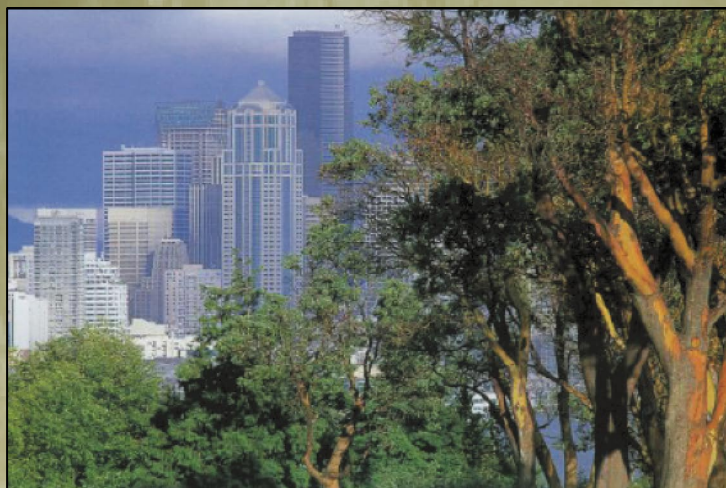




Urban Forest Management Plan



Vision





Seattle's urban forest is a thriving and sustainable mix of tree species and ages that creates a contiguous and healthy ecosystem that is valued and cared for by the City and all of its citizens as an essential environmental, economic, and community asset.

a city among the trees

EXECUTIVE SUMMARY

The Urban Forest Management Plan is a 30-year plan that recommends steps that the City of Seattle should take to preserve its trees and the cherished environment that has come to be called “a city among the trees.” Seattle’s urban forest touches the lives of its citizens every day. It consists of all trees in the city on both public as well as private property, including street trees, park trees, forested parklands, trees on institutional campuses and trees in many private ownership settings ranging from parking lots to back yards.

Unfortunately, Seattle’s urban forest has significantly declined over the last few decades as the City has grown. Today, about 18% of the city is covered by tree canopy as compared with 40% just 35 years ago. Accommodating growth is important in order to preserve open spaces outside of the city. However, the loss of treed relief in our built environment reduces livability and further motivates sprawl. Balancing urban goals that include managing growth, enhancing livability, protecting the environment, fostering economic growth, maintaining vibrant public spaces, and creating recreational opportunities is challenging and trees contribute to all of these goals.



To curb the loss of tree cover, the City has planted thousands of trees during restoration projects, as part of Capital Improvement Program (CIP) projects, and as replacements for trees that were removed. The City also creates incentives for private tree planting through programs like the Neighborhood Matching Fund as well as requirements for preservation through our development regulations.

To encourage tree preservation and planting across the city, the Urban Forest Management Plan lays out actions ranging from improving tree care on City of Seattle property to enhancing community outreach to strengthening incentives and regulations during development. The plan also establishes goals for different land-use types and identifies the challenges and opportunities for enhancing the tree canopy coverage within each type.

1. Urban Forest Sustainability

Although efforts of City of Seattle and committed community members have had a positive impact, they have not been enough to preserve Seattle's urban forest. The Urban Forest Management Plan, therefore, was developed as a roadmap for the long-term management of Seattle's trees. The primary goal of the Urban Forest Management Plan is to increase the city's tree canopy cover to 30% in 30 years by identifying goals, recommendations and actions that will preserve, restore, enhance and sustain the urban forest over the long term.

Urban Forest Sustainability Model

To assist in this rigorous task, the City employed a nationally recognized Model of Urban Forest Sustainability. Careful consideration was also given to how the resource has been managed in the past, what its value is, how the resource can be sustained over time, and what set of actions will move the City toward its goals.

Seattle's urban forest management strategy is built around four principles from the model:

- Sustainability is a broad, general goal that results in the maintenance of environmental, economic and social functions and benefits over time.
- Urban forests primarily provide services rather than goods.
- Sustainable urban forests require human intervention.
- Trees growing on private lands compose the majority of urban forests.

Seattle's Urban Forest Management Plan adapted the sustainability model to provide a structure that organizes its goals and the actions needed to achieve them. It incorporates the following three management elements of the model:

- 1. Tree Resource:** the trees themselves, as individuals or in forest stands
- 2. Management Framework:** the policy, planning and resources—including staff, funding, and tools — brought to bear on the tree resource
- 3. Community Framework:** the way residents are engaged in planning and caring for trees. Because most trees in the urban forest are on private property, a successful program requires that the community plant and maintain trees on their property.

Seattle's Urban Forest History Highlights

The first European settlers to this region were awed by what appeared to be unending, magnificent old-growth forests. Trees became the business of the new city, with millions of board feet of lumber milled for local use or shipped to San Francisco and other ports to feed the needs of a growing nation.

Over time, native soils were significantly disturbed, streams and the life they supported were altered, and many acres of forest lands were covered by the building footprints of the new city. Early logging operations left no seed source to repopulate second-growth conifer forests, causing more than 70% of Seattle's new forest to be seeded with short-lived native maples and alders. Today, in a city land-base that once enjoyed more than 53,000 acres of old-growth conifers, only slightly more than 200 acres of true old-growth forest remain. These 200 acres are part of the mere 3,200 acres of actual forest lands left within the city limits.



Environmental, Economic, and Social Value of the Urban Forest

This section of the Urban Forest Management Plan describes the benefits of healthy, well managed forests in terms of environmental, economic and social value, the challenges the City faces to maintain or restore its urban forests, and what is lost when forests are poorly maintained and less healthy.

In addition to making the city more livable for a growing population, Seattle's urban forest provides habitat to a variety of wildlife and native and migratory songbirds. The urban forest, which offers shade that cools streams, intercepts rainwater and lessens the impacts from storm events, is home to more than 250 terrestrial vertebrate species and valuable terrestrial and aquatic habitat. Trees also improve air and water quality, and sequester global warming pollution.

The dollar value of the ecological services attributed to healthy urban forests can be into the many millions of dollars annually, particularly for the Pacific Northwest where stormwater control, for example, requires substantial investments in built infrastructure. By applying cost/benefit modeling provided by the *Western Washington and Oregon Tree Guide: Benefits, Costs and Strategic Planting*, E. Greg McPherson, et al. it has been determined that an increase in Seattle's tree canopy coverage from the present 18% to 36% would more than double current environmental and economic benefits.

2. Seattle's Urban Forest Today

Beginning with an assessment of the current state of the resource, this section of the Urban Forest Management Plan highlights both the challenges and opportunities for future resource management. Discussion focuses on the following three key elements of the sustainability model to provide the framework for this assessment:

- Tree resource assessment
- Management framework assessment
- Community framework assessment

Tree Resource Assessment

Factors used to evaluate an urban forest include the extent of tree canopy, species diversity, age and health of trees. As previously discussed, canopy cover in Seattle has declined to about 18%. About 70% of the trees in Seattle's forested lands are aged deciduous maples and alders and about 30% conifers. About 40% of the trees in developed locations across the city are small flowering deciduous trees without expansive canopies. A primary goal of the Urban Forest Management Plan is to reverse both of these conditions over time.

Urban trees are under pressures not present in native forests and require active management intervention to sustain them. They lack some of the natural buffers and protection found in wildlands, where the combination of soil micro-organisms, understory plants, an ample seed source, number of trees, variance in topography, and stable hydrology all contribute to healthy trees able to ward off early destruction due to diseases, insects, and invasive plants.

Furthermore, tree selection in the urban environment is usually driven by site conditions that have been shaped by previous development and current land use more than on natural conditions that sustain native northwest forests.

Management Framework Assessment

Effective interdepartmental coordination is essential for consistent delivery of urban forestry programs. To that end, the City of Seattle formed an Urban Forest Coalition in 1994 to provide a common base for coordinating development of policy, programs, and budget that need citywide direction. The Urban Forest Coalition is represented by all city departments that have urban forest management responsibilities. As important as it is for good communi-

cation between city departments on urban forestry matters, it is equally important that similar communication exist between the City and other agencies such as the Port of Seattle, Army Corps of Engineers, King County, Washington State Department of Transportation (WSDOT), and even commercial entities such as the railroads.

The City needs better information and tools to evaluate the conditions, values, benefits, needs and opportunities associated with its urban forest including:

1. More complete and current tree inventory
2. Better maintenance records with records linked to inventory data
3. Better tools/models for determining the value and benefits of the urban forest.

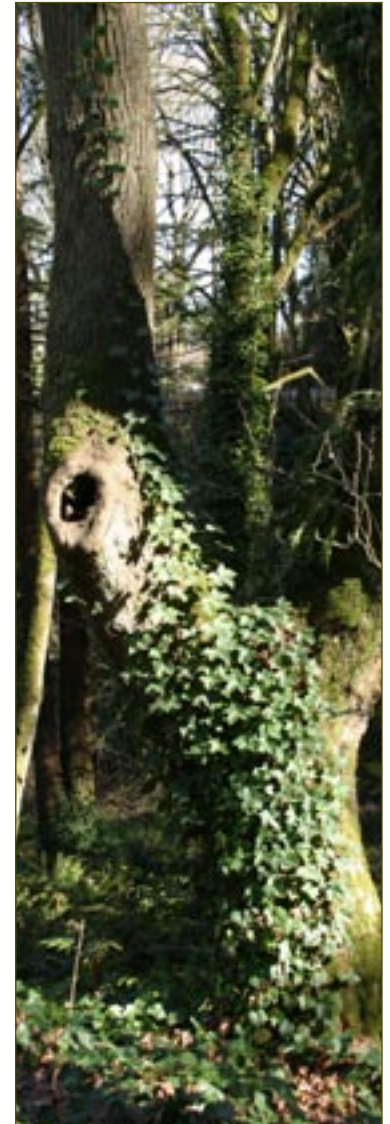
Certainly, as the pressure to redevelop land within Seattle continues and the region's population increases, density goals and development pressures need to be balanced with tree protection and planting goals. Finding the right balance is crucial to maintaining the city's livability and encouraging new development within already developed areas rather than pushing it to the metropolitan fringe.

A summary of Seattle's existing regulations, policies and programs that protect and increase the urban forest can be found in Appendix B, Tree Policies and Regulations.

Community Framework Assessment

Community appreciation for the benefits and needs of trees and engagement in planning, planting and caring for trees is essential to the long-term health of the asset. Citizen input and volunteer participation are critical to City programs. Without this support and involvement, urban forestry programs cannot succeed. This section of the Urban Forest Management Plan describes the ways the community is currently informed about and participates in stewardship of the urban forest through various programs, including the following:

- Outreach
- Volunteer opportunities
- Planning and policy development
- Partnerships
- Regional cooperation



3. Recommended Goals and Actions

A good measure of the health and value of an urban forest is the percentage of land within the city that has tree canopy cover. In order to measure success in canopy cover enhancement, canopy cover goals first must be established, which then will help the City of Seattle to rally the community around a clear set of common targets. These goals also help to plan implementation steps that consider planting opportunity, planting limitations and other priorities specific to individual land-use types.

To achieve the overall goal of 30% canopy cover in 30 years, goals have been defined for each of the three elements of the plan:

Seattle's Urban Forest Framework and Goals

Tree Resource	Management Framework	Community Framework
Understand the characteristics and complexity of Seattle's urban forest Maintain trees to promote health and longevity Maximize canopy cover and optimize age and species diversity Maximize the ecological and environmental benefits of the urban forest	Facilitate interdepartmental communication and cooperation to provide decision-makers the information they need to support the UFMP Develop and implement resource management tools Preserve and protect existing trees, and encourage new tree planting throughout the city by improving management of trees on private property Model good stewardship in City practices	Enhance public awareness of the urban forest as a community resource Engage the community in active stewardship of the urban forest Promote citizen-government-business partnerships

Short-, mid- and long-term actions to achieve these goals have been identified. Short-term actions to be implemented within the next 5 years include:

- Improving maintenance of City-managed trees
- Increasing tree planting
- Improving the City's internal communication and management structure regarding tree issues
- Increasing community engagement in tree policy and planning
- Strengthening incentives and regulations for tree preservation and planting on private property
- Increasing community outreach about the value of trees and proper tree selection, planting and care.

4. Goals and Actions by Management Unit

Seattle's urban forest covers all 53,000+ acres of publicly- and privately-owned land within the city limits. The obvious differences between urban spaces, streetscapes, parklands, remnant forests and other land-use types create a collection of management units that together form Seattle's urban forest ecosystem. This section defines the following nine of these management units and describes specific issues, opportunities, goals, and actions associated with each unit.

The following are the nine management units for the Urban Forest Management Plan:

1. Single-Family Residential
2. Multi-Family Residential
3. Commercial/Mixed Use Areas
4. Downtown Seattle
5. Transportation Corridors/Street Trees
6. Industrial Property
7. Major Institutional Property
8. Developed Parks and Boulevards
9. Parks Natural Areas

Canopy cover is a major indicator not only of the breadth of the urban forest but also of its overall health and vitality. The table below is a citywide snapshot that identifies current canopy cover percentages by land-use type or what this study refers to as a 'management unit.' It also estimates the number of trees to be found within each management unit as well as our 30-year canopy cover goals.

Canopy Cover Goals for Seattle by Management Unit

Land-use category	Current cover	Current trees	30-year goal	Estimated # of new trees to meet goal
Single-Family	18%	473,300	31%	350,200
Multi-Family	13%	103,400	20%	56,000
Commercial/Mixed Use	8%	49,700	15%	44,400
Downtown	9%	9,700	12%	3,800
Manufacturing/Industrial	8%	68,100	10%	18,100
Institutional Properties	15%	14,600	20%	5,000
Parks: developed sites	19%	90,000	25%	28,400
Parks: natural areas	64%	568,700	80%	143,200
Citywide	18%	1,377,500	30%	649,100
Transportation Corridors/ Street ROW*	16%		24%	

*Acres representing transportation corridors are included in the other management units

Once existing and future canopy cover goals are known and an estimate of the number of trees associated with each are known, the costs and benefits for managing the urban forest can be quantified. The table below shows this data at a citywide level. The Urban Forest Management Plan also provides this level of data by management unit.

Citywide Management Unit (MU) Data*

Statistic	Citywide	
	Current	30-year Goal
Acres in MU	54,324	
MU as % of City land base	100%	
Canopy coverage	18%	30%
Number of trees	1,377,500	2,026,600
Plantings needed		649,100
One-time cost of plantings		\$114,200,000
Maintenance Costs (yr)	\$14,054,300	\$21,116,300
Benefits (yr)		
Stormwater Mitigation Value (yr)	\$20,643,000	\$30,215,000
Air Cleaning Value (yr)	\$4,894,000	\$7,047,000
Carbon Sequestration (Tons CO₂)	52,400	77,066
Carbon Sequestration (Value \$)	\$1,584,000	\$2,331,000
Other Benefits (Energy, Aesthetics, & etc)	\$17,237,300	\$26,342,300
Net Benefit (All Benefits - All Costs) (yr)	\$30,304,000	\$44,585,000

*All values are based upon estimates and currently accepted models (McPhearson et al. 2002)

5. Moving Forward: Implementing the Plan

This Urban Forest Management Plan provides a roadmap for City staff and the community to move forward together to work toward a common set of ambitious goals. For the plan to be implemented, it needs to be institutionalized as a document requiring implementation. It also will require a stewarding group and a sense of urgency to get things started.

A broad range of actions that will forward the goal of a sustainable urban forest in Seattle over the next 30 years are presented throughout this document.

This first ever comprehensive plan for the managing and improving the condition of the urban forest is an exciting milestone. There is much to be done over time to improve the condition of Seattle's urban forest. The plan should be revisited every 5 years to celebrate accomplishments, validate assumptions, adjust goals and actions and revise data as new information is made available.