PORTLAND
PARKS & RECREATION℠
Healthy Parks, Healthy Portland

Portland Urban Forest Plan

Draft

February 2025

Acknowledgments

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Chapter 1: **Background**

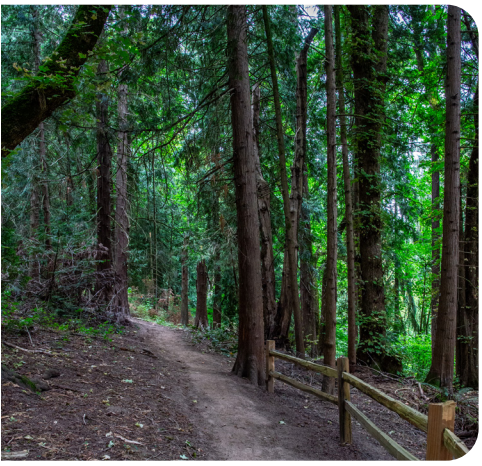
- What is the urban forest?
- A Legacy of Stewardship and Growth
- Collective Responsibility
- Plan Purpose
- Services and Benefits of Trees

What is the urban forest?

Portland's urban forest includes the trees and vegetation growing throughout the city in a diverse range of environments and ecosystems.

The urban forest includes trees along busy streets, highways, neighborhood streets, and commercial areas. It includes trees in parks, natural areas, private yards, and on business, school, and hospital campuses. Like the city's water, sewer, and transportation systems, the urban forest is essential infrastructure that improves the everyday lives of Portland residents and visitors.

The urban forest includes all trees in Portland. Trees lining streets, trees in parks, and trees growing in yards are all part of the urban forest.






A Legacy of Stewardship and Growth

Before western settlement, Portland was covered by a combination of large Douglas-fir *(Pseudotsuga menziesii)* and western hemlock (*Tsuga heterophylla*) forests and an open landscape dominated by Oregon white oak (*Quercus garryana*). Long before White settlers arrived, the region's trees were managed by Indigenous people, including the Clackamas, Kathlamet, Multnomah, Tualatin, and other tribes who made their homes along the Columbia and Willamette Rivers.[1] The city was given its nickname of "Stumptown" in the mid-19th century when settlers cleared the land of trees, leaving behind muddy streets and stumps as they built roads and houses. However, this nickname doesn't reflect the City's ongoing commitment to tree preservation and planting, which is crucial to its cultural identity and has resulted in the vibrant urban forest Portland is known for today.[2]

As early as 1855, at the height of Portland's Stumptown days, the City established its first tree code to promote and care for trees planted in public rights-of-way. Over 100 years later, Portland's first Urban Forest Management Plan was completed (1995) to more proactively manage the protection, maintenance, and restoration of the city's trees.

The Portland Urban Forest Plan (the Plan) builds on previous plans, provides direction for the preservation, expansion, and care of Portland's trees, and makes recommendations to sustain and grow the city's urban forest over time. This work is especially important now, as Portlanders see the impacts of climate change and continue to experience a disparity in access to trees and shade.

Photo: Oregon Historical Society, 52657

Collective Responsibility

Protecting and caring for the urban forest is a responsibility we all share. The Portland community has always played an important role in protecting and caring for the urban forest. The City acknowledges and appreciates the role our community plays in advancing this valuable work.

Today, community-based organizations and volunteers help support tree planting, tree care, and education throughout the city. These community tree stewards are critical partners in caring for Portland's urban forest.

The Portland community is a critical partner in preserving and caring for Portland's urban forest.

Plan Purpose

All Portlanders have the right to enjoy the significant health, social, economic, and environmental benefits of living near mature, healthy trees. Portland's urban forest is subject to both local and global challenges—including the climate crisis, pests and diseases, extreme weather, and increasing demands for urban space—all of which may contribute to a decline in Portland's tree canopy after decades of growth. Without coordinated support, investment, and planning, trees become an afterthought, and their benefits are not fully realized.

Trees are a generational investment. The Plan is our guide for protecting, preserving, restoring, and expanding Portland's urban forest into the future. This updated Plan reflects community priorities and supports Portland's efforts to respond to the climate crisis and improve access to trees and nature.

We must recognize the value that trees bring to our community as critical infrastructure. We will achieve the vision and goals in the Plan and create a resilient community by prioritizing trees through funding, urban planning and design, and community stewardship. The components of the Plan will help us work together to build a more equitable and resilient urban forest.

Just like the pipes that deliver water to your faucet or the utility lines that power your home, trees provide essential social, health, economic, and environmental benefits that are crucial to our daily lives.

Services and Benefits of Trees

Trees are a living part of Portland's urban infrastructure. Healthy, mature trees provide numerous services that improve our health, environment, economy, and social fabric in a variety of ways.

Many of the benefits and services trees provide have been researched and documented. This research shows that trees can help achieve City goals related to climate change, transportation, safety, environmental quality, livability, health, economic growth, equity, and anti-racism. Other benefits are less easily measured, but no less valuable. The urban forest provides beauty that inspires us, recreation that refreshes us, and connection with nature that lifts our spirits.

Tree canopy is the area covered by tree branches, leaves, and trunks. An uneven distribution of tree canopy means that tree services and benefits are also not evenly distributed and may not be enjoyed by all Portlanders. Addressing this imbalance is crucial for ensuring that all Portlanders, regardless of where they live, have equal access to the advantages that trees offer.

Climate Resilience

The urban forest contributes to climate resilience in several ways, including cooling and carbon sequestration services. As we experience warming temperatures and increases in the frequency or intensity of extreme heat events, trees provide the essential service of shade and cooling. In urban areas, the urban heat island effect occurs when areas dominated by pavement and concrete are significantly warmer than outlying areas.[3] Trees and vegetation help reduce the urban heat island effect and cool urban areas by lowering surface and air temperatures through shading buildings and pavements, and by releasing cooling water vapors into the air—a process known as evapotranspiration.[4]

Another climate benefit of trees is carbon sequestration. Carbon sequestration is the process where carbon dioxide, a key contributor to global warming, is stored or captured, preventing it from entering Earth's atmosphere. Trees sequester carbon by removing it from the atmosphere during photosynthesis and storing it in forms that cannot be immediately released such as in their wood, leaves, and roots.[5]

Portland's urban forest is valued at $9.5 billion. The total value of carbon stored within the trees of the urban forest is $312 million.[6,7]

How Trees Serve Our Community

Trees clean our air

Trees purify our air by removing pollutants like carbon monoxide, ozone, and particulate matter. These harmful substances can lead to stroke, heart disease, and respiratory issues.

Trees provide habitat

Trees provide food and shelter for animals and pollinators. Over 100 species of migratory birds and other important wildlife rely on Portland's urban forest.

Trees keep us cool

Trees cool people and urban areas by shading buildings and pavement, lowering surface and air temperatures, and releasing cooling water vapors.

Trees store carbon

Trees take carbon dioxide from the air and store carbon in their wood, leaves, and roots. This process can help reduce climate change and cool our planet.

Trees improve our health

Trees improve our physical and mental health, and neighborhood aesthetics. Trees promote active living and can make our streets and outdoor spaces more inviting and safe.

Trees clean our water and reduce flooding

Trees and soil help capture, filter, and slow down water and pollutants that flow into our streets and waterways after it rains. These services improve our water quality and reduce flooding.

Not All Trees Provide the Same Services

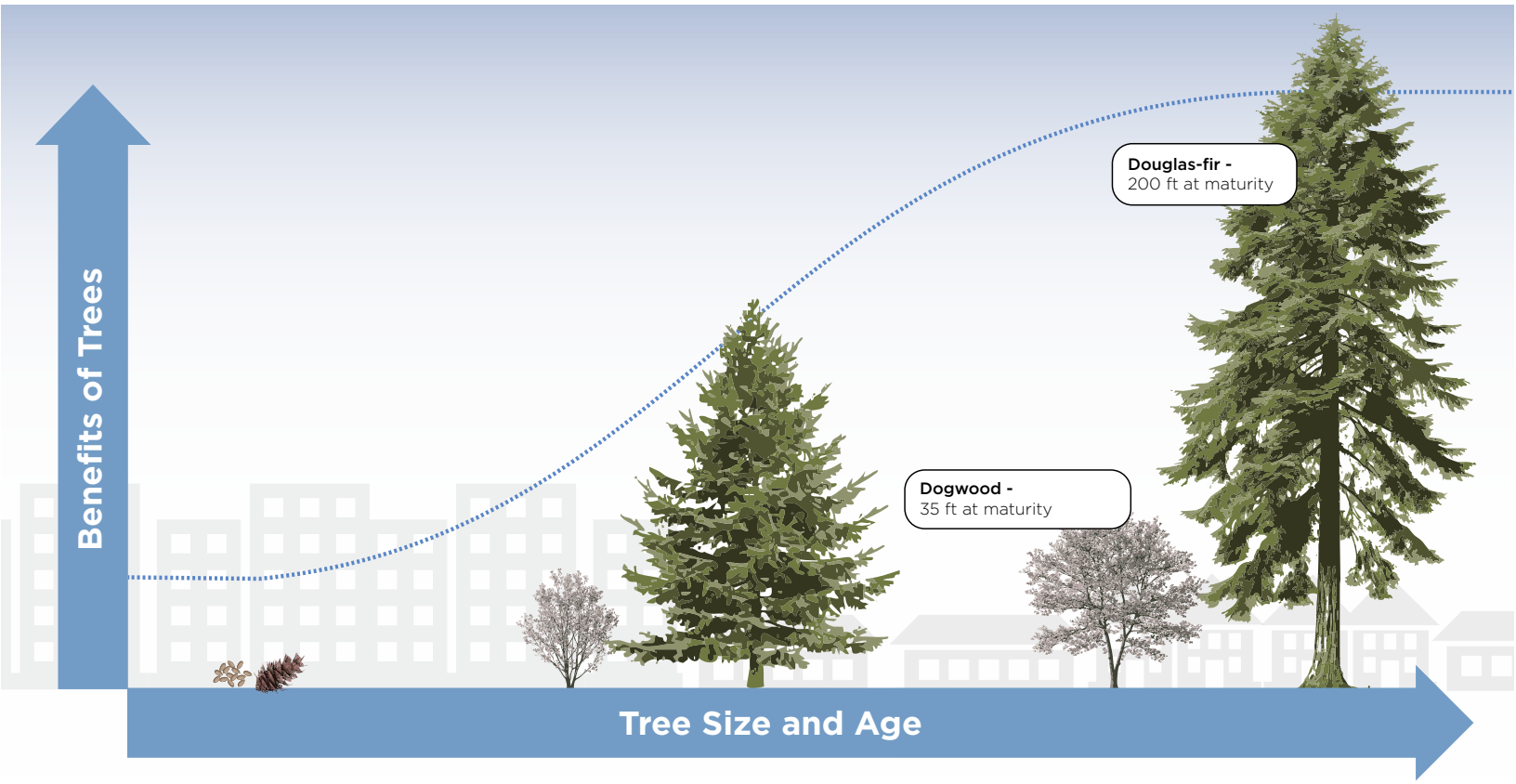
Large-form trees with the capacity to grow tall and wide provide more benefits and services than medium- and small-form trees.

Evergreen conifers native to the Pacific Northwest are particularly valuable. They provide longer periods of stormwater interception and pollution absorption than deciduous trees that lose their leaves each fall. They also increase urban forest resilience since they can be more resistant to some pests and extreme weather events than deciduous trees.[8] Native trees, particularly those that are climate resilient, provide important services, including food sources for native foraging bird species.[9] They also bring a unique sense of place that make many people feel at home in the Pacific Northwest.

Understanding the different values trees provide is important for maximizing their benefits and services when planning and managing the urban forest.

A Generational Investment

It takes many years for trees to grow and reach their full potential, which means they need time to develop deep roots, expand their canopy, and provide the full range of benefits they are capable of offering. Preserving existing mature trees is essential for maintaining these benefits over the long term. Urban forest management should focus not only on planting new trees but also on protecting and nurturing the trees that are already in place. Without proper care and preservation, these trees may be lost before they can fully mature, limiting the community's ability to experience the environmental, health, social, and economic services trees offer.



Large-form trees like Douglas-fir provide more benefits throughout their lifespan than small-form trees, like dogwood.

Chapter 2:
Plan Process

- How was the Plan created?

How was the Plan created?

The Plan was developed in three phases and finished in spring 2025. A key goal was to make sure the Plan reflects community needs. A variety of strategies were used to engage a broad range of Portlanders, including both community and technical experts. This chapter highlights the key engagement methods, audiences, and the priorities that directly informed the Plan.

Creating an Equitable, Community-Responsive Plan

The City understands and acknowledges that the legacy of gentrification, systemic racism, class discrimination, and other forms of oppression have negatively impacted many Portlanders. The Plan process aimed to align with the City of Portland's Public Involvement Principles, as well as Portland Parks & Recreation's commitment to equity and anti-racism, guided by its equity and anti-racism lens.

Photo: Bob Kerns

Project Timeline

September 2023	Fall 2023 - Spring 2024	Spring - Fall 2024	Fall 2024 - Spring 2025
Project Kickoff	**Phase 1: Listen and Learn**	**Phase 2: Change the Future**	**Phase 3: Develop Roadmap**
	Assess current conditions	Develop vision, goals, and recommendations	Document the process

Who helped create the Plan?

Advisory Committees

The Plan was guided by three regularly convened advisory bodies: the Urban Forestry Commission (UFC), Technical Advisory Committee (TAC), and Community Advisory Committee (CAC). The UFC is comprised of volunteer community members who advise City staff and leadership on tree-related regulations, budget, and planning, including this Plan. The TAC included representation from agencies who manage and have authority to make decisions that impact Portland's urban forest. It included representation from eight City bureaus, Multnomah County, Metro, Trimet, the Oregon Department of Forestry, and the Oregon Department of Transportation. The Community Advisory Committee included community members from different parts of the city and all walks of life. It included members of centered communities and representatives from nonprofit and community-based organizations. All three advisory bodies provided oversight and guidance throughout the project.

- **TAC** - 20 members, 6 meetings
- **CAC** - 18 members, 6 meetings
- **UFC** - 11 members, 8 meetings

Centered Communities

The Plan process supports the Portland Parks & Recreation's commitment to equity and anti-racism by focusing engagement resources on communities that have been harmed by racism and unequal treatment in Portland, including Black people, Indigenous people, people of color, immigrants and refugees, LGBTQ2SIA+ people, people with disabilities, youth, older adults, and people earning low incomes.

At the beginning of the planning process, Portland Parks & Recreation staff participated in a mapping and power analysis that helped to identify and prioritize key audiences/communities for engagement. This was an important first step in the project and creation of the engagement strategy.

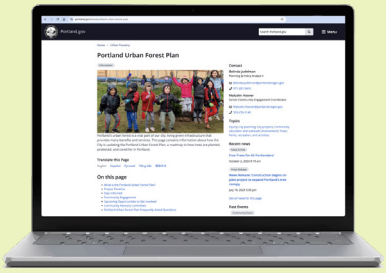
Community Outreach Highlights

Engagement activities were developed to encourage participation from as many people as possible, particularly underserved community members. These activities provided a way for Portlanders with diverse backgrounds and experiences to provide feedback in different ways. The level of response shows that Portlanders deeply care about trees and are eager to continue to be a part of preserving and growing the urban forest.

Project Website and Email List

A project webpage served as a hub for project information, updates, and engagement. It was periodically updated with content in multiple languages. It also provided project manager contact information and a way for people to sign up for the project email list. Quarterly project updates and notifications about opportunities to provide feedback were shared with the project email list.

1,341
page clicks



Community Events, Meetings, and Discussions

City staff presented at numerous community meetings and did outreach while tabling at public events between March 2024 and February 2025 to connect with stakeholders and underserved community members. Some of these events included Portland Arbor Day at Glenfair Park, SOLVE volunteer days, Shade Equity Coalition Socials, the Central Eastside Industrial Council, and the East Portland Community Center Fair. Discussions were also held with business associations and labor representatives.

Staff engaged with the City's advisory bodies to inform elected and appointed officials. These meetings provided an opportunity for staff to engage with existing groups that already meet about topics impacting urban forest management. Example bodies included the Planning Commission, Pedestrian Advisory Committee, Multnomah Youth Commission, and the Freight Advisory Committee.

30+
community events, meetings, and discussions

7+
advisory commission meetings

Centered Communities Focus Groups

Ten focus groups for centered communities took place between March and September 2024. Four of the focus groups were held in language for Spanish, Russian, Vietnamese, and Chinese (Mandarin) speaking communities. Focus group participants discussed challenges and barriers to preserving, planting, and caring for trees, their priorities for the vision and goals, and the City's management of the urban forest.

77
centered community members reached through focus groups including Black people, Indigenous people, people of color, immigrants and refugees, LGBTQ2SIA+ people, people with disabilities, youth, older adults, and people earning low incomes.

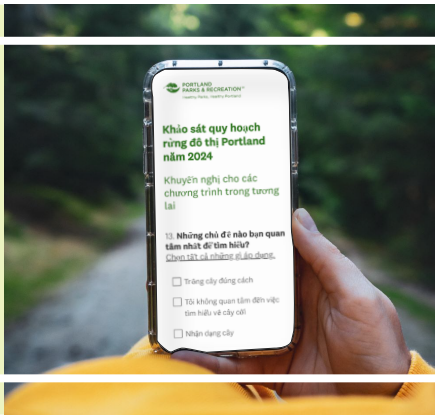
4
in-language focus groups

Online Survey

A citywide, online survey developed in five languages asked Portland residents questions about their priorities for how to protect, preserve, and expand the urban forest. The survey was composed mostly of multiple-choice questions; it received over 1,700 responses from the community while it was open for six weeks. Seventy-seven percent (77%) of respondents identified as part of a centered community.

1,787
survey responses

5
languages



Open House Events

The two open house events provided residents another opportunity to learn about the project and share feedback on key elements of the Plan, such as the vision, goals, and recommendations. The event design prioritized direct communication with the project team. Childcare and light refreshments were provided. The open house stations were family friendly and interactive in multiple languages through the assistance of professional, in-person interpreters.

80+
open house participants

Photo: Bob Kerns

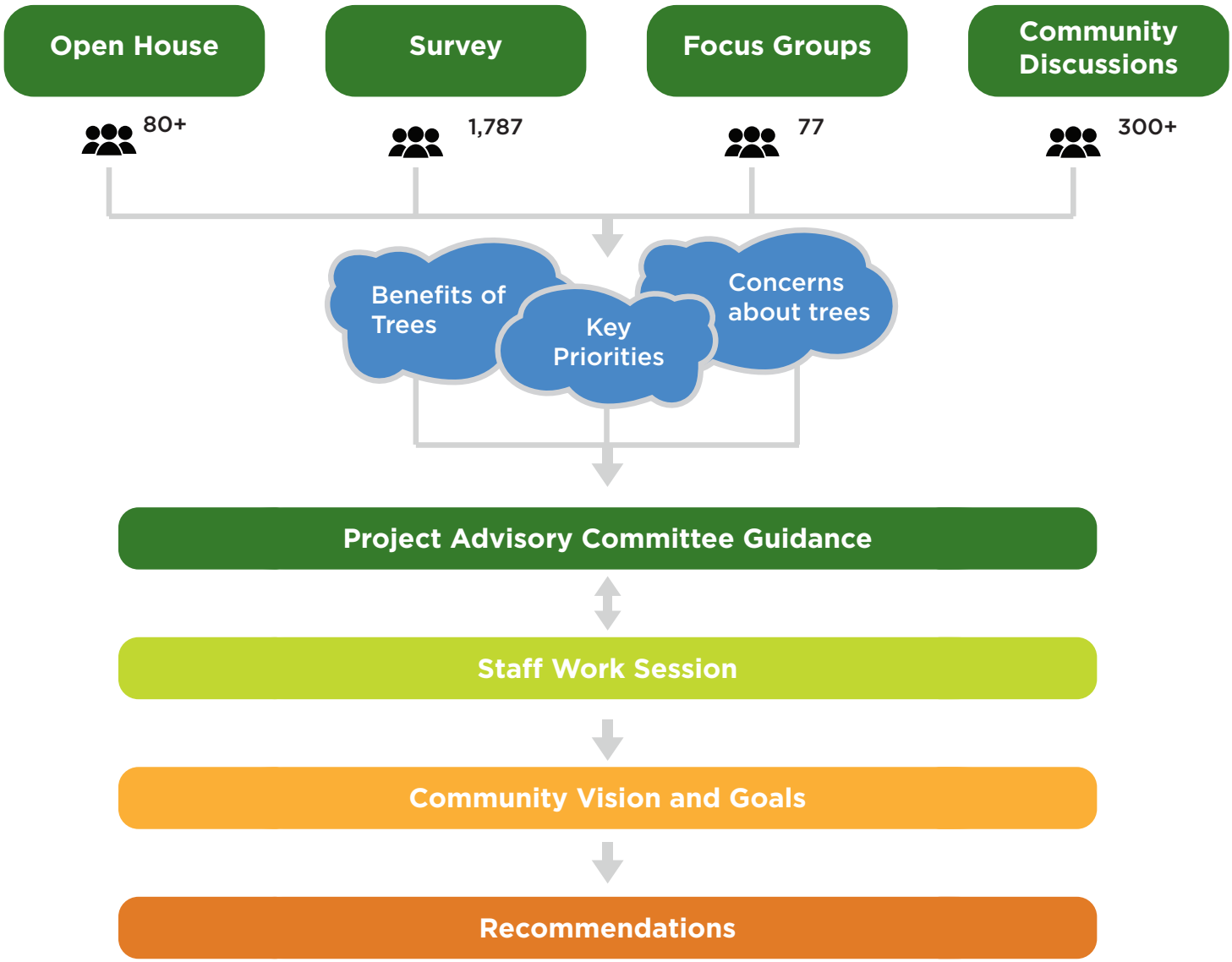
A Public Review Period for the Draft Plan

A public review period for the draft Plan was used to let the public provide feedback on all aspects of the Plan before it was finalized.

Vision, Goals, and Recommendations

The vision, goals, and recommendations of the Plan were developed based on feedback gathered through engagement activities.

The diagram below illustrates the multiple audiences and inputs that informed the vision, goals, and recommendations.



Community Priorities for Trees and Tree Care

Community priorities for trees and tree care were shared through the citywide survey, open house, focus groups, community discussions, and conversations with the advisory committees. These priorities included guidance on both the process of creating the vision, goals, recommendations, and implementation strategy, and the content within them.

Equity should be included explicitly, not just alluded to.

Strengthen regulations to protect trees, especially large trees, including during development.

The benefits of trees are important to call out—these benefits provide motivation for protecting and enhancing the urban forest.

Include climate resilience in the vision, and how trees can help us meet climate goals.

Focus tree planting along our streets and near affordable housing, businesses, schools, parks, and industrial areas.

Manage invasive species in natural areas and across the city.

Collect more information to understand how the urban forest is doing and how we should improve the way we care for it.

Build partnerships and trust with community organizations.

Include youth and older adults in tree stewardship, a multigenerational connection to trees.

Be transparent and accountable—show the public progress toward reaching goals.

It should be affordable for everyone to have and care for trees.

Use data to guide where we plant trees—to maximize benefits to people, climate, and the environment.

Some communities, including older adults and people with disabilities, need more or specialized support caring for trees.

Community partnerships are a fundamental part of how we manage the urban forest. Empower and support community to do this work.

Value and protect large, mature trees for all the benefits they provide.

The City should focus on neighborhoods with fewer trees and resources first.

Make more space for planting trees around the city.

Many Portlanders need financial help with planting, maintenance, and removal of trees. Without this support, trees can be a burden.

Planting more trees is important, but we also need to maintain and protect the trees we already have.

City bureaus and utilities should coordinate and communicate about how they manage trees.

The City needs to have plans and policies in place to protect trees and increase tree canopy.

Community education and training about trees and tree care are critical to achieving the goals.

Chapter 3:
Portland's Urban Forest Today

- Assessing Portland's Urban Forest
- Portland's Urban Forest by the Numbers
- How is the urban forest distributed across the city?
- Urban Forest Composition
- Management of the Urban Forest

Assessing Portland's Urban Forest

This chapter provides a snapshot of the current conditions of Portland's Urban Forest. Understanding how the urban forest is doing today provides the baseline information needed to effectively plan for, manage, and maintain urban trees by taking into account factors like how our trees are distributed across the city, the composition of our urban forest, how canopy has changed, and how effectively we are managing our trees. This helps us identify the best strategies for equitably preserving, planting, and maintaining trees to maximize their benefits and ensure the long-term health and sustainability of both our community and urban forest.

Portland's Urban Forest by the Numbers

32%

of Portland's land area is covered by tree canopy. 46% of Portland's neighborhoods have at least 25% tree canopy cover.[10]

50%

of tree canopy is on private property.[10]

Only 13%

of trees are larger than 20 inches diameter-at-breast-height, and just 2% are over 35 inches.[6]

4.2 million

trees are in Portland's urban forest. Over 330,000 trees line our streets.[6,11]

$9.5 billion

The value of environmental and public health services we receive from the urban forest.[6]

Each year[6]

44,895 tons

of carbon sequestered

615 tons

of air pollution removed

1,327

fewer cases of acute respiratory symptoms

120 million

cubic feet of captured stormwater

$4.5 million

saved in reduced building energy use[12]

How is the urban forest distributed across the city?

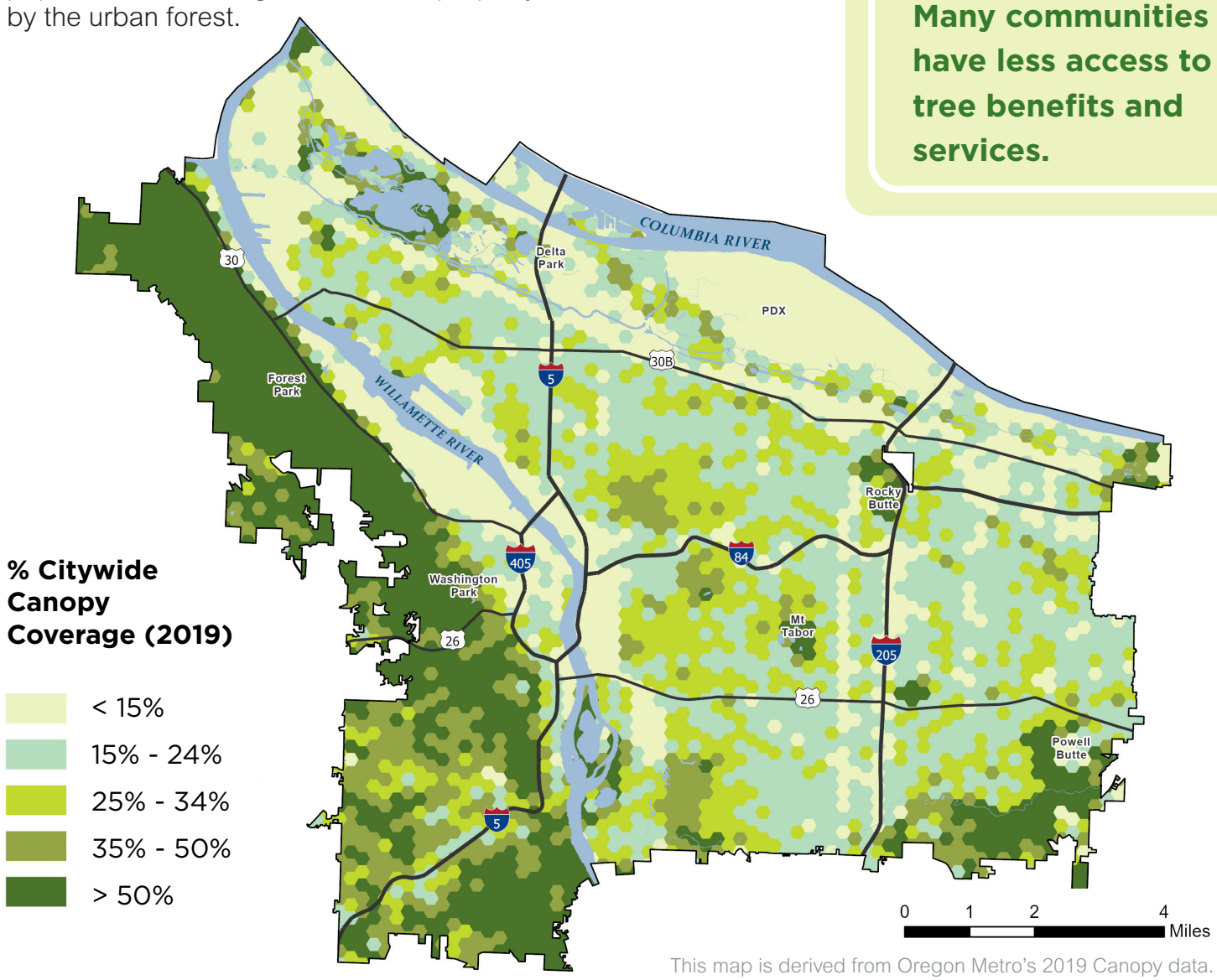
Tree canopy cover % =

(Tree Canopy Area / Total Land Area) x 100

Tree canopy is measured from an aerial view, made up of the leaves and branches covering the ground. By studying how much tree canopy exists and where it's located in Portland, we can identify which areas and populations are being served by the urban forest.

Approximately 32% of the city's land area is covered by trees.* Citywide, 35% of Portland's tree canopy is located on public land, 15% along streets (right-of-way), and 50% is on private property.

Portland's tree canopy is not distributed evenly. Many communities have less access to tree benefits and services.



This map is derived from Oregon Metro's 2019 Canopy data.

* Beginning in 2025, the City chose to measure citywide canopy cover based on land area, excluding water. This change streamlines analysis processes, allows for a more accurate representation of existing and possible tree canopy, and allows for comparison of canopy between cities.

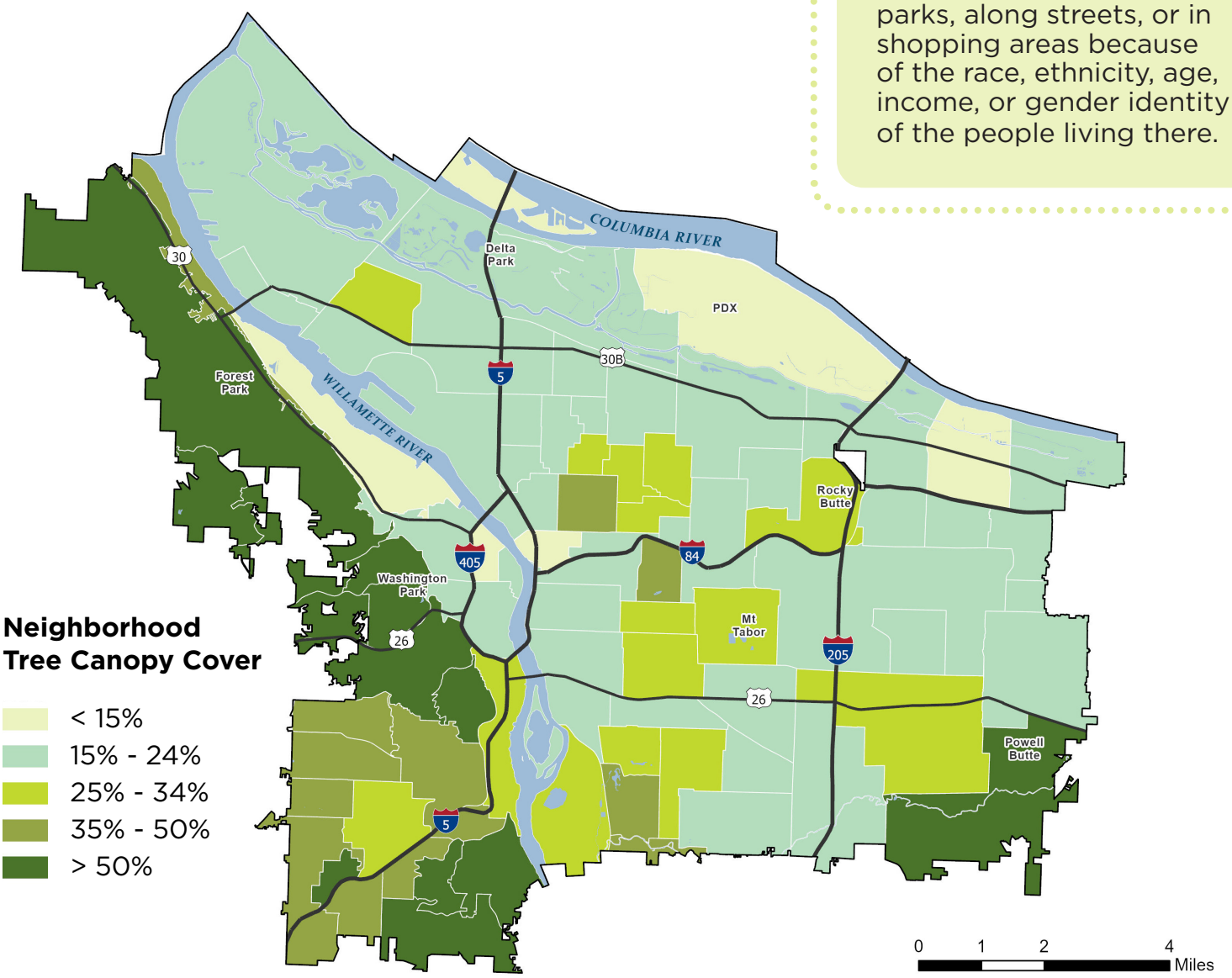
Neighborhood

Tree canopy varies between neighborhoods. On average, Portland's neighborhoods have 30% tree canopy cover, but it ranges from 4% in the Northwest Industrial neighborhood to 91% in the Forest Park neighborhood. Portland's median neighborhood tree canopy cover is 24%.

This vastly uneven distribution means Portlanders don't have the same access to urban forest benefits and services. The amount of benefits and services people experience vary depending on where they live, work, or play.

Equitable Tree Canopy

A significant disparity in tree canopy cover across urban neighborhoods leads to differences in temperatures and health outcomes. Tree equity is about ensuring there is fair distribution of healthy trees throughout all neighborhoods and communities. One neighborhood should not have more healthy trees in parks, along streets, or in shopping areas because of the race, ethnicity, age, income, or gender identity of the people living there.



This map is derived from Oregon Metro's 2019 Canopy data.

Land Use and Zoning

Land use is regulated by the City and identifies residential areas where people live, commercial areas where people work and shop, and industrial areas where there is manufacturing. Open space zones are for parks and natural areas. Land use greatly impacts tree canopy by influencing the types and characteristics of development. Open space zones allow the least amount of development and have the highest amount of tree canopy coverage citywide, at 64%. Commercial and Industrial zones allow larger buildings and parking lots, and have 13% and 8% tree canopy cover, respectively. Residential is the largest zoning category in the city and has 33% tree canopy coverage.[10]

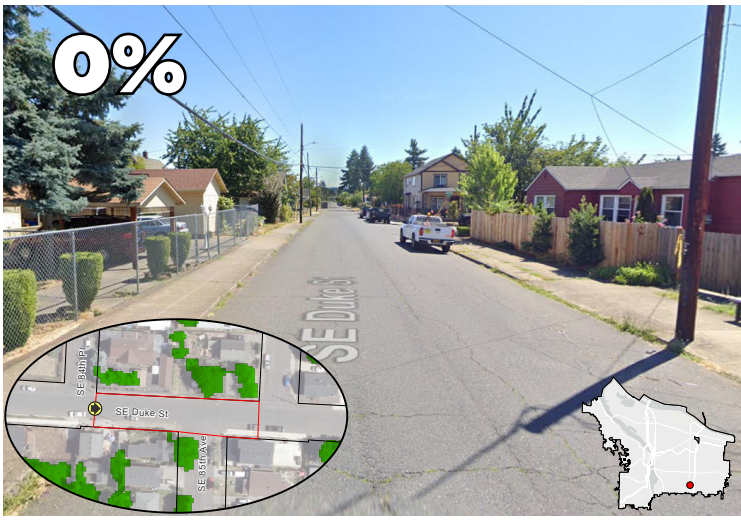
Land use has a big impact on tree canopy because it affects how the built environment is designed and developed.

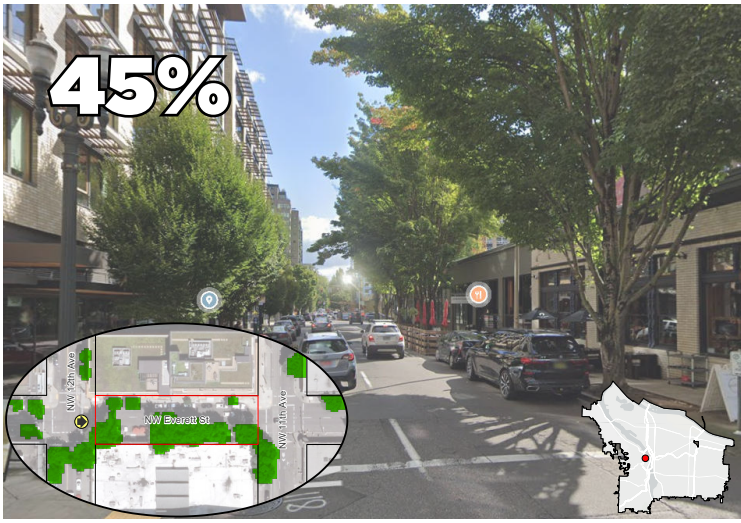
Streets

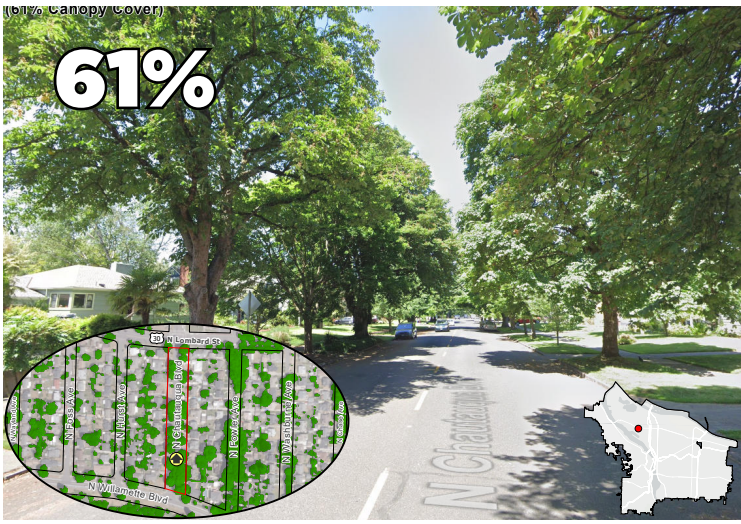
Streets and highways make up 20% of Portland. Tree-lined streets improve the comfort, beauty, and sustainability of our streets and neighborhoods. Shade keeps us cool while we travel along our streets. Street trees can also improve health and safety.

Tree canopy covers 24% of our streets citywide. Tree canopy cover varies significantly across Portland's streets, ranging from 0% along some blocks to nearly 100% along others.[10] In general, local residential streets have more trees than streets in commercial areas. Local streets in East Portland have much lower canopy cover than local streets on Portland's west side and inner neighborhoods.

Canopy Cover Over Our Streets







The images above show the percentage of tree canopy covering different streets in Portland. The percentages reflect the area of tree canopy within the right-of-way, as shown by the red box.

Canopy Change Over Time

How Do We Lose and Gain Canopy?

Tree canopy losses can happen quickly after an event, like a storm or with the removal of a significant tree through intentional tree removal. Losses can also happen slowly as trees decline and die due to pests, diseases, or weather events like heat waves or extended drought.

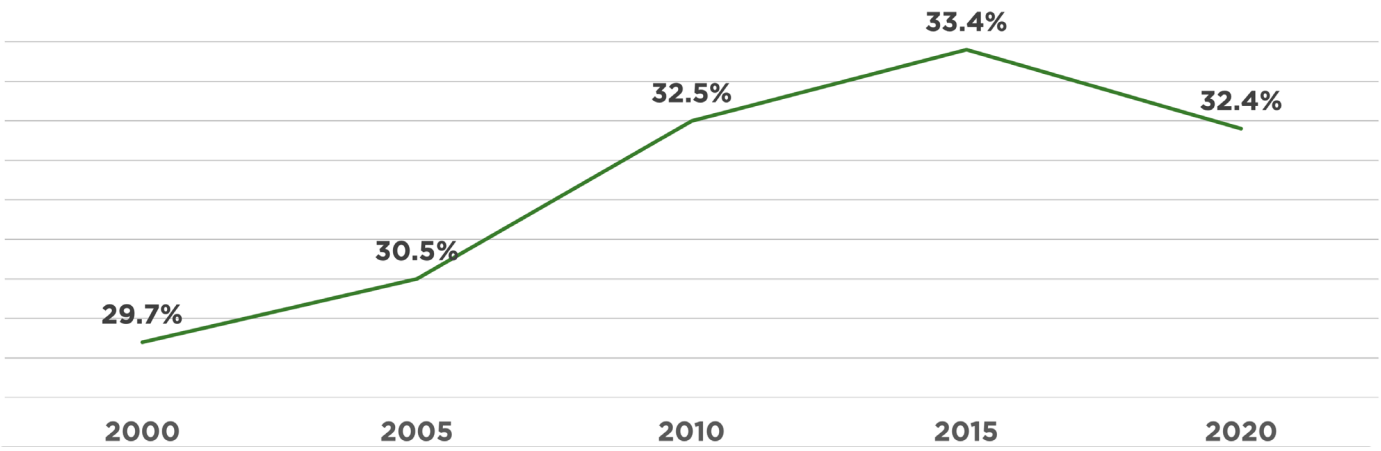
Tree canopy gains occur slowly over time. Most canopy gains come from existing trees growing larger. Preserving spaces for natural seeding and intentional tree planting efforts are also critical to increasing canopy cover, but it takes time for young trees to mature. When large, mature trees are removed, it can take decades for new trees to reach a size equivalent to the trees they replace. A two-pronged approach of protecting and preserving healthy, mature trees and planting and caring for new trees can help us maintain and increase tree canopy. Increasing tree canopy requires long-term planning and design to preserve existing trees, provide adequate space for new trees, and accommodate population growth.

Trends

An assessment of tree canopy using aerial photography revealed that historically, tree canopy in Portland increased over time. From 2000 to 2015, tree canopy cover increased from 30% to 33%. However, from 2015 to 2020, canopy cover declined slightly, falling to 32%.

Analyses of aerial photography and Metro's canopy data show canopy losses did not occur evenly throughout Portland. Overall, land uses with the most tree canopy, like residential and open space areas, experienced the most pronounced losses.

Portland's Tree Canopy Cover[13]

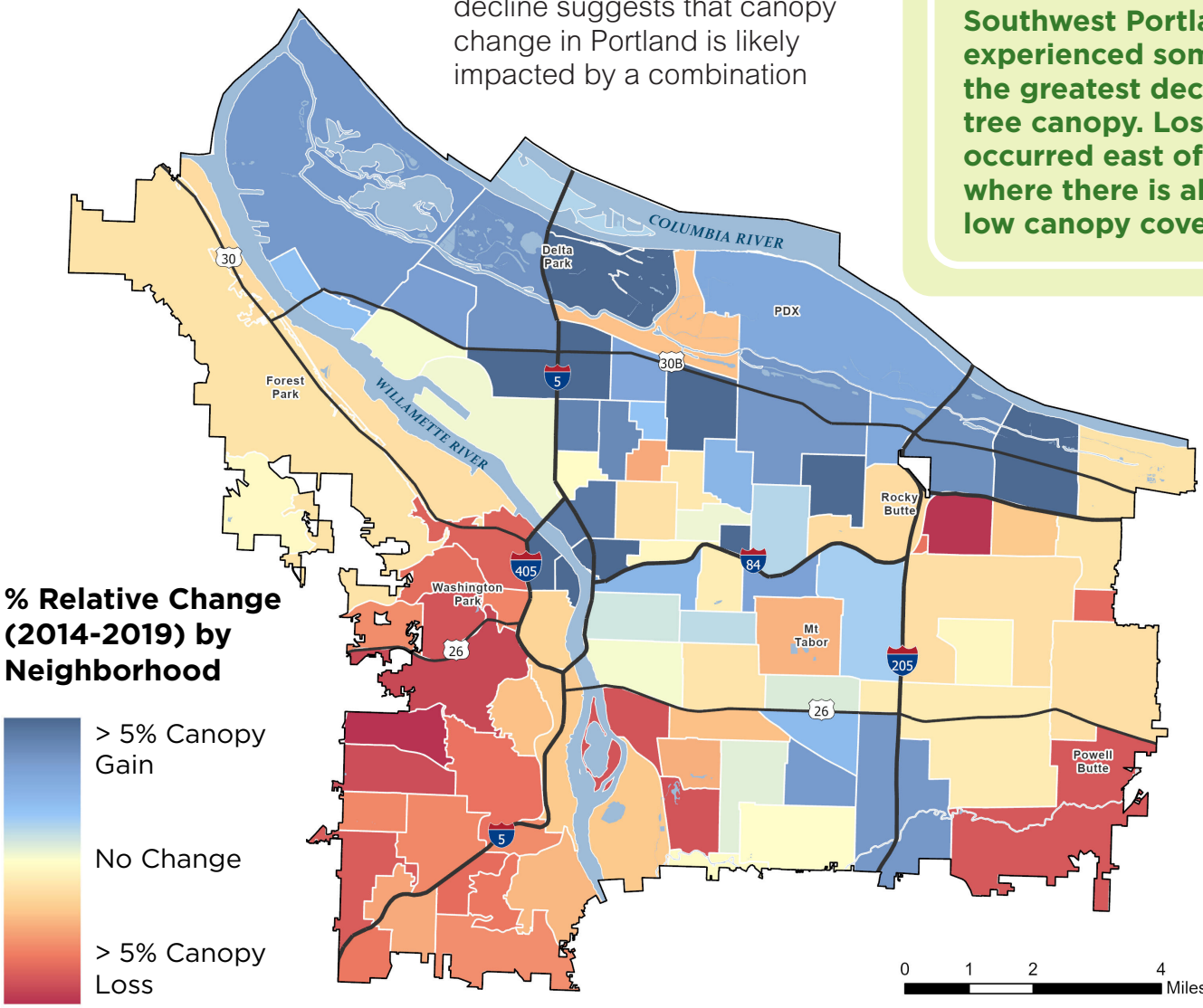


The map of canopy cover change by neighborhood suggests that some parts of the city with high canopy cover, like Powell Butte and Southwest Portland, experienced some of the greatest declines in tree canopy. Lower canopy neighborhoods, such as Glenfair and Parkrose Heights, also experienced declines. Several neighborhoods in North and Northeast Portland experienced tree canopy gains.

To better understand the causes of canopy change, we analyzed 19,244 tree removal permits from 2015 to 2019. The data indicates a comparable amount of canopy loss occurred on properties with development and no associated development. This suggests that changes to both development and non-development sections of the tree code could improve canopy preservation outcomes. Analysis of the causes of recent tree canopy decline suggests that canopy change in Portland is likely impacted by a combination of climate change, historic tree planting efforts, development, and regulations.

The map below shows change in tree canopy cover by neighborhood from 2014 to 2019. Relative change refers to the change in tree canopy between 2014 and 2019, measured using 2014 as the baseline year.

Some parts of the city with high canopy cover, like Powell Butte and Southwest Portland, experienced some of the greatest declines in tree canopy. Losses also occurred east of I-205 where there is already low canopy cover.



% Relative Change (2014-2019) by Neighborhood

> 5% Canopy Gain

No Change

> 5% Canopy Loss

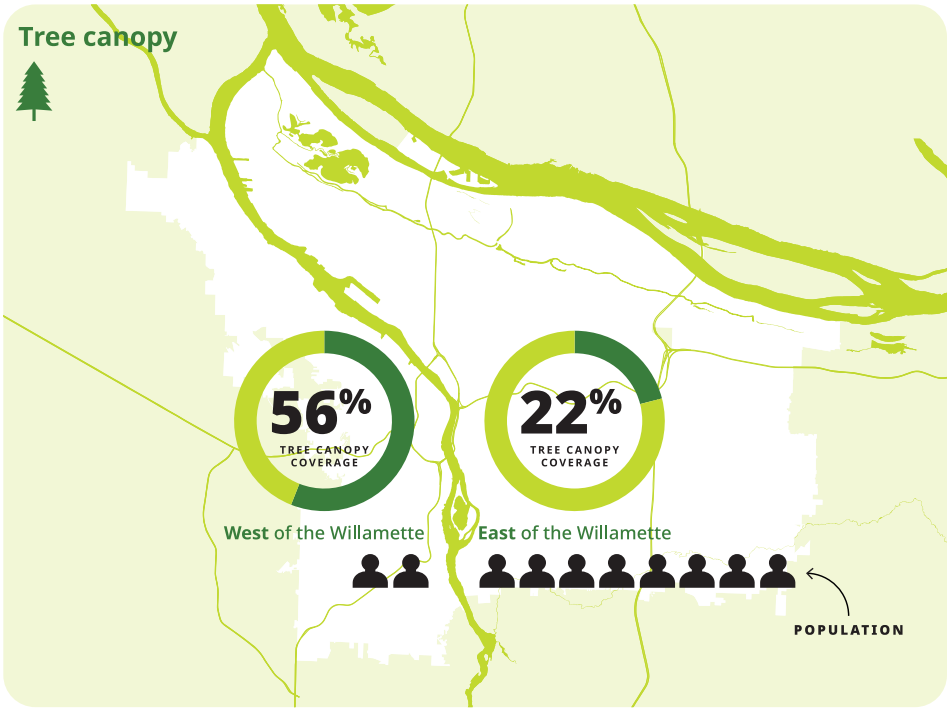
This map is derived from Oregon Metro's 2014 and 2019 Canopy data.

An Imbalance of Canopy Cover

In many cities across the United States, including Portland, tree canopy is not evenly distributed. Some neighborhoods have fewer trees or trees in worse condition than other neighborhoods.[14]

In Portland, affluent and west side neighborhoods have significantly more tree canopy than east side and lower income neighborhoods. West of the Willamette River tree canopy is 56% while east of the Willamette River, where 80% of Portlanders live, tree canopy is only 22%. As a result, communities living in these neighborhoods, including people of color, immigrants, and refugees and people earning low incomes, receive fewer of the benefits and services trees provide. They also may need to spend a greater percentage of their income on tree maintenance than people in wealthier communities.[15]

Lower-canopy neighborhoods experience higher exposure to poor environmental conditions such as air pollution and urban heat. These neighborhoods are in greater need of trees and vegetation and services supporting tree preservation, planting, and care.[16]



Causes of Uneven Tree Canopy Distribution

The imbalance of tree canopy in Portland can be traced to several factors, including variation in topography, natural features, land use and development, and processes of discrimination and disinvestment in certain neighborhoods. For example, parks and natural areas have policies and regulations that protect them from widespread development. These uses also have space to support more tree canopy. Industrial and commercial uses have historically been designed with limited space for tree canopy.

East Portland's low tree canopy is partially a result of its recent agricultural history.

Racially discriminatory policies like redlining have impacted the distribution of trees and parks in cities across the United States, including Portland. Redlining refers to the systematic disinvestment in neighborhoods of color by withholding financial services to those residing in neighborhoods designated as "relatively hazardous" by the Home Owners' Loan Corporation.[17]

Tree Cover and Heat Vulnerability

There is a clear link between lower levels of tree canopy and higher summer temperatures. In general, communities east of the Willamette River, in the city center, and industrial areas west of the Willamette River with the lowest amounts of tree canopy have the highest summer temperatures.[18]

Some of this is a result of the urban heat island effect. The Portland metro region has one of the most severe urban heat islands in the nation.[19] It also has among the highest disparities in summer heat extremes between wealthy neighborhoods with more trees, and low-income, historically underserved neighborhoods (like East Portland and outer Southeast) with more pavement and fewer trees.[15]

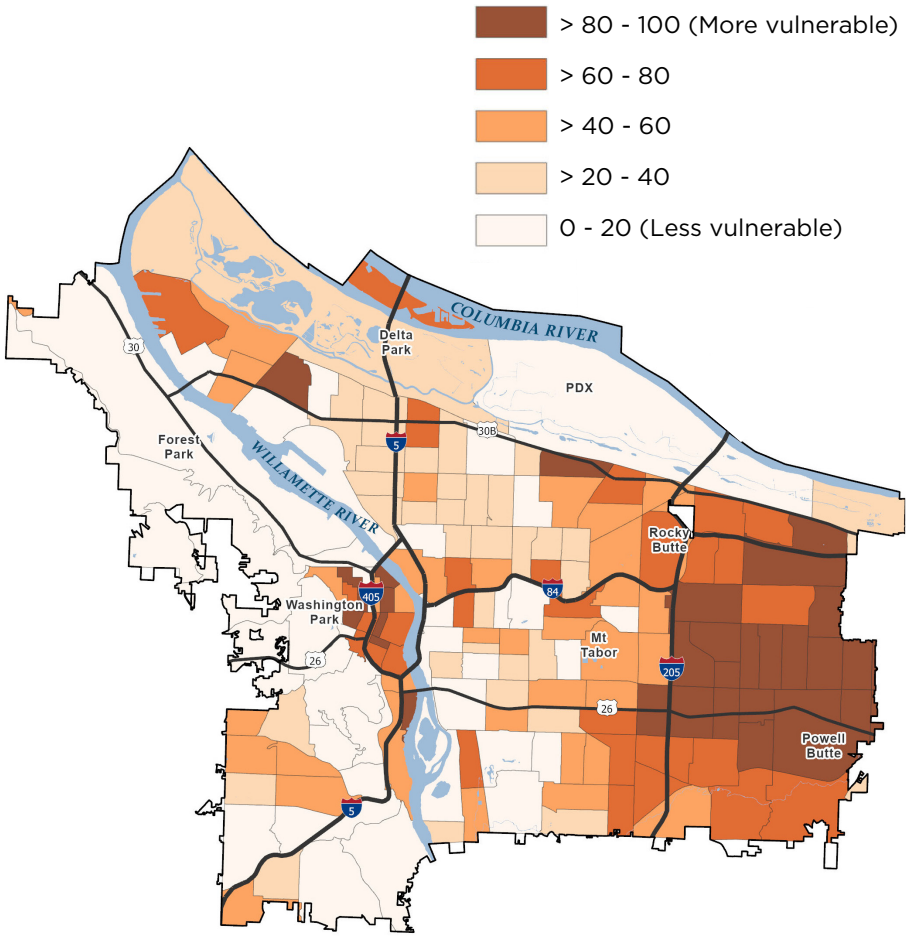
In 2024, Multnomah County created a heat vulnerability index. The index assesses heat vulnerability at the population-level, based on the following factors:

- Sensitivity to heat and illness;
- Exposure to extreme heat, and trees and other elements of our built environments which regulate temperature; and
- The capacity to adapt to extreme heat and lessen harm.

Urban heat islands occur because areas dominated by pavement and concrete are significantly warmer than less developed areas which have more trees and vegetation.

The map below shows people living in areas in dark orange are more vulnerable to heat and generally have less tree canopy than people living in other parts of the city. These areas also tend to have, more people of color, and people earning lower incomes than other parts of the city.

Multnomah County Heat Vulnerability Index
Ranked Percentile by Census Tract



Urban Forest Composition

In addition to tree canopy, it is important to understand the types of trees that make up the urban forest. This includes factors such as species diversity and size distribution (range of tree ages). These additional factors help us understand how vulnerable the urban forest is to pests, diseases, and climate change, whether there are enough young trees to replace older trees, and the overall resiliency of the urban forest.

Data from the Forest Service's Urban Forest Inventory and Analysis (UFIA) indicates that citywide, the most common tree species are bigleaf maple, Douglas-fir, black cottonwood, western redcedar, and oneseed hawthorn.[6] Portland's most recent street tree inventory (2022 to 2024) counted of a total of 252,205 street trees, and identified Portland's most common types of street trees as maple, cherry and plum, pear, dogwood, and oak. Additionally, we estimate there are 81,107 trees in unimproved, or naturalized rights of way.[11]

Portland's top 10 types of street trees include species that are vulnerable to various threats, with ash and birch being the most at risk due to existing and emerging insect pests. Notably, three of the top five species citywide (bigleaf maple, Douglas-fir, and western redcedar) are susceptible to mortality from the effects of climate change.[20,21,22,23]

The majority of Portland's trees are fairly small, at 12 inches diameter-at-breast-height (DBH) or smaller. Only 29% of the urban forest's 4.2 million trees are larger than 12 inches DBH.[6]

Just 13% of the urban forest is made up of large trees, defined as trees 20 inches DBH or larger. This small share of large trees provides nearly 60% of the replacement value ($9.5 billion) of the entire urban forest.[6]

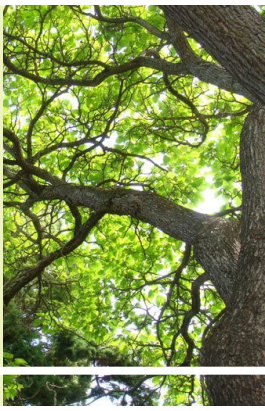
Replacement value is based on tree appraisal methods that use tree condition, size, location, and other factors widely accepted in the insurance industry.

Top 5 most common tree species citywide:[6]

- Bigleaf maple *(Acer macrophyllum)*
- Douglas-fir *(Pseudotsuga menziesii)*
- Black cottonwood *(Populus trichocarpa)*
- Western redcedar *(Thuja plicata)*
- Oneseed hawthorn *(Crataegus monogyna)*

Top 5 most common street tree genera citywide:[11]

- Maple *(Acer spp.)*
- Cherry, plum *(Prunus spp.)*
- Pear *(Pyrus spp.)*
- Dogwood *(Cornus spp.)*
- Ash *(Fraxinus spp.)*



Just 13% of the urban forest is made up of large trees. This small share of large trees contributes an outsized benefit to the community.

Management of the Urban Forest

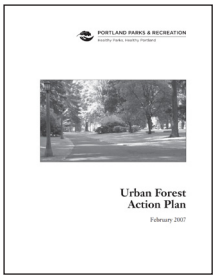
Keeping the urban forest healthy and growing involves preserving, planting, and caring for trees. This work relies on many policies, programs, research, and data analysis which guide the way we care for the urban forest. Since trees grow across jurisdictions and properties, the City, State, County, and individual community members all have a critical role to play. Portland also has many active community organizations that help ensure the continuation of the urban forest through education, advocacy, tree planting, and tree care.

Recent Planning Context

1995
Portland Urban Forestry Management Plan

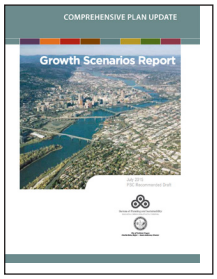
2004
Portland Urban Forestry Management Plan

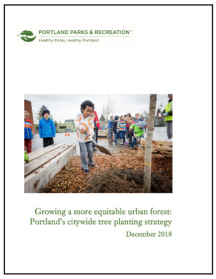
2007
Portland Urban Forest Action Plan



2015
Portland City Code Title 11: Tree Code

2015
Growth Scenarios Report Comprehensive Plan Update

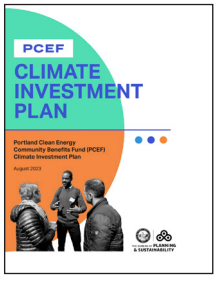




2018
Growing a More Equitable Urban Forest: Portland's Citywide Tree Planting Strategy

2022
Climate Emergency Work Plan

2023
Climate Investment Plan



City Efforts

Portland Parks and Recreation (PP&R) Urban Forestry is responsible for managing, preserving, and growing Portland's urban forest. However, management is a Citywide effort. City departments leading infrastructure, utility, or restoration projects regularly interact with, and impact the urban forest. Staff must coordinate and collaborate with PP&R Urban Forestry to care for Portland's trees.

Alignment with City Plans and Policies

Many plans and policies help the City make decisions about how to manage Portland's urban forest. These plans were reviewed while developing the Urban Forest Plan to ensure alignment with other ongoing City efforts and goals, like equity, climate resilience, watershed health, and the creation of safer streets and vibrant neighborhoods.

A selection of key plans and strategies are listed below.

- Urban Forest Action Plan (2007)
- The Portland Plan (2012)
- 2035 Comprehensive Plan (2015)
- Growing a More Equitable Urban Forest: Portland's Citywide Tree Planting Strategy (2018)
- Climate Emergency Workplan: Priority Actions for 2022-2025
- The Mitigation Action Plan (2021)
- Climate Investment Plan (2023)

Two sections of City Code focus on policies and regulations to protect, preserve, and expand the urban forest on public and private property. These are the Planning and Zoning Code (Title 33) and the Tree Code (Title 11).

Growing a More Equitable Urban Forest

In 2018, PP&R Urban Forestry created a citywide tree planting strategy. This strategy included community focus groups, surveys, interviews, and a community advisory committee to identify recommendations to reduce barriers and improve access to the City's tree planting programs and services.

As a result of this strategy, PP&R Urban Forestry uses data to prioritize areas for tree planting and other tree-related services. Tree canopy cover, income, and people of color are considered together to determine areas where resources have the potential to provide the most benefit.

Key City Roles and Responsibilities for Urban Forest Management

Photo: Bob Kerns

Portland Parks & Recreation Urban Forestry is the primary manager of the urban forest and implementer of the Tree Code. Urban Forestry creates the Urban Forest Plan, develops and implements technical standards and requirements, fosters community tree awareness and stewardship, develops tree policies and programs, monitors and assesses the urban forest, and issues permits for planting, pruning, and removal of public and many private trees. Urban Forestry also manages the Heritage Tree program, provides constituent services and guidance through the City's tree hotline, and responds to tree emergencies 24 hours a day.

Portland Parks & Recreation City Nature manages natural areas through activities including tree planting, pest and invasive species control, ecological restoration, volunteer stewardship, and environmental education to support ecosystem health and provide access to nature.

The Bureau of Environmental Services plants and manages trees and vegetation, manages invasive species, provides education and outreach programs, monitors watershed health, and implements programs and projects to improve water quality and riparian habitat. The Bureau also manages and maintains trees in stormwater management facilities in the right-of-way.

The Portland Bureau of Transportation (PBOT) builds, manages, and maintains the city's transportation system. PBOT leads sidewalk, bikeway, and roadway projects and sets right-of-way policies including street designs with spaces for street and median trees. PBOT also maintains street trees for visibility and clearance.

The Bureau of Planning & Sustainability manages the Zoning Code, which regulates trees in many circumstances, including during land divisions, specific plan districts, and a variety of environmental overlay zones. The zoning code also regulates trees via minimum landscape requirements for parking lots, screening, and building setbacks.

Portland Permitting & Development implements the Zoning Code and implements the Tree Code during property development and associated public works situations.

The Portland Water Bureau builds and maintains reservoirs, water mains, pump stations and water tanks in right-of-ways, urban areas, and natural areas throughout the city. The water system uses road right of ways and private connections to individual homes and commercial properties.

State and Regional Agency Support

State agencies, including the Oregon Department of Agriculture and Oregon Department of Forestry, support Portland's urban forest through resources, funding, research, and coordinating invasive species response.

Multnomah County supports urban forest management through research, data collection, and analysis to advance urban greening and improve public health. This includes the Heat Vulnerability Index, Heat Watch Report and data tool, and Environmental Justice Snapshot. The County, in partnership with the City of Portland, also creates and updates the region's climate action plan.

Metro, the Portland area regional government, provides valuable canopy data which the City uses to analyze canopy cover. In addition, Metro manages many properties in the region to support wildlife habitat and watershed health.

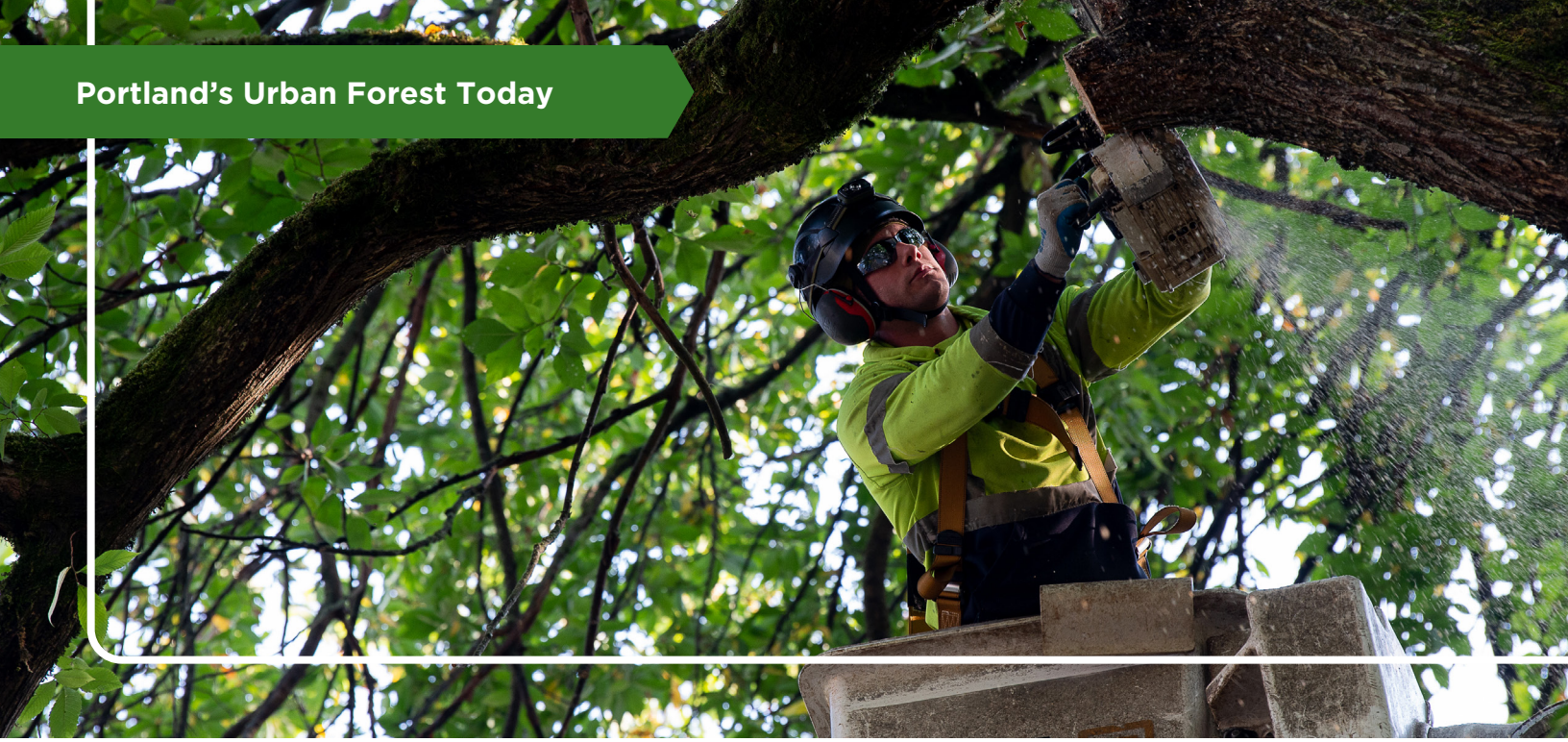
Community Efforts

Dozens of nonprofit organizations, coalitions, and community groups support the urban forest through planting, tree care, job training, watershed stewardship, educational events, data analysis, reports, and advocacy.

These organizations are a critical part of urban forest management in Portland. They inspire and engage the public, mobilizing Portlanders to make bigger strides toward growing and caring for the urban forest.

Examples of these organizations include:

- The Bird Alliance of Oregon
- The BluePrint Foundation
- Connecting Canopies
- Friends of Trees
- Johnson Creek Watershed Council
- Portland Fruit Tree Project
- Shade Equity Coalition
- Thrive East PDX
- Trees for Life Oregon
- Verde
- Willamette Riverkeeper
- Wisdom of the Elders Inc.



Considerations for Urban Forest Management

There are many challenges to growing trees in an urban environment. Portland's urban forest is vulnerable to climate change and extreme weather events, wildfire, invasive insects, plants, and disease, development and constrained growing environments, and premature removals. Historically, Portland has had a mild climate with moderate rainfall providing exceptional conditions for growing large-form trees. However, temperature is on the rise in Portland.

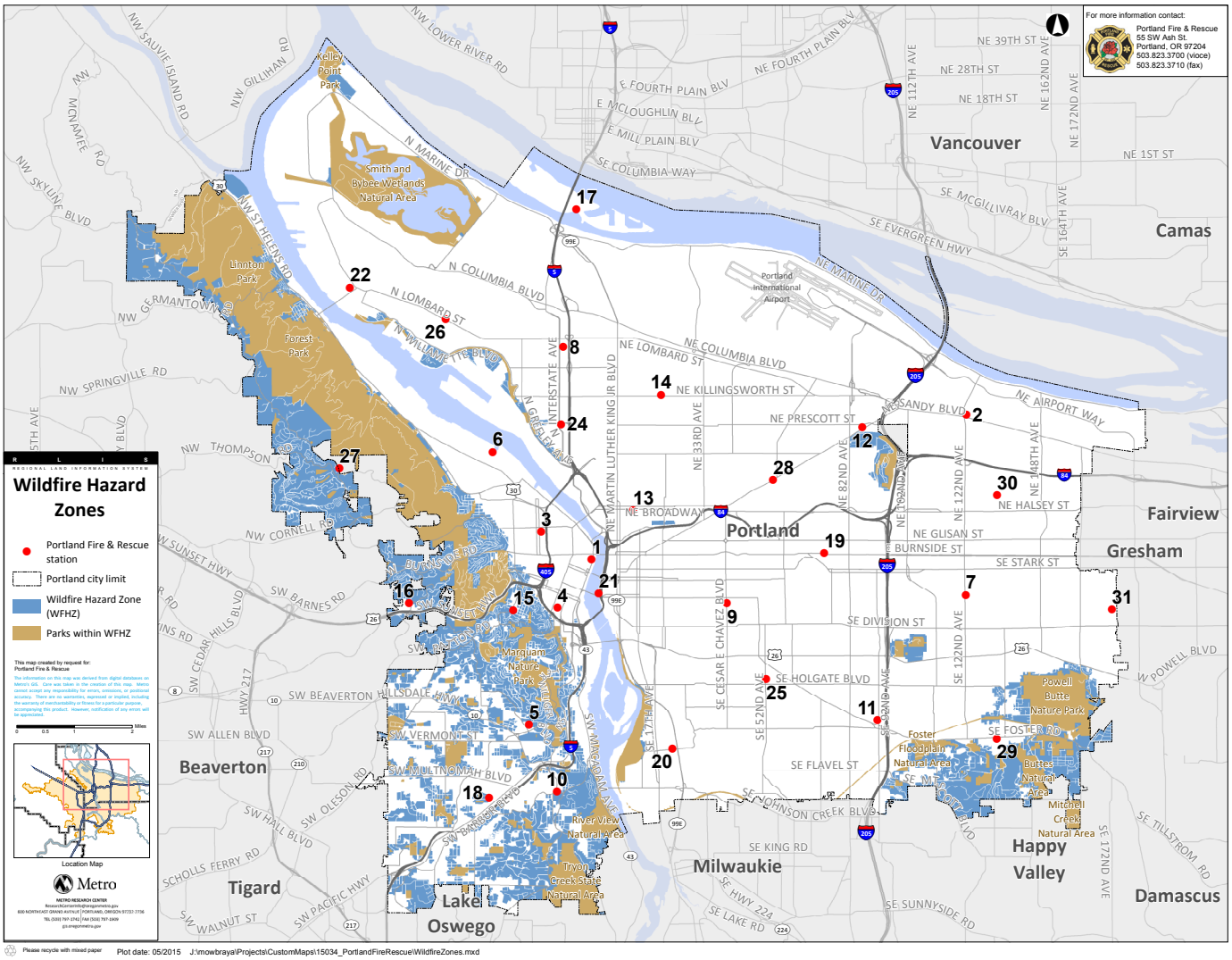
Climate Change, Wildfire, and Extreme Weather Events

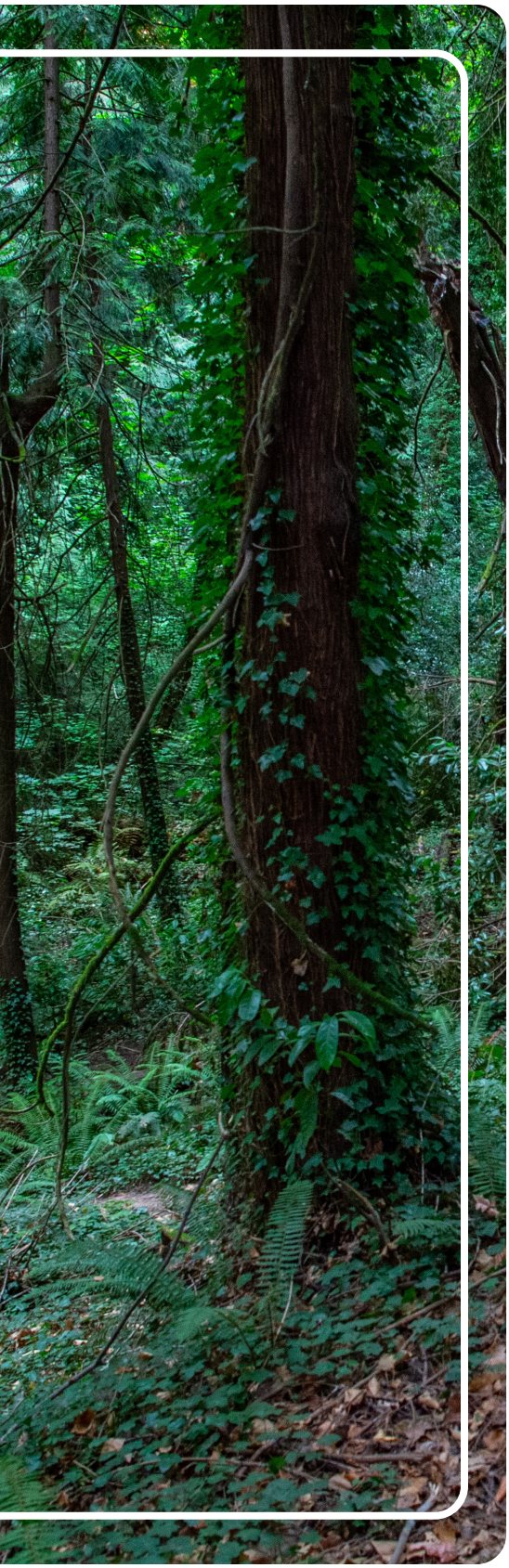
From 1940 to 2023, the average annual daily maximum temperature went up by 2.6 degrees while the average daily maximum for the summer months went up by 4.6 degrees. Five of the top ten warmest days over the last 80 years occurred since 2010 and Portland's all-time high of 116 degrees was set in 2021. A record of 31 days over 90 degrees was set in 2018.[24,25]

Since 2016, Portland has experienced at least four hazardous winter storms, each of which caused downed trees, large transportation shutdowns, and widespread power outages. The winter storms in December 2016, January 2017, February 2021, and January 2024 were especially devastating.[26] Weather extremes including extreme heat events, extended periods of drought, and more powerful winter snow, ice, rain, and windstorms are expected to become more common due to climate change.

The health and structural stability of trees can be negatively impacted by extreme weather. It can lead to increased risk of tree failure which can damage property, impact community safety, and reduce tree canopy.

Increased air temperatures and drought increases the likelihood of wildfire, particularly in urban areas that are adjacent to wildlands. Overcrowding of trees and invasive species growth can also increase wildfire risk. The Oregon Wildfire Risk Explorer Map, produced by Oregon State University and the Oregon Department of Forestry, identifies multiple areas as moderate hazards in Portland's urban forest. These include large areas in west Portland, such as Forest Park and the southwest hills, along with more limited areas in East Portland, such as Mount Tabor and Rocky Butte.





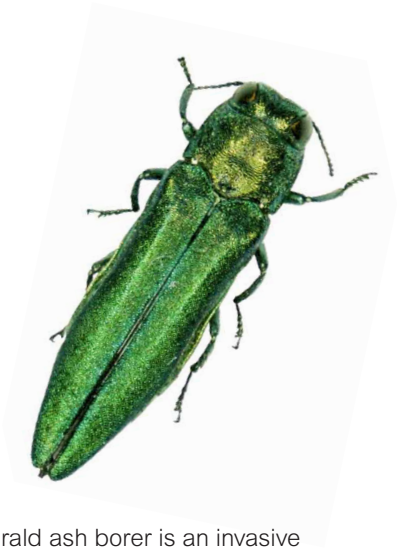
Urban forest management actions, including actively managing invasive vegetation and pests; pruning trees away from structures, especially those with low branching; planting fire-resistant trees and vegetation; and removing dead and dying branches can help reduce risk to people, infrastructure, wildlife, and nearby trees in the wildland-urban interface.

Proactive tree maintenance can reduce the risk of tree failures and make people and trees less vulnerable during extreme weather events. This requires a full life-cycle approach to tree care, including proper species selection and planting techniques, ensuring young trees are well established, and pruning mature trees. Just like we need well-designed streets with ongoing maintenance, we need to properly plant and care for trees throughout their lifespan. People with limited incomes may not be able to afford proactive maintenance and may need assistance to provide proper care for their trees.

During the January 2024 ice and windstorm, the City of Portland received 785 calls for trees emergencies. Major storm events like this can have severe emotional and financial costs for those impacted. Between 2021 and 2024, Urban Forestry responded to an average of just under 1,800 tree emergencies.[27] Based on historical trends, this number is likely to increase in the future.

Invasive and Nuisance Plants

Invasive and nuisance plants have the capacity to reproduce and outcompete native and other desirable trees and plants. The City has 15 trees on its Nuisance Tree List. There are also dozens of other undesirable plants on the Nuisance Plant List that can smother or otherwise limit tree growth such as English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), clematis (*Clematis sp.*), Scotch broom (*Cytisus scoparius*), garlic mustard (*Alliaria petiolata*), and others. When left unchecked, invasive and nuisance plants can prevent new trees from growing through dense mats of weeds and cause existing trees to die or fall over when covered by heavy vines.



Emerald ash borer is an invasive beetle that kills ash trees by eating the tissues under the bark.

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Photo: Dallas Urban Forest Advisory Committee

Pests and Diseases

Tree pests and diseases are usually a natural part of the forest ecosystem and contribute to ongoing forest growth, regeneration, and renewal. However, non-native pests can have a significant impact on the forest if they gain a foothold where they lack natural predators to control their population. This can result in devastating impacts to trees. Recent non-native pest examples include emerald ash borer (*Agrilus planipennis*, EAB) which is found to be fatal to all ash trees (*Fraxinus spp.*). Another pest recently discovered in the region is the Mediterranean oak borer (*Xyleborus monographus*), which is potentially fatal to native and non-native oaks, including Oregon white oak. Other non-native pests and diseases of concern that are present in Oregon include, Dutch elm disease (DED), thousand cankers disease (TCD), and sudden oak death (*Phytophthora ramorum*). Asian longhorn beetle (*Anoplophora glabripennis*), spotted lanternfly (*Lycorma delicatula*), and spongy moth (*Lymantria dispar*) are not yet established but expected to arrive.

A diverse tree population is an insurance policy against widespread losses. Many pests and diseases target specific tree species, so planting only one type leaves communities vulnerable. This was seen in the United States when Dutch elm disease killed American elms beginning in the 1930s, and later, emerald ash borer attacked ash trees beginning in the 2000s. By planting a mix of tree species, we reduce the risk of losing large parts of the urban forest at once.

The image above left is a street lined with ash trees, which are susceptible to emerald ash borer. The image above right is a street lined with maple trees which are vulnerable to the pending threat of Asian longhorn beetle.

Urban Design and Development

Trees must coexist with buildings and essential infrastructure in the built environment, such as utilities and sidewalks. This infrastructure can limit space for healthy trees and other vegetation, especially in small areas or in the right-of-way where there are many services we want to provide. To support healthy trees, above and below ground conditions must be considered.

Tree root systems and surrounding soil must be protected from damage and disturbance. Trees also need enough soil to support healthy roots. Increasingly dense urban development can limit space above and below ground, limiting opportunities to grow medium- and large-form trees. In a given area, the greater the soil volume, the larger the tree the space can support. When soil volumes are limited or large-form trees are planted in confined locations, trees may decline and die prematurely or cause damage to surrounding infrastructure, like sidewalks.

Thoughtful planning, policy, and design practices can preserve and create new space for trees while supporting other important infrastructure and services.

A few examples are listed below.

- Soil cells or suspended pavement can be used below the surface to provide increased soil volumes in confined areas to support healthy tree growth.
- Space along streets with excess or underused space can be reallocated and depaved to provide new space for trees. This can be implemented as part of tree-lined medians or removing underused parking spaces along streets with narrow or missing planting strips to improve traffic safety and cool our streets.
- Incentives can be used to encourage greater tree preservation or planting during private development projects to encourage tree preservation and the use of techniques such as alternative building foundations that are constructed above tree roots.

Maximizing Tree Canopy

A key element of urban forest management is maximizing space for trees while reducing conflicts with infrastructure. Planting the "appropriate tree" ensures long-term growth and service without causing issues that could lead to its decline or removal. Cities can maximize opportunities for healthy canopy growth by planting large-form trees in large planting sites, medium-form trees in suitable sites and planting small-form trees in sites that can't accommodate larger trees. Large planting sites are especially important because large trees provide more benefits and services than smaller trees. Planting the right tree in the right place is particularly important near the street and in commercial areas where there are many different types of infrastructure that need to be accommodated.

For example, planting a small-form tree in a large planting site does not maximize the potential benefits and services that a large-form tree could provide in that space. Planting the wrong type of tree in a planting space can also increase the likelihood of tree mortality or damage nearby infrastructure. This can unintentionally increase tree care costs for the City or nearby residents. Street trees in the public right-of-way are not always appropriately sized for their planting spaces. Over half of living street trees (53%, 132,125 street trees) are not right sized to their planting space (trees are either too large or too small for the available planting space). In large planting spaces, 62% of trees (54,739 street trees) planted are too small for the space. This represents a missed opportunity to have more urban forest benefits and services in our community.[11]

The presence of overhead high voltage wires impacts the types of trees that are suitable for a planting site. For example, 55% of medium sites (57,406 medium sites) that might otherwise be suitable for medium- or large-form trees are more suitable for smaller-sized trees to avoid conflicts around high voltage wires. In these situations, front yards or other underused spaces in the street could be designed to support larger trees.[11]

Certain areas or neighborhoods in the city have narrow planting strips that are not suitable for street trees. This is particularly evident in Northeast and Southeast, where street trees are planted in spaces less than three feet wide. In King, Piedmont, Vernon, and Woodlawn, over 30% of street trees are planted in these narrow spaces.[11]

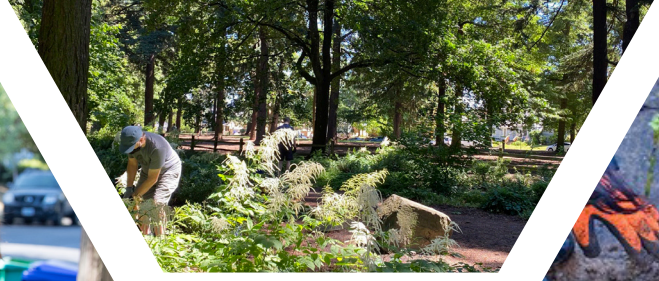
Today, Portlanders are responsible for establishing and maintaining, and if necessary, removing trees on their properties. They are also responsible for maintaining street trees adjacent to their property.

Tree Establishment and Maintenance

Trees in Portland require different levels of care depending on factors like age, size, species, and location. For example, trees in forested natural areas need less maintenance than street trees, which may require pruning, watering, and root management. Native trees adapted to summer drought need less watering than non-native species from areas with year-round rain. Newly planted trees, whether native or non-native, typically need regular watering for at least three years to become established. Climate change has created additional challenges and costs for establishing and maintaining trees with extended drought, heat, and increasingly severe weather events.

Investing in tree maintenance is worthwhile due to the environmental, health, and economic benefits they provide. Proper care, like pruning young trees, can prevent future issues like branch failure. A study found that for every $1 spent on street tree maintenance, communities receive $5.82 in benefits.[28] Larger trees, while more expensive to maintain, provide even greater benefits. A study in the Pacific Northwest found that, 20 years after planting, small trees provided about 60% fewer benefits than medium-sized trees and 77% fewer benefits than large trees in residential yards.[29]

Today, Portlanders are responsible for establishing and maintaining, and if necessary, removing trees on their properties. They are also responsible for maintaining street trees adjacent to their property. The City has programs to maintain trees in parks and natural areas, and to keep streets and trails clear. The City also has free street and yard-tree-giveaway programs, but many property owners decline free trees because of high maintenance costs.



Chapter 4:
Community Vision and Goals

- Our Vision for Portland's Urban Forest
- Goals
- Tree Canopy Goals

Our Vision for Portland's Urban Forest

Trees and vegetation improve our public health, well-being and the environment. They clean our air, reduce stress, foster a sense of place, and encourage physical activity outdoors. They are an essential part of watershed health and provide a connected network of habitat for wildlife. To ensure everyone benefits from these services, we must preserve and equitably expand Portland's urban forest. The following vision statements reflect the future Portlanders envision for the urban forest.

Portland's urban forest is a healthy and resilient ecosystem which serves as a living testament to our commitment to community health and climate action. As people living on this land, we value, preserve, and care for the health of the urban forest, including the trees, vegetation, and soil.

The urban forest is healthy, biodiverse, and climate-resilient

In response to the climate emergency, we establish policies and practices that prioritize the preservation and expansion of the urban forest. We manage the urban forest to withstand current and intensifying climate challenges like heat, storms, pests, and wildfire. Our community has the resources to keep trees healthy and well-maintained throughout their life cycle. We preserve irreplaceable, healthy, mature trees. We also plant native and non-native trees that will thrive in Portland's current and future climate. The urban forest is made up of a diverse range of tree species, providing healthy and livable spaces for residents and wildlife in all parts of the city.

City decisions are guided by racial and social equity

We preserve, protect, and expand tree canopy equitably across neighborhoods to provide access to nature and improve health for all Portlanders. City staff take accountability for our history. We learn from the impacts of past and current policies and practices on different communities. Looking at who benefits from the urban forest today, we address the gaps and unequal burdens experienced by underserved communities and neighborhoods.

The City and community work collaboratively to share responsibility and care for the urban forest

Portlanders value the urban forest and actively work together to protect and care for it. Care of the urban forest is coordinated across city and regional governments, businesses, community organizations, and residents. City staff and community partners foster collective responsibility through practices of two-way communication, knowledge sharing, and empowering residents. City staff engage in strong community partnerships and consult residents about planning and programming decisions. City staff and community organizations collaborate to make resources, education, training, and services for trees and tree care accessible to all Portlanders.

Trees are integrated into urban design and planning to support healthy people and ecosystems

Portland's trees are an integral part of our city's identity and character. Our City staff collaborate to proactively plan and coordinate the protection, expansion, and care of the urban forest to maximize benefits to people, wildlife, and the natural environment for generations to come. City staff and community members work together to build inviting public and private spaces that prioritize the preservation and integration of the urban forest. We use trees strategically along our streets and in parks, yards, and other spaces to provide shade and habitat, reduce urban heat, slow the flow of stormwater, and create a beautiful, welcoming urban environment. We understand the urgent need to think creatively and use innovative practices to make room for healthy trees today and ensure urban forest continuity and expansion.

Goals

Caring for Portland's urban forest is the shared responsibility of the City and Portlanders. By working together, City staff and community members can keep trees healthy and create a thriving and resilient urban environment.

Equitable Preservation, Care, and Expansion

1. Equitably protect, preserve, restore, and expand Portland's urban forest to support biodiversity and improve community health and safety.
2. Prioritize the needs of underserved communities in urban forest planning, programming, and services.
3. Implement a comprehensive, citywide, and City-managed street tree maintenance program.
4. Prioritize the preservation and planting of trees and creation of new spaces for trees and smaller vegetation in policies, plans, and projects to enhance the city's habitat connectivity, livability, and ecological resiliency.

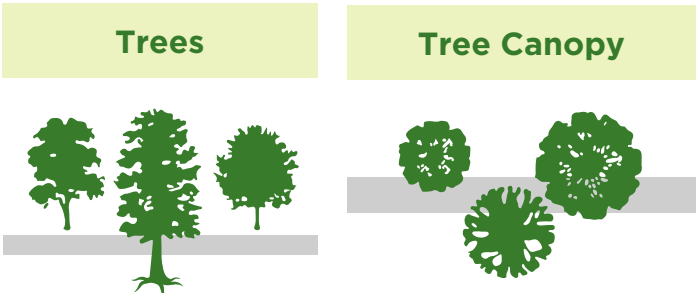
Education, Outreach, and Partnership

5. Provide programs and education about trees and tree care that are responsive to community-identified needs, accessible to all Portlanders, and empower residents to be active stewards.
6. Improve coordination between local government, community organizations, and residents to expand and care for the urban forest.

Climate Action and Monitoring

7. Actively manage and evaluate the urban forest and adapt practices to maintain forest health, preserve habitat, and respond to the impacts of climate change.

Tree Canopy Goals



Tree canopy is measured from an aerial view, made up of the leaves and branches covering the ground.

What are tree canopy goals and why are they important?

Tree canopy goals show how much of the city's land area we want to be covered by trees. They are used by cities across the country to track the growth and distribution of the urban forest and the many benefits it provides. This Plan presents three tree canopy goals which build on past City tree canopy goals. They reflect community input calling on the City to respond to the climate emergency and expand the urban forest equitably.

Setting Our Tree Canopy Goals

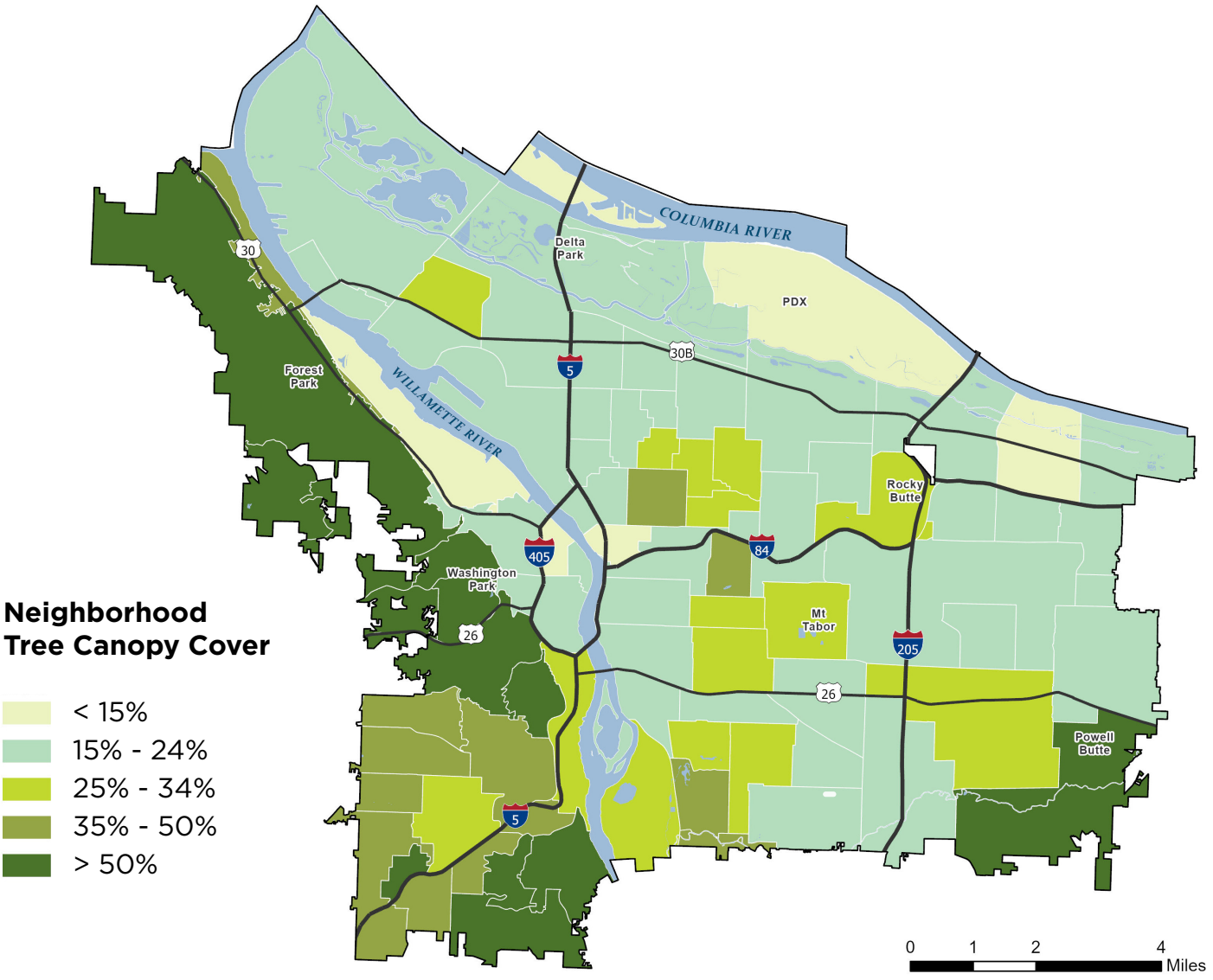
The City used an information-driven approach to set the tree canopy goals. First, we measured the amount of tree canopy we have and estimated how much more we can grow, while making space for other needs, like housing, employment, and transportation.[30] Second, we looked to other cities and studies to understand current industry standards and practices for setting tree canopy goals. Third, we asked the community where it is important to have trees, and which factors we should consider when setting the goals. Portlanders told us they want trees in all types of locations, including where they live, work, shop, learn, and play. They asked the City to consider equity and equality, urban heat, watershed health, and habitat connectivity when setting the goals. We also heard it is important to maximize opportunities for tree canopy on public property and to prioritize increasing tree canopy in areas that have less canopy than other parts of the city.

Portland's citywide tree planting strategy, "Growing a More Equitable Urban Forest," combined with the street, neighborhood, and pattern area tree canopy goals will guide our work over the coming years. They will help us achieve our citywide goal and focus our resources where they are needed most.

I. Every Neighborhood Will Have At Least 25% Tree Canopy Cover

Reaching this goal requires preserving existing tree canopy and adding 2,600 acres of new tree canopy (about 160,000 trees). Approximately 54% of Portland's neighborhoods (51 neighborhoods) do not meet this level of tree canopy cover. Examples of neighborhoods with 25% tree canopy cover already, include Alameda, Beaumont Wilshire, and Sunnyside.

See Appendix C for the current tree canopy cover and the acreage needed to achieve at least 25% tree canopy cover for every neighborhood.



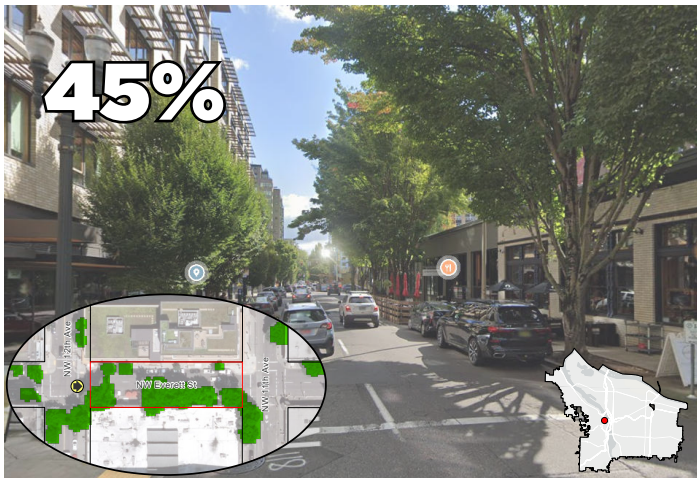
This map is derived from Oregon Metro's 2019 Canopy data.

II. At Least 35% Canopy Cover Over Our Streets in 20 Years

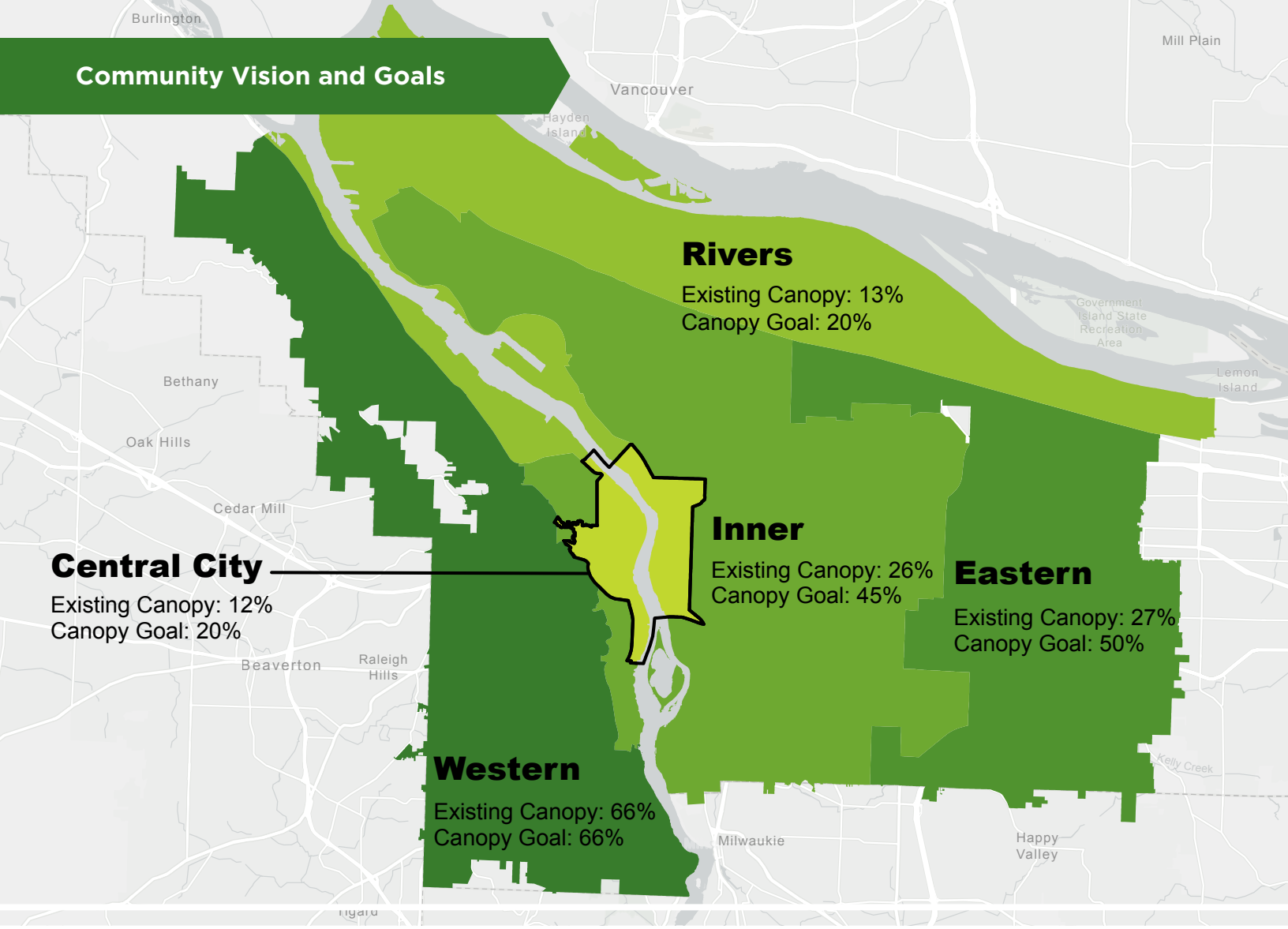
Streets dominated by pavement and concrete increase urban heat and we need shade when traveling along the street. This is especially important in hotter parts of the city or where we encourage people to walk, bicycle, or ride transit. Currently, 24% of the area covered by our streets (also called the road right-of-way) is shaded by tree canopy. This includes the sidewalks, planting strips, and space between the curbs. To reach 35%, we need to increase tree canopy cover from 4,000 acres to 5,800 acres. This goal can be achieved using a combination of methods, including caring for recently planted trees, maximizing tree canopy in the planting spaces we already have, and planting trees in empty planting strips and front yards. We can also add space for healthy, dense tree canopy during street transformation projects and overcome challenges by using strategies proven to be successful here, or in other cities.

III. Increase Tree Canopy Cover Citywide to 45% in 40 years

Covering 45% of the city's area with tree canopy is a significant increase above our current 32% tree canopy coverage. It is ambitious yet achievable. It is also critical to reducing urban heat islands and improving community health and ecological resilience. It may not be possible to have equal tree canopy cover across all parts of the city, but we can focus our efforts to expand tree canopy in a way that reduces the differences between communities. As we prepare for the future, we must recognize that not all parts of Portland are designed the same way. For example, the creation of Forest Park limited development and is one reason why Portland's west side has much higher tree canopy cover than other parts of the city. Because of this, we used the pattern areas defined in Portland's 2035 Comprehensive Plan to set tree canopy goals for different parts of the city. The pattern area goals help ensure we achieve 45% coverage citywide as equitably as possible. The pattern areas identify five areas of the city that have distinct characteristics that have been influenced by both the natural environment and how or when these parts of the city developed. These characteristics impact how much tree canopy we can grow today, and where. The unique goals for each part of the city acknowledge the varied opportunities and challenges in the pattern areas and can help us move closer to equal distribution.



This approach allows the City to be strategic and focus services in the areas where we can have the biggest impact on reducing differences in access to nature and vulnerability to climate change. It will also help us reduce the impacts of historic disinvestment and development patterns on community health.



The **Western Neighborhoods** already have much higher tree canopy cover than the rest of the city. Analysis also shows that tree canopy is declining in this pattern area so sustaining or expanding canopy in the Western Neighborhoods will be challenging. Our goal for this area is to sustain the current tree canopy (66%) and prevent further decline.

The Central City is likely the most limited of all areas in Portland. Much of it is fully built with large dense development and a lot of paved surfaces or buildings. The goal for this area aligns with the Central City Plan. We aim to increase tree canopy cover from 12% to 20%.

A notable increase in tree canopy along **the Rivers** recognizes the critical role the urban forest plays in supporting watershed health and habitat. In this area, the goal is to increase tree canopy cover from 13% to 20%. There are several different types of properties and land uses along our rivers, including industrial and commercial areas, parks and natural areas, and residential areas. Regional partners, like Oregon Department of Transportation and Metro, and larger private property owners in these areas will be important partners in this work.

We aim to significantly expand tree canopy in the **Inner Neighborhoods** and **Eastern Neighborhoods.** The goal is to increase tree canopy cover from 26% to 45% in the Inner Neighborhoods and from 27% to 50% in the Eastern Neighborhoods. Increasing canopy in the Eastern Neighborhoods is especially important as it is home to a high proportion of populations vulnerable to urban heat and some of the hottest parts of the city.

What will it take to reach our goals?

Reaching the tree canopy goals will be challenging and require a combination of strategies. It will take additional and sustained funding, as well as collaboration across City staff, state and regional agencies, and community members. Preserving and caring for the trees we already have is vital to increasing Portland's tree canopy cover. This work is becoming increasingly challenging and complex due to changes in our climate, forest pests and diseases, and invasive plants. We will need to plant more trees than are needed to replace the ones that must be removed. Our approach will be more effective if we maximize tree planting where we can and plant medium- and large-form trees in appropriately sized spaces. Larger-form trees have larger mature canopies and can help us meet our goals and receive more community benefits faster than if we plant small-form trees. All this work should be supported by communication, education, financial assistance, and expanded tree care services to reduce property owner cost burdens and keep our forest healthy.

PP&R is working with the Portland Clean Energy Community Benefits Fund's Equitable Tree Canopy Initiative to scale up our efforts and plant up to 10,000 trees each year. This effort, along with continued implementation of the Tree Code and other actions in the Plan will keep us on track to reach our goals.

Let's work together! Help us reach 45% tree canopy cover and grow the urban forest equitably and sustainably.

We need 10,700 more acres of tree canopy to reach our goal. That's nearly one tree for every Portlander or 660,000 trees. This excludes trees planted to replace trees that must be removed. What can you do?

1. Care for the trees you have. We get more canopy faster by letting existing trees grow bigger than by planting new trees and waiting for them to grow.
2. If there's space, plant a new tree where you live or work.
3. If you remove a tree, plant a new one to replace it and try to maximize tree canopy.
4. Volunteer with the City or community organizations to plant or care for trees, or share information about trees with your friends and neighbors.
5. Help remove invasive plants, like ivy, clematis, and Himalayan blackberry.
6. Learn about steps you can take to slow the spread of invasive forest pests, like emerald ash borer.

Estimated Timeline to Achieve Our Citywide and Pattern Area Tree Canopy Goals

	2025	2035	2045	2055	2065
Citywide Tree Canopy Cover	**32%**[13]	**35%**	**38%**	**41%**	**45%**

How a Vision Becomes a Reality

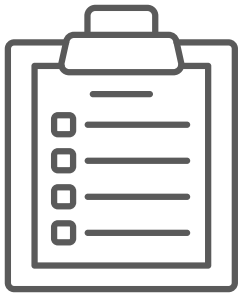
Vision
Description of our values and what Portland's urban forest should be like in the future.

Plan Goals
Priorities and guidance that direct City-led actions and help us achieve the vision.

Recommendations
Focus areas to support goals.

Implementation Strategy
Actions, partners, timelines, and cost estimates to help achieve the vision, goals, and recommendations.

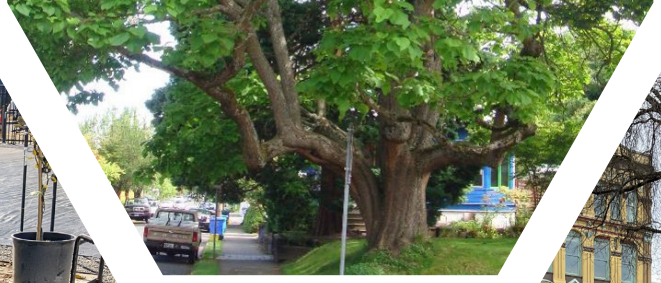
How do we ensure that we are meeting the Plan goals?



Performance measures are data points that show if the implementation strategy is working and if we are on track to meet the Plan goals.

Example of a performance measure:

Measure 4. Number of trees planted through the City's planting programs, by property type (e.g., parks, natural areas, and streets)



Chapter 5:
Recommendations and Implementation Strategy

- Recommendations
- Implementation Strategy

Recommendations

This chapter presents a framework to achieve the vision and goals of the Plan. It features recommendations and an implementation strategy with actions created in direct response to community priorities.

This framework will help increase collaboration, communication, and education within the City, and between the City and Portlanders. It will improve the way we track and care for trees. It includes actions to create new places to plant trees, provide more space for larger trees, and provide more services and support to Portlanders. The strategy will improve the health and resilience of the urban forest, our community, our watersheds, and local wildlife.

The recommendations and supporting implementation strategy build on current City services, plans, and policies which the City will continue to implement. They support broader City priorities like community and environmental health, public safety, equity, and anti-racism. Specifically, they expand on recommendations and guidance in the 2035 Comprehensive Plan, Urban Forest Action Plan (2007), Citywide Planting Strategy (2018), Pedestrian Design Guide (2022), Climate Emergency Workplan (2022), and the Climate Investment Plan (2023).

1. Prioritize the preservation and care of the urban forest
2. Reduce the cost of tree care for Portlanders
3. Design and create new space for trees and other vegetation
4. Expand the urban forest through planting, stewardship, and collaboration
5. Provide inclusive communication, training, and education about the urban forest and tree care
6. Use data, tools, and monitoring to support climate adaptation, meet canopy goals, and equitably distribute canopy
7. Improve City codes, standards, and guidelines to support community resilience and urban forest health

Implementation Strategy

Implementing the Plan requires a community effort and collaboration across City departments. It will take partnerships, resources, and the continued recognition of trees as a community priority. Principles of sustainability, equity, transparency, and inclusivity will drive implementation. The City invites community members to help in this effort. Together, we can ensure the continuation, expansion, and equitable distribution of the urban forest for future generations.

Urban Forestry programs and services will continue to prioritize service in areas with less trees, more people of color, and more people earning low incomes than other parts of the city. New programs and services will require new outreach, education, and communication. Education and communication for all programs will be accessible, inclusive, and culturally specific. The City will create and host welcoming programs, activities, and materials for people of all ages, abilities, and identities.

For each recommendation, the implementation strategy includes several actions accompanied by implementation partners, anticipated timelines, and estimated costs for completion.

Partners

Each action needs a department to take the lead, and many actions require support from other departments or agencies. Below is a list of the implementation leads and key agency partners. Achieving canopy goals and sustaining a healthy urban forest also depends on partnerships with local businesses, community organizations, and volunteers. Actions which should be implemented in collaboration with these community partners are marked with an *. The City is excited to work with new and existing partners to improve the health of our community and environment.

- PP&R: Portland Parks & Recreation
- BES: Bureau of Environmental Services
- PBOT: Bureau of Transportation
- BPS: Bureau of Planning & Sustainability
- PP&D: Portland Permitting & Development
- PF&R: Portland Fire & Rescue
- PBEM: Portland Bureau of Emergency Management
- PWB: Portland Water Bureau
- ODF: Oregon Department of Forestry
- Metro: Oregon Metro

Timeline

Achieving the goals of the Plan will take time. Not all actions can be completed at once. The implementation strategy divides actions into four time frames to guide City decisions and staff workplans.

Ongoing: These are actions staff is already working on, or that involve minor changes to existing programs.

1 to 3 years: These actions are top priorities for the City and can be implemented relatively quickly. They typically require minimal additional funding or staff capacity and include efforts that are already partially or fully funded.

3 to 5 years: These actions require additional funding or new staff, are slightly complex and may take a few years to implement or are dependent on other actions being completed first.

5 to 10 years: These actions are very large in scope or require a significant amount of additional funding and staffing or are lower priority than other actions.

Funding

Each action in the strategy includes an annual cost estimate. Some actions, particularly those with shorter time frames or lower costs, can be implemented using current staff and budgets. Many actions require additional staff and funding. Some actions can be completed with one-time funding, most require ongoing funding, contracts, or staffing.

$: Can be completed using existing staff and budget allocations, if 2024 budget allocations continue, or requires less than $100,000

$$: Requires limited additional staff capacity or less than $250,000

$$$: Requires several staff or $250,000 to $1 million

$$$$: Requires significant funding (at least $1 million)

$$$$+: Requires orders of magnitude greater than $1 million

The City of Portland's General Fund, 2020 Parks Local Option Levy, Portland Clean Energy Fund, and the Tree Planting and Preservation Fund are the primary sources of funding for many ongoing actions. The Tree Planting and Preservation Fund was created in 2015 as part of the Tree Code and is the City's only dedicated source of funding for tree planting. Money in this fund can be used to plant trees on public and private property and establish them for up to five years.

Funding to support the initial implementation of a selection of actions has already been allocated as part of the Portland Clean Energy Community Benefits Fund (PCEF) Climate Investment Plan.

Additional funding is needed to sustain these actions long term and fully implement the Plan. This additional funding could come from increases in the City's General Fund or Parks Local Option Levy allocations for urban forest preservation, expansion, and care; coordinated investments between City bureaus and other local agencies; state or federal grants; bonds or tax levies; public-private partnerships; or other sources.

The Plan's funding is based on current and expected allocation levels for the 2024–2025 fiscal year. Future funding will be decided by City Council through the annual budget process or other methods. Changes in funding will affect the City's ability to carry out the Plan's action items.

The implementation of the Plan should remain flexible and will depend on funding, City priorities, and resource availability. Progress towards implementation will be tracked using the approach outlined in Chapter 6.

New PCEF-Funded Tree Canopy Commitments, 2024-2029

- The **Tree Protection and Care** program provides $65 million to support multiple Urban Forestry areas, including establishing a program to care for Portland's street trees, shifting responsibility for maintenance away from adjacent property owners. This initial investment will kick off the program, but long-term funding is needed to sustain it over time and expand it into a comprehensive citywide program.
- The **Equitable Tree Canopy** program allocates $40 million to plant and provide five years of establishment care for at least 15,000 trees, focusing on priority neighborhoods. Funding is also allocated to build and support community partnerships and arboricultural workforce training. A collaborative community workgroup informs the deployment of this program.
- The **PCEF Tree Canopy Maintenance Reserve** allocates $5 million to allow income qualified property owners to access funds to maintain existing yard trees though professional tree care providers. The program is anticipated to provide tree care services to low-income households, along with arboriculture-related technical mentorship.
- The **82nd Avenue Street Tree Expansion** program provides $5 million to build sidewalks and create space for medium- and large-form trees along 82nd Avenue. This effort is focused on some of the areas of 82nd Avenue that have the greatest needs and lowest tree canopy.
- The **Arborist Trainee Program** provides $840,000 to foster diversity within the field of arboriculture, by providing a supportive and inclusive training environment. The funding will support at least three Arborist Trainee positions in Urban Forestry for two years including on-the-job training, mentorship, and full salary and benefits. Upon successful completion of the trainee program, trainees will have the opportunity to progress into permanent arborist roles.
- **Portland Clean Energy Fund** (PCEF) funds are also supporting ongoing work within Urban Forestry and at the Bureau of Environmental Services in continued maintenance and care of trees in natural areas, City parks, and private property.

Strategy

1 Prioritize the preservation and care of the urban forest

Relates to goals: G1 G2 G3 G4 G5 G6 G7

Action	Lead & Support	Timeline	Cost Estimate
1-1 Improve inter- and intra-bureau coordination to implement citywide best management practices for tree care in Portland's parks, natural areas, and rights-of-way.	Lead: PP&R, BES and PBOT	Ongoing	$
1-2 Preserve healthy trees through updated City policies, programs, and practices.	Lead: PP&R Support: BPS	Ongoing	$
1-3 Improve compliance with the City's Tree Code (Title 11) to protect, preserve, and expand the urban forest on public and private property during development and non-development situations.	Lead: PP&R and PP&D	Ongoing	$$$
1-4 Improve the health of the City's park trees, preserve habitat for wildlife, and ensure parks in lower canopy and lower income or racially diverse areas receive equitable care by implementing the Park Tree Maintenance Plan.	Lead: PP&R	Ongoing	$
1-5 Coordinate with state and regional efforts to create and implement a citywide strategy to address emerging and invasive urban forest pests and pathogens using integrated pest management practices.*	Lead: PP&R and BES Support: ODF, PWB, Metro	Ongoing	$$
1-6 Manage invasive, non-native plants in partnership with communities to improve habitat quality and reduce wildfire risk in parks and natural areas.*	Lead: PP&R and BES Support: PF&R	Ongoing	$$$
1-7 Improve efficiency of storm response by streamlining communication and workflow between City bureaus.	Lead: PP&R, PF&R, PBEM, PBOT, PP&D, 311, BES	Ongoing	$
1-8 Increase funding and staff capacity for natural area planning to establish site-specific goals and improve the health and management of natural areas as integral parts of the urban forest.	Lead: PP&R Support: BES	1 to 3 years	$$
1-9 Refine protocols and practices and clarify intra- and inter-bureau roles to protect trees in natural areas during non-City led projects when development permits are not required (e.g., utility projects).	Lead: PP&R and PP&D	1 to 3 years	$
1-10 Identify and implement financial and other incentives that result in residential, commercial, and industrial property owners preserving healthy trees, and planting or creating new space for trees.	Lead: PP&R	1 to 3 years	$$$

* Actions which should be implemented in collaboration with community partners.

Action	Lead & Support	Timeline	Cost Estimate
1-11 Improve the health of existing trees in constrained sites by enlarging existing tree wells, using sidewalk cut outs, alternative sidewalk materials, or other construction methods to improve local site conditions.	Lead: PP&R Support: PBOT	3 to 5 years	$$$
1-12 In addition to existing protective regulations, protect significant, mature trees or groves that are vulnerable to removal using land acquisition, conservation easements, transfer of development rights, or other protective measures.*	Lead: PP&R, BES, and BPS	3 to 5 years	$$$$
1-13 Coordinate with state and regional efforts to develop a process to manage and sustainably reuse the increase in woody debris and logs anticipated from enhanced street tree maintenance and emerging urban forest pests.	Lead: PP&R Support: PF&R, BES, PBOT, and ODF	5 to 10 years	$$

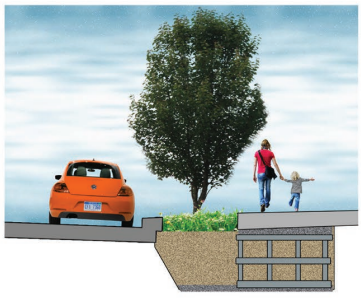
* Actions which should be implemented in collaboration with community partners.

Action Spotlight: Subsurface Soil Treatments

Subsurface soil treatments are used in areas like streets and parking lots where larger trees are desired but space for trees is limited. These treatments, such as structural cells and suspended pavement, provide nutrient-rich, lightly compacted soil under pavement, allowing tree roots to grow while supporting sidewalk and vehicle loads. They have been successfully implemented in cities worldwide and in the Pacific Northwest including Seattle, Spokane, Boise, Bothell, and Bainbridge Island.[31]

Structural Cells

Modular manufactured cells that support pavement and are filled with loose soils that encourage root growth.



Suspended Sidewalks

Sidewalks with a supporting understucture that allows loose root-friendly soils to be continued under the walk.

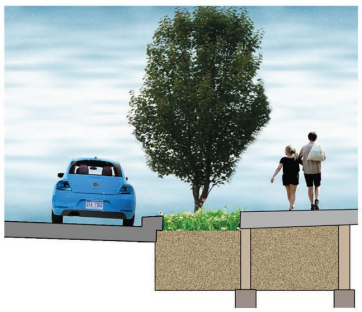


Photo: United States Environmental Protection Agency (2016)

2 Reduce the cost of tree care for Portlanders

Relates to goals: G1 G2 G3 G4 G5 G6 G7

Action	Lead & Support	Timeline	Cost Estimate
2-1 Develop and implement a tree care program to provide financial assistance to Portlanders for planting and maintaining trees, as well as removing dead, dying, or dangerous trees on private property.*	Lead: PP&R and BPS (Portland Clean Energy Fund)	1 to 3 years	$$$
2-2 Develop a street tree maintenance program including a pilot project to inform program and cost specifics prior to citywide implementation.	Lead: PP&R and BPS (Portland Clean Energy Fund)	1 to 3 years	$
2-3 Sustainably fund and implement a comprehensive citywide street tree maintenance program to reduce financial burdens for Portlanders, improve the health and safety of the city's street trees, and support habitat connectivity.*	Lead: PP&R and BPS (Portland Clean Energy Fund)	3 to 5 years	$$$$+
2-4 Explore funding opportunities to support expansion of the Leaf Day Program to more neighborhoods and provide more frequent service to improve stormwater management and expand program access.	Lead: PBOT Support: BES	5 to 10 years	$$$$
2-5 Identify financing strategies, cost-saving measures, and other ways to improve pedestrian accessibility and reduce costs to property owners for repairing sidewalks damaged by trees.	Lead: PBOT Support: PP&R	5 to 10 years	$$$$+

* Actions which should be implemented in collaboration with community partners.

Action Spotlight: Street Tree Maintenance

Cities that invest in street trees receive net benefits from services such as shading, stormwater management, carbon sequestration, and property value increases compared with the costs of tree maintenance. One study found the return on investment is $6 in benefits for every $1 invested in street tree maintenance.[28]

City responsibility for street tree maintenance increases the likelihood that all communities, regardless of age, race, or income, benefit equally from healthier environments, cleaner air, and cooler temperatures. It addresses economic inequality by relieving low-income residents of the high costs of tree care, while promoting environmental justice through equitable distribution of tree cover. Additionally, it provides consistent standards for tree care, reducing disparities in public safety, infrastructure, and neighborhood aesthetics.

3 Design and create new space for trees and other vegetation

Relates to goals: G1 G2 G3 G4 G5 G6 G7

Action	Lead & Support	Timeline	Cost Estimate
3-1 Incorporate trees and vegetation into medians as part of roadway projects on wide streets where roadway reconfiguration is feasible.	Lead: PBOT Support: PP&R	Ongoing	$$$$
3-2 Create a permanent Trees in the Curb Zone program for streets without space for trees in the furnishing zone (i.e., planting strip).	Lead: PBOT Support: PP&R	1 to 3 years	$$$
3-3 Develop standards and processes to allow the City or private property owners to widen narrow planting strips or depave parking spaces to create opportunities for trees in the right-of-way. Opportunities could include installing Trees in the Curb Zone treatments as part of City Capital projects or through permits, local improvement districts, or other means.	Lead: PBOT and PP&R	3 to 5 years	$
3-4 Identify locations and situations where Trees in the Curb Zone facilities or widening narrow planting strips by expanding them into the street should be required as part of street improvements completed during development.	Lead: PBOT Support: PP&R and PP&D	3 to 5 years	$
3-5 Create a design guide or similar resource that illustrates ways to integrate buildings, streets, trees, and vegetation on residential, commercial, and industrial properties to support City and private development projects, highlight innovative strategies, tools, and successful examples for above and below ground treatments.	Lead: BPS Support: PP&R, PP&D, BES, PBOT, and PWB	3 to 5 years	$$$
3-6 Find and implement opportunities and funding to consolidate or relocate existing utilities, expand underground wiring districts, or revise utility placement regulations to provide space for street tree planting.	Lead: PP&R, PBOT, BES, PWB	5 to 10 years	$$$$
3-7 Partner with community organizations and businesses to create space for planting through depaving on public and private property.*	Lead: PP&R Support: BPS, PP&D, and BES	5 to 10 years	$$

* Actions which should be implemented in collaboration with community partners.

Action Spotlight: Trees in the Curb Zone

Trees in the Curb Zone is a strategy the City can use to depave underused on-street parking spaces and turn them into planting spaces for trees. In 2024 and 2025, the Portland Bureau of Transportation led a Trees in the Curb Zone pilot project to test this strategy with support from Portland Parks & Recreation Urban Forestry and the Bureau of Environmental Services.

4 Expand the urban forest through planting, stewardship, and collaboration

Relates to goals: G1 G2 G3 G4 G5 G6 G7

Action	Lead & Support	Timeline	Cost Estimate
4-1 Collaborate across City workgroups and with residents, businesses, and community organizations to plant trees on public and private property, including in schools, parks, natural areas, riparian corridors, streets, and other public spaces.*	Lead: PP&R Support: PBOT, BES, PWB, BPS (PCEF)	Ongoing	$$
4-2 Ensure all trees planted by the City or required to be planted by the City, in developed areas (e.g., parks, streets, and private property), meet tree survival goals.	Lead: PP&R	Ongoing	$$
4-3 Build and nurture relationships with culturally specific and community-based organizations and neighborhoods to foster engagement with urban forest management.	Lead: PP&R and BES	Ongoing	$$
4-4 Identify and implement opportunities to expand tree planting in parks while maintaining park services, functions, and accessibility.*	Lead: PP&R	Ongoing	$$
4-5 Increase planting of pest-resistant and climate-adapted trees and other vegetation near streams and rivers to reduce impacts of current and future invasive species and maintain water quality and temperature.*	Lead: PP&R and BES Support: BPS	1 to 3 years	$
4-6 Integrate climate- and fire-resilient trees and other vegetation as part of natural area restoration projects, as appropriate.	Lead: PP&R and BES, BPS Support: Metro, ODF, PF&R	3 to 5 years	$$
4-7 Increase tree canopy in industrial and commercial areas while maintaining the intended use of these areas and their contributions to the regional economy.*	Lead: PP&R Support: BPS	3 to 5 years	$$
4-8 Support and expand the Ecologically Sustainable Landscapes Initiative in parks to improve habitat and access to nature in developed parks.	Lead: PP&R	5 to 10 years	$$$
4-9 Develop a sustainable funding strategy to acquire and manage land parcels to preserve, expand, and increase connectivity of the urban forest through PP&R's land acquisition program.	Lead: PP&R	5 to 10 years	$$$$

* Actions which should be implemented in collaboration with community partners.

5 Provide inclusive communication, training, and education about the urban forest and tree care

Relates to goals: G1 G2 G3 G4 G5 G6 G7

Action	Lead & Support	Timeline	Cost Estimate
5-1 Educate the public about the values and benefits of trees and of natural areas for habitat, urban forest health, and water quality.*	Lead: PP&R and BES	Ongoing	$$$
5-2 Provide financial and technical assistance to culturally specific organizations, neighborhood groups, nonprofit organizations, and businesses to implement, expand, and raise awareness about Urban Forestry programs and share information about trees, tree planting, and tree care.*	Lead: PP&R	Ongoing	$$
5-3 Provide tree stewardship programs for neighborhoods to give residents skills to be local tree stewards and help them care for, appreciate, and advocate for the urban forest.*	Lead: PP&R	Ongoing	$$
5-4 Expand trainings for City employees who work with or near trees to provide education about tree permit requirements and best practices for tree care.*	Lead: PP&R Support: BES, PBOT, PWB, and PP&D	Ongoing	$
5-5 Continue to partner with community-based organizations and underrepresented communities through watershed stewardship, educational activities, and restoration projects to improve the health of natural areas, provide sustainable access to nature, and support careers in natural area care.*	Lead: PP&R and BES	Ongoing	$$
5-6 Continue to implement the arborist trainee program and identify opportunities for improvement and expansion, including expansion into the various career paths in urban forestry. Focus on engaging underrepresented communities and building partnerships with community organizations and other workforce development programs in the region.*	Lead: PP&R	Ongoing	$$$
5-7 Establish strategies to enhance two-way communication with community organizations to foster active participation, integrate public input, strengthen collaboration in urban forest management, and support the implementation of the Plan.*	Lead: PP&R	Ongoing	$
5-8 Develop and implement a comprehensive education plan to share information with the public about the importance of trees, how to select, plant, and care for trees, property owner responsibilities, and the City's tree programs, services, and regulations.*	Lead: PP&R	1 to 3 years	$$
5-9 Enhance training for local tree care providers to increase awareness and compliance with the Tree Code (Title 11) and build awareness of the Plan goals. Explore opportunities to expand into a tiered or more comprehensive program or use other strategies to improve tree health outcomes, connection with commercial tree care providers, and increase permit program efficiency.	Lead: PP&R	3 to 5 years	$$
5-10 Consolidate tree protection, preservation, and planting requirements and other Portland urban forest policies into a comprehensive, accessible, and easy-to-read format to make it easier for Portlanders to understand the Tree Code (Title 11).	Lead: PP&R	3 to 5 years	$$
5-11 Improve access to the City's Urban Forestry programs, services, and information through website improvements, including opportunities to simplify permit processes and streamline registration processes for planting programs through web-based platforms.	Lead: PP&R	3 to 5 years	$$

* Actions which should be implemented in collaboration with community partners.

6 Use data, tools, and monitoring to support climate adaptation, meet canopy goals, and equitably distribute canopy

Relates to goals: G1 G2 G3 G4 G5 G6 G7

Action	Lead & Support	Timeline	Cost Estimate
6-1 Continue to inventory and assess street and park trees (quantity, type, condition) at regular intervals and partner with the U.S. Forest Service to assess the whole urban forest.	Lead: PP&R Support: Forest Service	Ongoing	$$$
6-2 Evaluate and update priority service areas on a three-year basis to ensure planting efforts prioritize underserved communities and low-canopy areas.	Lead: PP&R	Ongoing	$
6-3 Conduct a citywide canopy cover assessment every five years to understand trends, such as drivers of canopy change and progress towards equitable canopy distribution and canopy goals.	Lead: PP&R Support: Metro	Ongoing	$
6-4 Track, analyze, and share data for trees planted by the City. Create a public-facing dashboard to share planting data.	Lead: PP&R Support: BES	Ongoing	$$
6-5 Monitor the health and survival of trees planted by Urban Forestry staff, volunteers, and contractors.	Lead: PP&R	Ongoing	$
6-6 Implement a new tree-specific asset management software and integrate it into existing City systems to improve coordination of tree planting, care, monitoring, permitting, and other activities for trees inventoried and managed by Urban Forestry.	Lead: PP&R Support: 311, PBOT, and BTS	1 to 3 years	$$
6-7 Create and implement strategies for preserving and expanding the urban forest that are responsive to the distinct context, issues, and opportunities in the five pattern areas (Western, Inner, and Eastern neighborhoods; and the Central City and River areas) to help achieve tree canopy goals.*	Lead: PP&R Support: BES, BPS	1 to 3 years	$$$$
6-8 Evaluate and improve systems to monitor and track trees that are preserved, planted, or removed during development and non-development situations.	Lead: PP&D and PP&R Support: BES	3 to 5 years	$$$

* Actions which should be implemented in collaboration with community partners.

7 Improve City codes, standards, and guidelines to support community resilience and urban forest health

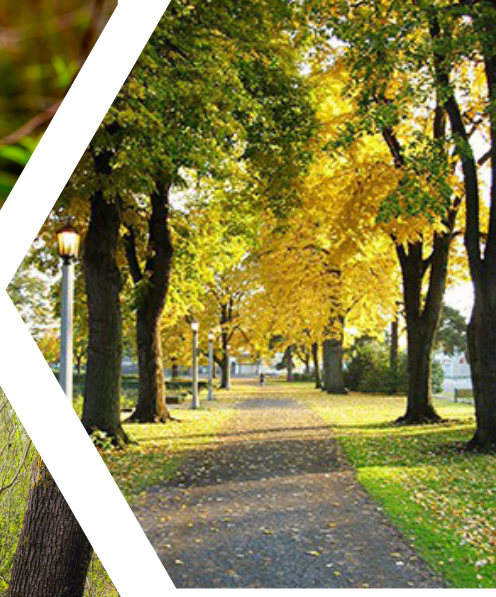
Relates to goals: G1 G2 G3 G4 G5 G6 G7

Action	Lead & Support	Timeline	Cost Estimate
7-1 On a five-year basis, continue to review and revise the current approved list of street trees, incorporating, where appropriate, additional large, evergreen, and native trees, climate-resilient species, and culturally significant trees.	Lead: PP&R	Ongoing	$
7-2 Update and enhance Urban Forestry's Street Tree Planting Standards in collaboration with Public Works bureaus to create more space for trees and reflect best practices in arboriculture, including soil volumes.	Lead: PP&R Support: BPS, PBOT, BES, PWB, PP&D	1 to 3 years	$
7-3 Create a tree planting list and guide for tree planting and care on private property highlighting suitable native tree species, fruit trees, and other climate- and pest-resilient tree species.	Lead: PP&R	1 to 3 years	$
7-4 Update the City's Tree Code (Title 11) to align with updated Plan goals and other adopted plans and policies, including wildfire prevention plans.*	Lead: PP&R and PP&D Support: BPS, PBOT, BES, PWB	1 to 3 years	$$
7-5 Review and update, as necessary, the Planning and Zoning Code (Title 33) to support alignment with the Plan and wildfire prevention goals.	Lead: BPS Support: PP&R, PP&D	3 to 5 years	$
7-6 Create guidance for using alternative sidewalk materials and subsurface soil treatments for trees such as soil cells, suspended pavement, or structural tree soils when space is limited to provide opportunities for medium- and large-form trees in constrained areas and support tree health on City property.	Lead: PP&R and PBOT Support: BES	3 to 5 years	$$$
7-7 Update the Portland Plant List (including Nuisance Plant List), and Tree and Landscape Manual to create consistent alignment with City practices and ensure urban forest diversity and resilience to climate change, wildfire, and invasive plants and pests. Establish protocol for future updates so appropriate lists and species recommendations are updated based on changes in climate and invasive plants and pests.	Lead: BPS Support: PP&D, PP&R, and BES	3 to 5 years	$

* Actions which should be implemented in collaboration with community partners.

Action Spotlight: Soil Volume Minimums

Providing a sufficient volume of soil is critical for sustaining healthy trees. The larger the tree, the greater the volume of soil needed to support healthy long-term growth. Cities in the Pacific Northwest and across the country include soil volume standards in their tree planting requirements.[33]



Chapter 6:
Tracking Progress and Accountability

- Reporting Timeline
- Performance Measures

Tracking and demonstrating progress is essential to the Plan's success and for ensuring accountability to our community. Monitoring advancements toward Plan goals, recommendations, and actions provides an opportunity to celebrate milestones, build on successes, and identify challenges to overcome. The City is committed to working towards Plan goals and regularly sharing accomplishments using the reporting timeline and performance measures outlined below.

The Plan should be periodically reviewed and updated as the needs of the urban forest, community priorities, and Plan implementation evolve. At a minimum, the Plan should be evaluated for an update every eight to 10 years.

Reporting Timeline

Beginning in 2026, the City will track and share progress on performance measures every year. Every three years, the City will create a comprehensive report to share the status of each action and performance measure. The City will also highlight key accomplishments, challenges, and opportunities. These reports will demonstrate the City's accountability to Plan goals and community priorities and inform future updates to the Plan. Updates and reporting materials will be posted online and accessible to the public.

Performance Measures

In addition to tracking each action in the Plan, the City will use performance measures to track progress towards achieving Plan goals and urban forest management outcomes. A performance measure is a quantifiable way to measure the effectiveness of a goal, project, or program. The performance measures for the Plan reflect a cost-effective and comprehensive approach to monitoring. They align with Plan goals and measure the urban forest itself (e.g., acres of canopy cover), programmatic management activities (e.g., number of park trees maintained), community partnership (e.g., number of volunteer hours), and equity (e.g., canopy cover by neighborhood). Most measures will be tracked annually. A few measures, like canopy cover, will be tracked less frequently because this data cannot be updated every year.

Additional performance measures for actions requiring the creation of new programs, like financial assistance for tree care and street tree maintenance, may be developed as part of the creation and implementation of those programs.

Performance Measures

	Plan Goal 1: Equitably protect, preserve, restore, and expand Portland's urban forest to support biodiversity and improve community health and safety.	**Plan Goal 2:** Prioritize the needs of underserved communities in urban forest planning, programming, and services.	**Plan Goal 3:** Develop and implement a comprehensive, citywide, and City-managed street tree maintenance program.	**Plan Goal 4:** Prioritize tree preservation and create new space for trees and smaller vegetation in policies, plans, and projects to enhance the city's habitat connectivity, livability, and ecological resiliency.	**Plan Goal 5:** Provide programs and education about trees and tree care that are responsive to community-identified needs, accessible to all Portlanders, and empower residents to be active stewards.	**Plan Goal 6:** Improve coordination between local government, community organizations, and residents to expand and care for the urban forest.	**Plan Goal 7:** Actively manage and evaluate the urban forest and adapt practices to maintain forest health and habitat and respond to the impacts of climate change.
Measure 1. Percentage of land covered by tree canopy citywide, by right-of-way, and by pattern area*	X	X		X			X
Measure 2. Percentage of neighborhoods with at least 25% tree canopy cover	X	X		X			X
Measure 3. Number of trees on public and private property permitted for removal and planting	X			X			X
Measure 4. Number of trees planted through the City's planting programs, by property type (e.g., parks, natural areas, and streets)	X	X					X
Measure 5. Number and percentage of trees planted by Urban Forestry in neighborhoods with less than 25% tree canopy cover	X	X					X
Measure 6. Number of volunteer hours spent improving Portland Parks & Recreation's natural areas	X				X	X	X
Measure 7. Number of street trees and number of trees in developed parks receiving care and maintenance citywide and in priority service areas**	X	X	X		X	X	
Measure 8. Number of hours of tree planting, education, or tree-related community engagement led or sponsored by Urban Forestry	X	X			X	X	
Measure 9. Summary of efforts by Urban Forestry to build and strengthen relationships with culturally specific communities, community organizations, or underrepresented communities		X			X	X	
Measure 10. Tree survival rate for trees planted and established by Urban Forestry	X						X

* Pattern areas are shown in Tree Canopy Goals and include western neighborhoods, central city, inner neighborhoods, eastern neighborhoods, and rivers. Pattern areas were developed as part of Portland's Comprehensive Plan for 2035.

** Priority service areas are defined by Urban Forestry and combine tree canopy, demographic, and income information to prioritize service in lower income and racially diverse neighborhoods that have less tree canopy cover than other parts of Portland.

Glossary

Urban Forest Management Glossary

Absolute Change: Tree canopy changes can be reported as an absolute change, which in this Plan is the 2019 canopy minus the 2014 canopy. For example, if canopy in an area increased from 10% in 2014 to 11% in 2019, the absolute change in canopy is +1% (11% - 10%).

Broadleaf: Trees and other plants with wide leaves that are typically flat. Maple trees and oak trees have broadleaves.

Canopy: Also called tree canopy, refers to the parts of the tree that are above ground, like the leaves, needles, and branches.

Canopy Cover: Canopy cover refers to the extent or amount of a given area that is covered by tree leaves, needles, and branches. It is typically expressed as a percentage and is used to assess tree canopy density within a specific city, neighborhood, or other area.

Canopy Goal: A tree canopy goal (also called canopy target) is a specific amount or percentage of tree canopy coverage set for a defined area. It represents the desired amount of tree canopy cover an agency or community wants to achieve in the future.

Carbon Sequestration: The process of capturing and storing carbon dioxide from the air. When trees sequester carbon, most of it is stored in the trunk, but some carbon is also stored in the branches, leaves, and roots.

Centered Communities: Communities who are prioritized to make sure their voices and needs are heard. At Portland Parks & Recreation, centered communities include underserved communities. Specifically, these communities include Black people, Indigenous people, people of color, immigrants and refugees, LGBTQ2SIA+ people, people with disabilities, youth, older adults, and people earning low incomes.

Climate Resilience: The ability to prepare for, and respond to climate-related hazards and changes, like increased heat, wildfire, flooding, and storms. It involves reducing vulnerability of our community, including the people, infrastructure, and environment.

Coniferous: Trees and shrubs that produce cones and needle- or scale-like leaves. Most, but not all species are green all year. Pines, firs, and cedars are examples of coniferous trees.

Deciduous: Refers to trees and plants that lose their foliage during a specific season, usually winter to conserve water and energy.

Developed Park (Park): A developed park, also called a landscaped park, is a public, outdoor park that has been intentionally designed, constructed, and maintained to support recreational, social, and/or environmental functions. Developed parks often include paved walkways, picnic areas, playgrounds, ball fields, restrooms, lighting and other infrastructure. They are more actively maintained and manicured than natural areas.

Development: As it relates to urban forest management and the Tree Code, development is the process of physically expanding or altering a site to accommodate population growth, often resulting in a change to infrastructure, housing, transportation, or other public services. Development can occur on public or private property.

Diameter-at-breast- Height (DBH): The diameter of the tree is usually measured at 4½.5 feet above ground level. This is a standard way to report the size of a tree.

Ecosystem: A community of living organisms, their environment, and the cycles of interactions that link the organisms with their environment. It includes plants, animals, and microbes, as well as the air, water, and soil around them.

Ecosystem Services: The direct and indirect benefits that people receive from natural environments, trees, or plants. The benefits and services include clean air and water, flood control, and climate regulation. They reflect the ways that nature supports human health and quality of life.

Equitable Distribution: The fair and just allocation or sharing of resources, benefits, or opportunities among different groups or communities, particularly with a focus on addressing historical disparities or injustices. It requires understanding differences in access to a resource or service and prioritizing those who have less access.

Equity: In this context, it means fairness and justice in treatment and social systems, where resources and opportunities are distributed in a way that recognizes and accommodates differences and reduces disparities among groups of people.

Equality: The state of being equal. Every individual, group, or neighborhood has the same resources and opportunities, regardless of their current or past circumstances or identity.

Establishment: In urban forest management, this refers to the care given to new trees after planting to help them survive. It often includes minor pruning, watering, and applying mulch.

Evergreen: Trees and other plants that retain their leaves throughout the entire year. Evergreen trees are usually characterized by needles or scales, but some broad-leaf trees are also evergreens, like madrones, magnolias, and several species of oak.

Extreme heat: A period of very hot weather with temperatures above 90 degrees for at least two to three days. During an extreme heat event, our bodies must work hard to keep us cool. Some of us are better able to withstand these hot days, especially if we have air conditioning or trees to provide shade and cool the air.

Fee-in-lieu: A mechanism allowing developers or property owners to pay a fee to a municipality or organization instead of providing a required public amenity or service, such as green space, tree preservation, or tree planting. It often comes into play during a development project.

Genera: The plural of genus. A term used in biology to group together closely related species. One genus contains multiple species. For example, the genus *Abies* (Fir) includes grand fir and noble fir.

Impervious Surface: A hard, non-absorbent surface, such as pavement or concrete. It prevents water from soaking into the ground. Impervious surfaces can contribute to stormwater runoff and environmental challenges by increasing the amount and speed of water flowing during a flood or heavy rain event.

Invasive species: Species that are not native, or didn't originally come from the region where they are. They can reproduce rapidly and spread quickly. They take space, nutrients, water, and light from other plants or animals, making it difficult for non-invasive species to grow and thrive. Invasive species can slowly or rapidly kill plants that Portlanders want to grow. They can also damage infrastructure, streams, parks, and natural areas.

Land Use: The management and modification of land in different ways for different purposes, including agriculture, forestry, conservation, housing, recreation, industrial (e.g., manufacturing), or commercial (e.g., shopping or restaurants) uses.

Large Tree: Trees that have reached significant size. Portland City Code defines large trees as those 20 inches diameter-at-breast height and larger.

Large-form Tree: When able to reach maturity, these trees have larger canopies and provide more community and environmental benefits than small-form trees. Large-form trees may grow exceptionally tall, like a Douglas-fir, or wide, like a bigleaf maple or Oregon white oak. A large-form tree may provide mature tree canopy that is 60 to 100 feet wide, compared to a small-form tree which may only have a tree canopy that is 15 to 20 feet wide.

LiDAR: LiDAR stands for "Light Detection and Ranging." LiDar uses laser pulses to measure distances and create detailed three-dimensional maps of the Earth's surface. LiDAR is often used in urban forestry and land management. It helps us estimate tree canopy cover.

Mature Tree: A mature tree is one that has passed its initial rapid growth phase and reached a stage where its growth has slowed and it is close to its ultimate size. It typically takes decades for a tree to reach maturity and the amount of time it takes to reach maturity depends on species, climate, and local site conditions.

Native Species: A plant, animal, or other organism historically found in a given area or ecosystem as a result of natural processes, not human intervention. They are naturally occurring in an area and are often well adapted to grow and thrive without human assistance, if they are not threatened by changes to their environment, like invasive species or changes to the climate.

Natural Area: A natural area is a location that has been preserved or allowed to exist in its natural state for many years, with minimal human intervention. These areas often support native plants and wildlife but can also include non-native and invasive species. They are intended to grow and function in their natural state so management is typically limited to passive recreation, (if appropriate) vegetation management, and restoration, like removal of invasive species and planting native species.

Neighborhood Pattern Area: Neighborhood pattern areas were created in 2015 as part of Portland's 2035 Comprehensive Plan. They divide the city based on the characteristics of each area's built and natural environment. There are five neighborhood pattern areas in Portland, including the Western Neighborhoods, Central City, Inner neighborhoods, Outer East Portland, and Rivers.

Non-Development Tree Removal: A circumstance in which a property owner requests to remove a tree when development is not the reason for the request. Removing a tree because it is a nuisance species, dead, dying, or dangerous, or growing too close to a building are common reasons.

Nuisance Species: Plants, including trees, that threaten the health and vitality of native plant and animal communities, humans, and the economy. They are designated in the Portland Plant List and ranked to indicate how invasive or widespread the plant is in Portland.

Open Space: Open space refers to undeveloped land or green areas within an urban or suburban environment. It is often designated for recreational, ecological, or aesthetic purposes. Parks and natural areas are examples of open space.

Park Tree: A tree located within a park or developed recreational area. These trees provide shade, beauty, and ecosystem services for park visitors.

Performance Measure: A quantifiable way to measure or describe the effectiveness or outcome of a goal, project, or program.

Potential Canopy: The amount of tree canopy we think could grow in a given area based on the space available. Potential canopy excludes areas where trees are not able to grow such as water, buildings,and parts of the Portland Airport property. Portland Parks & Recreation completed an analysis of tree canopy potential for Portland. This analysis was updated for the Portland Urban Forest Plan using the latest available data. Portland's tree canopy potential could be as high as 52%.

Priority Service Area: Defined by Portland Parks & Recreation Urban Forestry as areas to focus planting, tree care, outreach, education, and other urban forestry services. They are identified by overlapping demographic, income, and tree canopy data. Identifying and prioritizing areas for services helps the City focus resources where they are needed most, like neighborhoods with less tree canopy than other neighborhoods.

Private Tree (also called Yard Tree): A tree located on private property. Trees growing in the front or back yards of homes, businesses, and schools are examples of private trees.

Relative Change: Tree canopy changes can also be reported as a relative change, which in this Plan is the absolute change in tree canopy from 2014 to 2019 canopy divided by the 2014 canopy (times 100%). From the previous example, if canopy in an area increased from 10% in 2014 to 11% in 2019, the relative change in canopy is +10% ([(11% - 10%) ÷ 10%] x 100%).

Resilience: The ability to adapt and quickly recover.

Right-of-Way (Transportation): The area of land designated for transportation purposes, like roads, sidewalks, and utilities. It includes the street, where cars drive or park, and the area between the curb and the private property line, where the sidewalk and planting strip are typically located.

Soil Volume: Soil volume refers to the available space in the ground where tree roots can grow and access nutrients and water. Sufficient soil volume is essential for healthy tree growth.

Species Diversity: The variety of different species, whether plants or animals, within a specific ecosystem or location. Higher species diversity often indicates a healthier and more resilient ecosystem.

Stormwater: The water generated from rain or melting snow that does not infiltrate or soak into the ground. Concrete and most types of pavement prevent rain from naturally soaking into the ground. This increases the need to manage stormwater. Proper stormwater management is important to prevent flooding and maintain healthy streams and rivers.

Street Tree: A tree growing along streets, sidewalks, or public right-of-way. The benefits these trees provide can be enjoyed by the adjacent property owner and other people traveling through the neighborhood.

Tree Canopy: Tree canopy refers to the collective coverage of trees branches and leaves in a specific area, providing shade and habitat. It is often measured as a percentage of the total land area.

Tree Care: Also called tree maintenance, it includes the activities to manage trees or the site where they're growing to ensure their health, safety, and aesthetic appeal. It includes services like pruning, pest and disease control, watering, soil management, and if necessary, removal.

Tree Code: A set of regulations and guidelines related to the protection, planting, and management of trees within a community or municipality. Portland's rules and regulations for trees are mostly listed in Title 11, but there are others in Title 33.

Tree Inventory: A detailed record or database of trees within a specific area. It typically includes information about the location, species, size, health of each tree.

Tree Preservation: Tree preservation can be used broadly to refer to efforts to maintain or protect existing trees from removal or damage. It can also refer to policies and regulations that dictate when trees can be removed or cut down.

Tree Protection: The practices and measures taken to safeguard trees from damage or harm, most often during construction or development. It may include activities like installing protective barriers or fences or limiting soil compaction near roots.

Underserved Communities: Groups or neighborhoods that have experienced long-standing social, economic, and environmental disadvantages or discrimination due to historic and/or current policies and practices.

Urban Forest Management: The strategic planning, preservation, expansion, and care of trees and vegetation within urban areas. It involves considerations for forest and community health, habitat, equity, public safety, and the protection of ecosystem services.

Urban Forest: The urban forest encompasses all the trees, vegetation, and green spaces within an urban or suburban area. It plays a crucial role in improving air quality, reducing heat, and enhancing the overall well-being of the community.

Urban Heat Island: The effect of cities, or dense parts of cities, experiencing warmer temperatures than nearby rural areas due to the variation in the amount of vegetation, concrete, pavement, and other types of surfaces. Vegetation decreases the temperature of an area while concrete, buildings, and pavement increase the temperature.





Endnotes

Endnotes

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