segregation of neighborhoods, racially focused slums, and denied credit and other financial services to people living in redlined neighborhoods. Although redlining was officially banned in 1968, the legacy continues to be felt today, with redlined neighborhoods experiencing higher levels of poverty, lower levels of homeownership, and reduced tree canopy.

Urban Renewal. Urban renewal is a policy and practice that seeks to revitalize and redevelop urban areas that are perceived as being in decline or decay. In Oakland, the policy dates back to the 1950s and 60s, when projects like the Oakland-Alameda County Coliseum were built on predominantly African American and working-class land, displacing residents. Highways and freeways were also constructed, demolishing homes and businesses in West Oakland, including Interstate 880 which separated



HISTORIC REDLINING MAPS SET THOSE DISCRIMINATORY PRACTICES THAT CREATED THE FRONTLINE COMMUNITIES OF TODAY. THERE ARE SIGNIFICANTLY FEWER TREES IN FRONTLINE COMMUNITIES.

the neighborhood from downtown, disrupting unity and creating an economic disadvantage. This practice has continued into recent years, leading to gentrification and displacement of long-time residents and sparking debates about the role of urban renewal in Oakland's future.

Prohibiting Trucks on Route 580. The Port of Oakland is a major hub for goods transportation in Northern California, responsible for moving 99% of cargo in the area and serving a market of 14.5 million consumers (Dara, 2021). However, due to California State Law, truck traffic is not only concentrated on Interstate 880 but is banned from Interstate 580, leading to more diesel particulate matter and a disproportionate amount of air pollution in communities surrounding the I-880 freeway. This air pollution has significant negative impacts on the health and well-being of community members, particularly those who live, work, or attend school near the freeway.

Vehicle emissions are a primary source of air pollution on Oakland freeways, and the negative health impacts of this pollution are particularly pronounced among children and older adults (Sæbø, 2017, p. 112). Exposure to air pollution, including fine particulate matter ($PM_{2.5}$), nitrogen oxides (NOx), and volatile organic compounds (VOCs), has been linked to a range of health problems, including respiratory and cardiovascular diseases, cancer, and premature death (WOEIP, 2019). In West Oakland, residents may inhale up to 100 cubic meters of $PM_{2.5}$ in a single day, compared to the average of 10 cubic meters in most other areas (WOEIP, 2019). In addition to the health impacts, air pollution has negative economic impacts on the community, such as reduced property values, decreased tourism, and higher healthcare costs. The poor air quality can also impact the quality of life in the community, making it difficult for residents to enjoy outdoor activities.

CONSEQUENCES OF INEQUITY

As government and private actors have created systems of discrimination and treated social groups differently, providing greater opportunity to some while placing burdens on communities of colors, these inequities have negative consequences, including but not limited to:

- Disadvantaged and marginalized communities. When equity is not present, certain communities may be disadvantaged and marginalized, leading to a lack of access to resources and opportunities. This creates a cycle of poverty and disadvantage that is challenging to break.
- Social unrest and conflict. When certain communities are excluded or disadvantaged, it can lead to social unrest and conflict, as people are not being treated fairly. This can create a sense of division and tension within the community.
- Poor quality of life. When certain communities are disadvantaged, it can lead to a poor quality of life for those who live there. This includes issues such as poor housing, limited access to education and healthcare, and high levels of crime and violence.

▶ Oakland before freeway construction on top and after on bottom. The resulting fragmentation of West Oakland created significant environmental and social inequities. Credit: Segregation by Design, Adam Paul Susaneck, 2023

Urban Forest Plan Community Engagement

The Urban Forest Plan's community engagement process helped establish the community's vision, ensuring the Plan's goals, strategies, and actions are:

- Responsive to the needs and desires of the community.
- Foster a sense of ownership among community members.
- Create a more inclusive and just city for all. [55]

However, the engagement process faced several challenges associated with the COVID-19 pandemic. Those challenges led to deeper reflections about strategies and approaches, eventually leading to hiring community organizations to provide targeted outreach to frontline communities, creating a project website and survey, using the City of Oakland's social media platforms, and leveraging local media interest for broader outreach to residents and businesses throughout Oakland. After a few false starts, community engagement began in spring 2022 with the help of four engagement partners.

▲ Community members are eager for urban forestry volunteer opportunities.

▲ Volunteers are critical in increasing tree canopy cover in Oakland.

TREE PLANTING IN OAKLAND'S FRONTLINE COMMUNITIES

As part of the CAL FIRE grant that supported development of the Urban Forest Plan, 700 new trees were planted in Oakland's frontline communities. Many of these trees were planted and are being cared for with the help of volunteers and community groups.

"A lack of participation in forestry programs by people living in [frontline] communities is highly problematic in relation to the goal of increasing canopy cover equity across the city." [52]

ENGAGEMENT PARTNERS

In 2021, the City of Oakland released a request for proposals (RFP) to find community engagement partners for the Urban Forest Plan who could assist in reaching underrepresented frontline community members. **The goal was to integrate urban forestry engagement into existing outreach programs that community groups were already conducting**. These partners had the freedom to design their own engagement activities in formats and spaces that were authentic to them, within budgets they determined. City of Oakland staff provided educational resources and surveys for them to collect community input, and provided training and support as needed.

Four community groups with unique missions and approaches submitted proposals and were selected:

- **Common Vision** focuses on environment, food, and education in underrepresented communities, working through schools to engage youth and the entire community.
- **California Interfaith Power & Light** mobilizes individuals and communities of faith and conscience to take action on climate change across Oakland's diverse demographics.
- **Trees for Oakland with Oakland Parks and Recreation Foundation** plants and maintains trees in the city, with a focus on limited canopy areas, aiming to educate people about trees, combat climate change, and provide a more equitable distribution of trees within Oakland.
- **Forest & Tree** provides outdoor learning experiences to young people and their families to develop a stronger sense of self, community, and connection with the natural world, working collaboratively with educators and students to create personalized curriculum and experiences.

SUPPORTING WEST AND EAST OAKLAND NEIGHBORHOODS

The creation of the Urban Forest Plan supports strategies outlined in the West Oakland Community Action Plan (WOCAP), which calls for a comprehensive urban canopy and vegetation plan. This plan aims to identify suitable areas for planting and maintaining trees, such as parks and Caltrans' rights-of-way, and to protect existing trees that mitigate air pollution exposure in West Oakland. Similarly, the East Oakland Neighborhoods Initiative (EONI) identified urban greening and tree planting as one of its top ten priorities for the region.

"The empowering moment of [BIPOC] residents seeing their voice matters in how Oakland will forest their community was also a highlight"
Common Vision

OBSERVATIONS, REFLECTIONS AND LESSONS LEARNED FROM THE COMMUNITY ENGAGEMENT PROCESS

The Urban Forest Plan's community survey received over 2,450 responses, which is a good response rate, however, this number alone does not accurately reflect the level of participation and engagement. Many questions were left unanswered, resulting in an average of 1,615 responses per question. Several factors may have contributed to this, including:

- **Survey layout being difficult to read or manage on mobile devices.**
- **Survey design not being able to differentiate between intentional and unintentional question skipping.**
- **Number of questions causing fatigue for respondents.**

Although the engagement process aimed to target frontline and BIPOC communities, the response and feedback from community members in these groups was not as high as the Parks & Tree Services had hoped. Of the 1,124 people who responded to the race/ethnicity question, 416 identified as BIPOC.

Though turnout was not as high as originally hoped for, the Parks & Tree Services will use the lessons learned from this process to improve future community engagement efforts.

URBAN FOREST PLAN WEBSITE

An Urban Forest Plan website served as the central hub for sharing educational materials with the public. It contained various resources to inform people about the current status of Oakland's Urban Forest, including:

- A Timeline of Urban Forest Plan processes and milestones.
- **Oakland Tree Canopy and Land Cover Assessment 2020**, which summarized the distribution of trees and tree canopy across the community.
- **Oakland Urban Forest Resource Analysis 2021**, which provided information about the species, composition, and benefits of the city's public trees.
- **Oakland Urban Forest Council District Summary and Supplemental Materials,** which summarized the findings of a study on the relationship between tree canopy cover and community characteristics (e.g., U.S. Census Data, CalEnviroScreen, 500 cities).

The website included links to interactive engagement tools to increase accessibility, such as:

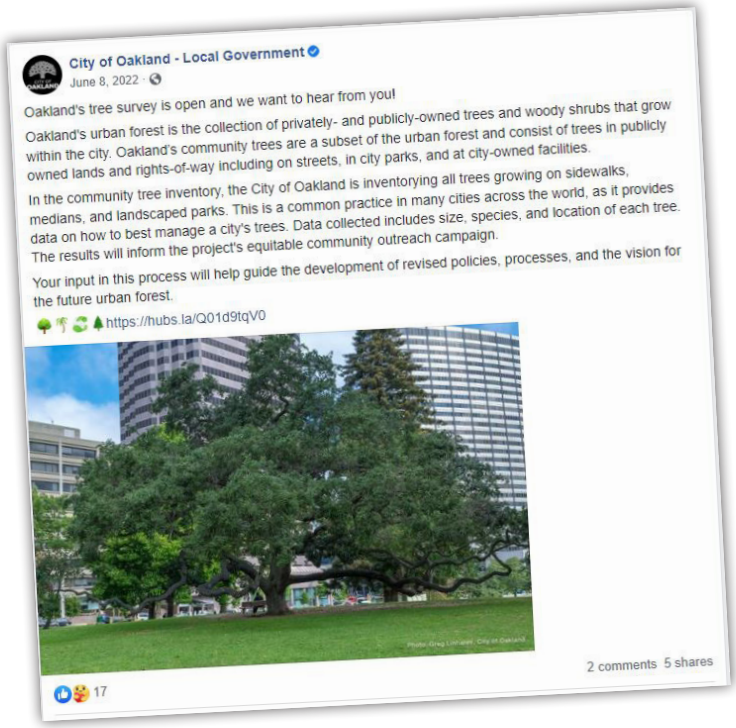
- **StoryMap,** a digital mapping tool that allows people to learn more about Oakland's urban forest through a series of interactive maps.
- **TreeKeeper Canopy**, a planning tool for tree planting and canopy expansion on both public and private property.
- **Pre-recorded presentation**, a 20-minute video summarizing the findings from the Oakland Tree Canopy and Land Cover Assessment and Oakland Urban Forest Resource Analysis.

Community engagement partners received training on how to use these materials during engagement and a handbook for reference.

COMMUNITY SURVEY

A 50-question community survey posted on the Urban Forest Plan website collected Oaklander's thoughts on their community priorities, issues, and opportunities related to Oakland's trees and urban forest.

To increase the reach of the survey, the City's website and social media platforms, such as Facebook, Twitter, Instagram, and Nextdoor, advertised the call for engagement. Postcards with QR codes provided easy access to the online survey through mobile devices. The Google Translate function on the project website allowed the survey to be translated into many languages to improve accessibility. Additionally, community engagement partners distributed paper versions of the survey in English, Spanish, and Chinese at events.
The survey period remained open from April to August 2022 and received over 2,450 submissions.



ENGAGING THE OAKLAND COMMUNITY

The engagement partner organizations in collaboration with the City of Oakland's Department of Race & Equity and Parks & Tree Division, utilized various in-person and virtual events and methods to engage with frontline communities about the Urban Forest Plan, the community survey, and the importance of their voices in the planning process. While outreach activities occurred in all seven Council Districts, there was a focus on engagement in Council Districts 3 and 5 based on the Engagement Partners' established networks. These Districts include frontline communities specifically aimed to reach in the engagement process. The City reached out to community groups representing frontline communities in other Council Districts to attempt to fill the gap. Outreach events included:

- Prescott School and King Elementary School work parties
- Oakland Tech High School
- West Oakland Environmental Indicators Project (WOEIP) meeting
- Mama Wanda Good Eggs Family Challenge
- SPRAC Health & Wellness Fair
- Community Circle at Peralta Hacienda
- ASCEND School
- Virtual meetings
- Email blasts, social media posts, and newsletters

What Did We Hear from the Community?

2,484 Survey Respondents[1]

95% live in Oakland

Top community priorities:

1. Housing
2. Public Safety
3. Improved roads and infrastructure
4. Clean air and water
5. Trash and litter control
6. Better schools
7. Job creation/economic opportunities

81% notice the trees in their community

78% wish there were more trees in their community

[1] * Note: Not all respondents answered all survey questions

▲ A tree-shaded trail in the Oakland Hills. Credit: Clifford Ham

▲ Joaquin Miller Park picnic area.

Reasons people like trees:

1. Add beauty to the neighborhood
2. Benefit birds, wildlife, and ecosystems
3. Clean the air
4. Create shade
5. Capture carbon dioxide
6. Provide mental, spiritual and cultural benefits
7. Reduce traffic noise
8. Reduce crime
9. Improve local water quality

Top Challenges of Trees

1. Tree maintenance is a burden
2. Tree roots damaging sidewalks
3. Leaf litter
4. City does not take care of the trees

▲ In major storms, unmaintained trees have a greater chance of uprooting.

▲ The City of Oakland recognizes the importance of interacting with nature from an early age. Credit: Clara Petit.

▲ American kestral hunting from a tree. Credit: Bev Jo Von Dohre

50% **do not think** the City of Oakland maintains its street and park trees.

92% **do not think** Oakland provides education to the community about trees and think the City should do more.

44% **are aware** that a City tree permit is needed to plant a street tree.

64% **are aware** that most trees growing in Oakland are protected by City ordinance.

For more detailed information on the engagement process and survey results, please see the Plan's companion report Oakland Community Engagement Summary report.

Community Urban Forest Concerns and Priorities

1. THE CITY OF OAKLAND NEEDS TO PROVIDE PUBLIC TREE PLANTING AND PRUNING SERVICES

The community is in favor of increasing tree planting but believes that the City of Oakland is not effectively planting and maintaining public trees. The Parks & Tree Division stopped proactively maintaining public trees in 2008, which has led to neglect, and trees being viewed as a burden. The community is urging the City to resume the planting and pruning of all street trees.

2. EMOTIONAL AND ECOSYSTEM BENEFITS OF TREES

People love trees for both emotional connections (such as beauty and mental, spiritual, and cultural benefits) and ecosystem services (such as clean air, shade, and clean water). Tree planting and management objectives need to focus on providing these benefits.

3. SUSTAINING THE URBAN FOREST FOR FUTURE GENERATIONS

The community takes a long-term view of Oakland's urban forest. They want it to be better not just for today, but for future generations as well. Street trees can live for 50 or more years and grow over 40 feet tall, so ensuring sustainability requires significant planning and resources.

4. VOLUNTEERISM, GREEN JOB TRAINING, AND EDUCATION

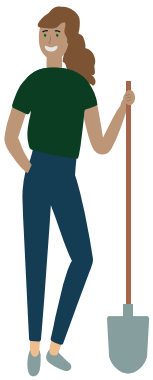
The community is eager to support the urban forest through volunteering and green job training. They also want the City to provide education on tree planting and maintenance.

5. SOCIAL JUSTICE

The Oakland community believes that social justice should be considered when making decisions about the urban forest. To achieve this, the City needs to prioritize tree planting and maintenance in frontline communities and involve community members in the decision-making process.

6. TREE SPECIES

Oaklanders appreciate native trees for their beauty, symbolism, cultural significance, and history. However, urban development and climate change are dramatically changing the landscape and making it harder for native trees to grow and establish. Strategies that can address this priority include identifying appropriate locations to plant native trees to ensure they thrive and identifying native species from southern climates that may be suitable for Oakland's warming climate (assisted migration).



7. MITIGATING SIDEWALK CONFLICTS AND TREE MAINTENANCE

To address community concerns, the City needs to facilitate repair of aging sidewalks, improve tree maintenance, and find solutions to mitigate sidewalk conflicts. This may involve revising the species planting list to better match trees to available soil space, reducing the chance of future sidewalk lifting by employing innovative sidewalk design and technology, and implementing strategies for mitigating existing sidewalk damage while ensuring ADA-compliant paths of travel (such as sidewalk shaving, bridging, permeable pavement, bump-outs, meandering sidewalks, etc.).

8. CITY POLICIES ON TREE PROTECTION AND PLANTING

Many people are not aware that Oakland has policies that protect trees and regulate the planting of new street trees. Increasing awareness about these policies to encourage compliance and maximize the health, quality, and size of the urban forest is a priority for the City.

9. PUBLIC SAFETY AND TREES

The community is very concerned about public safety. While trees can improve neighborhood cohesion, create a sense of place, and provide shade and cooling during hot weather, they can also block streetlights, traffic signals, obstruct accessible paths of travel, and obscure pedestrian sightlines. There is a strong community desire for the City to consider public safety when selecting tree species and planting locations, as well as conduct regular maintenance to ensure visibility and safety.

▲ Volunteers expanding tree canopy near Lake Merritt. Credit: Kerstin Firmin

Section Three

Oakland's Urban Forest

To equitably and sustainably manage Oakland's urban forest, it is crucial to understand its current conditions and management. The following sections explore Oakland's urban forest data.

2018

Tree Canopy and Land Cover

21.5% tree canopy (Figure 1, Map 1, 2018)

53.8% pavement, structures, and hard surface (impervious surfaces)

22.4% grass, low lying vegetation, and bare soil (pervious surfaces)

2.3% open water

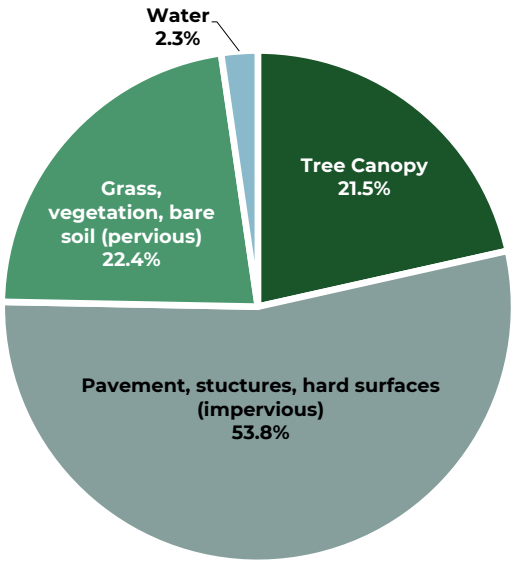


FIGURE 1. 2018 TREE CANOPY AND LAND COVER

Oakland has 7,819 acres of tree canopy cover, which is equivalent to 5,923 football fields of trees!

▼ Oakland's UTC assessment accounts for all trees growing within the City limits.

URBAN TREE CANOPY ASSESSMENT

An urban tree canopy (UTC) assessment uses high-resolution aerial imagery to map the location and amount of tree canopy cover within a city, on both public and private property. The term "tree canopy" refers to the leaves, branches, and woody plants that cover the ground when viewed from above.

The information from a tree canopy assessment can:

1. Identify areas that have low tree canopy cover and prioritize them for tree planting and care.
2. Develop a baseline of tree canopy cover, which can be used to measure the effectiveness of tree planting and care activities over time.
3. Identify areas with high tree canopy cover and develop strategies to protect these areas from threats.

Oakland's Tree Canopy Stats

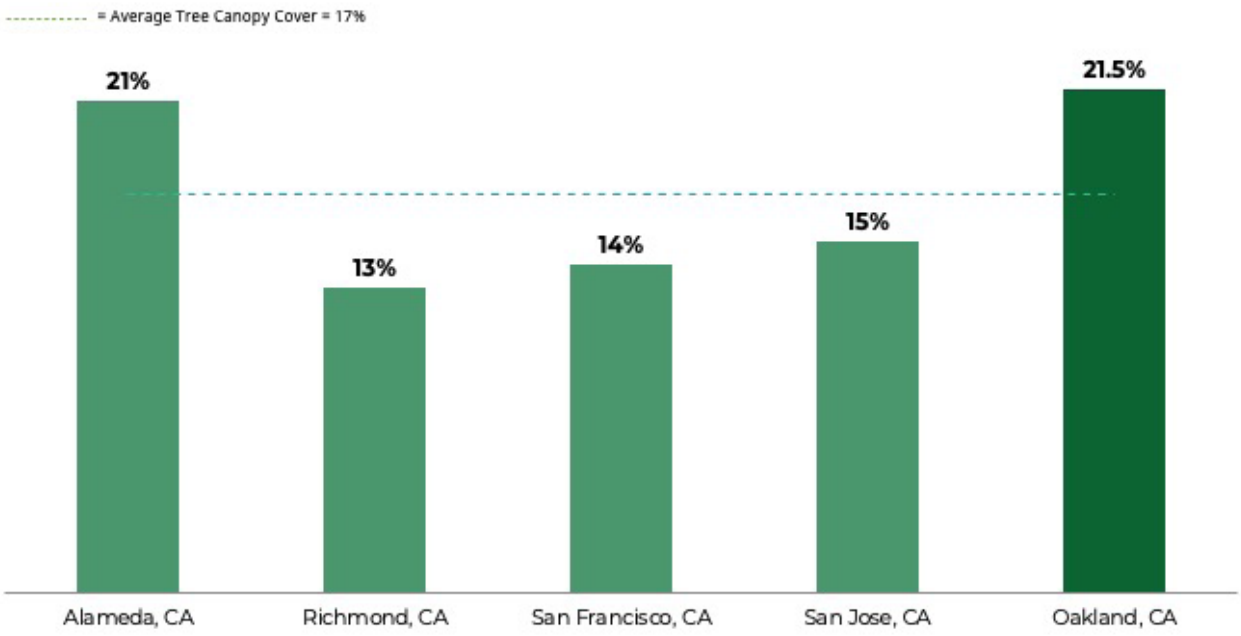
71% of **tree canopy** is on **private property**

29% of **tree canopy** is on **public property**.

46% is the average tree canopy covering **Oakland's Parks and Open Spaces**

38% is the **maximum tree canopy cover possible in Oakland** *if it were feasible to plant trees on all* public and private property.

FIGURE 2. TREE CANOPY IN OAKLAND AND OTHER CITIES IN THE REGION



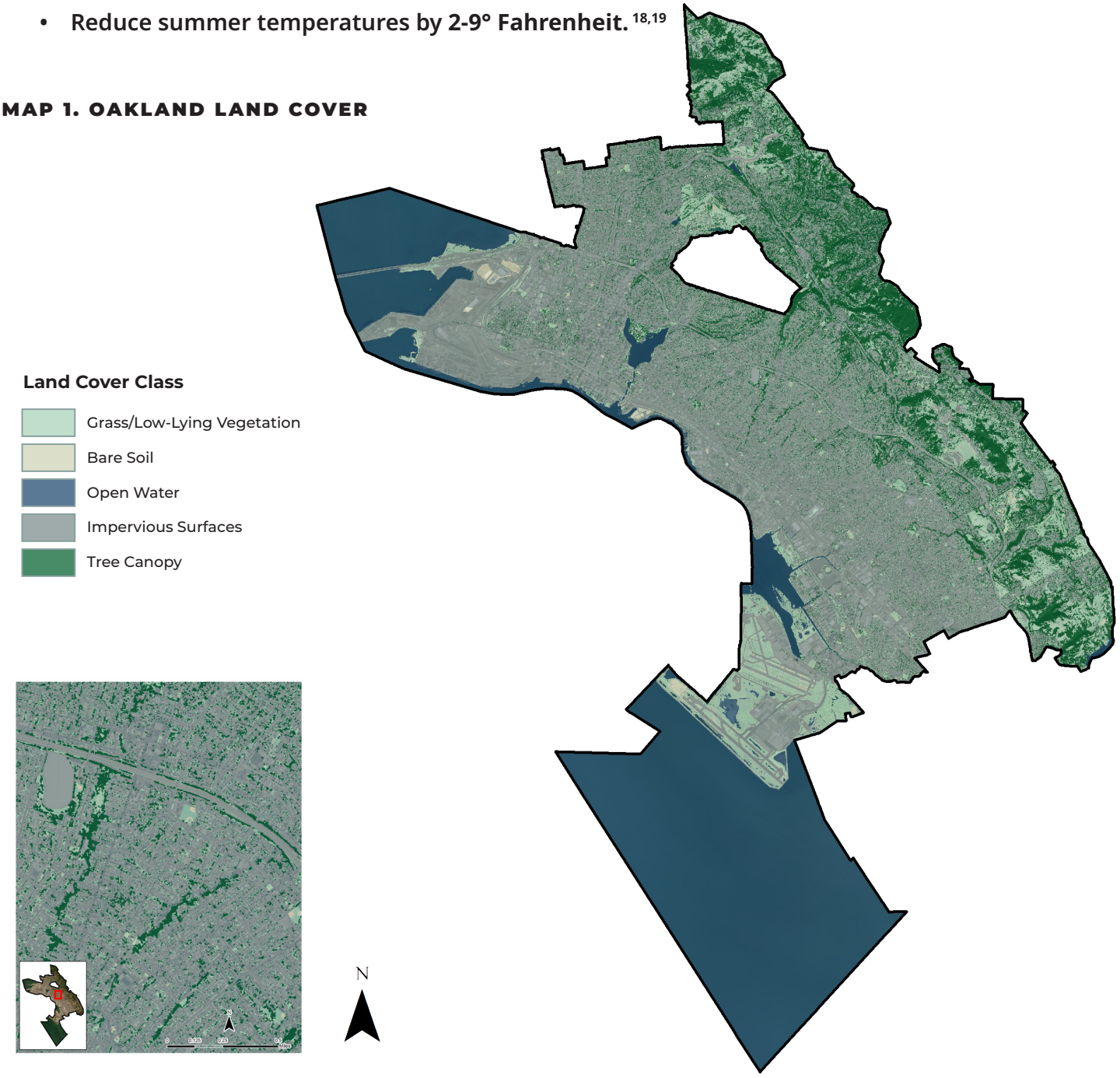
Oakland has more tree canopy than other cities in the region (Figure 2), primarily due to the forested Oakland Hills.

Oakland's Tree Canopy Benefits

Each YEAR, all of the trees in Oakland (on both public and private property)...

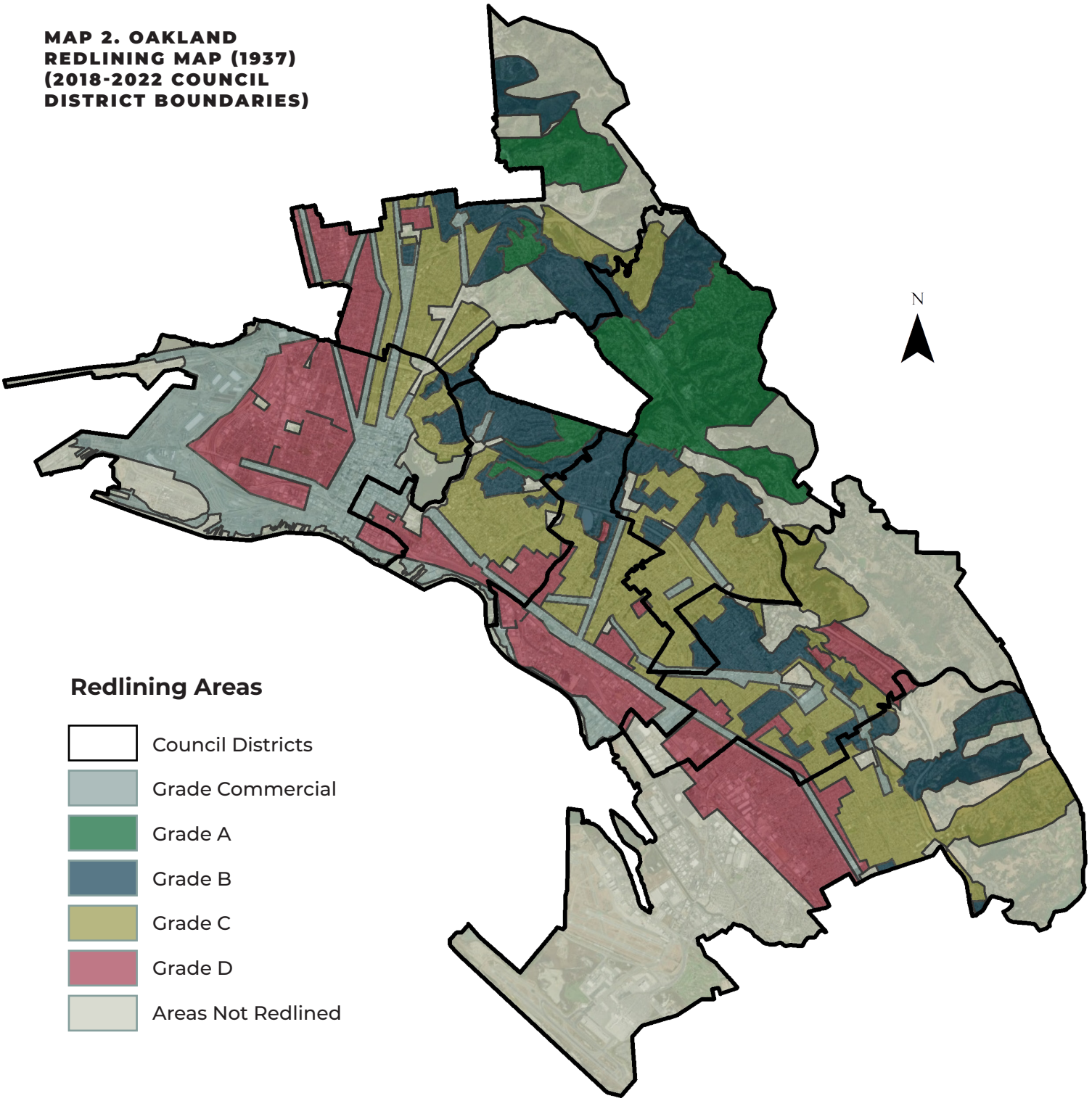
- **Absorb 13,280 tons of carbon.**
- **Intercept and absorb 100 million gallons of stormwater.**
- **Remove 679,080 pounds of air pollutants.**
- **Reduce summer temperatures by 2-9° Fahrenheit.** [18,19]

MAP 1. OAKLAND LAND COVER

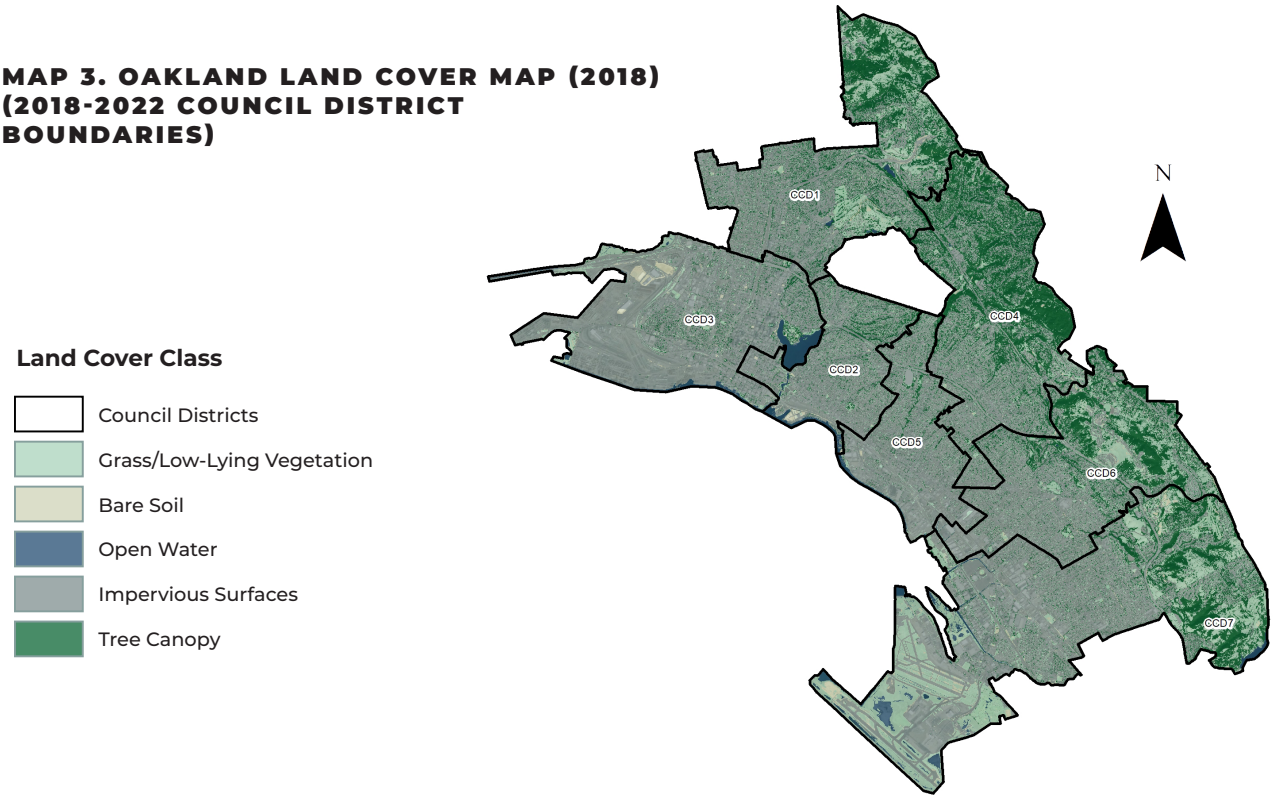


Areas that were historically redlined (Grades C and D) have significantly less tree canopy today than areas of the city that were not redlined (Grades A and B) (Map 2).

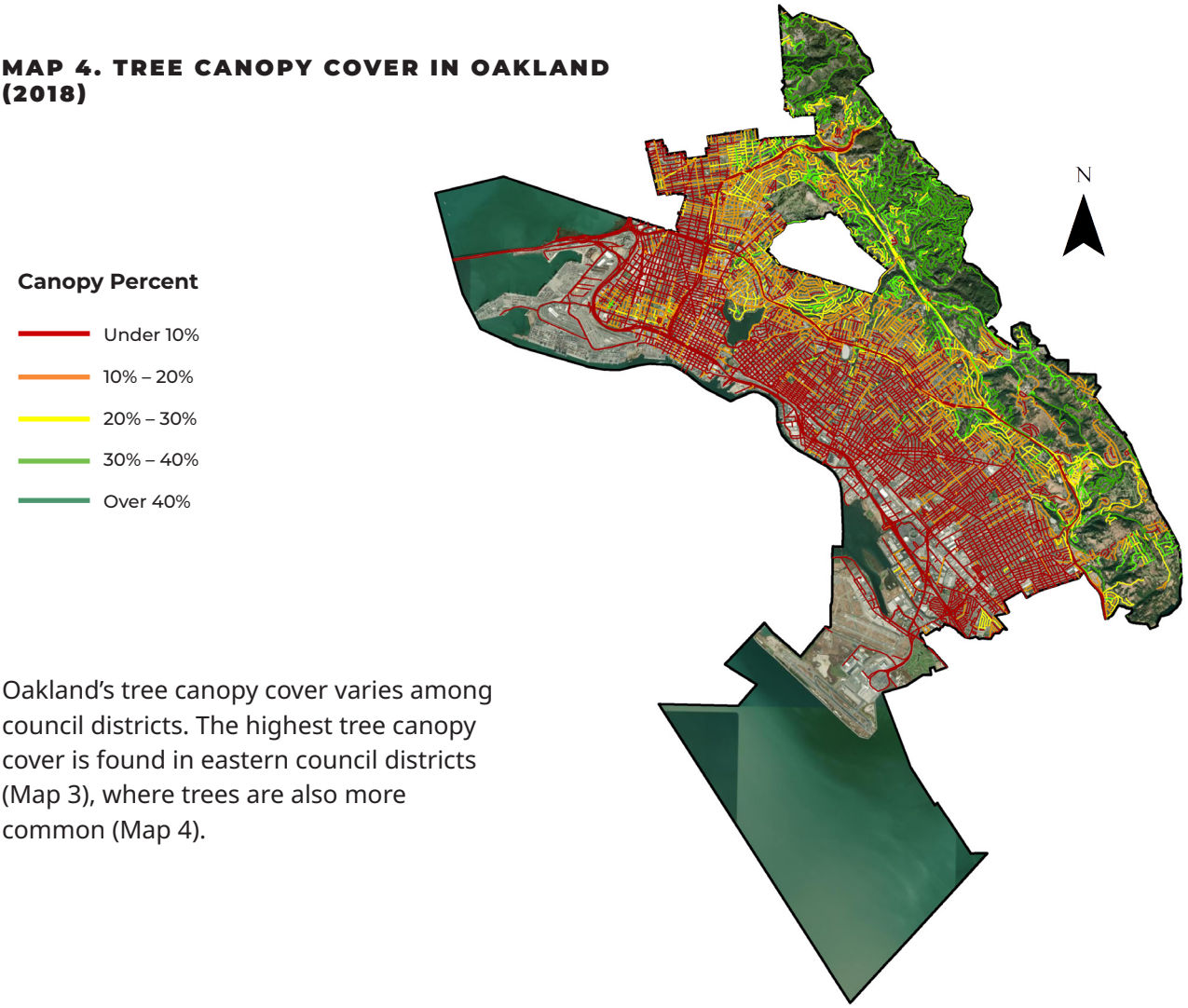
MAP 2. OAKLAND REDLINING MAP (1937) (2018-2022 COUNCIL DISTRICT BOUNDARIES)



MAP 3. OAKLAND LAND COVER MAP (2018) (2018-2022 COUNCIL DISTRICT BOUNDARIES)



MAP 4. TREE CANOPY COVER IN OAKLAND (2018)

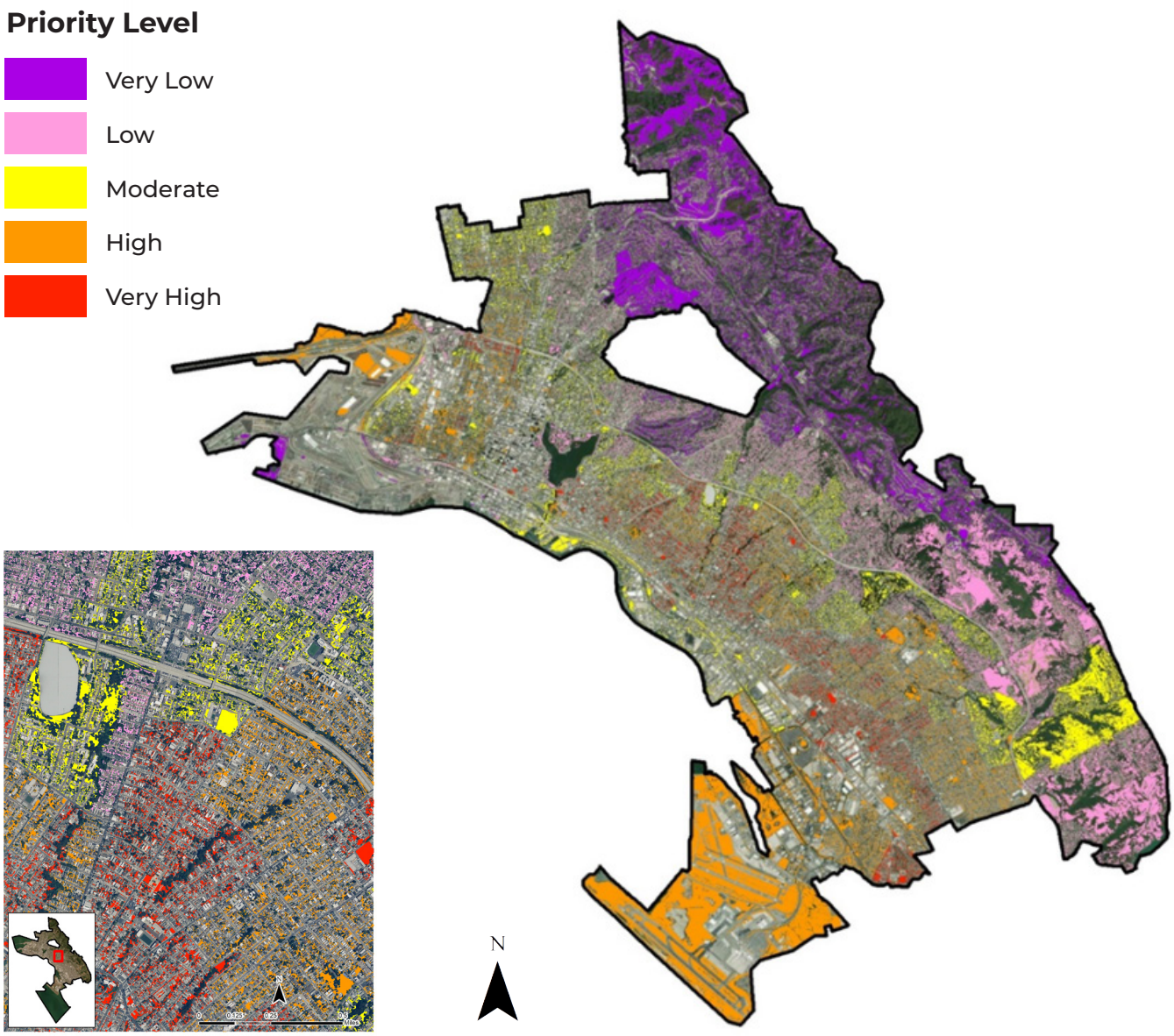


Oakland's tree canopy cover varies among council districts. The highest tree canopy cover is found in eastern council districts (Map 3), where trees are also more common (Map 4).

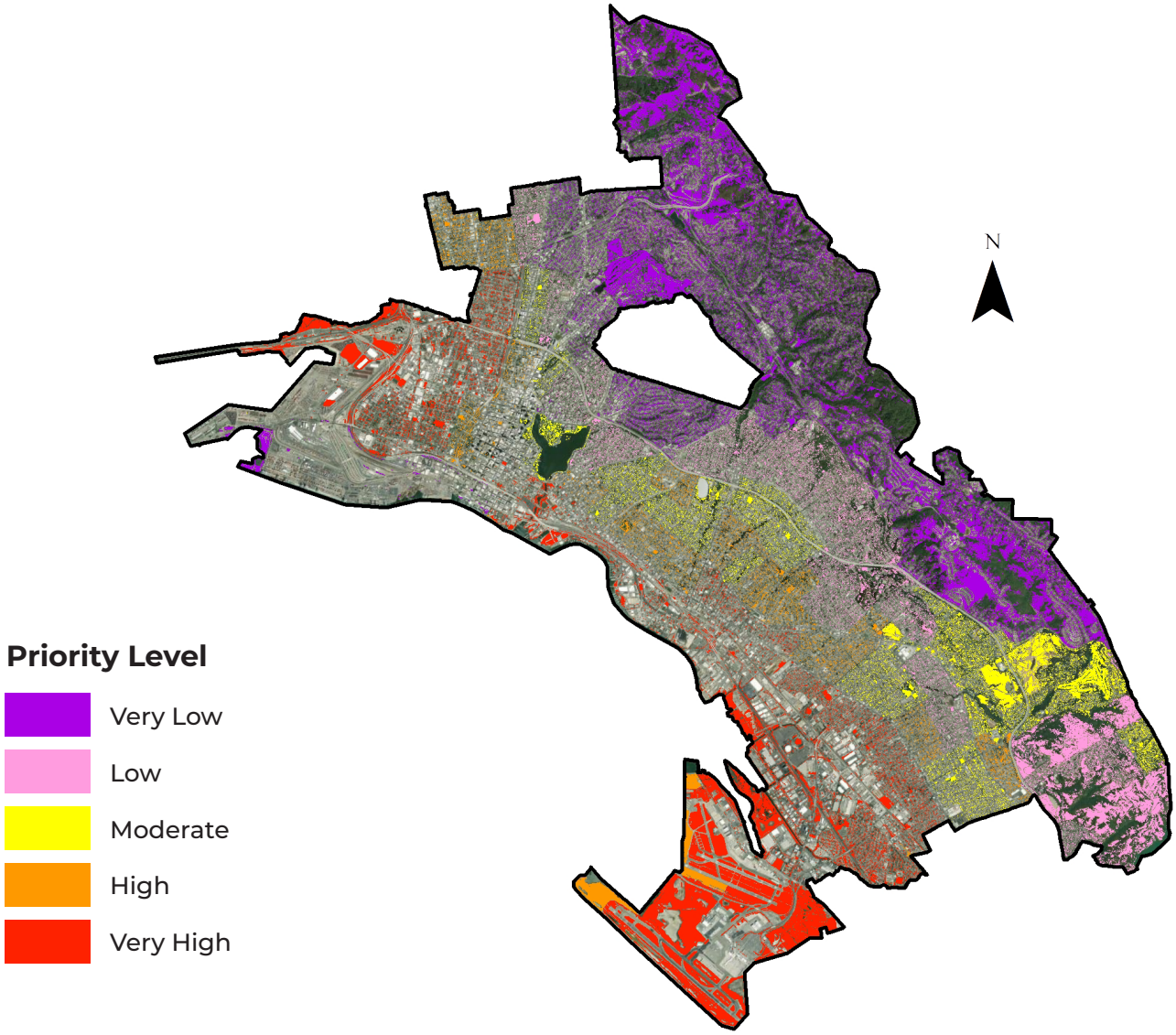
Tree Canopy Equity Analysis

Areas of very high and high need for new trees are those with low or aging canopy cover and socially, racially, and/or economically vulnerable populations (frontline communities) that can benefit most from increases in tree canopy cover (Maps 5, 6). **The provided planting maps are not indicative of jurisdictional boundaries and should not be interpreted as specific recommendations for tree planting in these areas.** Instead, they offer a theoretical overview of locations where tree planting could be most beneficial.

MAP 5. COMPOSITE SOCIAL EQUITY PRIORITY PLANTING MAP



MAP 6. ENVIRONMENTAL FACTORS (CALENVIRONSCREEN) PRIORITY PLANTING MAP



EQUITY ANALYSIS FACTORS

The social equity priority planting analysis is based on the following data:

- BIPOC Population (U.S. Census)
- Median Household Income (U.S. Census)
- Population Density (U.S. Census)
- CalEnviroScreen Score by U.S. Census Block Group (CalEnviroScreen)
- 2018 Tree Canopy Data

Each factor was weighted equally to create the Composite Social Equity Priority Planting Map (Map 5).

Oakland's Changing Tree Canopy

Between 2014 to 2018 Oakland **lost 277 acres of tree canopy** (approximately 209 football fields) and gained **1,296 acres of impervious surfaces** - roads, buildings, sidewalks, and other hard surfaces (approximately 982 football fields) (Figure 3, Map 7).

MAP 7. TREE CANOPY LOSS BY COUNCIL DISTRICT 2014-2018 (2018-2022 COUNCIL DISTRICT MAP)

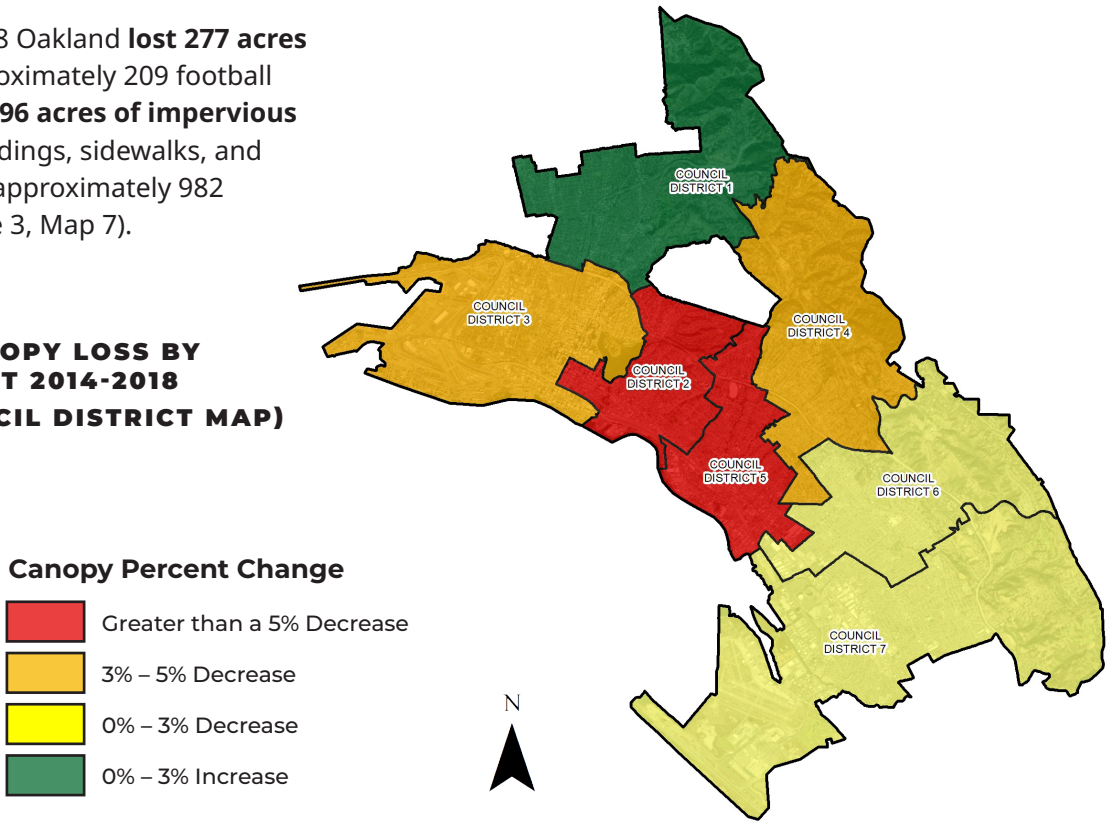
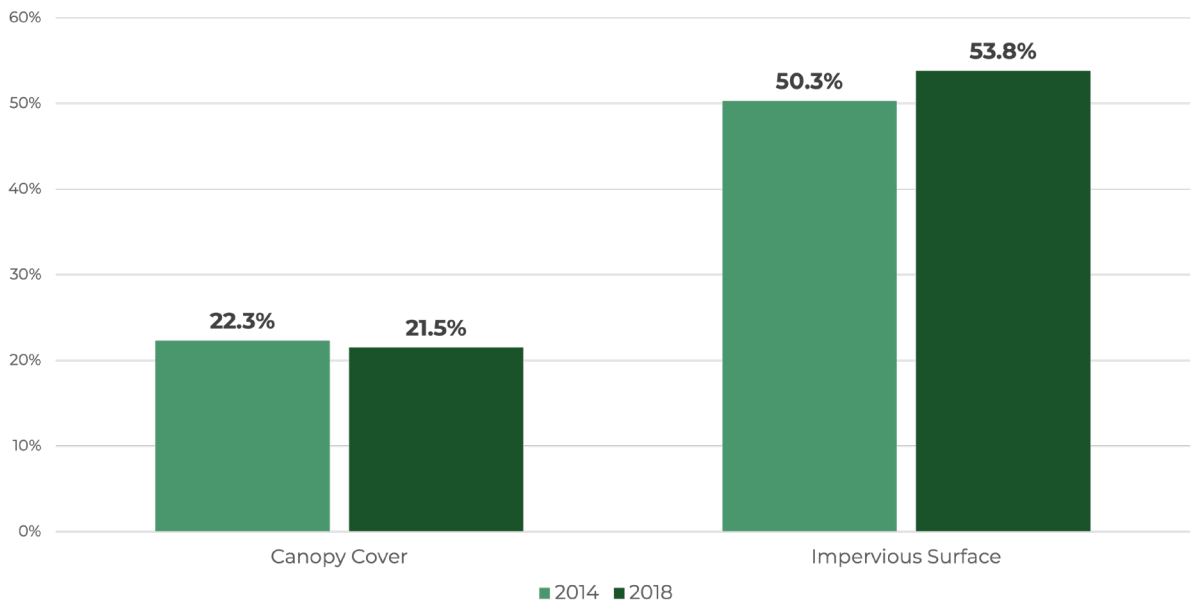


FIGURE 3. TREE CANOPY AND IMPERVIOUS SURFACE LAND COVER 2014 TO 2018



Public Tree Inventory

In 2020, Davey Resource Group arborists inventoried Oakland's public trees including their size, location, and species (Table 1, Figure 4).

TABLE 1. PUBLIC TREE INVENTORY SUMMARY

Public Tree Inventory Summary	
Street Trees	56,056
Landscaped Park Trees	12,241
Total Public Trees Inventoried	68,297
Stumps	2,131
Potential Vacant Planting Sites*	29,006
Street Tree Stocking Level**	64%
Total Sites Inventoried	99,434

* Potential vacant planting sites need to be field verified to determine suitability for planting based on location of underground utilities, sidewalk accessibility, proximity to lights, street intersections, and other site factors. **Not ALL potential vacant planting sites will be suitable for planting**.

**Street Tree Stocking Level = number of street trees currently planted compared to the total number of available planting sites, including both occupied and vacant locations.

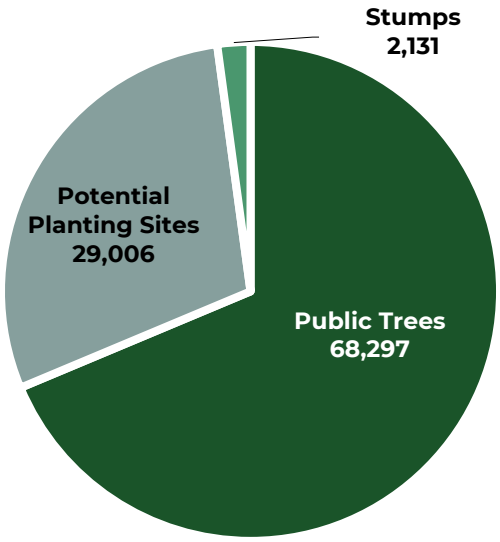


FIGURE 4. PUBLIC TREE INVENTORY SUMMARY OF SITES

▲ Each of Oakland's 56,000 street trees and 12,000 trees in landscaped parks were inventoried by ISA Certified Arborists.

IMPORTANCE OF URBAN FOREST AGE DIVERSITY

A sustainable urban forest strives to achieve industry guidelines for age distribution (dashed line in Figure 5). This ensures that the overall canopy contains trees at varying stages of maturity. To achieve this requires both annual tree planting to replace dead trees, as well as on-going tree pruning and care to improve tree condition and health.

MODELING TREE CANOPY SCENARIOS IN OAKLAND

The 2020 urban tree canopy assessment found that Oakland lost tree canopy going from 22.3% to 21.5% between 2015 and 2018. The loss in tree canopy is due to many factors including, old age, insect/disease, development, neglect, and storms. Three tree canopy scenarios were modeled to better understand how to increase tree canopy cover and the consequences of not doing so:

Tree Canopy Scenario 1:
Current Canopy Trend (No Action/Business as Usual)
Not Recommended

Tree Canopy Scenario 2:
No Net Loss in Tree Canopy

Tree Canopy Scenario 3:
Increase Tree Canopy to 22.5% by 2034 (Reverse the Trend)

FUTURE TREE CANOPY BENEFITS: MODELING THE SCENARIOS

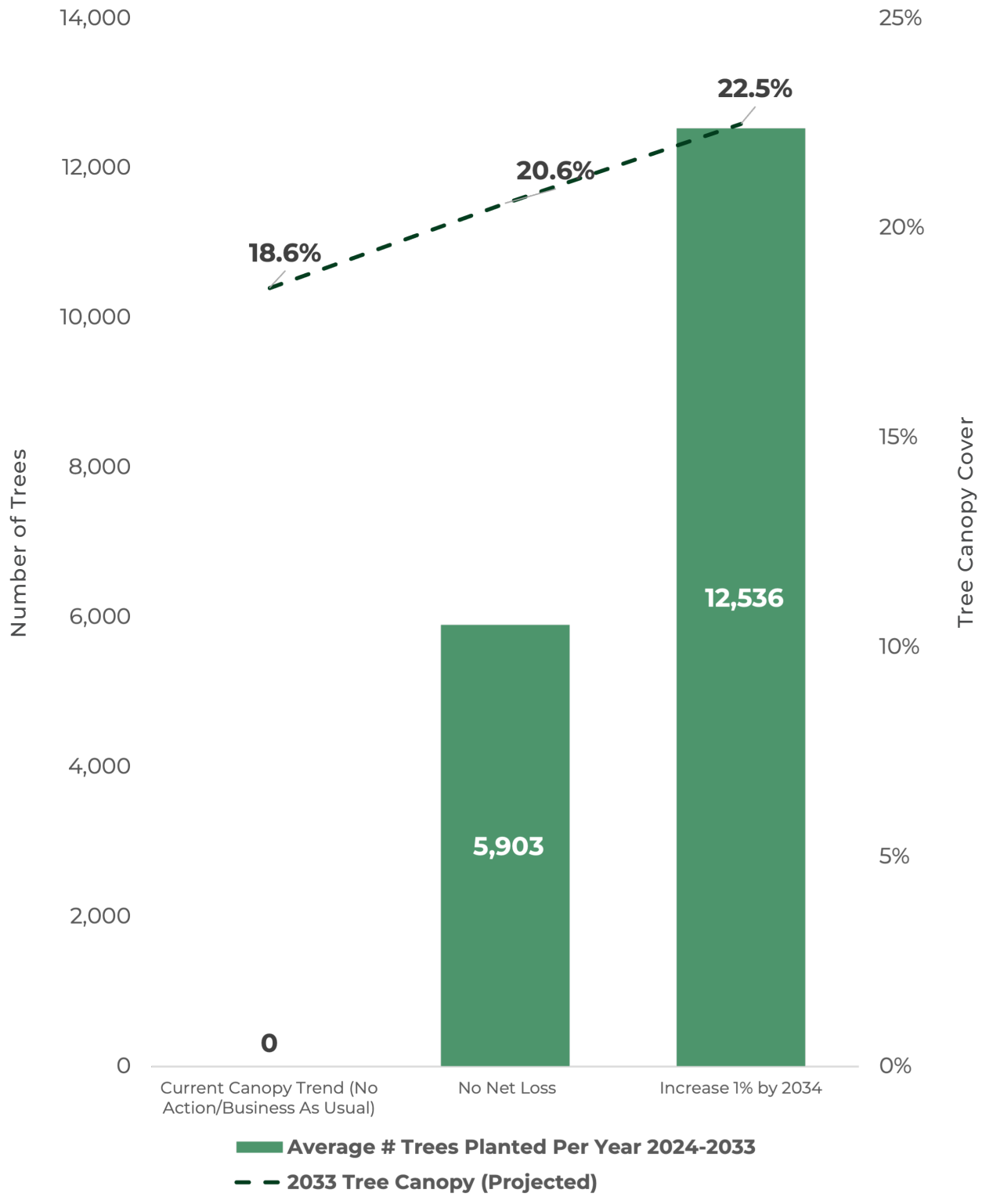
By 2034, if no action is taken and current practices continue (Scenario 1: Business as Usual), Oakland's tree canopy is projected to decrease to 18.6%. This reduction in canopy cover will correspondingly impact the benefits derived from the canopy, as reflected in the calculations for Scenario 1.

To estimate future cumulative impacts of a decade-long annual tree planting initiative in scenarios 2 and 3, the i-Tree Planting Calculator Version 2.2.0 was used (https://planting.itreetools.org/).

▼ Table of changes in environmental benefits by scenario

Benefits	Scenario 1	Scenario 2	Scenario 3
	Current Canopy Trend (No Action)	No Net Loss	Increase to 22.5%
Air Quality (pounds) (Ozone, Nitrogen Dioxide, Sulfur Dioxide and Particulate Matter (2.5) Removed)	-88,280	+57,385	+121,868
Carbon Benefits (pounds) (Carbon sequestered)	-3,452,800	+14,068,444	+29,876,675
Stormwater Benefits (gallons) (Rainfall intercepted)	-13,080,923	+71,108,675	+151,011,070

▼ Figure showing number of trees planted and projected tree canopy.



TREE CANOPY SCENARIOS

SCENARIO 1: CURRENT CANOPY TREND (NO ACTION/BUSINESS AS USUAL)

Trees Planted/Year: 0
Total Cost/Year: $0
2014 Tree Canopy Cover: 22.3%
2018 Tree Canopy Cover: 21.5%
2024 Estimated Tree Canopy Cover: 20.6%
2034 Projected Tree Canopy Cover: **18.6%**

If no new trees are planted in Oakland, the Current Canopy Trend Scenario predicts a decrease in tree canopy to 18.6% by 2034. The City of Oakland's annual tree planting efforts are not enough to compensate for the 66-acre loss in tree canopy each year (equivalent to an estimated 5,903 trees).
Although this scenario is assumed to have zero cost, the decline in tree canopy would result in a decline in tree benefits, affecting the health and well-being of Oakland residents.

SCENARIO 2: NO NET LOSS

Trees Planted/Year: 5,903
Total Number of Tree Planted 2024-2033: 59,030
Cost/Year: $7,338,060*
2014 Tree Canopy Cover: 22.3%
2018 Tree Canopy Cover: 21.5%
2024 Estimated Tree Canopy Cover: 20.6%
2034 Projected Tree Canopy Cover: **20.6%**

Assuming the trends in canopy decline continued from 2018 to 2024, **it is estimated that Oakland has a tree canopy coverage of 20.6% in 2024.** To maintain a **no net loss** tree canopy goal moving forward (keeping tree canopy at a stable 20.6%), approximately **5,903 trees will need to be planted annually** across public and private property through 2034 and sustained indefinitely. The number of trees is based on the replacement of 66 acres of canopy (approximately 5,903 trees) that are lost each year in Oakland due to old age, insect/disease, development, neglect, storms, and other factors.

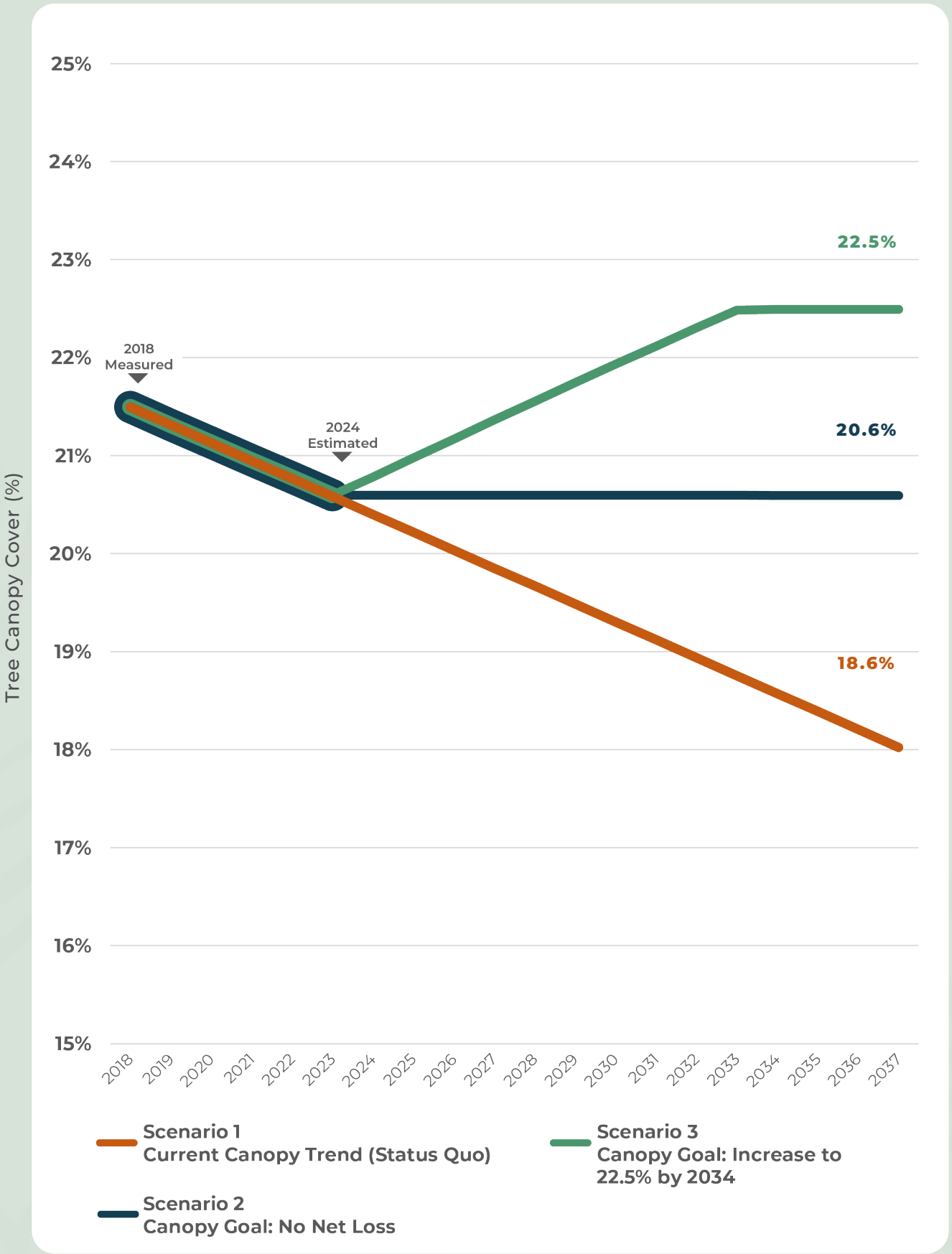
SCENARIO 3: INCREASE TREE CANOPY TO 22.5% BY 2034

Trees Planted/Year: 12,536
Total Number of Tree Planted 2024-2033: 125,360
Cost/Year: $15,584,735*
2014 Tree Canopy Cover: 22.3%
2018 Tree Canopy Cover: 21.5%
2024 Estimated Tree Canopy Cover: 20.6%
2034 Projected Tree Canopy Cover: **22.5%**

To **increase the tree canopy cover of Oakland to 22.5%** by 2034, approximately **12,536 trees per year must be planted across public and private property** starting in 2024. By 2034, the number of trees planted to maintain 22.5% canopy cover will decrease to approximately 6,500 annually. The estimated cost to implement this scenario is **$15,584,735 per year.**

*Note: Costs are based on contractor tree planting estimates of a 15 gallon tree, planted, staked, and watered weekly for eight months for two years ($1,243/tree).

▼ Future canopy goals based on three tree planting scenarios.



Size and Age Composition

Oakland has an excess of young trees (52%), a shortage of maturing trees (11%), and a shortage of mature trees (8%) (Figure 5) likely due to inadequate tree maintenance over the last 15+ years that has resulted in shorter tree lifespans. To address this, **reinstating tree pruning and resuming the street tree planting program are necessary to improve the age composition of Oakland's trees**. Investing in pruning and watering programs for the young trees is also crucial to enhance their health, minimize future maintenance expenses, and maximize the benefits of Oakland's public trees.

Tree Diversity

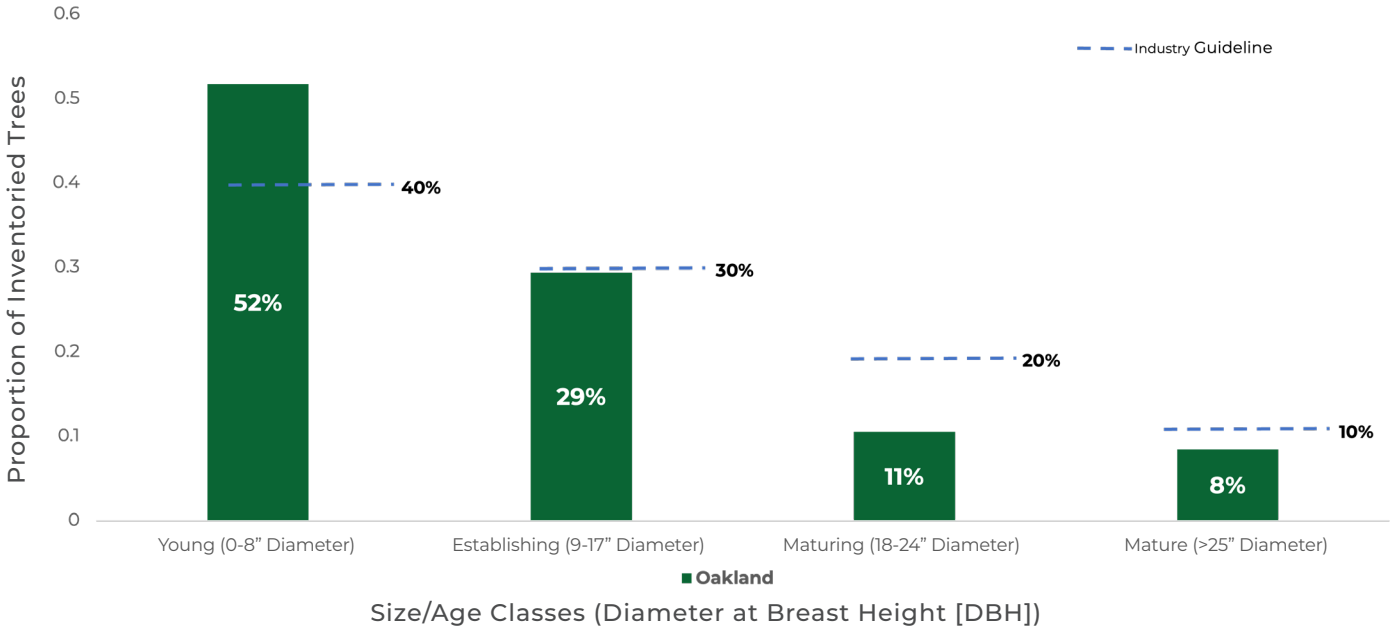
Tree diversity helps buffer the urban forest from pest outbreaks, disease, and other threats.

The public tree inventory catalogued 535 different tree species growing in Oakland. The top 5 public tree species, which make up 30% of the inventoried public tree population are:

1. **London plane /sycamore** (*Platanus* x *acerifolia)* **(9%)**
2. **Crepe myrtle** (*Lagerstroemia indica)* **(6%)**
3. **Callery pear** (*Pyrus calleryana)* **(5%)**
4. **Coast live oak** (*Quercus agrifolia)* **(5%)**
5. **Sweetgum** (*Liquidambar styraciflua)* **(5%)**

Industry guidelines recommend that a single species should not make up more than 10% of the public tree population and no genus should make up more than 20% of the population to reduce the public tree population's susceptibility to pests and diseases.[56] **No species or genus in Oakland exceeds these recommendations** (Figures 6 & 7).

FIGURE 5. SIZE/AGE DISTRIBUTION OF OAKLAND'S INVENTORIED TREES



INVENTORIED PUBLIC TREES

Trees located in developed public rights-of-way (streets with sidewalks), landscaped parks, and surrounding City facilities were inventoried. Trees in public open spaces, undeveloped public rights-of-way (typically streets without sidewalks), and on private property were not collected in the inventory.

Genus (plural, genera) is a category of scientific classification consisting of related species of organisms. For example the tree species coast live oak (*Quercus agrifolia),* red oak (*Quercus rubra*), and holly oak (*Quercus ilex*) are all in the oak genus (*Quercus*).

FIGURE 6. TOP 5 INVENTORIED PUBLIC TREE SPECIES IN OAKLAND

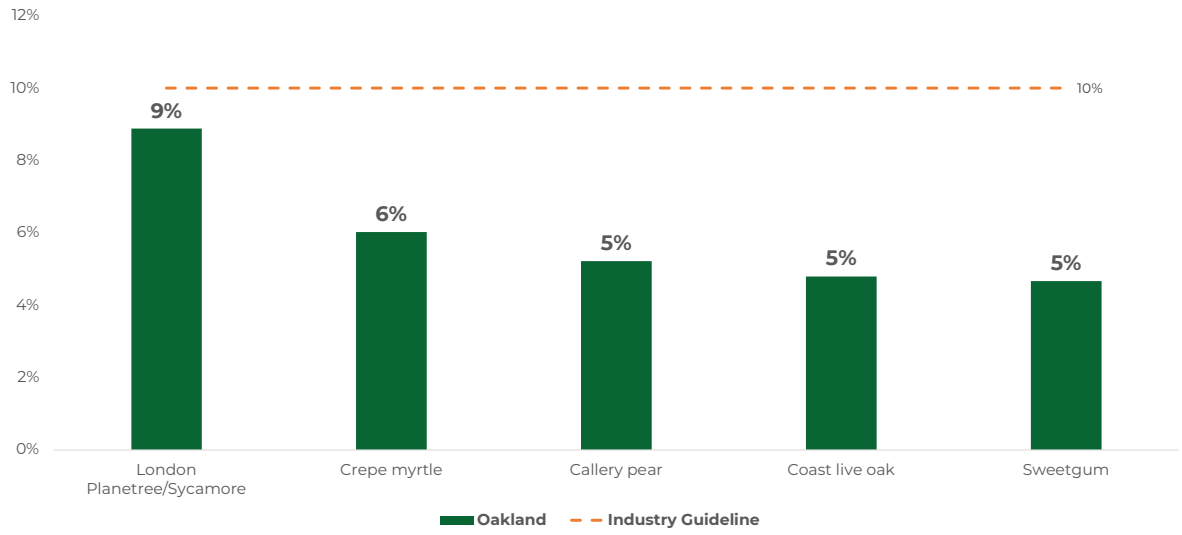
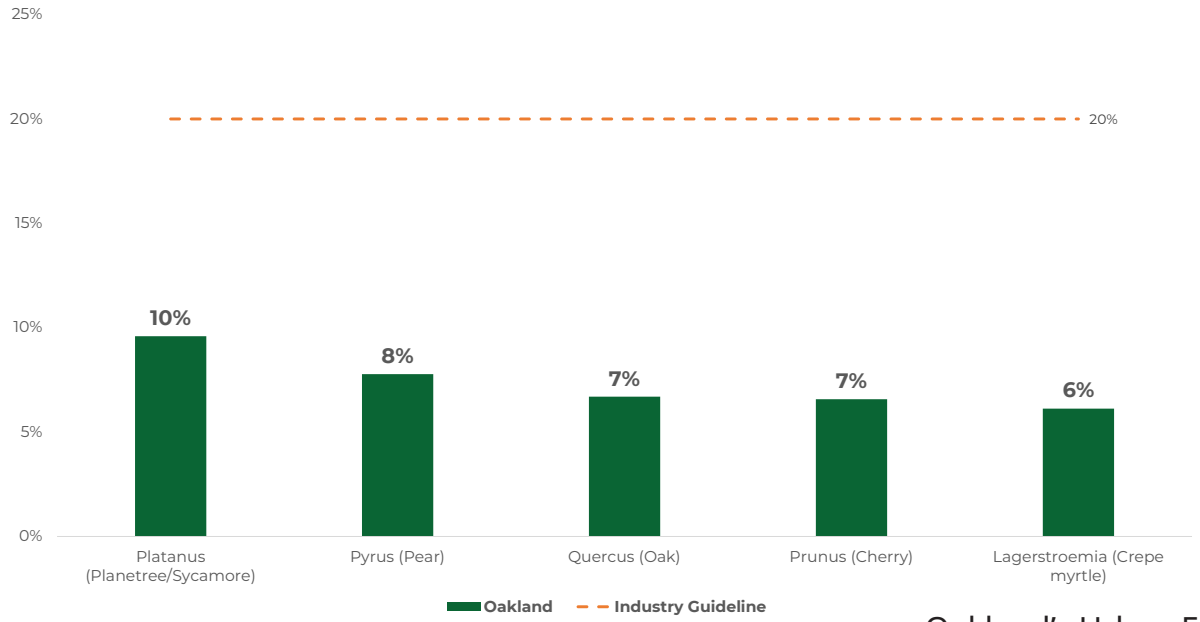


FIGURE 7. TOP 5 INVENTORIED PUBLIC TREE GENERA IN OAKLAND



Urban Forest Vulnerability

CLIMATE CHANGE

Oakland's urban forest mitigates and buffers the effects of climate change, but it is also susceptible to threats created by climate change, such as extreme heat, high winds, flooding, drought, and wildfires. As Oakland's climate warms and precipitation patterns change, the **types of trees that are planted should be assessed to ensure that they can thrive today while also being resilient to projected future conditions**. With over 535 species growing along Oakland's streets and in City parks and public places, the use of less commonly planted species should be promoted. The City should also limit or eliminate the planting of species that perform poorly in Oakland's urban forest (i.e., London plane/sycamore, Callery pear, and sweetgum). Climate adaptation strategies like assisted migration can be used to introduce new species that are better suited to Oakland's changing climate.

While choosing the right tree for the right place is a complex decision, considering projected climatic suitability during species selection will contribute to growing a resilient urban forest in Oakland (see "Using the Tree Inventory as a Tool for Species Management" on pages 80-81).

▲ University of California Cooperative Extension staff inspect acacia tree die-off in the Oakland Hills.

By later this century, the number of days that are above 86°F in Oakland is expected to increase from fewer than 7 days per year to over 30 days (USDA, 2021).

TREE PESTS & DISEASES

Insects and diseases play crucial roles in maintaining the balance of healthy ecosystems. However, urban forests, such as Oakland's, are particularly vulnerable to invasive pests and diseases. These intruders can significantly compromise the health, resilience, and ecological services provided by the urban canopy, leading to unforeseen expenses for the treatment or removal of afflicted trees.

Furthermore, the challenges posed by climate change, including extreme conditions like drought, flooding, and elevated temperatures, exacerbate these issues. Such environmental stresses weaken trees, making them more susceptible to infestations. Additionally, changing climates may create favorable conditions for pests and diseases previously unsuited to Oakland's environment, further threatening the urban forest's integrity.

At least 54% of Oakland's inventoried trees are susceptible to at least one significant pest or disease currently found in the United States, including spotted lanternfly (*Lycroma delicatula*), European spongy moth (*Lymantria dispar*), sudden oak death (*Phytophthora ramorum*), Asian longhorned beetle (*Anoplophora glabripennis),* and crepe myrtle bark scale (*Acanthococcus lagerstroemiae*). While many of these species are not yet present in Oakland, their impact to the city's trees could be significant and **monitoring for their presence is critical for the health and sustainability of Oakland's urban forest**.

▲ Sudden Oak Death. Credit: Richard Sniezko

ASSISTED MIGRATION

Assisted migration is a climate change adaptation strategy that refers to the human assisted movement of a plant or animal species. For trees, it involves planting a species outside of its historical range. This concept is relatively new, and experiments are on-going to determine its effectiveness (Jacobs, 2022).

USING THE TREE INVENTORY AS A TOOL FOR SPECIES MANAGEMENT

Oakland's species management recommendations will evolve with changing conditions like climate change, pests and disease, funding, and community preferences. By using tree inventory data and observations, these guidelines focus on improving tree health, minimizing environmental impact, and optimizing resource use. This approach aims to enhance the urban forest's resilience and sustainability, recognizing the unique contributions of each tree species.

1. **Adopt Selective Planting Strategies.** Focus on tree species that balance environmental benefits with lower maintenance needs, addressing issues such as hardscape damage and water use and utilizing the strategy of "the right tree in the right place." Gradually reduce planting of certain species not well adapted to Oakland's climate and urban conditions and prioritize alternatives that enhance urban biodiversity with minimal challenges.

   As indicated in analyses of the current public tree inventory, the genera and species recommended for limited future planting include:

From left to right: Acacia (acacia), Jacaranda mimosifolia (jacaranda), Pinus (pine), Platanus (planetree), Prunus (cherry), Sequoia sempervirens (coast redwood), Ulmus (elm)

Oakland's urban forest management will also continue to consider observational information.

2. **Identify Candidates for Removal and Replacement.** For trees in Oakland showing signs of poor adaptation to the urban environment or potential safety hazards, removal should be considered as a last resort and not taken lightly. These include species with issues similar to those on the limited future planting list. Every tree's removal necessitates thorough scrutiny, recognizing its environmental and community value. An expert arborist's assessment is crucial to discern whether a tree can be preserved and nurtured or if removal and replacement with a more suitable species is the most responsible choice.

   The following genera and species were identified in the current public tree inventory as commonly being in poor condition and/or causing potential safety hazards, and are therefore recommended to be assessed and removed and replaced as needed:

From left to right: Cinnamomum (camphor), Crataegus (hawthorn), Fraxinus (ash), Liquidambar (sweetgum)

3. **Increase Routine Pruning.** Several genera in the inventory were commonly recommended for priority (high-risk) pruning, indicating that the current frequency of pruning is inadequate and should be increased to ensure public safety and tree health. Genera and species recommended for increased routine maintenance:




From left to right: Celtis (hackberry), Cupressus (cypress), Eucalyptus (eucalyptus), Pinus (pine)

4. **Consider Site Characteristics.** Species and genera in this category are generally in fair to good condition but have a pattern of conflicts with hardscape and overhead utilities, as well as moderate water use rating. Although these species are suitable to Oakland's urban forest, a thorough assessment of the site should be completed before species selection to ensure the tree is suitable for the location. Trees with a mature height over 25 feet should not be planted under overhead utilities to avoid future conflicts. The ideal water use rating of trees planted in Oakland is "low" or "very low." Genera and species recommended for site characteristic evaluation:








From left to right: Celtis (hackberry) (overhead utilities), Ginkgo biloba (ginkgo) (site size, water usage), Lagerstroemia (crepe myrtle) (site size), Magnolia (magnolia) (site size, overhead utilities, water usage), Pistacia chinensis (Chinese pistache) (site size, overhead utilities), Podocarpus (podocarpus) (site size, overhead utilities, water usage), Pyrus (pear) (site size overhead utilities, water usage), Tristaniopsis (water gum) (site size, overhead utilities)

FINDING A HOME FOR NATIVE TREES

Native tree species, such as the coast live oak, provide essential habitat for birds, insects, and mammals. However, urban challenges such as reflective heat surfaces, limited soil volume, compacted soils, human activities, surrounding infrastructure, and water scarcity affect survival rates and growth potential. These challenges will be amplified by climate change.

In managing Oakland's urban forest, there's a delicate balance between preserving native biodiversity and choosing species that are resilient to urban conditions. **Native trees should be integrated wherever feasible**—they are particularly well-suited for parks and open space, where soil is less disturbed and conditions are more favorable.

Tree planters should consult with California ReScape, Cal Poly's SelecTree, or consult with an ISA-Certified Arborist to make these determinations.

STREET TREE CONDITION

The **majority of Oakland's inventoried public trees (72%) are in fair condition**, meaning they have minor issues that can be corrected (Figure 8). However, 9% of the trees are in poor or worse condition. **Performing routine tree maintenance can improve tree condition, increase tree benefits, reduce risk, and increase tree longevity.**

Tree species may struggle to thrive, or even survive, in Oakland due to a combination of natural and human-induced factors.

Climate. The distinctive Mediterranean climate of Oakland, characterized by hot and dry summers along with occasional winter cold snaps, may not be suitable for a tree species found in nearby regions. Extended periods of drought common in Oakland can particularly strain trees, especially those ill-equipped to handle arid conditions.

▲ City staff climb oak tree with rope and saddle.

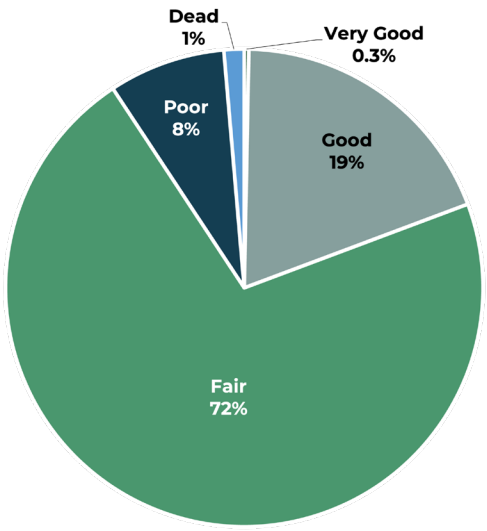


FIGURE 8. CONDITION OF OAKLAND'S INVENTORIED PUBLIC TREES

Soils. Oakland's soils have an impact on which tree species grow best. Like much of the Bay Area, Oakland has a significant amount of clay soil. On the positive side, clay soil is typically rich in nutrients and can hold water well, which can be beneficial for supporting plant growth during dry periods. However, clay soil also tends to compact, leading to poor drainage and aeration, depriving tree roots of oxygen. Some trees are better adapted to poor drainage conditions, while others may require improvement to the soil prior to planting.

Site and Environmental Factors. Urban areas, like Oakland, often have higher levels of pollution, heat, and limited space for root growth. They also have human activities such as construction, vandalism, and improper tree care practices, such as improper pruning, watering, and planting techniques. Oftentimes these natural and human-made factors affect trees in combination, compounding the stress on the tree and leading to trees in poor or dead condition. While no tree species prefers these conditions, some are better adapted to tolerate them.

PUBLIC TREE MAINTENANCE RECOMMENDATIONS

All trees and sites were assigned a maintenance category during the inventory. If they were not assigned as tree removal, stump removal, or tree planting they were assigned as tree pruning (Figure 9). Tree pruning includes young tree pruning (to train for form and structure), removal of dead limbs, structural pruning, and pruning to address obstructions to pedestrian access, roadways, signs, and street lights.

- 64,254 trees are recommended for pruning (92% of sites)
- 3,773 trees are recommended for removal (5% of sites)
- 2,131 stumps are recommended for removal (3% of sites)

The inventory also identified **29,006 potential sites** for tree planting**,** pending further review.

While tree maintenance activities should be prioritized by risk, with tree removals and high priority pruning addressed first, resources should also be directed towards routine pruning and tree planting to improve the resilience of Oakland's urban forest.

Like other city infrastructure, improper planning, design, installation, or maintenance can lead to shorter usable lifespan and unintended consequences. For street trees, this could mean trees dying prematurely or uprooting, tree limb failures, damage to nearby buildings, conflicts with below-ground infrastructure, and/or lifting sidewalks. Since trees are living things, they are more vulnerable to damage than other city infrastructure. However, unlike other types of infrastructure that lose value, with proper maintenance the value of Oakland's public trees actually increases over time.

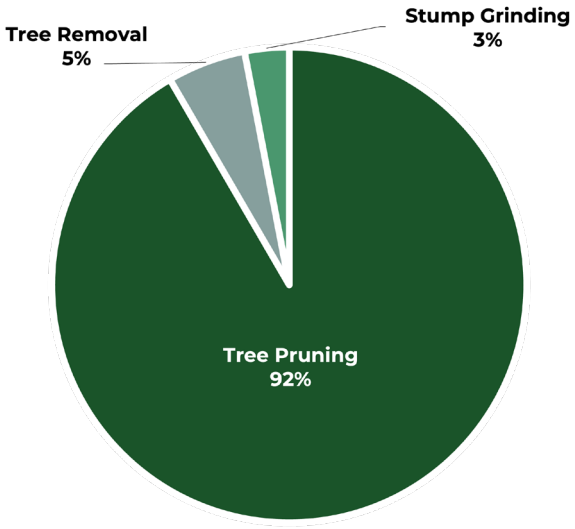


FIGURE 9. RECOMMENDED MAINTENANCE OF OAKLAND'S INVENTORIED TREES AND STUMPS

▲ Lack of street tree maintenance leads to poor tree structure and eventual branch failure. Credit: Christopher Buckley

Benefits of Oakland's Public Street and Park Trees

Oakland's public street and park trees have an estimated replacement value of over $191 million (an average of $2,791 per public tree); and are estimated to provide at least $368,801 in carbon, air quality, and stormwater benefits each year (Figure 10, Table 2). The overall benefits of Oakland's trees are presented in the *Tree Canopy and Land Cover* (see page 63). **There are numerous other tree benefits that are not quantifiable by i-Tree Eco, but are valued by Oakland residents, such as mental and physical health, wildlife habitat, and the beauty that trees add to the city.**

PROJECTING TREE BENEFITS

Planting all available vacant street sites and those with stumps (31,137) to achieve 100% stocking could result in an additional $104,000 in benefits during their FIRST YEAR alone. These benefits will continue to increase as the trees grow and mature.*

*This projection is based on guidance provided to City of Oakland Parks & Tree Division from the USDA Forest Service Albany, CA Research Station and the University of California Division of Agriculture and Natural Resources.

CALCULATING TREE BENEFITS

The Urban Forest Plan quantifies the benefits of Oakland's public street and park trees using **i-Tree Eco**, a suite of industry-recognized tools that measure and calculate the ecosystem benefits of trees.

i-Tree is a partnership between the USDA Forest Service, Davey Tree Expert Company, The Arbor Day Foundation, the International Society of Arboriculture, Society of Municipal Arborists, Casey Trees, and SUNY College of Environmental Science and Forestry. It was released in 2006 and its models are updated regularly based on the latest science and research.

www.itreetools.org

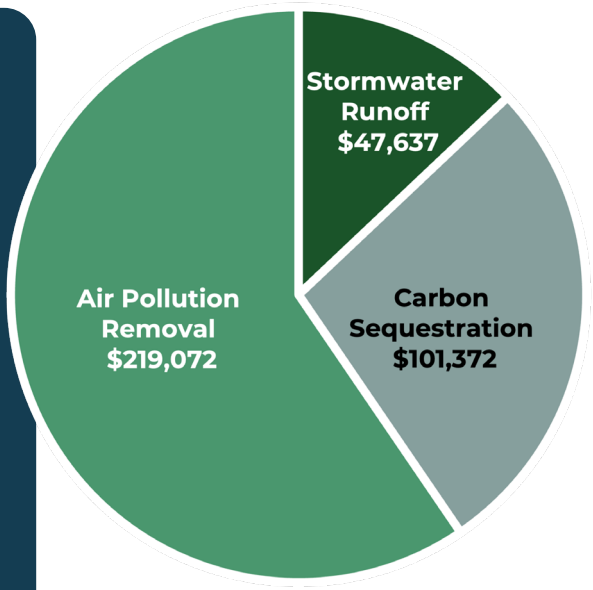


FIGURE 10. ANNUAL ENVIRONMENTAL BENEFITS OF OAKLAND'S INVENTORIED PUBLIC TREES

TABLE 2. ESTIMATED ENVIRONMENTAL BENEFITS PROVIDED BY OAKLAND'S INVENTORIED TREES

Annual Benefits		
Gross Carbon Sequestration	(tons/year)	23,429
	($/year)	$101,372
Avoided Runoff	(gallons/year)	25,400,000
	($/year)	$47,637
Pollution Removal	(pounds/year)	26,039
	($/year)	$219,072
Total Annual Benefits	**($/year)**	**$368,801**
Structural Benefits		
Lifetime Carbon Storage	(pounds)	65,832,000
	($)	$5,613,781
Replacement Value	($)	$191,687,400
Total Structural Value	**($)**	**$197,301,181**

ENERGY SAVINGS

In addition to the benefits in Table 2, according to the U.S. Department of Energy, "carefully positioned trees can save up to 25% of the energy a typical household uses." (U.S. Dept of Energy, n.d.).

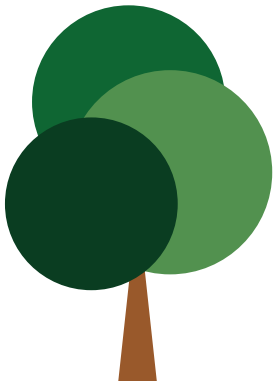
▲ A Persian silk tree *(Albizia julibrissin)* shades several Oakland homes. Credit: Clifford Ham

Summary of the Current State of Oakland's Urban Forest

- **Data from 2018 indicated Oakland had 21.5% tree canopy cover.** While this is higher than other cities in the region, there is significant disparity in canopy coverage between frontline communities, which have as low as 9% coverage, and more affluent areas in the Oakland Hills, which have as high as 43% coverage.
- **Pavement, structures and hard surfaces like roads, parking lots, and buildings (impervious surfaces) are increasing, while tree canopy is decreasing.** From 2014 to 2018, Oakland experienced an increase of 1,296 acres in hard surfaces, such as pavement and buildings, and a loss of 277 acres of tree canopy.

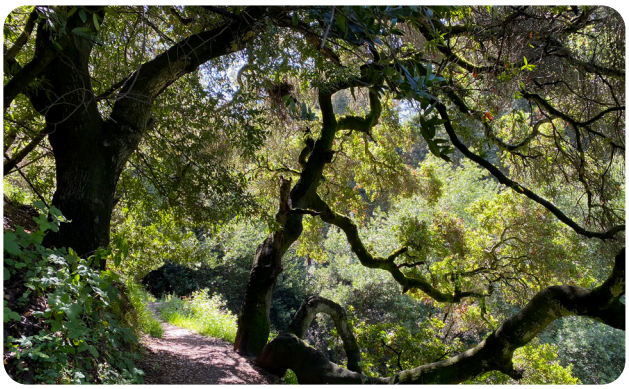
▲ Street tree maintenance and removal often requires heavy machinery.

- **Oakland's updated tree canopy and inventory data are important management tools.** This data can be used to make management decisions, estimate budgets, and monitor changes over time. It can be utilized by partners for research and regional planning efforts.
- **The lack of public tree maintenance has resulted in poor tree condition.** When trees are in poor health or have structural issues, it can decrease their lifespan and chances of survival. Oakland has not proactively maintained its public trees for over 15 years, which can cause broken branches, decay, and whole tree failures. Regular maintenance can help address these issues, which would improve the overall benefits Oakland's trees provide.
- **Oakland's public tree population has an overall good size/age distribution.** The surplus of small trees and deficit of mature trees can be better balanced by proactively maintaining all public trees and thereby increasing survivability.
- **There are over 500 species planted along Oakland's streets and in City parks.** The city's species diversity among public trees is generally good, with no species overplanted. This helps to reduce the risk of the urban forest declining due to a pest or disease affecting any one species.



- **Tree species are being negatively impacted by drought and climate change,** and this trend is projected to continue or even worsen in the future. As mature street trees cannot be feasibly or sustainably irrigated, they are at risk of dying, which can result in increased expenses for removing them. To mitigate these risks, it is crucial to plant tree species that are better suited to Oakland's changing climatic conditions.
- **Large tree species are planted under high voltage power lines.** PG&E is required to maintain clearance between their utilities and trees. The typical method to accomplish this is by removing the tops of trees, which can result in poor tree structure and decline. A "remove and replace" program could address this issue by replacing problematic trees with species that are more appropriate in size and will not conflict with overhead utility lines in the future.
- **There is significant potential to plant more street trees.** The tree inventory identified just over 29,000 possible sites where street trees could potentially be planted, pending further review.

▼ Trees native to Oakland may be threatened by climate change.



- **There are over 2,000 known stumps along Oakland's streets.** These stumps are not only unsightly but also cause frustration within the community**.** Removing stumps and replacing them, when appropriate, with new trees can help eliminate blight and increase the overall number of street trees.
- **Oakland's urban forest is vulnerable to loss from catastrophic wildfire due to a significant portion of its tree canopy being in "very high" wildfire risk areas.** This presents additional challenges and considerations that will be addressed in the Oakland Vegetation Management Plan.

▲ Oakland's street tree inventory found 29,000 possible sites where street trees could be planted.

Section Four

Managing Oakland's Urban Forest

The City of Oakland's Department of Public Works – Parks & Tree Division within the Bureau of Environment manages the care, planting, and maintenance of 68,297 public street and park trees and thousands of trees in open space parks and other city-owned properties. They also indirectly manage trees on private property through regulation. Oakland's public trees are a **valuable asset worth nearly $200 million,** and provide essential environmental, economic, social, and health benefits to the community. Like other **essential infrastructure, such as roads and bridges, proper management is crucial for ensuring a resilient, safe, and sustainable urban forest.**

Dialing 3-1-1 is the best way to report tree-related emergencies, concerns, and service requests.

▲ City staff prune tree limbs at Frank Ogawa Plaza.

▲ City staff remove a hazardous street tree with heavy-duty equipment.

Key Insights about Oakland Parks & Tree Division Operations

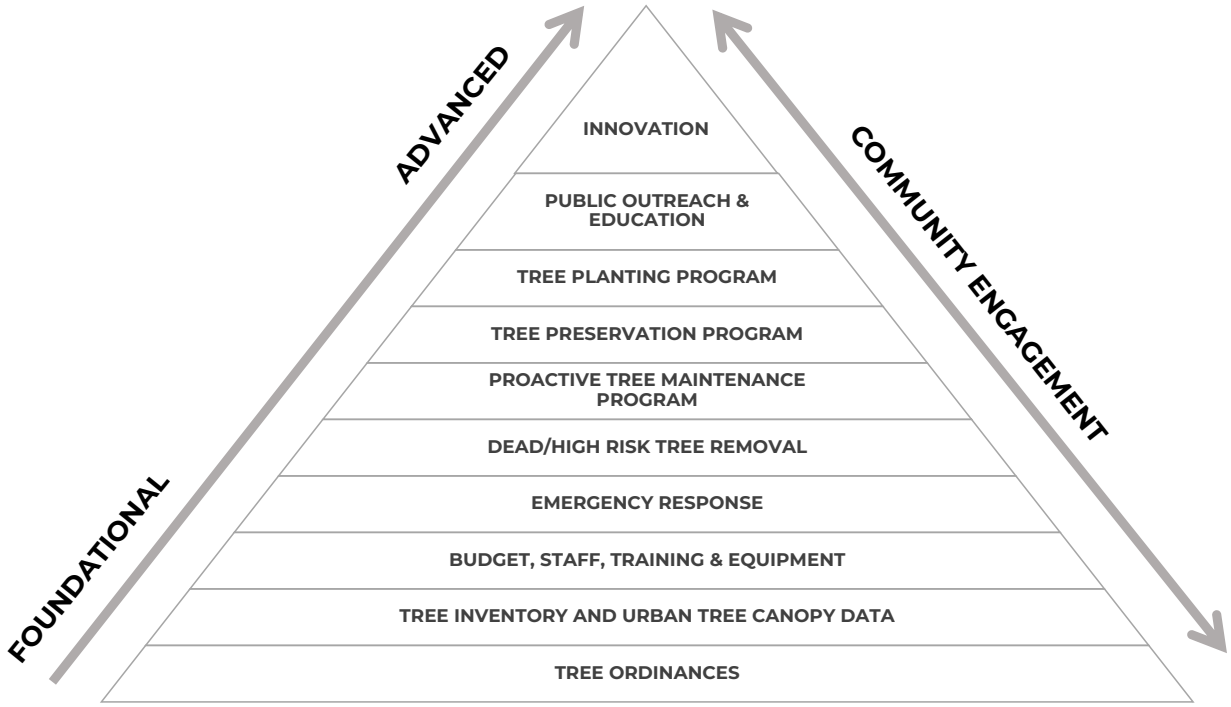
- **Deferred tree maintenance creates a substantial work backlog and amplifies Oakland's emergency workload.** The Parks & Tree Division lost significant funding and staffing following the Great Recession, which has severely limited tree maintenance services. Funding, staffing, and services have yet to be restored to pre-Recession levels. Lack of regular maintenance can exacerbate tree inequities as some communities have the resources to maintain trees in their neighborhoods while others do not.
- **There is a major backlog of dead or hazardous trees that continues to grow.** Current staffing and resources levels cannot keep up with demand.
- **Deferred tree maintenance negatively impacts other City services.** Street sweepers and garbage trucks cannot reach the curb, paving machines cannot drive down the road, streetlamps and other infrastructure are impaired due to overgrown branches.
- **The Parks & Tree Division is in an operationally reactive position, which is logistically challenging and inefficient.** Tree crews have to travel significant distances between each tree emergency rather than working on one street or neighborhood for a full day. Large jobs that may take several hours or days are often interrupted by emergency requests in other locations. Compounding the problem are inadequate staffing levels that, together with deferred maintenance and a high volume of emergency work, makes it difficult to schedule work.
- **Lack of tree maintenance is a source of frustration for the community.** While many Oakland residents love trees in general, they are frustrated by the lack of maintenance and the associated nuisances and safety risks caused by it (e.g., broken/fallen branches, streetlamps being blocked, conflicts with other infrastructure).
- **Lack of tree planting, community engagement, and public outreach programs** make it difficult to bring awareness to the urban forest in the face of Oakland's many other competing priorities.

▲ Emergency contractors remove an uprooted tree that is blocking a road.

Hierarchy of Urban Forest Management Needs

A strong foundation is essential for Oakland's urban forestry program to meet community needs and ensure a healthy and sustainable urban forest. By prioritizing the hierarchy of urban forest management needs and implementing sustainable, resilient, and equitable strategies, Oakland's program can effectively improve the urban forest (Figure 11a). This section outlines Oakland's current urban forestry program in relation to the hierarchy, highlighting challenges, operational needs, and opportunities for improvement.

FIGURE 11A.HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS



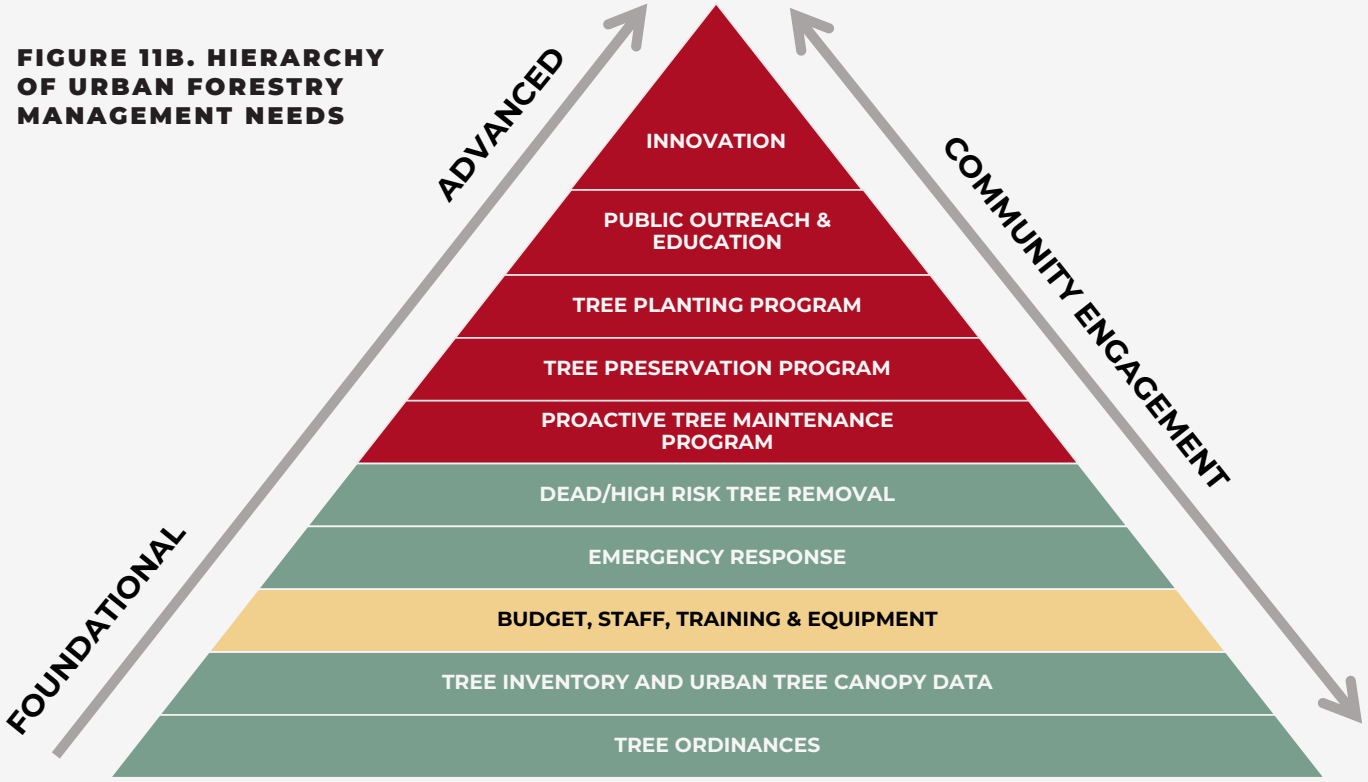
ASSESSING OAKLAND ON THE HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS

= Established and implementation is fair to good.

= Established but in need of improvement.

= Not in place and/or in need of significant improvement.

FIGURE 11B. HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS



Tree Ordinances

The Management of Oakland's Urban Forest is guided by policies outlined in the Oakland Municipal Code (OMC). The OMC has four chapters that specifically address trees.

Chapter 12.32 – Street Trees and Shrubs gives the City the authority to plant, remove, and maintain trees and shrubs on public property, including the right to remove trees endangering public space.

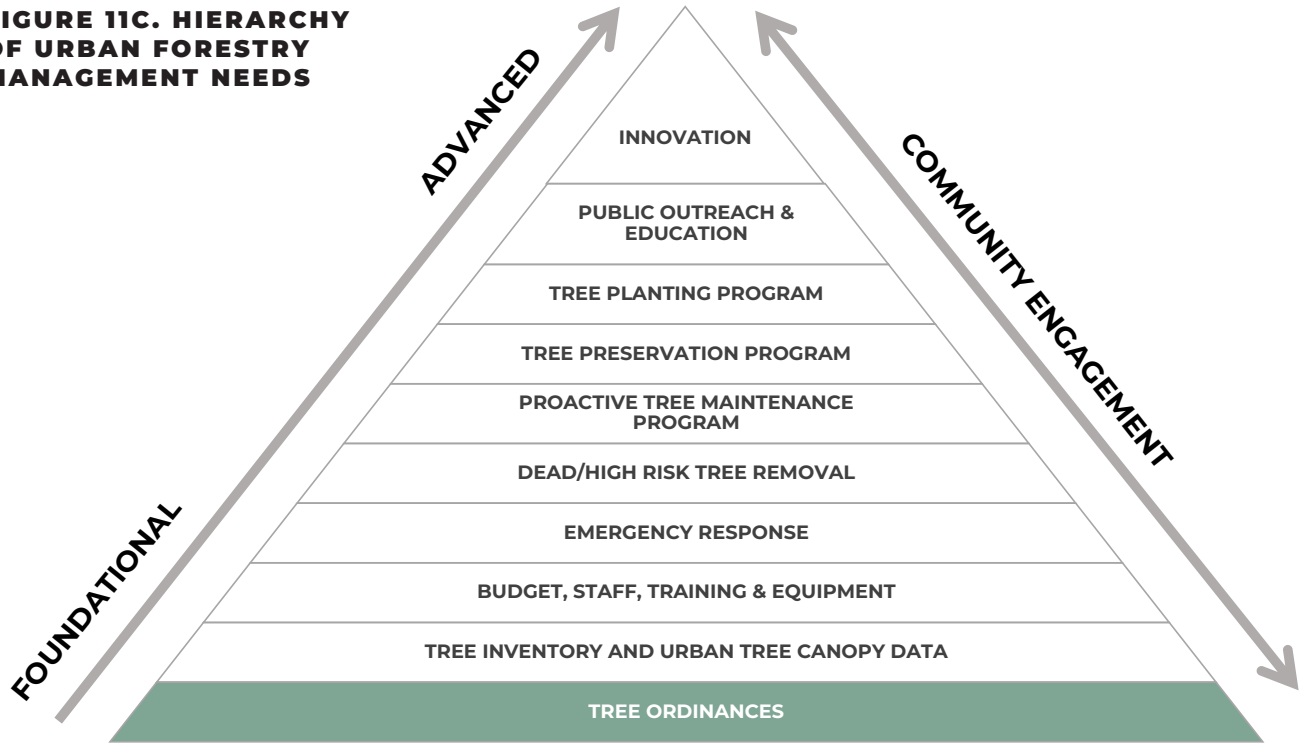
Chapter 12.26 – Protected Trees protects all trees of a certain size except for eucalyptus and Monterey pine and sets the basis for the tree removal permit process.

Chapter 12.40 – Hazardous Trees provides the definitions and procedures of removing trees that pose a public hazard.

Chapter 15.52 – Views allows residents to prune their privately-owned trees to preserve panoramic views but does not apply to native species or public property trees**.**

The Protected Tree Ordinance (Chapter 12.26) shall be updated and streamlined according to the community vision and goals of an adopted Urban Forest Plan to provide a stronger foundation for implementing the Plan and sustaining the urban forest and to reflect the City's obligation to provide accessible paths of travel under the ADA.

FIGURE 11C. HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS

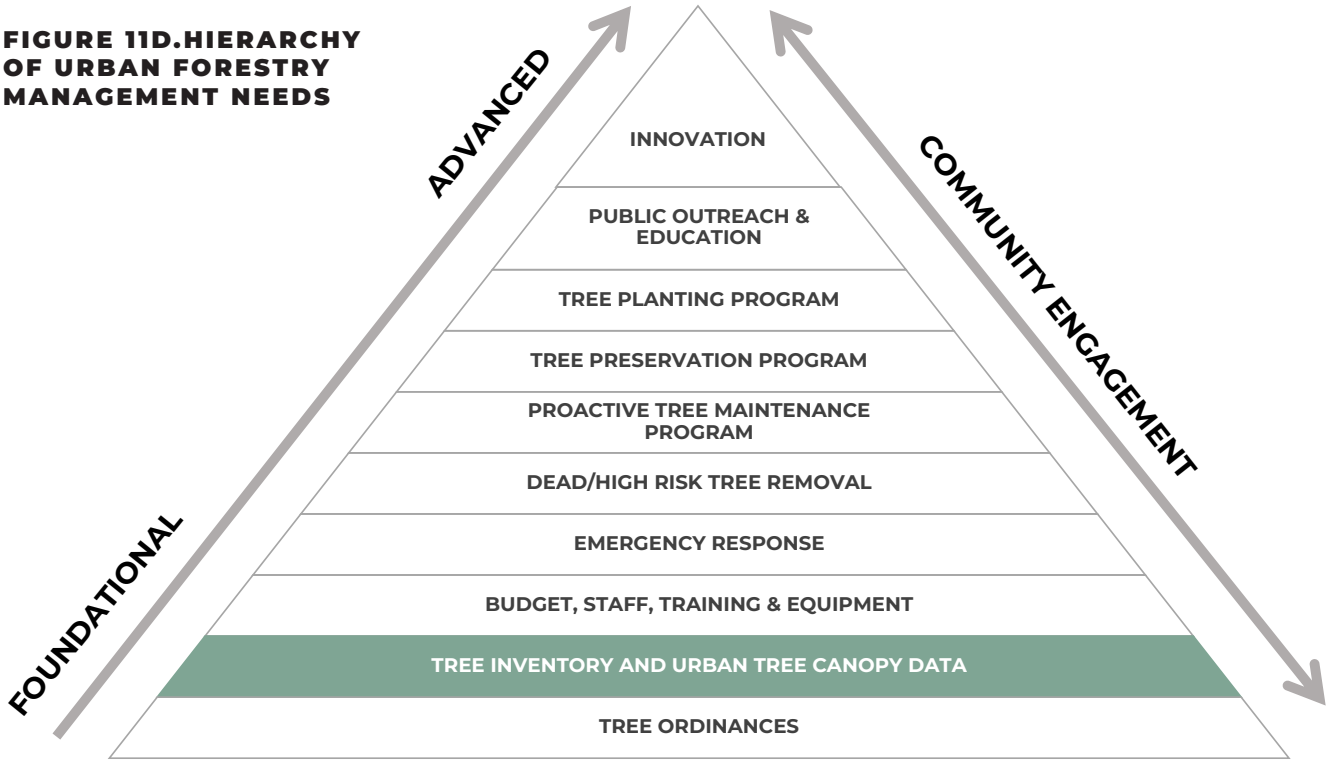


Tree Inventory and Urban Tree Canopy Data

Tree Inventory. A current and detailed GIS-based public tree inventory provides vital information on tree species, location, condition, and maintenance needs, which is used to develop management plans and prioritize work. Industry standards recommend regular updates every 7-10 years to monitor public trees and ensure that resources like funding, staffing, and equipment are sufficient for necessary tree maintenance and management. **In 2020, Oakland conducted its first ever citywide tree inventory (Section 3).**

Urban Tree Canopy Assessment. As outlined in Section 3, an urban tree canopy (UTC) assessment utilizes high-resolution aerial imagery to map the amount and extent of tree canopy cover in a city, on both public and private property. **Oakland conducted a UTC assessment in 2020** that used 2018 aerial imagery. Industry standards recommend UTC assessments be conducted every 5-10 years, or more frequently in the event of natural disasters or development, to track changes and evaluate how City policies and procedures are impacting canopy cover.

FIGURE 11D.HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS

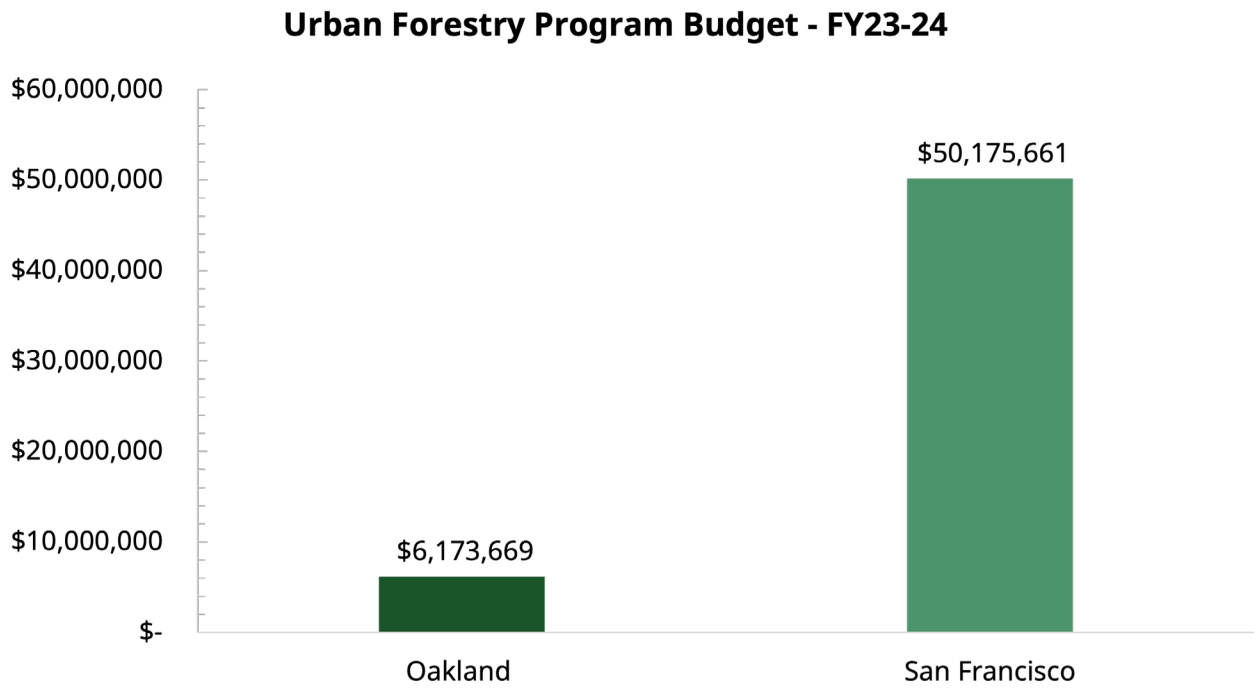


Budget, Staff, Resources, and Training

Budget. Oakland's urban forestry program **lacks a dedicated funding source** and instead relies on a variety of funds that shift and change each budget cycle. Due to severe budget cuts in 2008, the Parks & Tree Division has been reduced to focusing exclusively on emergency tree responses to fulfill the minimum expectation of keeping roads and sidewalks clear from fallen trees and branches. As a result, resident tree requests remain unaddressed, leading to low levels of service and community dissatisfaction. Figure 12 highlights the urban forestry program budgets for fiscal year 2023-24 for the cities of Oakland and San Francisco, California. While San Francisco manages about 124,000 street trees to Oakland's 68,297 street and park trees, their budget is over 8 times higher than Oakland's. San Francisco has 201 full-time equivalent budgeted positions compared to Oakland's 23.

Budget increases are necessary to expand and sustain Oakland's urban forest. Table 4 highlights common funding methods employed by other municipalities to support their urban forests. Operations scenarios for Oakland to adequately maintain and grow the urban forest are detailed later in this section.

FIGURE 12. FISCAL YEAR 2023-24 BUDGETS FOR URBAN FORESTRY PROGRAMS IN THE CITY OF OAKLAND AND CITY OF SAN FRANCISCO



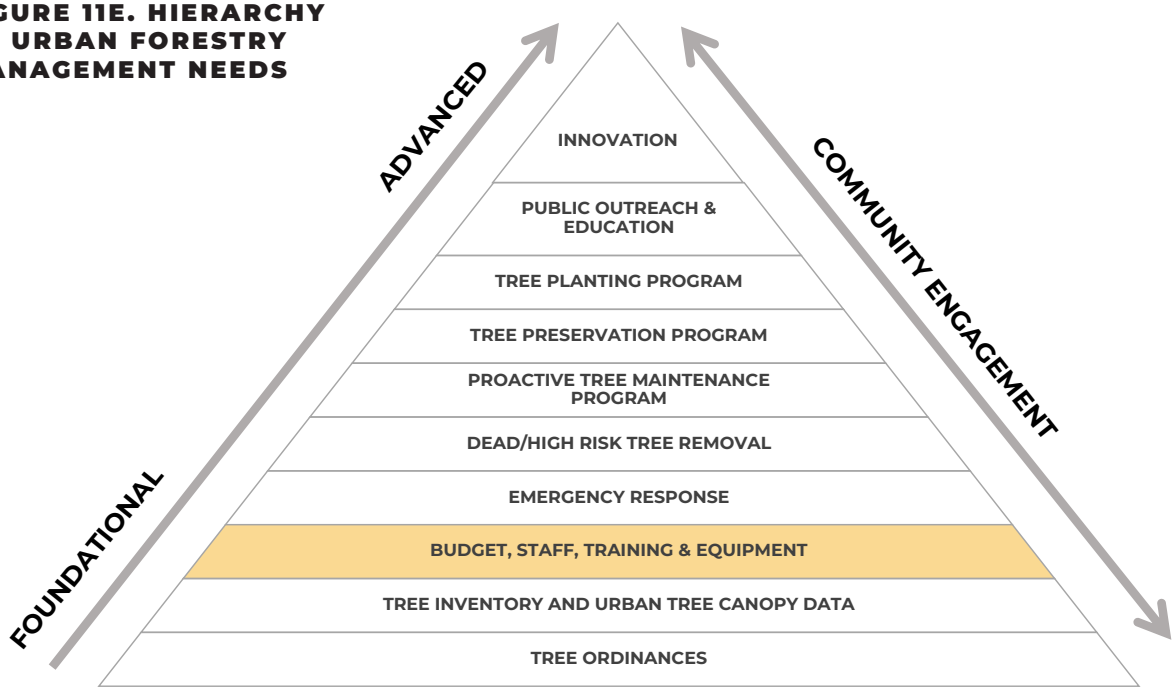
Staff. Prior to the 2008 recession, there were a total of 35 full-time tree staff plus part-time staff and high school students. **However, the Great Recession led to significant staffing cuts that have greatly reduced service levels for over 15 years.** At its lowest (2008-2017), there were 16 full-time budgeted Parks & Tree Division positions dedicated to tree work.

With the addition of new funding sources associated with Measure BB (2014) and Measure Q (2020), staffing levels have increased slightly in recent years. As of May 2023, the Parks & Tree Division has **23 budgeted positions, with 16 positions currently filled, and 7 vacancies** (Table 3, as of August 2023). Recruiting and retaining staff is an ongoing challenge with vacancy rates typically hovering around 30%.

TABLE 3. OAKLAND PARKS & TREE DIVISION STAFF (MAY 2023)

Full-Time Employee (FTE) Position Titles	Number of FTE Budgeted Positions	Number of Staff Positions Currently Filled	Number of Vacancies
Tree Supervisor II	1	1	0
Tree Supervisor I	2	1	1
Administrative Analyst II	1	1	0
Arboricultural Inspector	2	2	0
Tree Trimmer Crew Leader	4	0	4
Tree Trimmer	9	7	2
Tree Worker	3	3	0
Administrative Assistant II	1	1	0
TOTAL	**23**	**16**	**7**
Percent of Total		**70%**	**30%**

FIGURE 11E. HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS



Training & Credentials. To enhance operational capabilities and stay current with industry standards, Oakland shall strive to have every staff member hold at least one appropriate International Society of Arboriculture (ISA) Certification based on their job classification. Currently, among the 15 full-time staff, there are five ISA Certified Arborists, some of whom also have additional ISA credentials including Municipal Specialist, Tree Risk Assessment Qualification, and Board Certified Master Arborist.

Equipment. The Parks & Tree Division has a diverse range of specialized heavy-duty equipment tailored to Oakland's unique topography and urban forest. Work challenges include ascending over 1,000 feet in elevation, safely removing trees over 100 feet tall, and efficiently transporting logs downhill. Maintenance and repair of this equipment can be hindered by low staffing levels in the City's heavy-duty equipment repair shop. These challenges are compounded by a high rate of equipment usage, age, condition, and reliability.

City staff practice large tree felling techniques in Joaquin Miller Park.

TABLE 4. POTENTIAL URBAN FOREST FUNDING SOURCES

Potential Funding Source	Description	
Stormwater Fund	Explore directing funding to the Parks and Tree Division in recognition of the stormwater benefits provided by Oakland's street trees. The 68,297 public trees inventoried intercept over 5.3 million gallons of stormwater each year.	
"Percent for Trees" Program	Develop a program where a percentage of City Capital Improvement Project budgets are set aside for public tree maintenance and planting related to or within a project area.	
Fees	Institute fees for plan reviews and inspections of private and public activities. Collect in-lieu mitigation (replacement) fees to use towards all urban forestry management and planning activities.	
Public Tree Fund	Establish a Tree Fund in City Code to collect fees for damage and removal of public trees, and to accept donations that can be used for urban forestry activities and programs.	
Parcel Tax	Institute a tax calculated per foot of a property's right-of-way frontage for the planting, care, and maintenance of public trees.	
Charter Amendment	Create a ballot measure asking voters to establish a minimum annual allocation from the City's general fund to be dedicated to urban forestry activities.	
Special Taxing Districts/ Assessment District	Designate an area of the City as a special taxing district, where a majority of property owners allow the City to provide public improvement or special services through a non-ad valorem assessment (not based on property value).	
General Obligation (GO) Bond	GO Bonds are suitable for capital costs of tree planting and establishment (ongoing maintenance is not eligible). This is an especially appealing option when interest rates are low. California cities pay debt service from GO bonds through ad valorem property taxes, where assessments are based on property value.	
Internal Budget Transfers Between Departments	Analyze budgets to identify where Parks & Tree Division can recoup costs for work provided to other City departments. Determine if there may be justifiable reallocations of budget resources or opportunities to share resources between departments.	
Carbon Financing	Carbon financing may be able to support long-term tree planting and preservation projects. As companies look to offset their carbon emissions, the high visibility and co-benefits associated with these projects make them an attractive option in the U.S. voluntary carbon market.	
Grants	Federal and state government agencies, foundations, and other institutions offer one-time funding opportunities to support tree planting and other urban forestry-related projects.	

	Examples
	Since 2016, Portland, Oregon has collected a stormwater service charge from all properties with impervious areas. As of January 2023, the rate is $7.50 per billable unit. Part of this is granted to large-scale green infrastructure projects that provide benefits for watershed health and the community.
	More than half of the U.S. states maintain percent-for-art programs, in which the percentage of budgets are set aside for public art. Philadelphia was the first municipality in the U.S. to adopt the ordinance in 1959, with Baltimore following in 1964, San Francisco and Hawaii in 1967, and Seattle in 1973.
	East Palo Alto, California requires that in-lieu fees must be paid if a replacement tree may not be reasonably planted on site after tree removal.
	Boston's Tree Canopy Ordinance of 2021 established a Street Tree Fund to collect fees to fund planting, maintenance, and other tree-related needs on City property.
	The State of Ohio permits municipalities to collect fees for their public trees (Ohio Revised code Chapter 721.011). The most common method of assessment is charging a fee between $0.19 -$1.16 per foot of a property's right-of-way frontage. Measure Q was passed by Oakland's voters in 2020, authorizing the City to collect parcel tax for 20 years to support parks and recreation, homeless services, and water projects.
	In 2016, San Francisco residents voted in favor of shifting responsibility of street tree maintenance from private property owners to the City, allocating $19 million per year from the general fund to pay for maintenance.
	San Jose, California has designated Special Landscape Assessment Districts to fund activities including street tree planting and maintenance.
	San Francisco voters approved a Road Repaving and Street Safety GO bond in 2011 that included funding for street tree planting and repairing hardscape damage from tree roots.
	Oklahoma's Municipal Budget Act allows cities to transfer funds between departments and/or between expenditure categories.
	In 2022, 13 government entities and other organizations with urban forestry projects collectively earned over $1 million through the purchase of carbon credits registered with City Forest Credits—the largest and first-of-its-kind transaction.
	Examples: U.S. Forest Service Urban and Community Forestry Program; EPA Climate and Environmental Justice Block Grants, EPA Clean Water State Revolving Fund, NFWF America the Beautiful Challenge, CAL FIRE Urban and Community Forestry Grant Program, and CAL FIRE Wildfire Prevention Grants Program.

Tree Maintenance

As detailed in the budget and staffing section, the loss of resources has impacted the Parks & Tree Division's ability to provide proactive tree maintenance. **The division only has the staff and resources to respond to the highest priority service requests received through the 311 service request system.** Tree service requests are ranked as follows:

Priority 1: Emergency work fallen trees or limbs blocking a path of travel or damaging property, or large broken/hanging limbs that pose an immediate safety hazard.

Priority 2: Potential risk to public safety dead, dying, or diseased trees that are still standing; trees blocking traffic signals or pedestrian clearnace; tree pruning necessary to pave roads, repair buildings, or maintain other infrastructure.

Priority 3: Routine maintenance (currently not funded and does not occur) - structural pruning, stump grinding, tree planting, and tree watering.

Figures 13 and 14 display the number of tree service requests received and the number of units completed by work order type for fiscal years 2020-2022.

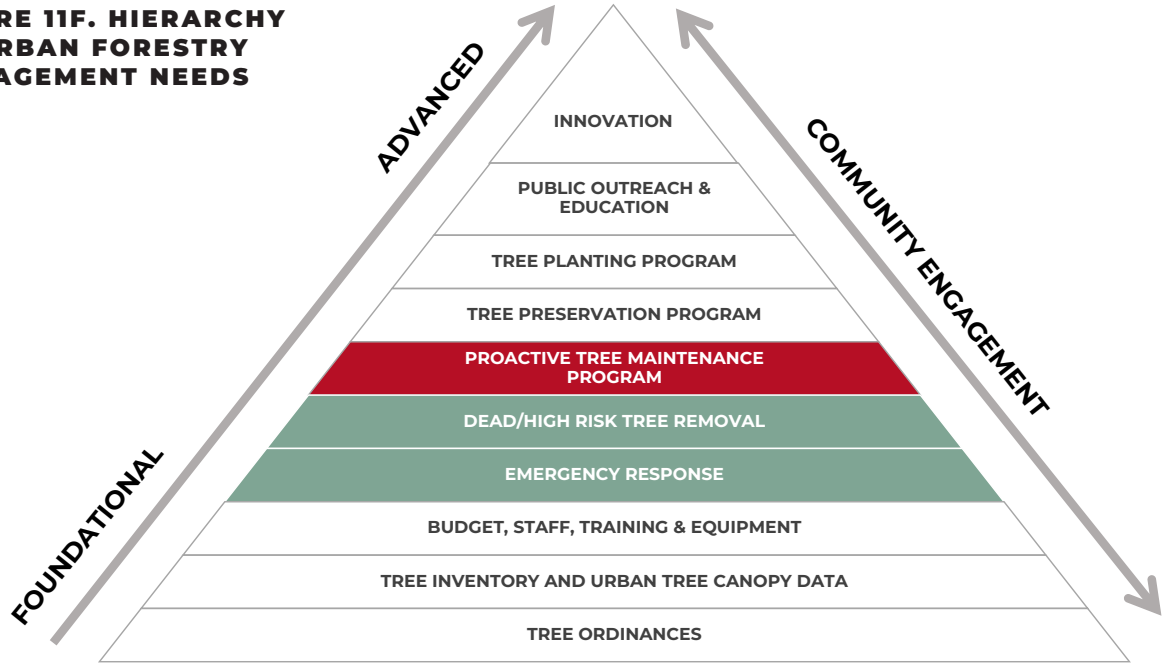
To enhance the sustainability and equity of Oakland's urban forest and improve customer service, it is **crucial for the City to reinstate a proactive tree maintenance program** focused on routine street tree pruning. For undeveloped rights-of-way that do not have sidewalks and curbs, proactive maintenance focuses on pruning tree limbs for vehicle clearance and abating hazards.

URBAN FORESTRY TRAINING AND WORKFORCE DEVELOPMENT

According to the Urban Forest Plan community survey, more than 60% of respondents believe that Oakland should prioritize creating job opportunities for local residents to plant and maintain trees.

The ECAP emphasizes the importance of providing meaningful opportunities for local participation and wealth creation to promote climate justice. Developing an arboriculture training or apprenticeship program could offer a pathway for disadvantaged populations and youth to gain the skills necessary to maintain the urban forest, while also creating a pool of qualified candidates for the Parks & Tree Division. By training community members who are already invested in the area, there is a greater likelihood of long-term employment and retention. Collaborating with local universities, schools, and organizations that support employment opportunities for those formerly involved in the justice system is another viable option to explore. Grant opportunities are available that can support workforce development programs.

FIGURE 11F. HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS



PROACTIVE TREE MAINTENANCE

Proactive tree maintenance refers to a planned and systematic approach to caring for trees before problems arise, with the goal of preventing damage, improving tree health and longevity, ensuring equitable service delivery, and reducing long-term costs. This includes regular inspections, pruning, and watering, as well as measures to monitor and prevent pest and disease outbreaks.

Benefits of Regular Tree Inspections:

- Identify and manage risks
- Detect potential threats from pests or diseases
- Expand the range of management options
- Develop strategic plans for management actions
- Assess assets and allocate budgets
- Set priorities
- Detect and address issues before they escalate into emergencies

Benefits of Routine Tree Pruning:

- Enhance tree health and lifespan
- Minimize long-term maintenance expenses*
- Improve staff scheduling and efficiency
- Provide equitable service throughout the city
- Mitigate the risk of tree splitting or uprooting
- Decrease storm damage
- Maximize long-term benefits from trees
- Minimize tree hazards and risks

***Implementing a routine pruning program instead of relying solely on emergency tree work can lead to a 50% reduction in tree maintenance costs (AECOM, 2013).**

FIGURE 13. NUMBER OF UNITS COMPLETED BY WORK ORDER TYPE FISCAL YEARS 2020–2022

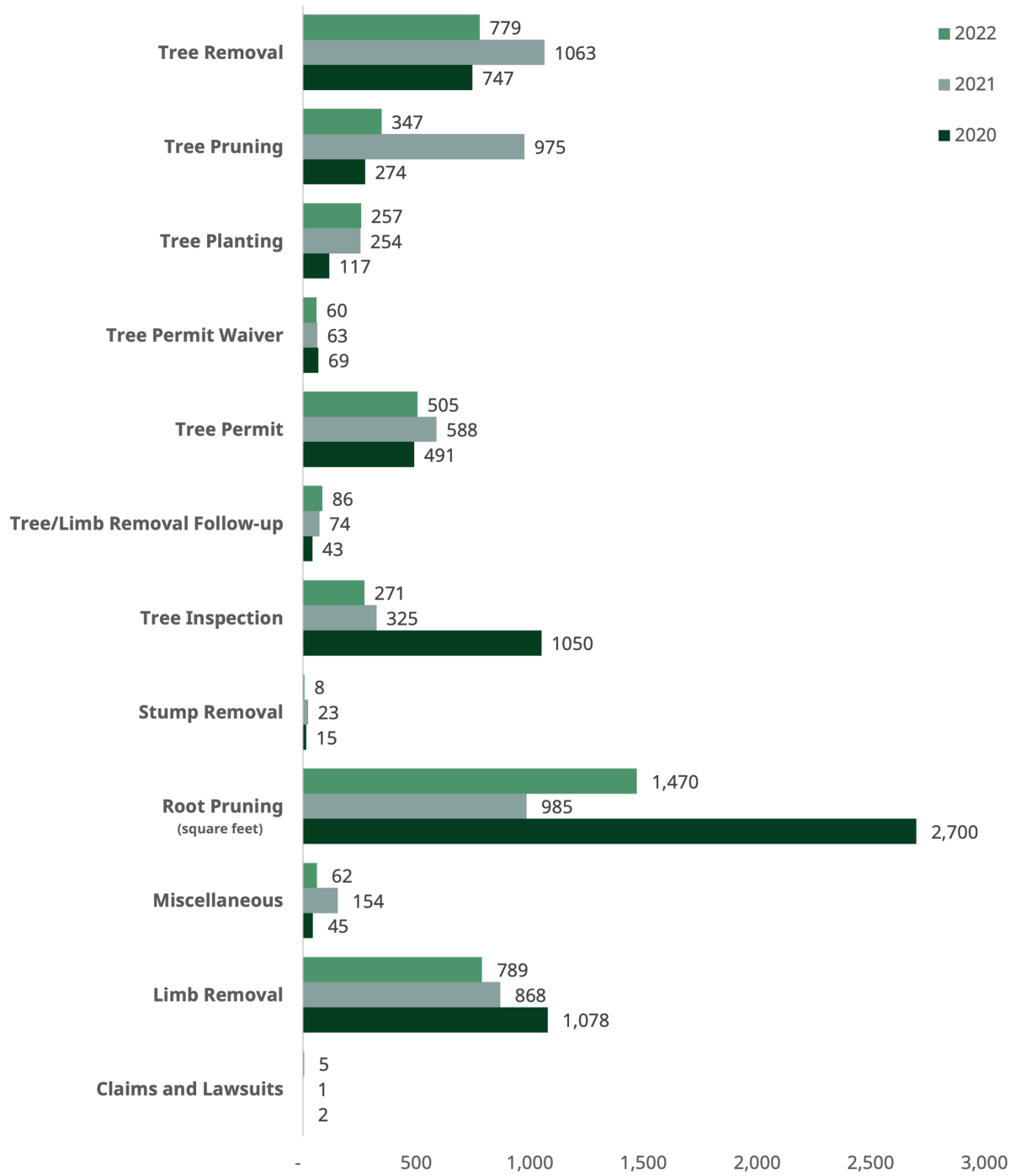
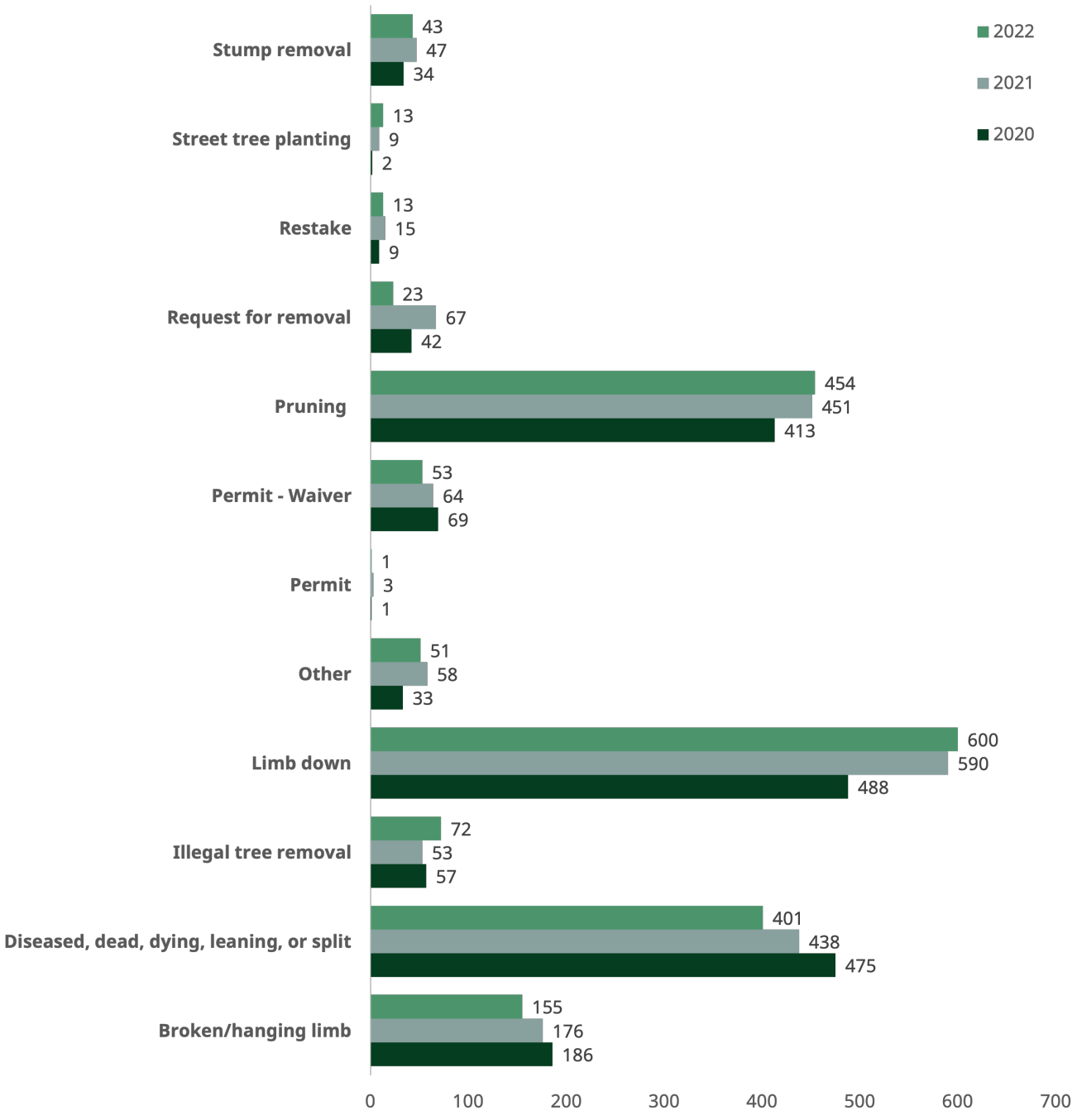


FIGURE 14. TREE SERVICE REQUESTS RECEIVED BY FISCAL YEARS 2020–2022



ALIGNING TREE MAINTENANCE WITH THE OAKLAND MUNICIPAL CODE AND ADOPTED CITY POLICIES

The **Oakland Municipal Code** gives the City power and authority over all trees on City streets. The adopted **Equitable Climate Action Plan (ECAP)** and the adopted **Environmental Justice Element of the Oakland General Plan** both set clear goals for City tree maintenance.

Oakland Municipal Code 12.32.020 - Powers and Authority Over Trees
The City Manager shall have full power and authority over the planting, removal and maintenance of trees and shrubs in or upon any public street or public grounds and shall have the right and power to establish rules and regulations relating thereto. The City Manager or his or her delegated representative shall have the power to cause the trimming or removal of any tree or shrub in or upon any public street or public grounds which is diseased or is endangering or which may endanger the security or usefulness of any public street, sewer, or sidewalk.

The **ECAP Action CR-2: Expand and Protect Tree Canopy Coverage** established that the City create a fifty-year Urban Forest Plan that:

- Prioritizes strategies to address disparities among neighborhoods in tree canopy coverage;
- Ensures that carbon sequestration is a major factor in tree planting targets, selection of tree species, and tree management practices;
- **Establishes a clear and sustainable funding mechanism for ongoing tree maintenance; and**
- **Establishes a protocol and goals for community partnerships for tree planting and maintenance.**

The **Environmental Justice Element of the Oakland General Plan, Goal EJ-7.15** states to:

- Implement the Urban Forest Plan, a comprehensive, area-wide urban canopy and vegetation plan that identifies locations where trees can be added and maintained, such as parks, streets, and rights-of-way.
- **Develop a plan to maintain and protect existing trees that provide shade, reduce urban heat island impacts, reduce flooding, reduce pollution, and reduce exposure to air pollution emissions in communities most affected by air pollution.**
- Align tree canopy with climate resilience planning, including green stormwater infrastructure. Trees should be low on the allergenic scale, to serve EJ communities most impacted by air pollution and asthma. This includes partnering with local nonprofit groups, encouraging trees on private property, and working with the community on tree maintenance and (as needed) removal.
- Prioritize tree canopy in Environmental Justice Communities with the least amount of canopy.

The Parks & Tree Division should seek funding to routinely prune tree branches on ALL trees growing in the developed public right-of-way, including those planted without permission. Doing so is a necessary process for the City to achieve its tree canopy goals.

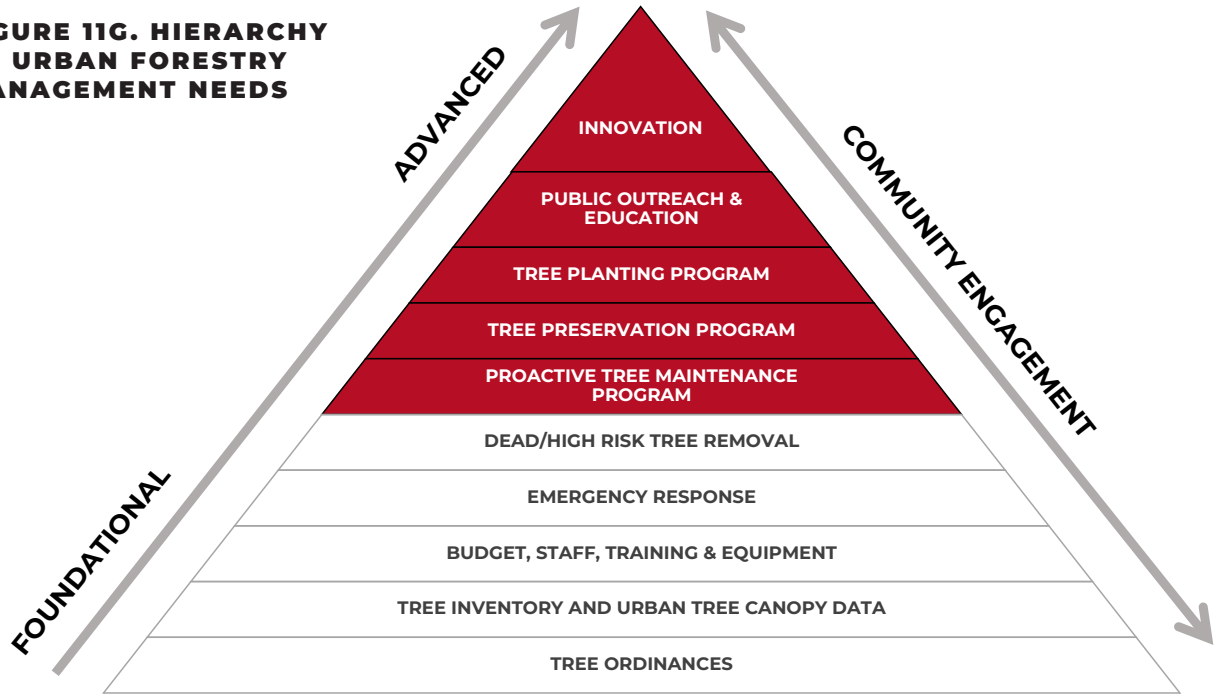
Tree Preservation, Tree Planting, Outreach & Education, and Innovation

Oakland does not currently have programs in place that focus on tree preservation, tree planting, public outreach and education, and innovation. A variety of factors influence the absence of these programs, including:

- **Lack of dedicated urban forestry funding**. Budget constraints and a focus on reactive priorities hinder the establishment and implementation of these programs.
- **Organizational and logistical challenges.** Implementing and managing these programs requires coordination among various City departments, community organizations, and stakeholders. This would require ongoing staff capacity and infrastructure, which is currently lacking.
- **Community Engagement and Public Support.** Without enough active involvement and advocacy from residents and community groups, it can be difficult to garner the necessary support and momentum for the implementation of these programs. Public education and outreach efforts are crucial to raise awareness, generate interest, and cultivate a sense of ownership and responsibility among the community. The Parks & Tree Division's capacity to effectively engage the community is currently lacking.

Several of the Goals, Strategies, Action Items (Section 5) articulate how to address these shortcomings.

FIGURE 11G. HIERARCHY OF URBAN FORESTRY MANAGEMENT NEEDS



Operation Scenarios

Oakland can estimate the costs of a proactive tree maintenance program by using tree inventory data and staff and contractor cost information. GIS-based tree locations allow tree pruning work to be scheduled so that each tree is inspected and pruned on a set cycle. Two scenarios are modeled to illustrate the estimated quantities and costs of pruning each of Oakland's street and park trees once every 7 years, plus addressing the backlog of dead or hazardous trees and stumps. Funding is also allocated to support tree planting activities by non-profit organizations. **Scenario A** uses Parks & Tree Division crew members with minimal contractor assistance, while **Scenario B** uses a combination of Parks & Tree Division crews and contractors. **Scenario B,** with its mix of City staff and contractors, is recommended due to the City's ongoing challenges hiring and retaining Parks & Tree Division staff.

More detailed scenario information is provided in Appendix A.

▲ City staff perform chainsaw maintenance.

OPERATIONS SCENARIO A

TABLE 5. SCENARIO A STAFF REQUIREMENTS

Position	Number of Staff
Tree Trimmer	19
Tree Trimmer Crew Leader	7
Tree Supervisor I	5
Tree Worker	15
Park Attendant (Part-Time)	18
Arboricultural Inspector	4
Program Analyst I (Urban Forestry Ambassador)	2
Administrative Analyst II	1
Tree Supervisor II	1
Administrative Assistant II	1
TOTAL STAFF	**73**

Operations Scenario A uses primarily Parks & Tree Division staff with limited support from contractors (Table 5). The Scenario establishes a 7-year pruning cycle and addresses high-priority tree removals in the first three years. Tree pruning and stump removal programs are also established.

Operations Scenario A requires 73 City staff and an average annual implementation cost of $20,813,589, with a total cost of $145,695,122 over seven years.

OPERATIONS SCENARIO B

TABLE 6. SCENARIO B STAFF REQUIREMENTS

Position	Number of Staff
Tree Trimmer	7
Tree Trimmer Crew Leader	3
Tree Supervisor I	6
Tree Worker	11
Park Attendant (Part-Time)	15
Arboricultural Inspector	4
Program Analyst I (Urban Forestry Ambassador)	2
Administrative Analyst II	1
Tree Supervisor II	1
Administrative Assistant II	1
TOTAL STAFF	**51**

Operations Scenario B uses Parks & Tree Division staff with a higher proportion of contractors to perform tree maintenance and removal work. (Table 6). Contractors perform routine pruning, and the focus in the first four years is on high-priority tree removals, emergency tree removals, and removing trees lost to annual mortality. Tree planting and stump removal programs are also established using a combination of city staff and contractors.

Operations Scenario B requires 51 City staff and an average annual implementation cost of $16,981,440, with a total cost of $118,870,083 over seven years.

A detailed seven-year budget for operation scenarios A and B is presented in Table 7.

TABLE 7. TREE WORK SUMMARY OPERATIONS SCENARIOS A AND B

TREE PRUNING	Year 1 (# of Trees)	Year 2 (# of Trees)
Scenario A - City Crews with Minor Contractor Support		
Routine Pruning (City Crews)	8,517	8,517
Priority Pruning* (City Crews)	2,452	2,452
Pruning, Raising, Clearance in Hills (City Crews)	3,056	3,056
Total	14,024	14,024
Scenario B - Hybrid: City Crews and Contractors		
Routine Pruning - Trees (Contractors)	8,517	8,517
Priority Pruning and Clearance in Hills (City Crews)	4,690	4,690
Total	13,207	13,207
*Priority Pruning includes trees identified in the tree inventory that require priority pruning and emergency/request based pruning for uninventoried public trees		

TREE REMOVAL	Year 1 (# of Trees)	Year 2 (# of Trees)
Scenario A - City Crews with Minor Contractor Support		
Tree Removals (City Crews)	1,584	1,562
Total	1,584	1,562
Scenario B - Hybrid: City Crews and Contractors		
Tree Removals (City Crews)	1,757	1,757
Tree Removals (Contractors)	341	90
Total	2,098	1,847

TREE PLANTING AND STUMP REMOVAL	Year 1 (# of Trees)	Year 2 (# of Trees)
Scenario A - City Crews with Minor Contractor Support		
Tree Planting	3,133	3,133
Stump Removals (Contractors)	2,201	2,201
Scenario B - Hybrid: City Crews and Contractors		
Tree Planting (City Crews)	3,133	3,133
Stump Removals (Contractors)	2,201	2,201

TREE INSPECTIONS	Year 1 (# of Trees)	Year 2 (# of Trees)
Scenario A - City Crews with Minor Contractor Support		
Tree Inspections	1,515	1,515
Total	1,515	1,515
Scenario B - Hybrid: City Crews and Contractors		
Tree Inspections (City Staff)	1,515	1,515
Total	1,515	1,515

	Year 3 (# of Trees)	Year 4 (# of Trees)	Year 5 (# of Trees)	Year 6 (# of Trees)	Year 7 (# of Trees)	Total
	8,517	8,517	8,517	8,517	8,517	59,618
	0	0	0	0	0	4,903
	3,056	3,056	3,056	3,056	3,056	21,392
	11,572	11,572	11,572	11,572	11,572	85,910
	8,517	8,517	8,517	8,517	8,517	59,618
	4,690	3,056	3,056	3,056	3,056	26,292
	13,207	11,572	11,572	11,572	11,572	85,910

	Year 3 (# of Trees)	Year 4 (# of Trees)	Year 5 (# of Trees)	Year 6 (# of Trees)	Year 7 (# of Trees)	Total
	1,865	1,264	1,264	1,264	1,264	10,067
	1,865	1,264	1,264	1,264	1,264	10,067
	1,757	1,757	809	809	809	9,457
	90	90	90	90	90	881
	1,847	1,847	899	899	899	10,337

	Year 3 (# of Trees)	Year 4 (# of Trees)	Year 5 (# of Trees)	Year 6 (# of Trees)	Year 7 (# of Trees)	Total
	3,133	3,133	3,133	3,133	3,133	21,929
	2,201	1,795	1,264	1,264	1,264	12,190
	3,133	3,133	3,133	3,133	3,133	21,929
	2,201	1,795	1,264	1,264	1,264	12,190

	Year 3 (# of Trees)	Year 4 (# of Trees)	Year 5 (# of Trees)	Year 6 (# of Trees)	Year 7 (# of Trees)	Total
	1,515	1,515	1,515	1,515	1,515	10,605
	1,515	1,515	1,515	1,515	1,515	10,605
	1,515	1,515	1,515	1,515	1,515	10,605
	1,515	1,515	1,515	1,515	1,515	10,605

Meeting Tree Canopy Goals

Since the measured overall tree canopy coverage in 2018 was 21.5% and we estimate that the 2024 tree canopy coverage is 20.6%, achieving a No Net Loss Tree Canopy Goal (maintaining 20.6% tree canopy coverage) will necessitate the planting of 5,903 trees annually.

To increase tree canopy coverage to 22.5% by 2034, it will be essential to plant 12,536 trees per year.

Operational Budget Scenarios A and B both incorporate the City's commitment to planting 3,133 trees each year. To reach either of these Tree Canopy Goals, it will be crucial to garner active participation from volunteers, community partners, property owners, and residents in planting trees across various property types within Oakland.

▲ Arbor Day in Columbian Gardens Park.

▲ Earth Day Arroyo Viejo Park.

▲ Parks & Tree Division supervisor in front of Jack London oak at City Hall.

CITY WORKERS, CONTRACTORS, AND VOLUNTEERS

Tree planting and maintenance will require the efforts of the City of Oakland, tree contractors, and community members/organizations. There are advantages and disadvantages for each group, which shall be considered when deciding how best to distribute the work.

City Staff Advantages:

- Technical expertise
- Access to a wide range of heavy-duty equipment
- Long-term stakeholders in urban forest
- Institutional knowledge
- Citywide perspective
- Access to City resources and facilities

City Staff Disadvantages:

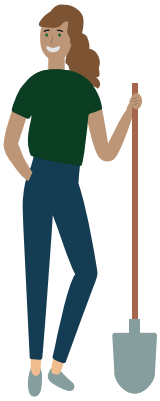
- Inadequate staffing levels and vacancy rates affect work capacity
- Difficult to scale up quickly or pivot scope
- Split focus due to competing priorities
- Constraints of working within bureaucracy

Contractor Advantages:

- Technical expertise
- Access to a wide range of heavy-duty equipment
- Ability to scale up and pivot scope quickly
- Flexibility, lack of bureaucratic constraints
- More easily funded by grants or 3rd party funding sources

Contractor Disadvantages:

- Require ongoing management by the City
- No long-term stake in the urban forest
- Costs can vary depending on market rates, supply/demand



▲ Parks & Tree Division crewmembers.

Volunteer Advantages:

- Community participation increases sense of ownership in the urban forest, contributes to a positive culture, and other positive side effects
- Fewer bureaucratic constraints
- Motivated and passionate
- Can work across jurisdictions and on private property
- Can scale up and pivot scope quickly
- In some cases, may be a lower cost method of getting work done
- In some cases, volunteers may be funded by outside sources

Volunteer Disadvantages:

- Limited technical expertise
- Limited to light-duty work
- Follow-through cannot be mandated
- Volunteers still require City training, support, and supervision
- Long-term commitment, work quality, and accountability may vary

Section Five

Implementation

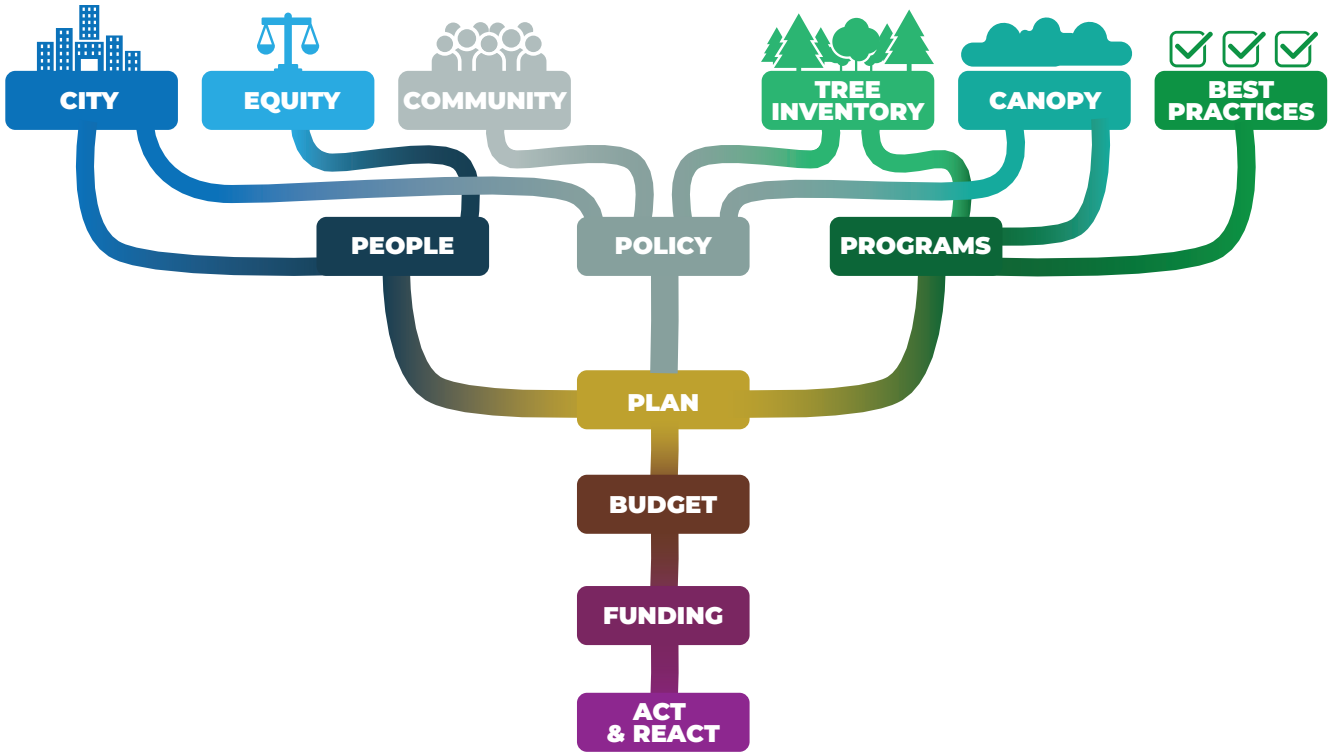
The Urban Forest Plan's goals, strategies, and action items are based on a synthesis of the community's vision, data and analyses of Oakland's urban forest, urban forestry best management practices, and equity considerations. They fall into three categories:

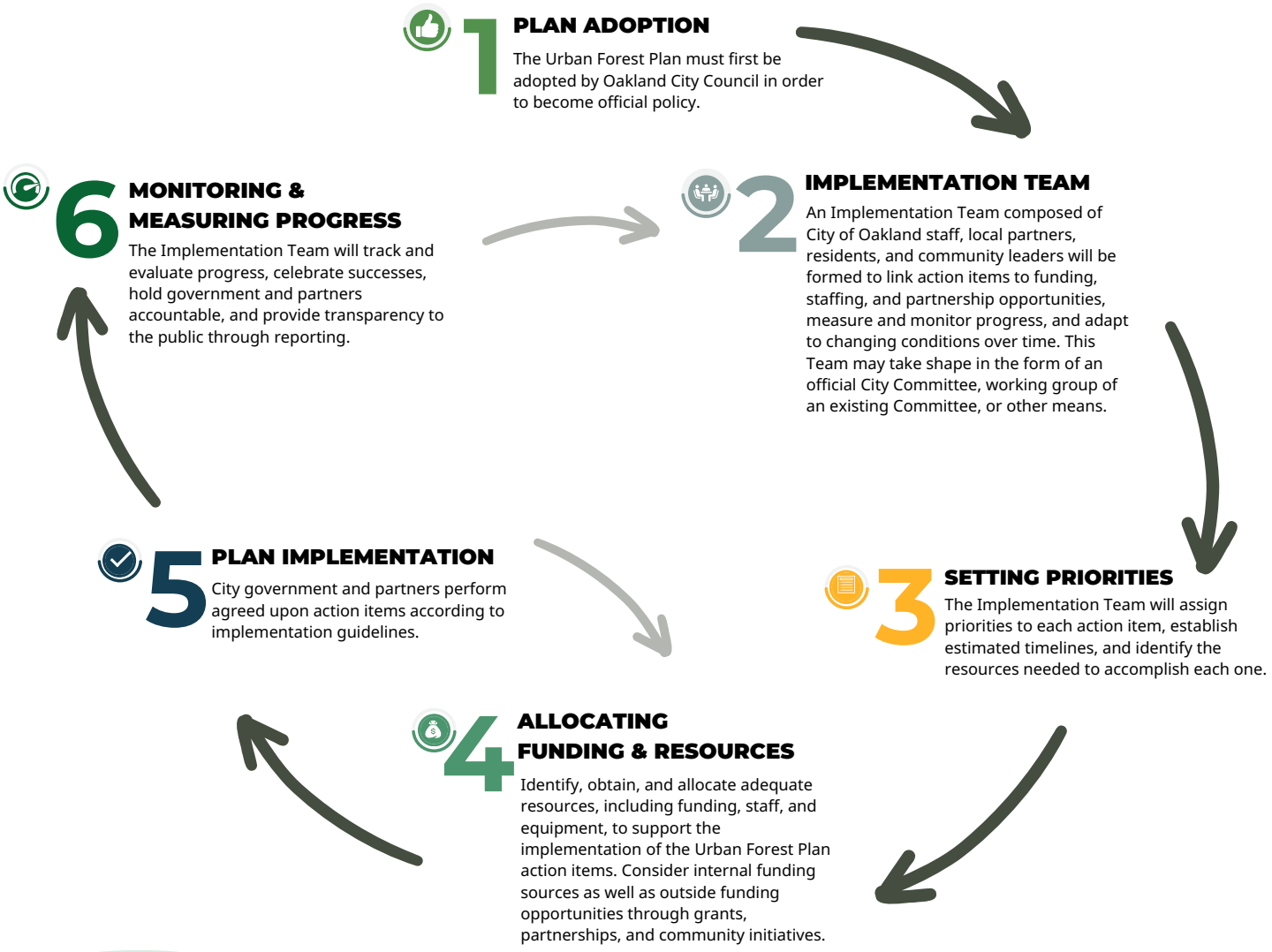
PROGRAMS
ways to implement actions

PEOPLE
community and human-focused

POLICY
ways to provide the basis for action

FRAMEWORK FOR THE URBAN FOREST PLAN'S GOALS, STRATEGIES, AND ACTION ITEMS





PERIODIC REVIEW AND UPDATES OF THE URBAN FOREST PLAN

The Urban Forest Plan is a living document designed to be periodically reviewed and updated every 5–10 years based on the changing needs of Oakland's trees, community priorities, and implementation progress. Oakland Public Works will lead the review and update process.

Guiding Principles for Implementation

The Urban Forest Plan's Guiding Principles are based on the those of the Oakland Department of Race & Equity.

- On-going community engagement, with a focus on frontline communities, to learn and adapt to arising community needs.
- Explore and develop partnerships where frontline members are directly involved in identifying problems and solutions.
- Co-create policies and programs with frontline community members, removing barriers to participation.
- Prioritize service provision in frontline communities and start citywide programs in frontline communities.
- Use analytic tools to measure equity indicators over time and evaluate the impact of equity-focused programming.
- Anticipate, monitor, and mitigate unintended consequences that may directly or indirectly affect frontline communities.

▲ Arbor Day tree planting at Bushrod Park, 2017. Credit: CAL FIRE.

POTENTIAL IMPLEMENTATION PARTNERS

This list of partners is not comprehensive; more partners will be included in the future.

California Department of Forestry and Fire Protection (CAL FIRE) works to expand and improve the management of trees and related vegetation in communities throughout California through the Urban & Community Forestry Program. The program gives grant funding to communities for projects, including tree planting, municipal tree inventories, management plans, urban forest educational efforts, and other innovative urban forestry projects.

California Interfaith Power and Light is a faith-based organization that activates congregations to steward the environment through reducing energy consumption and greenhouse gas emissions. Power and Light served as a partner for the community engagement and outreach efforts for the Urban Forest Plan.

Caltrans (Landscape Architecture) manages the roadside of California Highways in Bay Area counties. Requests for tree planting to serve as buffers from freeways are common, but funding is limited.

City Administrator's Office oversees the day-to-day operations of all City departments to ensure the goals and policy directives of the Mayor and City Council are implemented. This department houses the City's Sustainability Program and ADA Programs Division, both of which are instrumental in the development of this Plan and for effectively implementing it.

Common Vision is a local non-profit organization that works with low-income schools and neighborhoods to build community gardens and plant fruit tree orchards. Common Vision served as a partner for the community engagement and outreach efforts for the Urban Forest Plan.

Oakland City Council establishes policy, budgets City resources, and allocates annual spending.

East Bay Regional Park District manages a park system in Alameda and Contra Costa counties with parklands that border Oakland. The proximity to Oakland provides opportunities to share expertise and knowledge on tree planting as well as the preservation and management of both natural and cultural resources.

Forest & Tree is an outdoor learning organization in Oakland that provides educational programming about the natural resources in the East Bay area and tree planting projects. Forest & Tree served as a partner for the community engagement and outreach efforts for the Urban Forest Plan.

Merritt College provides educational and training programs in arboriculture including Associates Degrees and certificate programs.

Neighborhood Councils are made up of Oakland residents working in partnership with the City of Oakland to address ongoing problems in their neighborhoods.

Oakland Fire Department lessens fire risk through vegetation management. The Department conducts annual inspections of private property and city-owned parcels in Oakland Hills (high fire risk zone) to ensure that structures maintain a defensible space. Vegetation management is primarily focused on reducing ground fuels.

Oakland Department of Public Works Environmental Stewardship Team manages a volunteer program to clean and green the City through tree planting, habitat restoration, and park maintenance support.

Oakland Information Technology Department, GIS Division is responsible for all City geographic information system (GIS) data and mapping. The Division supports Parks & Tree Division by maintaining and updating the GIS inventory of trees in the rights-of-way and assists in managing tree ownership data.

Oakland Unified School District works to improve school yards through urban greening grants, the living school yards project, and has goals to fund a living school yards master plan.

Oakland Parks, Recreation, and Youth Development Department oversees programming for City parks. The Department does not do any tree maintenance on park lands.

Oakland Parks and Recreation Foundation is a 501(c)(3) non-profit that administers grants, provides advocacy, strategic advice, and facilitation for groups and partners to augment the urban forest through planting trees. Oakland Parks and Recreation Foundation served as a partner for the community engagement and outreach efforts for the Urban Forest Plan.

Oakland Department of Transportation (OakDOT) is responsible for managing and improving the safety of city streets, sidewalks, highways, and bridges. OakDOT Sidewalks Program is responsible for ensuring the safety and accessibility of Oakland's sidewalks and maintains a program to expedite repairs of tree-related sidewalk damage on behalf of disabled requestors. OakDOT Right-of-Way Management reviews, permits and inspects privately-constructed infrastructure projects, often associated with redevelopment. OakDOT's engineering programs are also responsible for the design of streetscape improvement projects, which include planting street trees

Oakland Public Library has been a resource for the City since 1878. The Main Library is located near Lake Merritt and has 16 branches located throughout Oakland, including the African American Museum & Library, a Tool Lending Library, and the Oakland History Center. Public Works maintains the landscapes at Libraries, including maintaining current trees and planting new trees. The Oakland History Center was instrumental in providing the historical information for this Plan.

Pacific Gas & Electric (PG&E) is the local electric and gas utility in Oakland. In California, all utility providers are subject to General Order 95; Rule 35 Vegetation Management (California Public Utilities Commission, revised 2012) and FAC-003-2 Transmission Vegetation Management (NERC), which outline requirements for vegetation management in utility easements. These requirements include clearance tolerances for trees and other vegetation growing in proximity to overhead utilities.

The Port of Oakland oversees the Oakland Seaport, Oakland International Airport, and nearly 20 miles of waterfront. They manage environmental improvement projects and environmental regulations for all Port property.

Planting Justice is an East Oakland-based nursery and workforce development non-profit that specializes in food-producing plants and employing local residents and formerly incarcerated individuals. They are partners with the City's Transformative Climate Communities grant project in East Oakland.

Sogorea Te' Land Trust is an organization of the local Lisjan Ohlone people who are native to the land that is now Oakland. They cultivate rematriation of land and are the recipients of a special land trust by the City of Oakland that returned five acres of land back to the local native community. Sogorea Te' Land Trust assisted in the development of this Urban Forest Plan.

Trees for Oakland is a volunteer-based tree planting and tree care group based in Oakland that helps residents plant street trees in front of their homes and helps the City plant and maintain young trees in Oakland's parks

West Oakland Environmental Indicators Project is a resident led, community-based environmental justice organization dedicated to achieving healthy homes, healthy jobs and healthy neighborhoods for all who live, work, learn and play in West Oakland, California.

University of California Division of Agriculture and Natural Resources is the cooperative extension arm of the University of California system that brings the power of research and education to all 58 California counties, focusing on agriculture, natural resources (including urban forestry), economic growth, nutrition, and youth development. Oakland's local research center is located in Half Moon Bay, California.

U.S. Forest Service's Urban Ecosystems and Social Dynamics Program (UESD) conducts research on tree selection. The program partners with municipalities to identify species that are adapted to changing climatic conditions and environmental stressors. Oakland's local research station is located in Albany, California.

Goals and Strategies

PROGRAMS GOAL 1:
Proactively manage the urban forest.

Strategy 1: Implement a comprehensive tree pruning program for all public trees.

Strategy 2: Mitigate tree-related hazards.

Strategy 3: Enhance the visual appeal and eliminate unsightly elements in the urban forest.

Strategy 4: Manage and reduce tree conflicts with surrounding infrastructure.

PROGRAMS GOAL 2:
Expand and enhance urban tree canopy.

Strategy 1: Increase tree planting in public areas.

Strategy 2: Integrate tree planting into stormwater management systems.

Strategy 3: Promote and support tree planting on private property.

PROGRAMS GOAL 3:
Guide, monitor, and fund the implementation of the Urban Forest Plan for the next 50 years.

Strategy 1: Secure sustainable funding for the comprehensive implementation of the Urban Forest Plan.

Strategy 2: Foster collaborative public-private partnerships to drive and support the implementation of the Urban Forest Plan.

Strategy 3: Integrate urban forestry considerations into various City operations and initiatives.

Strategy 4: Regularly measure and report on the progress of Urban Forest Plan implementation.

PEOPLE GOAL 1:
Improve community relations and foster partnerships.

Strategy 1: Foster healthy relationships between Parks & Tree Division and Oakland's communities.

Strategy 2: Improve transparency and public awareness of Oakland's urban forestry efforts.

Strategy 3: Promote continuous learning about community needs and how to support them.

Strategy 4: Support urban forestry initiatives led by partners.

PEOPLE GOAL 2:
Strengthen community connections to the urban forest.

Strategy 1: Optimize outdoor activities and exposure to Oakland's urban forest.

Strategy 2: Recognize and amplify cultural and artistic celebrations of trees.

Strategy 3: Recognize and amplify the spiritual and mental health benefits of trees.

Strategy 4: Co-design streetscapes and parks to maximize the community's connection with trees and nature.

PEOPLE GOAL 3:
Empower community members to be urban forestry leaders.

Strategy 1: Promote urban forestry education.

Strategy 2: Provide opportunities for community participation in the urban forest and pathways for green jobs.

POLICY GOAL 1:
Preserve and protect Oakland's urban forest.

Strategy 1: Revise and update City ordinances and policies related to trees.

Strategy 2: Spread awareness and encourage compliance with the Protected Tree Ordinance.

Strategy 3: Improve compliance and enforcement of the Protected Tree Ordinance through enhanced staff support.

POLICY GOAL 2:
Plan for trees and tree canopy.

Strategy 1: Incorporate the Urban Forest Plan into City planning documents.

Strategy 2: Manage all public trees as green infrastructure.

Strategy 3: Maintain and expand tree canopy with a focus on historically underserved neighborhoods.

Strategy 4: Allocate resources for the urban forest in City budgets and programs.

Strategy 5: Expand and protect regional tree canopy.

POLICY GOAL 3:
Plan for climate change.

Strategy 1: Prioritize trees as a climate change solution.

Strategy 2: Enhance urban forest resilience to climate change.

Strategy 3: Implement an ecological approach to urban forestry.

PROGRAMS GOAL 1

Proactively manage the urban forest.

Strategy 1 Implement a comprehensive tree pruning program for all public trees.	
ACTION ITEM	**Action 1.** Develop and execute a citywide tree pruning and tree planting program based on industry standards, best management practices, and environmental justice principles. **Action 2.** Establish regular grid pruning cycles for street trees, trees encroaching onto roads from private property or the undeveloped right-of-way, and all park trees. Serve frontline communities first in each cycle, based on pollution levels, average tree health based on inventory data, and CalEnviroScreen. [57] **Action 3.** Publicly share tree pruning schedules to enhance transparency and community engagement. **Action 4.** Update and maintain the tree inventory.
EQUITY PRACTICES	This is a citywide program; frontline communities shall be addressed first. Use inclusive language to make schedules and public messaging accessible.
ESTIMATED COSTS	**Action 1.** Scenario A: $20.8 million per year (average 2024-2030). Scenario B: $16.9 million per year (average 2024-2030). **Action 2.** Scenario A: Routine Tree Pruning Costs Only: $5.8 million per year (average 2023–2030 — Parks & Tree Division). Scenario B: Routine Tree Pruning Costs Only): $1.4 million per year (average 2023-2030 — contractors). **Action 3.** No budget implications. **Action 4.** Included in Operations Scenarios A & B.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** Dedicated Tree Pruning and Tree Removal Crew — see Scenarios A and B. **Partners:** • Tree care contractors
PROGRESS METRICS	Budget increases to establish a proactive program. Number of trees pruned per year. Number of instances when tree pruning schedules were shared. Number of trees planted.

Strategy 2
Mitigate tree-related hazards.

ACTION ITEM	**Action 1.** Remove dead trees and hazardous trees/branches to minimize risks to public safety. Prioritize the backlog of tree removals identified in the inventory, beginning with frontline communities. **Action 2.** Conduct pruning activities to clear trees from streetlamps, traffic signals, and improve sightlines. Serve frontline communities first. **Action 3.** Perform tree clearance pruning along streets in Oakland Hills to ensure vehicle clearance. Prioritize evacuation routes first. **Action 4.** Repair tree-related hazards in the public right of way, including tree-damaged sidewalk, street, and curb and gutter.
EQUITY PRACTICES	This is a citywide program; frontline communities shall be addressed first. Use inclusive language to make schedules and public messaging accessible.
ESTIMATED COSTS	**Action 1.** Average annual cost $3.4 – $3.7 million (Scenarios A &B). **Action 2.** Scenario A: $1.29 million per year – 2024, 2025. Scenario B: $639,000 per year — 2024, 2025, 2026. **Action 3.** Scenario A: $1.38 million per year. Scenario B: $1.19 million per year. **Action 4.** Costs to be determined by OakDOT. Study currently underway.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** Dedicated Tree Pruning and Tree Removal Crew - see Scenarios A and B. Increase in OakDOT staffing to address tree-related repairs to streets, sidewalks, and curb and gutter. **Partners:** • Tree care contractors • OakDOT
PROGRESS METRICS	Number of dead and high-risk trees removed per year. Number of trees pruned for clearance and improved visibility. Number and locations of trees pruned in Oakland Hills. Number of locations of tree-damaged sidewalk, curb and gutter, and streets that are repaired each year.

Strategy 3

Enhance the visual appeal and eliminate unsightly elements in the urban forest.

ACTION ITEM	**Action 1.** Prioritize the removal of 2,000+ known stumps to improve the aesthetic quality of public spaces. Serve frontline communities first, based on pollution levels and CalEnviroScreen. **Action 2.** Replant trees in appropriate locations to replace removed stumps citywide, starting in frontline communities. Serve frontline communities first, based on pollution levels and CalEnviroScreen. **Action 3.** Implement beautification initiatives in collaboration with community groups and artists to create visually appealing tree installations and public art. In all projects, embrace, support, and celebrate Oakland's diverse cultures. Wherever possible, hire artists and cultural strategists from Oakland's frontline communities.
EQUITY PRACTICES	This is a citywide program; frontline communities shall be addressed first. Embrace, support, and celebrate Oakland's diverse cultures. Hire artists and cultural strategists from Oakland's frontline communities.
ESTIMATED COSTS	**Actions 1 & 2.** $228,760 per year for four years for contractors to address stump removal backlog (Operations Scenarios A and B). $235,000 per year Program Analyst I (fully burdened cost per one (1) position). **Action 3.** See People Goal 1/Strategy 1 and People Goal 2/Strategy 2 for costs.

IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** See Parks & Tree Division crews identified in Scenarios A and B. • Program Analyst I **Partners:** • Local artists, and art organizations City departments: • Race & Equity • OakDOT • ADA Programs Division • OPYRD • Cultural Affairs Commission
PROGRESS METRICS	Number of stumps removed. Number of new trees planted and thriving. Number of residents engaged in beautification projects.

Strategy 4

Manage and reduce tree conflicts with surrounding infrastructure.

ACTION ITEM	**Action 1.** Collaborate with OakDOT to implement strategies for addressing tree conflicts with sidewalks based on International Society of Arboriculture standards in compliance with ADA requirements. **Action 2.** Update the street tree species list to ensure better compatibility between mature tree size and available planting space. **Action 3.** Utilize alternative materials, such as permeable pavers and tree surrounds, to improve tree and pedestrian compatibility. **Action 4.** Collaborate with OPW Sewers Department to establish improved design and planting standards for trees and sewer laterals. **Action 5.** Develop a program for removing and replacing large conflicting trees growing under high voltage power lines, replacing them with smaller tree species where appropriate. **Action 6.** Enforce Oakland's street tree planting standards to minimize future conflicts with infrastructure and utilities.
EQUITY PRACTICES	This is a citywide program; frontline communities shall be addressed first. Use inclusive language to make schedules and public messaging accessible. Empower community members with knowledge and best management practices that can help them achieve their community's goals.
ESTIMATED COSTS	Establish budget based on annual needs. To start, establish a budget of $50,000 in Year 1 to begin to implement Action Item #3 — share costs with OakDOT.

IMPLEMENTATION NOTES/PARTNERS	**Staff:** OakDOT Arboricultural Inspector (vacant position to be filled). • Program Analyst I • Tree Supervisor II • Administrative Analyst II **Partners:** • PG&E City departments: • PBD • OakDOT ROW Management • ADA Programs Division
PROGRESS METRICS	Updated species list. Number of locations where alternative paving materials are used. Development of improved design standards. Number of problematic trees removed and replaced that conflict with utilities. Number of plans reviewed with updated street tree planting standards.

PROGRAMS GOAL 2

Expand and enhance urban tree canopy.

Strategy 1 Increase tree planting in public areas.	
ACTION ITEM	**Action 1.** Allocate additional resources, staff, and capacity to facilitate the planting of over 3,000 street trees annually, aiming for 80% street tree site stocking (suitable planting sites are planted with a tree) within seven years. Prioritize this work in frontline communities, based on pollution levels and CalEnviroScreen. **Action 2.** Work with OakDOT to provide appropriate street tree species, planting strip width, and maintenance recommendations on all construction projects. **Action 3.** Leverage private development projects to expand the urban forest in the public by updating the Oakland Municipal Code to require street trees for all private development projects. **Action 4.** Foster community partnerships and engagement to actively involve residents in frontline communities and throughout Oakland in tree planting initiatives and caring for young trees. **Action 5.** Establish a program for young tree pruning, providing training to qualified volunteers under the guidance of City staff. Prioritize reaching volunteers in frontline communities.
EQUITY PRACTICES	Collaborate with frontline communities on setting and implementing neighborhood-level tree canopy goals. Provide educational/volunteer opportunities and green job training to members of frontline communities so they may be empowered to achieve community goals. Focus programs in frontline communities.

ESTIMATED COSTS	$6.43 million average annual costs for tree planting and post planting care in both Operations Scenarios A and B. See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** See Operations Scenarios A and B for staffing needs. • Program Analyst I **Partners:** • Community organizations • Local businesses • CAL FIRE City departments: • Race & Equity • OakDOT ROW Management • ADA Programs Division • Environmental Services Division • Oakland Public Library
PROGRESS METRICS	Percent of suitable vacant planting sites planted in frontline communities. Number of residents engaged. Number of community member driven tree planting plans developed.

Strategy 2 Integrate tree planting into stormwater management systems.	
ACTION ITEM	**Action 1.** Collaborate with the Watershed & Stormwater Division staff working on the Storm Drainage Master Plan on modeling to identify where tree planting needs to be targeted to reduce localized flooding.
EQUITY PRACTICES	Flooding can affect low-lying areas and highly developed land, many of which are in Oakland's frontline communities.
ESTIMATED COSTS	See Programs Goal 1/Strategy 1 for costs. See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support this action item. **Staff Needs:** See Operations Scenarios A and B for staffing needs. • Program Analyst I **Partners:** • Community organizations City departments: • Race & Equity • OakDOT • Other Public Works Divisions
PROGRESS METRICS	Number of trees planted and thriving in locations that help reduce stormwater runoff and reduce flooding.

Strategy 3

Promote and support tree planting on private property.

ACTION ITEM	**Action 1.** Utilize tree canopy and equity data to identify priority neighborhoods for tree planting on private property, using pollution burden and CalEnviroScreen as primary factors. **Action 2.** Assist community partners in procuring and distributing climate-appropriate trees to private property owners, encouraging them to plant trees in their yards to expand the urban tree canopy. Provide species guidance based on site suitability and the communities' needs and values.
EQUITY PRACTICES	Focus on tree planting in Oakland's frontline communities. Perform extensive community engagement in Oakland's frontline communities to spread awareness and education about tree planting and tree care. Determine which trees best suit the community's needs on their private property, provide opportunities and resources for them to achieve their vision.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs. Other costs to be determined.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Community organizations • Local businesses • CAL FIRE City departments: • Race & Equity
PROGRESS METRICS	Number of trees planted and thriving in locations that meet the needs of frontline communities. Number of residents engaged.

PROGRAMS GOAL 3

Guide, monitor, and fund the implementation of the Urban Forest Plan for the next 50 years.

Strategy 1 Secure sustainable funding for the comprehensive implementation of the Urban Forest Plan.	
ACTION ITEM	**Action 1.** Utilize Table 2 (Funding sources to increase investment in Oakland's urban forest) to identify potential external funding sources, including grants, partnerships, voluntary and mandated mitigation fees, and sponsorships. **Action 2.** Develop a strategic funding plan that aligns with the budget estimates and specific needs of the Urban Forest Plan.
EQUITY PRACTICES	Funding sources may require equity focus and provided specific guidance on how that is to be achieved and measured (example: State or Federal grant funding). Use Department of Race & Equity guidelines in obtaining and implementing funds and services.
ESTIMATED COSTS	No direct budget implications to conduct this action item. Costs are associated with implementation of Plan Action Items.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** Parks & Tree Division Supervisor II and Administrative Analyst II to facilitate. **Partners:** City departments: • Finance • Other Public Works Divisions
PROGRESS METRICS	Increased funding and new funding allocations.

Strategy 2

Foster collaborative public-private partnerships to drive and support the implementation of the Urban Forest Plan.

ACTION ITEM	**Action 1.** Establish an urban forestry council, committee, or equivalent body comprising representatives from relevant stakeholders, including community organizations, businesses, and government agencies. Ensure that frontline communities are well represented. **Action 2.** Define clear roles and responsibilities for each partner in the implementation process, ensuring accountability and efficient progress. **Action 3.** Develop a prioritized action plan with projected timelines, identifying responsible parties for each action item, and exploring opportunities for partnership engagement. Specify milestones to ensure accountability and efficient progress.
EQUITY PRACTICES	Include people of diverse backgrounds and Oakland's frontline communities in the committee. Make all public information accessible for accountability and transparency.
ESTIMATED COSTS	Varies depending on staffing commitments and costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support each action item. **Staff Needs:** Parks & Tree Division Supervisor II and Administrative Analyst II to facilitate and serve as liaisons. **Partners:** • Community organizations • Local businesses • CAL FIRE City departments: • Race & Equity • OakDOT • ADA Programs Division • Oakland Public Library
PROGRESS METRICS	Establishment of an urban forestry council or committee. Number of Urban Forestry Council meetings. Action Plan accomplishments.

Strategy 3

Integrate urban forestry considerations into various City operations and initiatives.

ACTION ITEM	**Action 1.** Collaborate with key stakeholders and departments to explore opportunities for constructive collaboration and integration of urban forestry with urban planning, infrastructure development, and environmental initiatives to ensure alignment with the Urban Forest Plan. Specify equity indicators and objectives for all collaborative efforts. **Action 2.** Advocate for the allocation of necessary resources and funding within other City departments to support urban forestry initiatives.
EQUITY PRACTICES	Include equity insights, indicators, and objectives in collaborative efforts.
ESTIMATED COSTS	No direct budget implications to conduct this action item. Costs are associated with implementation of Plan Action Items.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** Parks & Tree Division Supervisor II and Administrative Analyst II to facilitate and serve as liaisons. **Partners:** City departments: • ADA Programs Division • City Administrator • Finance • OakDOT • OPYRD • PBD • Other Public Works Divisions • Race & Equity
PROGRESS METRICS	Increased funding and resources. Number of infrastructure, development and environmental initiatives that integrate trees.

Strategy 4 Regularly measure and report on the progress of Urban Forest Plan implementation.	
ACTION ITEM	**Action 1.** Prepare and distribute an annual report that provides an overview of the accomplishments, challenges, and ongoing efforts related to the Urban Forest Plan, including equity indicators for all relevant actions. **Action 2.** Conduct a comprehensive citywide tree inventory every 10 years to monitor the condition and health of the urban forest. **Action 3.** Analyze urban tree canopy changes every 5 years to assess the effectiveness of tree planting and preservation efforts. Include specific analysis of changes in canopy coverage in frontline communities.
EQUITY PRACTICES	Include equity indicators in reporting, monitoring, and analyses.
ESTIMATED COSTS	**Action 1.** No budget implications. **Action 2.** Estimated inventory costs: $357,000 (2025), $455,633 (2030) **Action 3.** 2024 Estimated cost: $60,000; 2030 Estimated cost: $66,245.
IMPLEMENTATION NOTES/PARTNERS	**Action 1.** To be developed by the Parks & Tree Division and the Urban Forest Plan Implementation Team. **Action 2.** **Funding:** Grant funding may be available to support this action item. **Staff Needs:** Consultant oversight; Consultant can perform tree inventory. **Action 3.** **Funding:** Grant funding may be available to support this action item. **Staff Needs:** Consultant oversight; Consultant to conduct UTC.
PROGRESS METRICS	**Action 1.** Development of annual report. **Action 2.** Tree inventory updates completed in 2025 and 2030. **Action 3.** Urban tree canopy assessment updated in 2024 and 2030.

PEOPLE GOAL 1

Improve community relations and foster partnerships.

Strategy 1 Foster healthy relationships between the Parks & Tree Division and Oakland's communities.	
ACTION ITEM	**Action 1.** Foster healthy relationships between the Parks & Tree Division and Oakland's communities through active participation in community events or meetings and direct engagement with residents, neighborhood associations, and environmental organizations to understand their needs, concerns, and suggestions related to trees. Prioritize this work in frontline communities. **Action 2.** Provide support or guidance to City departments and community members seeking assistance with tree-related issues, such as tree planting, pruning, or removal. Use inclusive language and appropriate translation of materials for frontline communities.
EQUITY PRACTICES	Focus engagement efforts within Oakland's frontline communities. Make information accessible to all, consider what communication techniques and formats work best for different communities and adapt to those needs.
ESTIMATED COSTS	$50/participant (transportation). See Programs Goal 1/Strategy 3 for Program Analyst I costs. $145,000 City support of local partners and non-profits.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Community organizations City departments: • Oakland Housing and Community Development • Oakland Public Library
PROGRESS METRICS	Number of meetings attended and presentations given. Number of residents supported.

Strategy 2

Improve transparency and public awareness of Oakland's urban forestry efforts.

ACTION ITEM	**Action 1.** Maintain and enhance the City's tree program website, regularly updating it with progress updates, maintenance schedules (when funded), and relevant information. **Action 2.** Utilize social media platforms to share accessible special announcements, upcoming tree-related events, and educational content about the benefits of trees. **Action 3.** Develop and make available an interactive Oakland tree map that allows the public to access information about the location, species, and condition of trees in the city.
EQUITY PRACTICES	Make information accessible to all, consider what communication techniques and formats work best for different communities and adapt to those needs. Remove barriers to access and focus communication efforts in frontline communities. Make public Oakland's tree equity disparities, utilize equity indicators as a means of making equity disparities visible and understandable to the public.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** • Program Analyst I **Partners:** • Public engagement/ advertising/ marketing consultant City departments: • ITD, GIS Division • City Administrator's Office
PROGRESS METRICS	Number of website visits/social media views.

Strategy 3 Promote continuous learning about community needs and how to support them.	
ACTION ITEM	**Action 1.** Foster ongoing collaboration and communication between the Parks & Tree Division and other City departments through regular meetings, forums, and reporting mechanisms. **Action 2.** Engage with community members, neighborhood associations, and environmental organizations to gain insights into their evolving needs and priorities regarding trees and urban forestry, prioritizing frontline communities.
EQUITY PRACTICES	Work closely with Oakland's Department of Race & Equity to shape departmental objectives and methods for providing service. Take an active listening role to Oakland's frontline community members.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Community organizations • Various City departments
PROGRESS METRICS	Number of meetings with other City departments. Feedback from community partners.

Strategy 4

Support urban forestry initiatives led by partners.

ACTION ITEM	**Action 1.** Support urban forestry initiatives led by partners by providing dedicated City staff to guide and support the implementation of community-level urban forestry grants and projects. Prioritize efforts in Oakland's frontline communities who are in greatest need of City support. Work with community and internal partners to include feasible protections against displacement that could result from urban forestry projects in frontline communities. **Action 2.** Collaborate with community organizations to facilitate tree giveaways and promote tree planting and care on private property, encouraging residents to actively participate in greening their neighborhoods. Prioritize efforts in frontline communities who are in greatest need of City support and collaborate with community leaders on what types of programs or services may best suit their community's needs.
EQUITY PRACTICES	Focus these efforts in Oakland's frontline communities who are in greatest need of City support. Take a humble approach to learning from community leaders what types of programs or services may best suit their community's needs.
ESTIMATED COSTS	$25,000 per year expenses. See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Community organizations • Residents City departments: • Oakland's Adopt a Spot • Oakland Public Library
PROGRESS METRICS	Number of grants/projects completed. Number of tree giveaways and related activities.

PEOPLE GOAL 2

Strengthen community connections to the urban forest.

Strategy 1 Optimize outdoor activities and exposure to Oakland's urban forest.	
ACTION ITEM	**Action 1.** Work with community partners to optimize outdoor activities & exposure to Oakland's urban forest. Support and, where feasible, organize field trips to parks and urban forest areas for schools, community organizations, and residents, providing transportation options to encourage participation. Collaborate with Oakland Park & Recreation and Youth Development (OPYRD) and other partners to develop inclusive tree-related programming and recreation activities, such as guided nature walks, tree identification workshops, and outdoor fitness classes.
EQUITY PRACTICES	Focus efforts in frontline communities. Identify barriers and enhance accessibility. Co-create programs that are best suited for community members.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support this action item. **Staff Needs:** • Program Analyst I **Partners:** • Local youth organizations City departments: • OPYRD • Oakland Public Library • OUSD
PROGRESS METRICS	Number of outdoor activities. Number of participants.

Strategy 2

Recognize and amplify cultural and artistic celebrations of trees.

ACTION ITEM	**Action 1.** Recognize and amplify cultural & artistic celebrations of trees by engaging local artists and cultural strategists to contribute artwork, murals, public service announcements (PSAs), and community relations efforts that highlight the value of trees in Oakland. Collaborate with Oakland's Cultural Affairs and local artists to commission and install public art that celebrates trees and their cultural significance, while embracing, supporting, and celebrating Oakland's diverse cultures. Wherever possible, hire artists and cultural strategists from Oakland's frontline communities. **Action 2.** Equitably support community groups in celebrating trees according to their cultural traditions by providing materials, resources, and public spaces for their activities, prioritizing activities in and serving frontline communities.
EQUITY PRACTICES	Embrace, support, and celebrate Oakland's diverse cultures. Focus on frontline communities and community members. Hire artists and cultural strategists from Oakland's frontline communities. Use language and style accessible to Oakland community members.
ESTIMATED COSTS	$50,000 to $75,000 per year to support cultural strategists' and artists' stipends and art installation costs. See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Cultural Affairs Commission • Local artists, and art organizations City departments: • Race & Equity • OPYRD
PROGRESS METRICS	Number of partnerships created. Tree-related art installations installed; events hosted.

Strategy 3

Recognize and amplify the spiritual and mental health benefits of trees.

ACTION ITEM	**Action 1.** Promote nature walks, hiking, and "forest bathing" as healthy activities that enhance well-being and foster a deeper connection to the urban forest. Collaborate with local wellness organizations and mental health professionals to develop programs that utilize the therapeutic benefits of spending time in nature. Focus efforts in frontline communities, especially where access to mental and physical health services are limited. Remove access barriers and integrate lessons from Indigenous and other frontline communities. **Action 2.** Support land rematriation efforts of Indigenous peoples to honor their connection with the land and trees.
EQUITY PRACTICES	Focus efforts in frontline communities, especially where access to mental and physical health services are limited. Remove barriers to access for these types of health services. Take an active listening role in relationships with Oakland's Indigenous cultures and work towards supporting them. Practice cultural humility and reflect on lessons that can be learned from Indigenous wisdom.

ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs. Other costs to be determined.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Local wellness organizations and mental health professionals • Indigenous peoples • Various City departments
PROGRESS METRICS	Number of participants in nature walks, hiking, and forest bathing. Number of collaborations with local wellness organizations and mental health professionals. Instances of support provided to Indigenous people/groups.

Strategy 4

Co-design streetscapes and parks to maximize the community's connection with trees and nature.

ACTION ITEM	**Action 1.** Assign Parks & Tree Division staff to actively participate in planning projects led by PBD, OakDOT, and other City departments to provide expertise and guidance for incorporating trees into streetscape designs. **Action 2.** Collaborate with local artists and businesses (prioritizing those in frontline communities) to design and install tree guard benches around street trees, creating inviting spaces for residents to rest and enjoy the urban forest. **Action 3**. Prioritize the use of native plants and pollinator gardens in the urban forest where appropriate, enhancing biodiversity and attracting wildlife, and maximizing green infrastructure for stormwater management, nature access, and pollution mitigation. Prioritize implementation in frontline communities. **Action 4**. Repurpose downed trees as logs in sitting circles and gathering places in parks, creating natural seating areas that blend with the surrounding environment.
EQUITY PRACTICES	Consider and acknowledge how frontline community members have been disproportionately hurt by city planning decisions and prioritize ways to address and counteract these inequities in future decisions. Use art and designs to celebrate and amplify cultural visibility of frontline communities. Foster partnerships in frontline communities to understand more about their needs and objectives. Focus programming and actions in frontline communities according to their needs and objectives.

ESTIMATED COSTS	$225,000 per year in expenses for tree guard benches, native plants and repurposed logs. $241,000 per year for one (1) Arboricultural Inspector.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I • One Arboricultural inspector **Partners:** • Local artists • City departments • ADA Programs Division
PROGRESS METRICS	Number of planning projects successfully integrating trees. Number of artists participating. Number of tree guard benches installed. Number of native plant pollinator gardens installed. Number of downed trees reused.

PEOPLE GOAL 3

Empower community members to be urban forestry leaders.

Strategy 1 Promote urban forestry education.	
ACTION ITEM	**Action 1.** Develop a comprehensive community tree maintenance and care training program that includes certification upon completion to equip community members with the necessary skills and knowledge to effectively care for trees. In creating and implementing this program, pursue partnerships with OUSD high schools, community colleges, and community groups serving frontline communities, including BIPOC and immigrant communities. **Action 2.** Collaborate with existing community groups and organizations (prioritizing those in frontline communities) to integrate urban forestry trainings, workshops, or school functions tailored to their specific needs and interests. **Action 3**. Establish partnerships with educational institutions such as Merritt College and the International Society of Arboriculture (ISA) to connect community members to additional educational opportunities and resources in the field of urban forestry.
EQUITY PRACTICES	Focus community tree care on recently planted trees in frontline communities. Identify existing urban forestry-related community groups working in Oakland's frontline communities and work to support them.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs. Other costs to be determined.

IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Community organizations • OUSD • Merritt College • ISA
PROGRESS METRICS	Number of residents attaining certification. Number of organizations participating in training. Number of partnerships established.

Strategy 2

Provide opportunities for community participation in the urban forest and pathways for green jobs.

ACTION ITEM	**Action 1.** Support and facilitate urban forestry volunteer programs, including tree planting and young tree pruning initiatives. Provide necessary tools, training, and ongoing guidance to ensure the success of these programs. Prioritize this work in frontline communities. **Action 2.** Identify and support green job career pathways in the urban forestry sector, offering employment opportunities for community members interested in pursuing tree care and maintenance careers. Establish partnerships with educational institutions such as Merritt College and the International Society of Arboriculture (ISA) to connect community members to additional educational opportunities and resources in urban forestry. **Action 3**. Collaborate with partners to develop a work program for individuals who were formerly incarcerated or experiencing homelessness in performing specific tree care and maintenance tasks in City parks.
EQUITY PRACTICES	Focus volunteer programs in Oakland's frontline communities. Focus green job training and creation opportunities in Oakland's frontline communities. Provide work opportunities to Oakland's frontline community members who have been negatively affected by the criminal justice system.
ESTIMATED COSTS	$200,000 annually to pay and train community members to perform tree work (four (4) community members @ $50,000 each per year). $50,000 per year for work force development program expenses.

IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I • Tree Supervisor II • Administrative Analyst II **Partners:** • Merritt College • International Society of Arboriculture • Other educational institutions and groups City departments: • Race & Equity
PROGRESS METRICS	Number of events and participants. Number of green jobs created. Number of individuals hired. Number of individuals trained.

POLICY GOAL 1

Preserve and protect Oakland's urban forest.

Strategy 1 Revise and update City ordinances and policies related to trees.	
ACTION ITEM	**Action 1.** Revise and update the Protected Tree Ordinance and other relevant tree ordinances to align with the values and strategies outlined in the adopted Urban Forest Plan. Ensure that revisions reflect community input and address Oakland's current needs and identified challenges, including climate change. Include a comprehensive community engagement process to gather input and feedback about the Protected Tree Ordinance. Incorporate community perspectives and environmental justice principles into any proposed updates to the maximum extent feasible, along with considerations for mitigating and adapting to climate change as outlined in Oakland's 2030 Equitable Climate Action Plan. **Action 2.** Streamline and enhance the enforcement mechanisms of the Protected Tree Ordinance, making it more practical and effective in preserving and protecting trees within the City. Include practices for equitable enforcement, developed in partnership with the Department of Race & Equity.
EQUITY PRACTICES	Ensure that community engagement processes follow Oakland's Race & Equity guidelines. Though the Protected Tree Ordinance applies to all trees citywide, ensure that engagement efforts include Oakland's frontline communities. Consider ways to incorporate equity considerations in the Protected Tree Ordinances, such as redirecting collected fees or fines towards expanding tree canopy in Oakland's frontline communities.
ESTIMATED COSTS	$100,000 for a consultant to assist in ordinance revisions and development. $50,000 community engagement.

IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I • Tree Supervisor II • Administrative Analyst II **Partners:** • Community groups and organizations City departments: • Race & Equity • Other departments (to be determined)
PROGRESS METRICS	Number of community engagement participants. Revised ordinance.

Strategy 2 Spread awareness and encourage compliance with the Protected Tree Ordinance.	
ACTION ITEM	**Action 1.** Engage community artists to design public service announcements (PSAs) that raise awareness about the importance of protecting trees. Utilize various city resources and platforms to disseminate these PSAs and reach a wide audience, ensuring frontline communities are both represented in the content and the distribution. (See People Goal 2, Strategy 2, Action Item 1.) **Action 2.** Work with relevant City departments to develop strategies to promote compliance with the Protected Tree Ordinance. Focus on improving the tree removal permitting process and establishing consistent design and construction standards that account for the protection of trees.
EQUITY PRACTICES	Use language and style accessible to Oakland community members. Hire artists and cultural strategists from Oakland's frontline communities.
ESTIMATED COSTS	$50,000 per year per cultural strategist. See People Goal 1/Strategy 1 for other costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Artists • Various City departments
PROGRESS METRICS	Number of PSAs. Number of interactions and percentage of their objectives achieved.

Strategy 3 Improve compliance and enforcement of the Protected Tree Ordinance through enhanced staff support.	
ACTION ITEM	**Action 1.** Increase the staffing of Arboricultural Inspectors to enable thorough review of plans, regular inspections of tree-related work, and prompt responses to reports of illegal tree removals. This increased capacity will help ensure compliance with the Protected Tree Ordinance. **Action 2.** Restore and utilize Parks Enforcement Officers or similar enforcement staff positions to actively enforce the Protected Tree Ordinance. These positions will play a vital role in monitoring and reporting tree-related violations and taking appropriate enforcement actions.
EQUITY PRACTICES	Provide translation for public noticing about tree removals to make more accessible. Spread policy awareness throughout Oakland's communities to encourage compliance. Utilize collected fees and fines to expand tree canopy in Oakland's disadvantaged communities.
ESTIMATED COSTS	$578,566 annually for 2 new inspectors. $750,000 annually for 3 enforcement officers.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** • Program Analyst I • Two Inspectors **Partners:** • Enforcement officers
PROGRESS METRICS	Number of staff hired.

POLICY GOAL 2

Plan for trees and tree canopy.

Strategy 1 Incorporate the Urban Forest Plan into City planning documents.	
ACTION ITEM	**Action 1.** Include the goals, strategies, and actions of the Urban Forest Plan in the writing and revision of relevant City Plans, including the General Plan, Neighborhood and Specific Area Plans, Equitable Climate Action Plan, and Vegetation Management Plan.
EQUITY PRACTICES	Tree Planting and maintenance are practical and relatively affordable ways of working towards Oakland's social, environmental, and climate justice goals.
ESTIMATED COSTS	No budget implications.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** Current Parks & Tree Division staff. **Partners:** City departments: • PBD • OakDOT • Race & Equity • Other Public Works divisions • OPYRD
PROGRESS METRICS	Number of plans integrating the Plan.

Strategy 2 Manage all public trees as green infrastructure.	
ACTION ITEM	**Action 1.** Implement routine pruning for all trees in the developed right of way based on best management practices and funding availability. **Action 2.** Integrate trees strategically into City plans and designs to maximize their ecosystem benefits, such as providing shade, capturing stormwater, and improving air quality.
EQUITY PRACTICES	By pruning all public trees, the City will reduce tree canopy inequity by providing service to communities who have fewer means to plant or maintain trees themselves. Frontline communities are categorically more threatened by the effects of climate change and air pollution. Taking these actions will protect their health and well-being.
ESTIMATED COSTS	**Action 1.** Average annual cost (excluding tree planting and stump removal). Scenario A: $14.25 million; Scenario B: $ 10.42 million. **Action 2.** No budget implications.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** See Operations Scenarios A and B. **Partners:** City departments: • PBD • OakDOT • Race & Equity • ADA Programs Division • Other Public Works divisions • OPYRD
PROGRESS METRICS	Number of trees pruned and removed each year. Number of plans integrating trees.

Strategy 3 Maintain and expand tree canopy with a focus on historically underserved neighborhoods.	
ACTION ITEM	**Action 1.** Adopt a no net loss citywide tree canopy goal. **Action 2.** Establish neighborhood-specific tree canopy goals that consider both the quantity and quality of tree coverage, particularly in neighborhoods affected by historical redlining/ frontline communities.
EQUITY PRACTICES	Maintaining tree canopy citywide and increasing tree canopy in neighborhoods that were historically redlined will reduce some consequences of historically racist and inequitable policies. Consider tradeoffs between affordable housing development and tree canopy. Plan for and mitigate unintended consequences of gentrification when creating improvements to communities. Involve community partners in management decisions.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs. Other costs to be determined.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** • Program Analyst I **Partners:** • Community organizations City departments: • PBD • Race & Equity
PROGRESS METRICS	Establishing area-specific canopy goals. Number of neighborhoods with canopy goals. Canopy percentage changes after each future urban tree canopy assessment.

Strategy 4

Allocate resources for the urban forest in City budgets and programs.

ACTION ITEM	**Action 1.** Incorporate urban forest strategies, including tree preservation, planting, and maintenance, into the budgets and funding streams of City planning, design, construction, and other related projects. **Action 2.** Implement requirements for new developments to include street tree planting and landscape components or, when not possible, contribute in-lieu fees to a City Tree Fund that funds planting activities in frontline communities.
EQUITY PRACTICES	Include equity-focused funding applications in budgets. Prioritize tree planting and maintenance in Oakland's frontline communities. Direct City Tree Fund collections towards planting trees in Oakland's disadvantaged communities.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs. Other costs to be determined.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** These actions may lead to future funding needs and opportunities. **Staff Needs:** • Program Analyst I • Current Parks & Tree Division staff **Partners:** City departments: • PBD • OakDOT • Race & Equity • ADA Programs Division • Other Public Works divisions • OPYRD
PROGRESS METRICS	Development of tree preservation, planting and maintenance standards. Number of times these are incorporated into City budgets and programs. Development of tree planting requirements and fee structure for in-lieu fees. Annual count of trees planted and in-lieu fees collected from City projects.

Strategy 5 Expand and protect regional tree canopy.	
ACTION ITEM	**Action 1.** Collaborate with regional partners to promote and maintain tree canopy coverage beyond Oakland's boundaries. **Action 2.** Share urban forest data with research partners to contribute to broader knowledge and utilization of Oakland's urban forestry practices.
EQUITY PRACTICES	When working with regional partners, ensure that equity is included in collaboration efforts, research, and analysis. Share insights and information that can be used to address equity and environmental justice issues.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** These actions may lead to future funding needs and opportunities. **Staff Needs:** • Program Analyst I • Current Parks & Tree Division staff **Partners:** • Regional partners City departments: • ITD
PROGRESS METRICS	Identify and list collaborations with nearby cities, counties, land managers. Description of data shared with the U.S. Forest Service, University of California Division of Agriculture and Natural Resources, and other research entities.

POLICY GOAL 3

Plan for climate change.

Strategy 1 Prioritize trees as a climate change solution.	
ACTION ITEM	**Action 1.** Continue to highlight and maximize the role of Oakland's urban forest in Oakland's climate policies and goals, emphasizing the role of trees in mitigating and adapting to climate change. Identify and develop frameworks and metrics to incorporate urban canopy and proactive tree maintenance into the City's greenhouse gas (GHG) accounting to provide a clearer assessment of progress toward Oakland's 2045 Carbon neutral target.
EQUITY PRACTICES	Equity is centered in Oakland's climate change policies, as depicted in the Equitable Climate Action Plan.
ESTIMATED COSTS	See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** • Program Analyst I • Current Parks & Tree Division staff **Partners:** City departments: • PBD • OakDOT • Race & Equity • Other Public Works divisions • OPYRD
PROGRESS METRICS	Number of policies and goals set that recognize the role of trees in mitigating climate change.

Strategy 2 Enhance urban forest resilience to climate change.	
ACTION ITEM	**Action 1.** Regularly update the street tree species list based on climate modeling and drought tolerance research to ensure the selection of suitable tree species. **Action 2.** Monitor and assess regional and local trends in tree stress and mortality caused by climate change, taking appropriate actions to mitigate these effects.
EQUITY PRACTICES	Making the urban forest more resilient will help mitigate its vulnerability to climate change, therefore protecting those who are most vulnerable to climate change.
ESTIMATED COSTS	$15,000 for consultant services.
IMPLEMENTATION NOTES/PARTNERS	**Staff Needs:** • Tree Supervisor II • Administrative Analyst II **Partners:** • Consultants • International Society of Arboriculture • Cal Poly SelecTree • California ReScape • University of California Division of Agriculture and Natural Resources
PROGRESS METRICS	Review tree list annually and update as needed. Track pests and tree die off.

Strategy 3
Implement an ecological approach to urban forestry.

ACTION ITEM	**Action 1.** Follow the guidelines of the Alameda County Water Efficient Landscape Ordinance and incorporate principles from the California ReScape program into urban forestry design and maintenance practices to reduce resource consumption and maximize environmental benefits. **Action 2.** Promote and support urban forestry educational opportunities led by partners to increase awareness and knowledge. Focus outreach, awareness, and opportunities in Oakland's frontline communities. Work with educational, vocational, and other partners to explore opportunities for integrating educational programs with green jobs training. Tailor programs to benefit frontline communities. **Action 3.** Encourage and facilitate the recycling of urban forestry byproducts, such as dead trees, brush, and leaves, into mulch or other useful resources.
EQUITY PRACTICES	Focus outreach, awareness, and opportunities in Oakland's frontline communities. Consider ways to turn educational opportunities into green jobs training. Make opportunities accessible, remove barriers for participation, provide translation services. Tailor programs to benefit frontline communities.
ESTIMATED COSTS	Other costs to be determined. See Programs Goal 1/Strategy 3 for Program Analyst I costs.
IMPLEMENTATION NOTES/PARTNERS	**Funding:** Grant funding may be available to support action items. **Staff Needs:** • Program Analyst I **Partners:** • Community organizations • International Society of Arboriculture • Cal Poly SelecTree • California ReScape
PROGRESS METRICS	Successful incorporation of California ReScape principles. Number of educational opportunities supported. Quantity of re-used byproducts.

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ADA Programs Division

Dr. Ayodele Nzinga, Oakland Poet Laureate

CAL FIRE Urban & Community Forestry

California Interfaith Power & Light

Common Vision

Davey Resource Group

David Muffly

Eastside Arts Alliance

Fair Forests Consulting, LLC

Forest & Tree

Oakland City Administrator's Office

Oakland City Attorney's Office

Oakland Community Engagement Working Group

Oakland Cultural Affairs Commission

Oakland Department of Housing & Community Development

Oakland Department of Race & Equity

Oakland Department of Transportation

Oakland Department of Workplace & Employment Standards

Oakland Fire Department

Oakland Information Technology Department

Oakland Parks & Recreation Advisory Committee

Oakland Parks and Recreation Foundation

Oakland Parks, Recreation, & Youth Development

Oakland Planning & Building

Oakland Public Library

Oakland Public Works

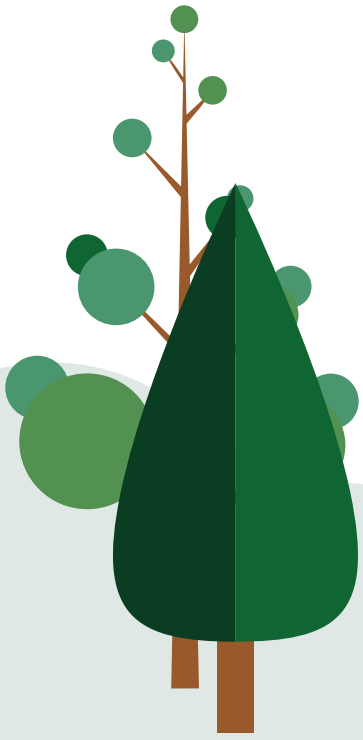
San Francisco Public Works

Sogorea Te' Land Trust

Trees for Oakland

University of California Division of Agriculture and Natural Resources

USDA Forest Service Pacific Southwest Research Station



This Urban Forest Plan is a product of an urban and community forestry grant funded by CAL FIRE and California Climate Investments (CCI).

▲ Volunteers planting trees on Skyline Boulevard. Credit: Keola Semitekol

APPENDIX A: Operations Scenarios

SCENARIO A BUDGET SUMMARY

Budget Summary SCENARIO A: 7-Year Proactive Street & Park Tree Management - City Crews and Minor Contractor Support*	YEAR 1	YEAR 2**	YEAR 3**
Tree Pruning (5 Crews)			
ANNUAL Tree Pruning Costs	$6,511,245	$6,836,808	$7,178,648
ANNUAL Number of Trees Pruned	14,024	14,024	11,572
Tree Removal (2 Crews)			
ANNUAL Tree Removal Costs	$2,928,509	$3,074,934	$3,228,681
ANNUAL Number of Trees Removed	1,584	1,562	1,865
Tree Planting and Stump Removal (7 crews)			
ANNUAL Tree Planting and Stump Removal Costs	$5,632,199	$5,903,309	$6,198,474
ANNUAL Number of Trees Planted	3,133	3,133	3,133
ANNUAL Number of Stumps Removed	2,201	2,201	2,201
Tree Inspections (4 Inspectors)			
ANNUAL Tree Inspection Costs	$994,830	$1,044,572	$1,096,800
ANNUAL Number of Inspections	1,515	1,515	1,515
Floating Crew			
ANNUAL Floating Crew Costs	$543,371	$570,539	$599,066
Administration and Operational Support (2 staff)			
ANNUAL Administration and Operational Support Costs	$1,275,823	$1,339,614	$1,406,595
Data Management and Updates			
Tree Inventory Update (Years 2 and 7)	$-	$357,000	$-
Urban Tree Canopy Assessment Years 1 and 6	$60,000	$-	$-
TOTAL ANNUAL COSTS	**$17,945,977**	**$19,126,775**	**$19,708,264**

( ) = Number of Staff/Crews
*REALISTIC CONDITIONS: Based on 220 work days per year (accounting for crew vacation, sick, holiday time, other missed work days, and reassignment to other tasks (i.e. storms, debris pick-up)

YEAR 4**	YEAR 5**	YEAR 6**	YEAR 7**	Total Costs & Trees Over 7 Years
$7,537,580	$7,914,459	$8,310,182	$8,725,692	**$53,014,615**
11,572	11,572	11,572	11,572	**85,910**
$3,390,115	$3,559,621	$3,737,602	$3,924,482	**$23,843,942**
1,264	1,264	1,264	1,264	**10,067**
$6,508,398	$6,575,766	$6,904,554	$7,263,183	**$44,985,882**
3,133	3,133	3,133	3,133	**21,929**
1,795	1,264	1,264	1,264	**12,190**
$1,151,640	$1,209,222	$1,269,683	$1,333,168	**$8,099,916**
1,515	1,515	1,515	1,515	**10,605**
$629,019	$660,470	$693,494	$728,169	**$4,424,128**
$1,476,925	$1,550,771	$1,628,309	$1,709,725	**$10,387,762**
$-	$-	$-	$455,633	**$812,633**
$-	$-	$66,245	$-	**$126,245**
$20,693,677	**$21,470,309**	**$22,610,070**	**$24,140,050**	**$145,695,123**

**After Year 1 includes 5% annual cost increase
***Tree Planting costs include the cost of tree purchase ($200/tree)

SCENARIO B BUDGET SUMMARY

Budget Summary SCENARIO B: 7-Year Proactive Street & Park Tree Management - Hybrid: City Crews* & Contractors	YEAR 1	YEAR 2**	YEAR 3**
Tree Pruning			
ANNUAL Tree Pruning Costs — City Crews (1 crews)	$1,745,110	$1,832,366	$1,923,984
ANNUAL Number of Trees Pruned City Crews	4,690	4,690	4,690
ANNUAL Tree Pruning Costs —Contractors	$1,201,440	$1,261,512	$1,324,587
ANNUAL Number of Trees Pruned Contractors	8,517	8,517	8,517
TOTAL ANNUAL Tree Pruning Costs	**$2,946,550**	**$3,093,877**	**$3,248,571**
TOTAL ANNUAL Number of Trees Pruned	13,207	13,207	13,207
Tree Removal			
ANNUAL Tree Removal Costs — City Crews (2)	$2,698,558	$2,833,485	$2,975,160
ANNUAL Number of Trees Removed City Crews	1,757	1,757	1,757
ANNUAL Tree Removal & Stump Costs — Contractors***	$500,000	$525,000	$551,250
ANNUAL Number of Trees Removed Contractors	341	90	90
ANNUAL Number of Stumps Removed by Contractor	341	90	90
TOTAL ANNUAL Tree Removal Costs	**$3,198,558**	**$3,358,485**	**$3,526,410**
TOTAL ANNUAL Number of Trees Removed	2,098	1,847	1,847
Tree Planting and Stump Removal			
Contractor Support — Tree Planting Site Prep (concrete removal, etc.) assumes 65% of vacant planting sites are in tree wells (based on 2022 inventory	$2,443,517	$2,565,693	$2,693,978
Contractor Support — Stump Removals (Inventory backlog — Years 1–4)	$212,300	$222,915	$234,061
ANNUAL Tree Planting & Stump Removal Costs	$5,127,558	$5,383,936	$5,653,133
ANNUAL Post Planting Tree Care Costs	$504,641	$519,373	$545,341
TOTAL ANNUAL Tree Planting and Stump Removal Costs	**$5,632,199**	**$5,903,309**	**$6,198,474**
TOTAL ANNUAL Number of Trees Planted	3,133	3,133	3,133
TOTAL ANNUAL Number of Stumps Removed	2,201	2,201	2,201
Tree Inspections (4 Inspectors)			
ANNUAL Tree Inspection Costs	**$994,830**	**$1,044,572**	**$1,096,800**
ANNUAL Number of Inspections	1,515	1,515	1,515
Floating Crew			
ANNUAL Floating Crew Costs	$543,371	$570,539	$599,066
Administration and Operational Support (5 staff)			
ANNUAL Administration and Operational Support Costs	**$1,275,823**	**$1,339,614**	**$1,406,595**
Data Management and Updates			
Tree Inventory Update (Years 2 and 7)	$-	$357,000	$-
Urban Tree Canopy Assessment Years 1 and 6	$60,000	$-	$-
TOTAL ANNUAL COSTS	**$14,651,330**	**$15,667,397**	**$16,075,917**

YEAR 4**	YEAR 5**	YEAR 6**	YEAR 7**	Total Costs & Trees Over 7 Years
$2,020,183	$2,121,192	$2,227,252	$2,338,615	
3,056	3,056	3,056	3,056	
$1,390,817	$1,460,358	$1,533,375	$1,316,524	
8,517	8,517	8,517	8,517	
$3,411,000	**$3,581,550**	**$3,760,627**	**$3,948,659**	**$23,990,835**
11,572	11,572	11,572	11,572	**85,910**
$3,123,918	$3,280,114	$3,444,119	$3,616,325	
1,757	809	809	809	
$578,813	$607,753	$638,141	$670,048	
90	90	90	90	
90	90	90	90	
$3,702,730	**$3,887,867**	**$4,082,260**	**$4,286,373**	**$26,042,683**
1,847	899	899	899	**10,337**
$2,828,677	$2,970,110	$3,118,616	$3,274,547	
$245,764	$-	$-	$-	
$5,935,789	$5,974,527	$6,273,253	$6,586,916	
$572,608	$601,239	$631,301	$676,267	
$6,508,398	**$6,575,766**	**$6,904,554**	**$7,263,183**	**$44,985,882**
3,133	3,133	3,133	3,133	**21,929**
1,795	1,264	1,264	1,264	**12,190**
$1,151,640	**$1,209,222**	**$1,269,683**	**$1,333,168**	**$8,099,916**
1,515	1,515	1,515	1,515	**10,605**
$629,019	$660,470	$693,494	$728,169	**$4,424,128**
$1,476,925	**$1,550,771**	**$1,628,309**	**$1,709,725**	**$10,387,762**
$-	$-	$-	$455,633	**$812,633**
$-	$-	$66,245	$-	**$126,245**
$16,879,712	**$17,465,646**	**$18,405,173**	**$19,724,908**	**$118,870,083**

( ) = Number of Staff/ Crews

* REALISTIC CONDITIONS: Based on 220 work days per year (accounting for crew vacation, sick, holiday time, other missed work days, and reassignment to other tasks (i.e. storms, debris pick-up)

**After Year 1 includes 5% annual cost increase

***Tree Removal costs for contractors includes the cost for stump removal

****City Tree Planting costs include the cost of tree purchase ($200/tree)

SCENARIO A: 7-Year Proactive Street & Park Tree Management - City Crews with Minor Contractor Support

City of Oakland Tree Services OPERATIONS STAFF

Tree Pruning	# of Staff
Tree Trimmer	15
Tree Trimmer Crew Leader	5
Tree Worker	5
Park Attendant (Part-Time)	5
Tree Supervisor I	2
Total TREE PRUNING STAFF	**32**
Total Tree Pruning Crews	**5**
1 crew = 3 Tree Trimmers + 1 Tree Trimmer Crew Leader + 1 Tree Worker + 1 Park Attendant (part-time)	

Tree Planting and Care	# of Staff
Tree Worker	6
Park Attendant (Part-Time)	11
Tree Supervisor I	2
Total TREE PLANTING & STUMP STAFF	**19**
Total Tree Planting/Care Crews	**7**
3 Tree Planting Crews - Tree Planting crew = 2 Tree Workers + 1 part-time Park Attendant) / 4 City Post Planting Care Crews - 1 crew = 2 part-time Park Attendants)	

Floating Crew	# of Staff
Tree Worker	2
Park Attendant (Part-Time)	1
Total Floating Staff	**3**
1 crew = (3 staff) 2 Tree Workers + 1 part-time Park Attendant	

Tree Removal	# of Staff
Tree Trimmer	4
Tree Trimmer Crew Leader	2
Tree Worker	2
Park Attendant (Part-Time)	1
Tree Supervisor I	1
Total TREE REMOVAL STAFF	**10**
Total Tree Removal Crews	**2**
1 crew = 2 Tree Trimmer + 1 Tree Trimmer Crew Leader + 1 Tree Worker+ 1 park-time Park Attendant	

Tree Inspections	# of Staff
Arboricultural Inspector	4
Total TREE INSPECTIONS STAFF	**4**
Total Tree inspection Crews	**4**
1 crew = (1 staff): 1 Arboricultural Inspector	

Administration & Operational Support Staff	# of Staff
Tree Supervisor II	1
Administrative Analyst II	1
Program Analyst I (Urban Forestry Ambassador)	2
Administrative Assistant II	1
Total ADMINISTRATION STAFF	**5**

Tree Care Contractors Activities

Tree Removal (emergency tree removals, large tree removals (>28"DBH), and storm response)
Tree Planting Site Prep
Stump Removal (inventory backlog)

City of Oakland Tree Services EQUIPMENT (ALL ACTIVITIES)	
Equipment	**Quantity**
Chainsaw (Tree Pruning and Removal)	28
Aerial Lift (Bucket Truck) (55' and 75') (Tree Removal)	1
F550 with w/ Altec (AT37g) - 37' Aerial Lift (Tree Pruning)	5
Chipper (Tree Pruning and Removal)	7
Chipper Truck (Tree Pruning and Removal)	7
Knuckle Boom Truck Crane (Tree Pruning and Removal)	2
F700 Flatbed Dump Truck (Tree Removal)	2
F350 Dump Body (Pick-up Truck) (Tree Pruning, Tree Removal and Tree Planting)	10
Stump Grinder (Tree Planting and Stump Grinding)	3
Pick-up Truck (All Activities)	14
Field Computer/Tablet (All Activities)	27
Water Tank	4
Staff Summary	
Tree Trimmer	19
Tree Trimmer Crew Leader	7
Tree Supervisor I	5
Tree Worker	15
Park Attendant (Part-Time)	18
Arboricultural Inspector	4
Administrative Analyst II	1
Tree Supervisor II	1
Administrative Assistant II	1
Program Analyst I (Urban Forestry Ambassador)	2
Total STAFF	**73**

SUMMARY OPERATIONAL NEEDS
SCENARIO B: 7-Year Proactive Street & Park Tree Management - Hybrid: City Crews & Contractors

City of Oakland Tree Services OPERATIONS STAFF

Tree Pruning	# of Staff
Tree Trimmer	3
Tree Trimmer Crew Leader	1
Tree Worker	1
Park Attendent (Part Time)	1
Tree Supervisor I	2
Total TREE PRUNING STAFF	**8**
Total Tree Pruning Crews	**1**
1 crew = 3 Tree Trimmer + 1 Tree Trimmer Crew Leader + 1 Tree Worker + 1 Park Attendant	

Tree Planting and Care	# of Staff
Tree Worker	6
Park Attendant (Part-Time)	11
Tree Supervisor I	2
Total TREE PLANTING & STUMP STAFF	**19**
Total Tree Pruning Crews	**7**
1 crew = (3 staff) 2 Tree Worker + 1 part-time park attendant + 4 City Post Planting Care Crews (1 crew = 2 part-time Park Attendants)	

Floating Crew	# of Staff
Tree Worker	2
Park Attendant (Part-Time)	1
Total Floating Staff	**3**
1 crew = (3 staff) 2 Tree Workers + 1 part-time Park Attendant	

Tree Removal	# of Staff
Tree Trimmer	4
Tree Trimmer Crew Leader	2
Tree Worker	2
Tree Supervisor I	2
Park Attendant (Part-Time)	2
Total TREE REMOVAL STAFF	**12**
Total Tree Removal Crews	**2**
1 crew = 2 Tree Trimmer + 1 Tree Trimmer Crew Leader + 1 Tree Worker+ 1 park-time park attendant	

Tree Inspections	# of Staff
Arboricultural Inspectors	4
Total TREE INSPECTIONS STAFF	**4**
Total Tree inspection Crews	**4**
1 crew = (1 staff): 1 Arboricultural Inspector	

Administration & Operational Support Staff	# of Staff
Tree Supervisor II	1
Administrative Analyst II	1
Program Analyst I (Urban Forestry Ambassador)	2
Administrative Assistant II	1
Total ADMINISTRATION STAFF	**5**

Tree Care Contractors Activities

Tree Pruning (Routine Pruning)
Tree Removal (emergency tree removals, large tree removals (>28"DBH), priority removals (>25" DBH), and storm response)
Tree Planting Site Prep
Stump Removal (inventory backlog)

City of Oakland Tree Services EQUIPMENT (ALL ACTIVITIES)	
Equipment	**Quantity**
Chainsaw (Tree Pruning and Removal)	12
Aerial Lift (Bucket Truck) (55' and 75') (Tree Removal)	2
F550 with w/ Altec (AT37g) - 37' Aerial Lift (Tree Pruning)	2
Chipper (Tree Pruning and Removal)	4
Chipper Truck (Tree Pruning and Removal)	4
Knuckle Boom Truck Crane (Tree Pruning and Removal)	2
F700 Flatbed Dump Truck (Tree Removal)	2
F350 Dump Body (Pick-up Truck)	8
Stump Grinder (Tree Planting and Stump Grinding)	3
Pick-up Truck (All Activities)	14
Field Computer/Tablet (All Activities)	25
Water Tank	4
Staff Summary	
Tree Trimmer	7
Tree Trimmer Crew Leader	3
Tree Supervisor I	6
Tree Worker	11
Park Attendant (Part-Time)	15
Arboricultural Inspectors	4
Administrative Analyst II	1
Tree Supervisor II	1
Administrative Assistant II	1
Program Analyst I (Urban Forestry Ambassador)	2
Total STAFF	**51**

APPENDIX B:
Plans, Studies, and Regulations

A review of select City of Oakland plans, studies, policies, and standards was conducted to identify ways to connect Oakland's urban forest to past and current planning efforts and find opportunities for the Urban Forest Plan to help advance citywide and regional initiatives while supporting the care and growth of Oakland's public trees. A summary of the plans and connections to Oakland's trees is detailed below.

City of Oakland's Municipal Code

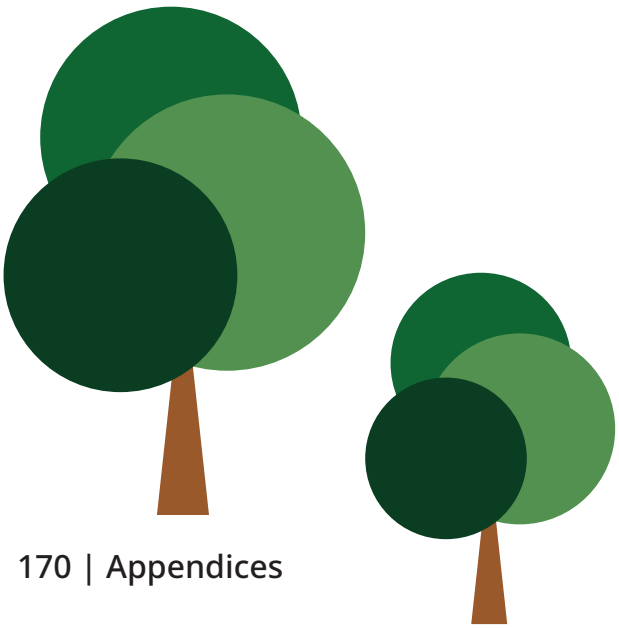
The Oakland Municipal Code has 12 Titles that relate to trees, with regulations covering various aspects of tree management. Title 1 grants the Senior Parks & Tree Division Supervisor the authority to arrest those who violate the Municipal Code. Title 2 identifies the Department of Race & Equity as being responsible for ensuring equal access to trees as part of a healthy environment. Other Titles regulate topics such as tree maintenance and pruning, tree obstruction of visibility, tree preservation during construction, and prohibiting the use of neonicotinoid insecticides.

Standard Specifications for Street Tree Planting

The Standard Specifications for Street Tree Planting serve as a reference to guarantee the proper planting of trees in parks and along streets in the City. These specifications establish standards for several aspects, such as the location of the site (including spacing, soils, and utilities), nursery selection, planting techniques, and maintenance procedures.

Oakland 2030 Equitable Climate Action Plan (2020)

Oakland's Equitable Climate Action Plan (ECAP) aims to reduce greenhouse gas emissions and build resilience for communities most affected by climate change. The plan proposes funding for proactive tree maintenance, increasing canopy cover in frontline communities, and preserving existing tree canopy. It also recommends tree planting and community solar to support carbon capture and emission reduction.



General Plan (under revision 2023)

The City of Oakland's General Plan emphasizes the importance of protecting and planting trees as a key component of physical and economic development. It includes specific actions, development proposals, and guides for planning and implementing programs. Several elements recognize the significance of trees, including expanding open space, promoting street trees, preserving oak woodlands and redwood forests, and using landscape plantings for noise mitigation and scenic enhancement. The plan also encourages green building practices and preserving green spaces.

Oakland Vegetation Management Plan (expected 2024)

Oakland has a history of wildfire that could threaten its urban forest, including street trees. The Draft Oakland Vegetation Management Plan (VMP) is a 10-year plan aimed at reducing fire hazards on City-owned land and wildfire hazards in the Oakland Hills.

City of Oakland Green Stormwater Infrastructure Plan (2019)

The Green Stormwater Infrastructure Plan aims to reduce stormwater runoff and improve human and watershed health, wildlife habitat, and community aesthetics. The plan recommends using green infrastructure and trees to support these systems, which can promote tree health and improve stormwater management, benefiting both human and environmental health.

West Oakland Reforestation Plan (2013)

Tree advocacy groups, the City of Oakland, and the Port of Oakland collaborated to increase tree canopy cover and reduce greenhouse gas emissions in West Oakland through tree planting, maintenance, and community engagement efforts. The West Oakland Reforestation Plan includes recommendations to diversify the urban forest by expanding the list of street trees, implementing planting plans for major streets in West Oakland and the MacArthur-Hoover neighborhood, identifying suitable locations for additional tree planting, and quantifying the costs of planting and maintenance versus environmental benefits over time.

City of Oakland, California, Citywide Sidewalk Condition and ADA Survey (2007)

The Sidewalk Condition and ADA Survey inventoried sidewalks and associated infrastructure citywide to estimate the cost of repairs. The survey revealed that nearly $80 million is required for infrastructure repairs, with about 25% of repairs attributed to tree conflicts, including ADA non-compliance and sidewalk damage.

East Oakland Neighborhood Initiative Community Plan (EONI) (2019)

The East Oakland Neighborhood Initiative (EONI) Community Plan is a comprehensive plan created to guide the physical, social, and economic development of the East Oakland neighborhood. The plan was created through a collaborative effort involving community residents, businesses, and government agencies. The plan includes a vision statement, goals, and action items for addressing issues such as public safety, housing, economic development, and education. The plan also includes strategies for improving the physical environment, such as increasing access to parks and open spaces, promoting green infrastructure, and improving transportation.

Owning Our Air: The West Oakland Community Action Plan (2019)

The West Oakland Community Action Plan (WOCAP) strives to enhance the air quality and overall health conditions in West Oakland, which have a history of being inadequate. To achieve this goal, the WOCAP recommends that the City of Oakland develop an urban canopy and vegetation plan that identifies areas where the urban forest can be expanded, preserved, and maintained.

2017 Pedestrian Plan, Oakland Walks! (2017)

The Pedestrian Plan outlines objectives and recommendations to enhance the pedestrian experience in Oakland. To foster walkable environments, the plan proposes the incorporation of trees along pedestrian and bike paths to create barriers that mitigate the effects of surrounding urban features such as traffic, noise, and air pollution, as well as to enhance visual appeal.

City of Oakland Bike Master Plan (2007)

The 2007 Bike Plan is a key part of Oakland's commitment to become a more bike-friendly community by building a comprehensive bikeway network and promoting safety for bicyclists. To ensure that new paved paths are environmentally responsible, the plan recommends avoiding disruption to sensitive habitats and the trees that rely on them. Additionally, the plan recognizes the important role of trees in promoting healthier air quality and suggests planting trees along bike paths to enhance the biking experience for all.

Sustainable Oakland Report (2016-17)

The 2016-17 Sustainable Oakland Report showcases Oakland's progress towards sustainability and highlights volunteer programs that have contributed to tree plantings in the community. One of the success stories featured in the report is the Brookfield Greening and Growing Project, which involved the removal of asphalt in the playground to plant trees, native shrubs, and a fruit orchard at Brookfield Village Elementary School.

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