City of Seattle

Urban Forest Management

Findings from an Initial Assessment

2019

Prepared for:

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Introduction

As part of the 2019 Urban Forest Management Plan update, the City of Seattle (Office of Sustainability and Environment, OSE) contracted with Davey Resource Group for technical support in an assessment of current policies and programs. The aspects of the technical support included a gap analysis of existing urban forestry programs, a review of the Trees for Seattle website, and recommendations for consideration in the Urban Forest Management Plan (UFMP) update.

Using the Vibrant Cities Lab as a framework for discussion, DRG engaged City staff through interviews. The goal of this exercise was to understand departmental roles in urban forestry and explore the challenges and opportunities from each department's perspective. Along with the interviews, members from the Core Team provided their own individual results from the Vibrant Cities Assessment. Finally, to complete the picture, DRG staff reviewed the City urban forestry program as presented through the Trees for Seattle website. This approach provided an additional perspective on how the City presents its urban forestry program to the general public.

The results of this project are summarized within this report and are intended to provide an additional resource to City staff in the development of meaningful goals and plans. The first section discusses the challenges and opportunities for urban forestry program improvements discovered within each department. The second section provides the results of the Vibrant Cities gap analysis tool.

Departments and Leadership

The urban forest in Seattle is managed mainly through seven[1] departments with staff representatives from each department meeting bi-monthly. This management framework is a matrix management structure, which means that cross-departmental cooperation is often a requirement to achieve urban forestry objectives. Cooperation and communication among departments are led by the Urban Forestry Core Team. The departments represented at the Core Team include:

- Seattle Department of Construction and Inspections (SDCI)
- Office of Planning and Community Development (OPCD)
- Office of Sustainability and Environment (OSE)
- Seattle City Light (SCL)
- Seattle Department of Transportation (SDOT)
- Seattle Parks and Recreation (Parks)
- Seattle Public Utilities (SPU)

[1] **Finance and Administrative Services** and **Seattle Center** have modest management responsibilities that impact the urban forest but do not provide representation on the Core Team.

Seattle Department of Construction and Inspections (SDCI)

This department is responsible for the development, permitting, and enforcement of regulations for trees on private property and some public property. Discussions with this department revealed the following challenges and opportunities:

Urban Forestry Leadership Roles:

- Encouraging tree retention or tree planting in development plans.
- Permitting tree retention or tree planting.
- Enforcement of tree retention or tree planting.

Challenges and Opportunities:

- SDCI makes decisions based on City Code and is not influenced by current UFMP goals or strategies.
- Information about trees regulated by the tree protection regulations is submitted to SDCI in permit applications, but the data is not being leveraged to increase knowledge about the privately managed urban forest.
- Tree planting as part of Green Factor mitigation is not being audited. Auditing tree permits to ensure compliance with permitted private property activity is not in SDCI work plans.

Recommendations:

- UFMP could provide more detail and/or actions on how to support canopy goals within the context of development projects.
- Draft code language with incentives for canopy retention or innovative designs that preserve high-value trees.
- Create a system to document, track, and report on private property tree planting, tree removal, exceptional trees, and hazard trees.
- Audit tree permits for compliance and to determine if urban forestry outcomes are as expected from the application of City code.
- For non-compliant properties/permit holders, consider property liens to promote compliance. Ensure that code requires replacement for mitigation trees that end up dead, damaged, or removed.
- When transfer of ownership occurs, consider adding long-term tree requirements (associated with permits) into the title for the property, similar to an easement.

Office of Planning and Community Development (OPCD)

This department is responsible for stewardship of the City's Comprehensive Plan, which includes a broad policy direction for managing the urban forest. Discussions with this department revealed the following challenges and opportunities:

Urban Forestry Leadership Roles:

- Ensuring urban forestry activities are aligned with Comprehensive Plan goals.

Challenges and Opportunities:

- Current UFMP is too lengthy for public use as resource for tree care decisions and is challenging for City staff to update and align with annual work plans.
- View policies are not fully established in the City. This can be a source of conflict with respect to tree retention objectives.
- Goals and strategies in the UFMP are not always based on or aligned with community needs.

Recommendations:

- Align urban forestry with housing growth, affordability, and livability (Comprehensive Plan indicators).
- Develop an outreach campaign to improve the mutual understanding between the competing interests of keeping trees and maintaining skyline views.
- Update tree and view related policies and code language for clarity.
- Align UFMP goals with City's Comprehensive Plan expectations for urban centers, hub urban villages, residential urban villages, manufacturing, and industrial centers.
- Consider measures such as access to parks and forest fragmentation, as well as connectivity and walkability in the community. Equity in access to the urban forest could be aligned with gaps in access to parks or natural areas.
- Design UFMP with standalone sections for each specific target/audience (e.g., private property, development, street trees, park trees, utility ROW, etc.)

Office of Sustainability and Environment (OSE)

This department leads policy development and coordination for City-wide urban forest issues. It facilitates Core Team meetings, staffs of the Urban Forestry Commission, and updates to the Urban Forest Management Plan. Discussions with this department revealed the following challenges and opportunities:

Urban Forestry Leadership Roles:

- Updating the UFMP.
- UFMP progress reporting
- Two-for-one Tree Replacement Policy tracking
- Coordinating interdepartmental efforts.
- Facilitating urban forestry meetings.

Challenges and Opportunities:

- Success for urban forestry programs is not well-defined in the UFMP.
- Political agendas can impact urban forestry when elected officials have short-term agendas that re-prioritize urban forestry efforts.
- Core Team members' City-wide urban forestry coordination workload is not always included in departmental work plans.

Recommendations:

- OSE should have formal leadership/stewardship of the UFMP, including accountability for UFMP goals and have mechanisms to fund urban forestry projects when interdepartmental cooperation is required.
- Formalize staff participation requirements to Core Team and optimize meeting attendance.
- UFMP goals need to have short-term and long-term targets to demonstrate progress and success.
- Annual progress reports should be revised to a "State of the Urban Forest Report." These reports should be ongoing and become a communication tool for the public to see where the City is winning on urban forestry. The report should also discuss challenges.
- Enhance the Story Map (GIS) to help communicate high-level goals and metrics wherever possible.
- City Council members and key decision makers should be coached to better understand the long-term goals and priorities of the UFMP. Major changes in direction should be communicated in a transparent manner, including impacts to the UFMP (i.e., State of the Urban Forest Report).

Seattle City Light (SCL)

This department conducts line clearance and landscape management activities around their substations, electrical distribution and transmission system assets. This department maintains an urban tree replacement program that works closely with Trees for Seattle and SDOT Urban Forestry programs. Discussions with this department revealed the following challenges and opportunities:

Urban Forestry Leadership Roles:

- Pruning, line clearance, and tree removal around SCL utilities.

Challenges and Opportunities:

- UFMP currently does not provide suitable goals for SCL operations.
- SCL leadership has strict risk management strategies that prioritize reliability over tree retention decisions in most cases.
- SDCI could create challenges that impact SCL with updated code and exceptional trees.
- SCL provides a lot of public education messaging about trees and tree care but does not track metrics on the value or impact of their messages.
- Mixed Cycle - SDOT and SCL work neighborhoods on a different schedule and the result can be multiple crews visiting the same tree which can be confusing or appear in-efficient to City residents.
- SCL collects a lot of data and could get more attributes to support other departments.
- SCL has obtained LiDAR data and has discussed regular, iterative data capture, but presently doesn't formally share it.
- Balance in resource allocation, SCL funds tree planting programs for other departments.

Recommendations:

- Improve UFMP as a high-level guidance document. Including references to industry BMP's (Utility Vegetation Management included) as well as ANSI and Safety standards to help ensure all city departments provide the same quality of tree care.
- Provide a policy statement for SCL operations in the UFMP and maintain Tree Line USA designation.
- Improve tree care messages provided by SCL to increase alignment with citywide urban forestry objectives. This could include improved messaging on the maintenance cycle relationships between SCL and SDOT (Story map).
- Utilize SCL billing statement newsletters to increase community awareness of urban forestry issues and evaluate the benefits of this approach.
- Develop tree inventory data sharing strategies with other departments (LiDAR and tree data)
- Optimize tree planting efforts through a general tree planting funding mechanism. SCL should pay into the fund but does not plant trees.
- SCL should develop risk management strategies that accept service interruptions in exchange for tree retention.

Seattle Department of Transportation (SDOT)

SDOT is responsible for management of trees in the right-of-way (ROW, i.e., street trees). This includes design, installation, and stewardship of trees and landscapes associated with ROW and permitting of actions that could impact these trees. SDOT maintains 40,000 street trees and regulates the planting and maintenance of another 250,000 privately owned trees in the ROW. Discussions with this department revealed the following challenges and opportunities:

Urban Forestry Leadership Roles:

- Maintenance of ROW trees
- Development of design and construction standards.

Challenges and Opportunities:

- For tree planting, not enough information is available about eligible vacant sites (no stocking assessment).
- Street tree list is outdated.
- Life-cycle costs of tree care have insufficient accounting in development plans and proposals.
- Insufficient SDCI oversight for developers and construction permits results in the transfer of unaddressed tree issues (e.g., poor health/structure) when SDOT assumes responsibility.

Recommendations:

- UFMP should have neighborhood and/or land use specific canopy and tree species diversity objectives for improved community engagement.
- Update approved street tree list that is neighborhood appropriate and include a process for periodic review/updates (e.g., annually, every 5 years, or whatever works) in the UFMP
- Assess and prioritize potential planting spaces and determine existing tree stocking level(s).
- Review and update design and construction standards for street tree installations.
- Improve funding and transfer of responsibility for the care of street trees in new development projects to ensure new trees become City-managed trees.
- Provide a mechanism for inspection to ensure new trees are in compliance with plan permit requirements prior to transfer to SDOT responsibility.

Seattle Parks and Recreation (SPR)

SPR manages over 6,000 acres of developed parks, boulevards, natural areas, and other publicly-owned open spaces, including about 100,000 trees in developed parks and over 585,000 trees in the parks' forested areas. Discussions with this department revealed the following challenges and opportunities:

Urban Forestry Leadership Roles:

- Care of trees in parks and natural areas.

Challenges and Opportunities:

- There is a limited inventory (risk management focused) of eleven (11) heavily used parks.
- Trees planted in parks aren't getting credit as planted trees for Two-for-One Tree Replacement Policy compliance.
- Risk Management Policies may be outdated.
- Department goal priorities are based on the Park Comprehensive Plan first, then the UFMP.
- SDCI could improve engagement with SPR during the permitting of more public-facing projects.
- Green Seattle Partnership (GSP) is a SPR program and only provides messaging about SPR lands instead of addressing the whole urban forest.

Recommendations:

- Improve the quality of information available about trees in Seattle parks by expanding the inventory with a priority for trees adjacent to structures, fixed targets, and other areas subject to high use (e.g., benches, picnic tables, trails, etc.)
- Determine GSP seedling attrition/survival rates.
- Develop standard metrics for inventorying trees planted across all departments.
- Develop a standard risk management policy for trees across all departments.
- UFMP should align with Park Comprehensive Plan goals.
- Develop communication and collaboration protocols for SDCI permitted projects to other departments.
- Integrate the GSP program into Trees for Seattle messaging and improve volunteer coordination efforts.

Seattle Public Utilities (SPU)

SPU manages Seattle's drinking water, solid waste, and drainage and wastewater systems. This department maintains trees on property it owns and plants trees to meet drainage or capital project needs. Specifically, SPU manages and stewards the urban forest through four major avenues: 1) at its facilities; 2) through green stormwater infrastructure; 3) through capital stream and riparian habitat restoration, and floodplain reconnection projects; and, 4) through the Trees for Seattle Program. SPU also works to install green stormwater infrastructure projects and is home to the interdepartmental Trees for Seattle program.

Trees for Seattle is the City of Seattle's interdepartmental outreach and engagement program housed in Seattle Public Utilities with responsibilities across all urban forestry departments. Trees for Seattle is responsible for City-wide urban forestry communications such as web, newsletter, and social media, plants 1,000 trees per year on private residential property through the Trees for Neighborhoods program and engages volunteers to steward Seattle's trees through the Tree Ambassador program. Discussions with the Trees for Seattle supervisor focused solely on her program and revealed the following challenges and opportunities:

Urban Forestry Leadership Roles:

- Planting trees on public and private properties.
- Running the Tree Ambassador Program.
- Serving as the Trees for Seattle website content manager.
- Public communications and engagement for urban forestry

Challenges and Opportunities:

- Funding comes from across all departments.
- Need for volunteer work outstrips staff capacity.
- Insufficient messaging about the care and protection of large conifers.
- No overarching urban forestry leadership across all departments. No department has care of the urban forest as part of its core mission.

Recommendations:

- Stabilize program funding sources to secure adequate staffing for managing volunteers.
- Integrate GSP volunteering with Trees for Seattle website to consolidate volunteer engagement. Consolidate urban forestry volunteering opportunities in one place.
- UFMP should improve the message that big trees are important for the City.
- Core Team should provide overarching policies for tree care standards.

Vibrant Cities Assessment

The Vibrant Cities Lab website was developed in partnership with the United States Forest Service, American Forests, and the National Association of Regional Councils. It was designed as a web resource to help people discover how a healthy tree canopy can enrich a community and guide residents toward an effective urban forestry program. One of the tools included on this website is the Community Assessment and Goal-Setting Tool. Structured with gap analysis principles, the tool presents urban forestry topics and invites users to consider their current urban forest program status as well as a potential future state. The difference in score between the present state and potential future state identifies magnitude of the gap. Analysis of the gap is intended to identify strategies that could remedy the difference and close the gap.

Each topic assigns points based on assessments of a low, fair, good, better and optimal states. Core Team staff and DRG completed individual assessments in order evaluate how different departments in the City consider these topics and how DRG would assess them (Appendix A). Small gap scores provide some indication of the City's success within the topic area, while large gap scores highlight the differences between department perceptions as well as major areas where the City could improve its urban forestry program.

Example Table: Gap Analysis Interpretation

Current	Goal	Gap Description	Remedy
This is the current status of Seattle Urban Forestry in the topic area as defined through vibrant cities lab.	*This is the desirable goal state as defined through vibrant cities lab.*	*This is how DRG describes the gap.*	*This is DRG's recommended strategy for closing the gap.*

1. Current Tree Canopy and Goals

On Canopy: *Achieve desired degree of tree cover, based on potential or according to goals set for entire municipality and for each neighborhood or land use.*

Optimal Score= 4, Core Team Score= 3, DRG Assessment Score= 3, Gap Score = 1
Seattle has a canopy goal of 30% by 2037. Core Team considers that the City has a fair assessment of the canopy based on multiple studies. The City may be within 75% of the its goal but there is no trend analysis determining whether the overall canopy cover in Seattle is increasing or declining. General consensus among staff was that the City needs to set appropriate canopy goals for smaller areas of the City, such as neighborhoods or management zones.

Table 1: Current Tree Canopy and Goals - Gap Analysis

Current	Goal	Gap Description	Remedy
The existing canopy is >75% of desired and there are no neighborhood goals.	The existing canopy is >75%-100% of desired at individual neighborhood level as well as overall municipality.	Missing individual neighborhood goals.	Engage neighborhoods and community leaders to establish neighborhood or management district canopy goals.

2. Urban Forest Inventory and Assessment

On Tree Inventory: *Current and comprehensive inventory of tree resource to guide its management, including data such as age distribution, species mix, tree condition, and risk assessment.*

On urban forest assessment methodology: *Urban forest policy and practice driven by accurate, high-resolution, and recent assessments of existing and potential canopy cover, with comprehensive goals municipality-wide and at neighborhood or smaller management level.*

Optimal Score= 8, Core Team Score= 5, DRG Score= 3, Gap Score= 3-5
Urban forest policy is driven by data being collected and used to establish City-wide goals. The City has begun to consider districts, zoning, and neighborhoods for smaller management levels. SDOT has an inventory of public and privately managed street trees that guides planning and management decisions. Parks have limited inventory in heavily used areas, primarily for risk management purposes. Natural areas have sample-based inventories.

Privately owned trees in the City have been assessed through canopy surveys with the most recent being a LiDAR canopy cover assessment in 2016.

Table 2: Urban Forest Inventory and Assessment - Gap Analysis

Current	Goal	Gap Description	Remedy
Inventory of publicly-owned trees is inconsistent across departments and could be considered sample based. There are some capabilities to leverage inventory data to guide planning and management decisions.	Systematic comprehensive inventory system of entire urban forest – with information tailored to users and supported by mapping in municipality-wide GIS system. Provides for change analysis.	Public and street trees are not inventoried within a consolidated database. Tree information is collected by individual departments.	Consolidate inventory data to develop a comprehensive inventory database of public and street trees.
The City has a complete, detailed, and spatially explicit Urban Tree Canopy (UTC) assessment based on LiDAR.	Complete UTC assessment based on LiDAR and effectively used to drive urban forest and green infrastructure policy and practice municipality-wide and at smaller management levels.	NO GAP	NO GAP

3. Trees in Your Community

On assessment of publicly-owned trees: *Current and detailed understanding of the condition and risk potential of all publicly owned trees that are managed intensively (or individually).*

On assessment of publicly-owned natural areas: *Detailed understanding of the ecological structure and function of all publicly-owned natural areas (e.g., woodlands, ravines, stream corridors, etc.), as well as usage patterns.*

On assessment of trees on private property: *Understanding of extent, location, and general condition of privately-owned trees across the urban forest.*

Optimal Score= 12, Core Team Score= 4, DRG Score= 4, Gap Score= 8
The City has a complete inventory of publicly-owned trees in the rights-of-way that is managed by SDOT. This data has no tree condition and risk data, but there are City-wide GIS maps that are publicly accessible through Story Map.

There are eleven (11) parks in the City with detailed inventories. More information could be collected. Information such as age distribution, species mix, and tree condition can be analyzed from the data, but risk assessments are not standard in the inventory database. iTree is being used to model tree benefits. SCL collects routine LiDAR for high-resolution analysis of their assets, but tree information available through SCL is not routinely shared as part of any protocols.

Natural areas have their ecological structure and function identified through Seattle Parks and Recreation activities with the Green Seattle Partnership program. Management of natural areas is approaching optimal in that it focuses on improving overall ecological structure and function while facilitating appropriate public use. It could improve with better community engagement adjacent to natural areas to control invasive plants re-seeding from adjacent properties.

A bottom-up sample based iTree Eco inventory project (Seattle Forest Ecosystem Values, 2012) was conducted by the Green Cities Research Alliance.

Table 3 Trees in Your Community - Gap Analysis

Current	Goal	Gap Description	Remedy
Limited information about tree condition and risk level.	Complete GIS tree inventory that includes detailed tree condition and risk ratings.	Condition and risk assessment information is part of the public tree and street tree inventory database.	Collect condition and risk information for all public trees and street trees.
Ecological structure and function of natural areas are assessed and documented through sample-based iTree Eco project (2012)	Management plan focused on sustaining and, where possible, improving overall ecological structure and function while facilitating public use. Plan should consider open space corridors outside community borders.	GSP management plan does not evaluate forest fragmentation and connectivity.	Use existing LiDAR UTC results to evaluate forest fragmentation in the City.
Bottom up sample-based assessment of ecosystem services provided by privately-owned trees along with UTC aerial views.	Bottom up sample-based assessment of the entire urban forest integrated into municipality-wide GIS system.	Ecosystem services provided by street trees are readily available, but private property tree benefits are not.	Update the Story Map and include additional UTC assessment results that describe environmental services of all trees at the neighborhood level.

4. Urban Forest Characteristics

On relative performance index by species: *Understanding the age, health, and condition of publicly-owned trees, by species.*

On use of native vegetation: *Preservation and enhancement of local natural biodiversity.*

Optimal Score= 8, Core Team Score= 1, DRG Score = 0, Gap Score= 0-8
The City has some understanding of the age, health, and condition of publicly-owned trees by species, but a Relative Performance Index (RPI) has not been established for the public tree population.

The preservation and enhancement of local natural biodiversity are being supported through the voluntary use of native species on publicly and privately-owned lands. Native species are recognized as important, but species diversity is encouraged to the extent that non-native species are also encouraged (as long as they are not considered invasive). Public messaging on the Trees for Seattle website encourages homeowners to consider large conifer trees whenever the site will support them. Eradication of invasive species is pursued on public forested lands through the Green Seattle Partnership and other program activities.

Concerns about urban forest resilience related to climate change and increased summer droughts are being discussed among urban forest leadership.

Table 4: Urban Forest Characteristics - Gap Analysis

Current	Goal	Gap Description	Remedy
No information about the age, health, and condition of public trees by species. City has no RPI.	All six of the most common species have higher RPI scores than the average of all species in the City.	City doesn't track the RPI of its tree species.	Collect condition information about public trees and street trees and develop RPI for most common tree species in the database.
City has limited focus on the enhancement of local natural biodiversity. Voluntary use of native species on publicly and privately-owned lands. Invasive species are recognized.	Use of native species is encouraged on a project-appropriate basis in all areas. Invasive species are recognized and discouraged on public lands.	Native species are encouraged in natural area projects but are not valued in SDCI permits for private property developments.	Develop City Code language that encourages native species and prohibits invasive species.

5. Engaging Peers and Residents in Process

On alignment of municipal departments: *Align affected municipal departments, county and regional authorities, and state agencies behind common agenda.*

On engagement of residents in planning and implementation: *Enable community stakeholders to participate in and help shape planning process.*

On trees acknowledged as vital community resource: *Stakeholders from all sectors and constituencies within municipality – private and public, commercial and nonprofit, entrepreneurs and elected officials, community groups and individual citizens – understand, appreciate, and advocate for the role and importance of the urban forest as a resource.*

Optimal Score= 16, Core Team Score= 9, DRG Score= 8, Gap Score= 7-8
The City has good interdepartmental cooperation, as evidenced by the Urban Forestry Core Team. However, across all departments, Core Team (CT) engagement is not part of individual annual work plans. The result is ad hoc engagement where CT members recognize potential conflicts and reach out to collaborate on a project-specific basis. An optimal condition would be formal participation requirements between CT members.

There are many active neighborhood groups and volunteers in the city that help advance urban forest goals by coordinating efforts through Trees for Neighborhoods, the Tree Ambassador Program, and GSP. Volunteer recruitment and recognition strategies for retaining volunteers could improve by enhancing the pathways for engagement and developing consistent messages through these three volunteer programs.

Only recently (from the 2016 UTC assessment) has the City been able to connect Urban Tree Canopy conditions around the City with issues of environmental and social equity. This relationship could be leveraged for targeted strategic improvements to the urban forest through planting and neighborhood engagement.

The City recognizes the importance of the urban forest in its Comprehensive Plan, and anecdotal evidence suggests that the public value trees as important to their neighborhoods and communities. However, public engagement around tree issues is often only attended by impassioned proponents or opponents of tree issues. Urban forestry education on tree issues could be fostered.

Table 5: Engaging Peers and Residents in Process - Gap Analysis

Current	Goal	Gap Description	Remedy
Informal teams among departments and agencies communicate regularly and collaborate on a project specific basis.	Municipal policy implemented by formal working teams on all municipal projects.	Core Team engagement is not formally funded by departmental work plans.	Departments have designated work hours associated with Core Team meetings and projects.
Many active neighborhood groups are engaged in advancing urban forest goals, but with little or no overall coordination with municipality or partnering NGOs.	Proactive outreach and coordination efforts by municipality and NGO partners resulting in widespread citizen involvement and structured engagement among diverse groups.	Multiple pathways to engagement on urban forestry issues compete for public attention. (GSP and Trees for Seattle)	Develop one website source as the sole point of engagement for all urban forestry volunteer recruitment.
Tree planting and outreach are not determined equitably by canopy cover or need for benefits.	Equitable planting and outreach at the neighborhood level are guided by strong resident involvement in low canopy/high need areas. Residents participate actively in identifying needs for their neighborhoods, planning, implementation, and monitoring.	Equitable urban forestry investment for underserved neighborhoods has yet to be fully addressed.	In partnership with community members, develop specific goals that strengthen community involvement in low canopy, high-need areas. .
Stakeholders from all sectors and constituencies, private and public, generally recognize trees as important and beneficial.	Urban forest recognized as vital to the community's environmental, social, and economic well-being.	Public engagement on tree issues is primarily attended by impassioned advocates or detractors.	Based on inclusive engagement results, develop targeted information sharing strategies.

6. Creating Essential, Effective Public/Private Partnerships

On Large private landholders*: including school systems, universities and corporate campuses – embrace and advance municipality-wide urban forest goals and objectives by implementing specific resource management plans.*

On all utilities*: above and below ground – employ best management practices and cooperate with municipality to advance goals and objectives related to urban forest issues and opportunities.*

On green industry: *works together to advance municipality-wide urban forest goals and objectives and adheres to high professional standards.*

Optimal Score= 12, Core Team Score= 3, DRG Score= 3, Gap Score= 9
The majority of trees in the City are on privately-owned lands. The City does not actively partner with large landowners or have pathways for private partnerships that could enhance urban forest stewardship programs. Through the Trees for Seattle program, there are educational resources, but they provide broad messaging. Corporate campuses, academic institutions, and large privately-owned parcels of undeveloped property should be specifically engaged to develop voluntary cooperation toward city-wide urban forestry objectives.

Since the City manages its own utility services, it is in an exceptionally good position to identify and resolve conflicts associated with the maintenance of trees around utilities and City infrastructure. SCL and SPU employ best management practices and are actively engaged within the Core Team to provide funding for tree planting projects and listen for opportunities where urban forestry objectives could be enhanced with support from the utilities.

Other green industry professionals, such as arborists, gardeners and landscape architects have a strong understanding of the constraints associated with working on urban forestry projects around SCL facilities and street trees. However, this understanding exists only because of permitting and code compliance. These professionals have the capacity to lead and make decisions that align with the City vision for the urban forest. The City could leverage this group by engaging them to think beyond minimum code requirements. As green industry professionals conduct business in the City, they could be operating and communicating with their clients about the City's vision for the urban forest. Excellence from green industry business professionals could be celebrated with a recognition program.

Table 6: Creating Essential, Effective Public/Private Partnerships - Gap Analysis

Current	Goal	Gap Description	Remedy
Private landowners are generally uninformed about urban forest issues and opportunities.	Municipality educates landowners, provides technical assistance, sets goals, and provides incentives for managing resources in accordance with the plan.	Trees for Seattle provides broad educational and outreach resources, but the City does not have policies to support private land owners with urban forest stewardship.	Identify and prioritize areas in Seattle to provide support for urban forest stewardship. Develop partnerships that align with city-wide urban forest objectives.
Utilities employ best management practices, recognize potential municipal conflicts, and reach out to urban forest managers on an ad hoc basis – and vice versa.	Utilities employ best management practices, recognize potential municipal conflicts, and reach out to urban forest managers on an ad hoc basis – and vice versa.	NO GAP	NO GAP
Some cooperation among green industry as well as general awareness and acceptance of municipality-wide goals and objectives.	Shared vision and goals and extensive committed partnerships in place. Solid adherence to high professional standards, and commitment to credentialing and continuing education.	Relationship with green industry is strong with SCL and SDCI because of safety and code requirements, but there is no shared vision or goals.	Develop a green industry partnership program that celebrates local green businesses with shared visions for the City's urban forest.

7. Resource Management: Planning

On UFMP: *Develop and implement a comprehensive urban forest management plan for public and private property. Cooperation and interaction on urban forest plans among neighboring municipalities within a region, and/or with regional agencies. Forestry plan is designed to reinforce, and be reinforced through comprehensive plans, sustainability plans, park development, storm water and watershed plans, neighborhood revitalization, climate mitigation and sustainability plans, etc.*

Optimal Score= 12, Core Team Score= 3, DRG Score= 2, Gap Score= 9-10
The City has been engaged in urban forest planning with management plans dating back to 2007. An updated UFMP is anticipated in 2019. Previous plans focused primarily on achieving City-wide canopy cover objectives; however, consensus among Core Team members is that this ignores equity issues, where some areas of the city are well above canopy goals, while others are well under. Smaller management units need to be considered as part of the strategy to increase canopy equitably among neighborhoods.

Looking at the region around Seattle, most municipalities are integrating some level of urban forest policy or plan to ensure urban forest health and sustainability. The City provides staff resources that contribute to regional planning efforts with non-profits and regional government agencies. Future urban forest planning efforts should also include objectives that are supported by urban forest policies in jurisdictions immediately adjacent to Seattle.

The City does not have any department with an explicit mission to care for the urban forest. This necessitates cooperation among departments, as current urban forest plans have goals and objectives that cannot be achieved without engagement from the Core Team. The UFMP should designate roles and responsibilities of individual departments and have associated goals and objectives. Individual departments should also include recognition of the UFMP objectives within their own departmental plans and policies.

Table 7: Resource Management: Planning - Gap Analysis

Current	Goal	Gap Description	Remedy
New or recent UFMP developed to achieve goal for publicly-owned forest resources.	New or recent urban forest and green infrastructure management plan, which targets public and private tree planting and protection based on assessment of anticipated benefits – and assures these benefits are distributed equitably among neighborhoods.	Management plan sets canopy targets but is generalized to the whole city and does not consider equity among neighborhoods.	Integrate knowledge of environmental, social and economic benefits at the neighborhood level into the UFMP.
Some neighboring municipalities and regional agencies share similar urban forest policies and plans.	Widespread regional cooperation resulting in development of regional urban forestry strategy.	Partnerships and alignment with regional urban forest planning groups (non-profits and governmental agencies) are not formalized in City policy or plans.	Develop UFMP elements that integrate with regional goals. Understand forest fragmentation relationships along municipal boundaries.
Urban forestry planning team presents plan to other departments, encouraging them to consider how forestry might help achieve their objectives.	All departments whose goals are served by urban forestry practices, participate in creation of forestry plan, and commit to designated roles and responsibilities.	Seattle does not have a department with explicit mission to care for the urban forest.	Ensure all relevant departments include recognition of UFMP objectives within their own plans and policies.

8. Resource Management: Implementation

On Staffing and Funding: *Maintain sufficient well-trained personnel and equipment – whether in-house or through contracted or volunteer services – to implement municipality-wide urban forest management plan. Develop and maintain adequate funding to implement municipality-wide urban forest management plan.*

On Tree Planting: *All publicly-owned trees are selected for each site and planted in conditions that are modified as needed to ensure survival and maximize current and future tree benefits. Comprehensive and effective tree planting and establishment program is driven by canopy cover and goals and other considerations according to plan. The ecological integrity of all publicly-owned natural areas is protected and enhanced – while accommodating public use where appropriate.*

On Policies: *Because private lands comprise the majority of canopy cover for most municipalities, plans and policies should address – through rules, fees and incentives – how owners contribute to the overall health of the urban forest and the benefits it delivers.*

Optimal Score= 24, Core Team Score= 8, DRG Score= 8, Gap Score= 21-22
Urban forest management program implementation is successful in a large part due to the training and qualifications available within City staff. Inadequate staffing was reported by both SPU and SDCI as the biggest challenge to successful implementation and monitoring of urban forest related programs and projects.

Secondary to staffing limitations is the multi-departmental funding for urban forestry. Projects are developed and funded by individual departments and the City does not have a distinct source for general funding of urban forestry projects. There is some interdepartmental sharing of funds or staff resources on projects, but the sharing has to be carefully negotiated to make sure that the funding sources and spending activities are acceptable from a City accounting perspective (e.g., SCL funds are only used in SPU planting projects, not park projects).

Tree planting projects in the City are frequently developed in partnerships between SCL, SDOT, SPU, and SPR. These tree planting projects effectively consider soil, growing space, and species selection. Tree planting projects that are performed by private landowners from SDCI permit requirements do not have sufficient oversight to ensure their success.

There are discrete management plans for developed parks and natural areas within the city and much of the implementation occurs through the GSP program. SPR is in the process of enhancing its inspection program to be more proactive with tree maintenance. SDOT has a program that routinely inspects and prioritizes street tree management.

Tree protection ordinances have been developed by the City to protect mature trees, but the code language does not incentivize tree protection beyond the minimum code requirements. SDCI could have more abilities to support urban forestry goals if the code offered incentives related to tree warranties beyond transfer of ownership.

Table 8: Resource Management: Implementation - Gap Analysis

Current	Goal	Gap Description	Remedy
Lack of staff training and/or access to adequate equipment limits effectiveness.	Team has capacity in terms of trained staff and equipment to achieve many of the goals of the UFMP	SDCI and SPU are understaffed to meet UFMP goals.	Staffing at SPU should be increased to leverage volunteer potential in the City. SDCI staffing should be increased to ensure codes are being enforced and delivering the expected results.
Funding sufficient for some proactive management based on UFMP	Sustained, long-term funding from multiple municipal, regional and/or state agencies, along with private sources to implement a comprehensive UFMP and provide for maintenance and adaptive management as circumstances change.	Funding for urban forestry activity is cobbled together from various departments. Each department has individual work plans, with some departments pursuing grants or being fully funded, while other departments may be underfunded (understaffed).	Methods for sharing funds across departments should be developed (e.g., OSE general fund or tree bank), which could serve as a resource to fund individual departmental projects or objectives and allow for adaptive management.
Municipality-wide guidelines for the improvement of planting site conditions and selection of suitable species.	All trees planted in sites with adequate soil quality and quantity, and with sufficient growing space and overall site conditions to achieve their genetic potential and thus provide maximum ecosystem services. Where growing conditions are poor, guidance provided on how to improve soil volume, quality, other factors.	Trees planted as part of City projects are not reviewed for success as part of routine inspection practices. Trees planted by private parties as part of code or permit requirements have insufficient oversight to ensure their successful establishment.	Increase staffing for SDCI to evaluate tree planting projects and ensure that trees are suitable, and successfully established. Research benefits of Green Factor (SMC 23.86.019) credits to optimize tree planting opportunities on private property projects.
Management plan for each publicly-owned natural area focused on sustaining and, where possible, improving overall ecological integrity (i.e., structure and function) while facilitating appropriate public use.	Management plan for each publicly-owned natural area focused on sustaining and, where possible, improving overall ecological integrity (i.e., structure and function) while facilitating appropriate public use.	NO GAP	NO GAP

Current	Goal	Gap Description	Remedy
Strong tree protection ordinance focused on maintaining mature trees with effective procedures.	All relevant municipal policies require or incentivize adherence by private owners to standards incorporated in the plan. Incentives and sanctions applied when appropriate.	Tree protection ordinance do have sanctions but no incentives.	Tree code could have incentives developed to encourage tree protection beyond minimum code requirements.

9. Resource Management: Monitoring and Maintenance

On Tree Protection Policy and Enforcement: *The benefits derived from trees on public and private land are ensured by the enforcement of municipality-wide policies, including tree care "best management practices."*

On Monitoring: *Periodic, cyclical inspection of urban trees to identify health, pests and disease, growth, canopy, site conditions, and potential risks. Regular inspections guide urban forest management activities, including regular maintenance, species selection, planting sites, preventative and reactive disease and pest control.*

On Risk Management: *Comprehensive tree risk management program fully implemented, according to ANSI A300 (Part 10) "Tree Risk Assessment" standards and supporting industry best management practices.*

On Urban Wood and Green Waste*: Create a closed system diverting all urban wood and green waste through reuse and recycling.*

Optimal Score= 16, Core Team Score= 6, DRG Score= 1, Gap Score= 10-15
The City has established tree protection codes and policies designed to protect trees during construction. Permit requirements moderate tree removals to encourage retention of large trees and require tree planting to mitigate for tree loss. Tree policies and design standards are referenced for SCL, SPU, SPR, and SDOT operations, but each department sets its own policy.

With multiple departments responsible for monitoring, SCL and SDOT have the most comprehensive inspection schedules to monitor, report, and take action on tree health issues. SPR does not have a routine inspection cycle, but it does have inventories about trees in eleven (11) parks and is developing a risk management strategy to improve pro-active monitoring and management of park trees.

Across all departments, there is not a standard tree risk assessment or risk management policy or program. When tree concerns are reported, SCL, SDCI, and SDOT apply tree risk assessment methodology in their evaluations and determinations for action. This work is performed on a reactive basis without a consolidated system in place to track identified tree risks and maintain documentation of the City's response.

The City has waste management programs designed to divert green waste from landfill, but wood waste utilization has not been optimized in any way to maximize the value of the wood available in the urban forest. Trees for Seattle website introduces to the public the value of wood chips but doesn't provide direction on how to extract more value from trees. SCL, SDOT, and SPR have their crews and contractors chip wood waste or deliver clean wood to Waste Management, Inc. The City could provide leadership in the community to connect tree removals with wood turning operations.

Table 9: Resource Management: Monitoring and Maintenance - Gap Analysis

Current	Goal	Gap Description	Remedy
Policies in place to protect public and street trees and employ industry best management practices, but rare or inconsistent enforcement.	Policies include construction standards for on-site tree protection, establishment, and maintenance. Conforms to and references ANSI Standards for arboricultural practices (A300), safety (Z133), and nursery stock (Z60.1), as well as applicable ISA BMPs.	Multiple departments conform and reference ANSI Standards and ISA BMP'S, but these are either variable departmental policies or are inconsistently considered in City code.	Tree care standards should be developed and apply to all public and street trees as an interdepartmental tree care policy.
Monitoring is infrequent and reactive to reported changes in tree health, site condition, etc.	Monitoring adheres to the standards and protocols established by the Urban Tree Growth and Longevity network.	SDOT and SCL have routine inspections, but SPR has not implemented a proactive inspection program.	Develop a routine tree inspection protocol and standards for all public and street trees.
No tree risk assessment or risk management policy or program. Response is on a reactive basis only.	Citizens and City staff report tree safety issues to the forestry department or manager (e.g. 3-1-1 system, online form, etc.). System tracks the time between damage report and mitigation action.	City has dedicated contact line for all tree-related questions but does not have an integrated risk management policy directing responses.	Develop a standard risk management protocol for all public and street trees and ensure that risk assessments for public and street trees are performed and documented.
While most green waste does not go to landfill, uses are limited to chips or mulch.	Comprehensive Plan and processes in place to utilize all green waste one way or another, to the fullest extent possible.	No policy, plan or program to integrate wood waste utilization.	Provide information resources within Trees for Seattle website to increase City and public utilization of wood waste. Free chips or wood turning resources should be available through Trees for Seattle.

Trees for Seattle Website

The City has developed a website called "Trees for Seattle." The intent is to provide a singular resource (public-facing portal) for comprehensive communication about Seattle's urban forestry programming, policies, regulations, and opportunities. To identify gaps and areas for improvement, OSE requested that DRG review the website and provide some commentary on its completeness and ease of use. The approach examined the website from three (3) perspectives: the homeowner/landowner, the developer, and the tree enthusiast. Overall, there were two (2) general observations that would improve the website's ease of use:

- The **Get Involved** tab presents opportunities for volunteerism, but it also is the only tab that links users to **Ask Our Experts** or **Contact Us**. When users decide that they want to connect with the City Staff, these links should be easily found.
- The **Restoration** tab or **Home** page could be reworded to introduce some fundamental details about Seattle's urban forest, specifically, that the urban forest is made up of street trees, private trees, and park trees. With the current site, it's not readily obvious that the City manages the trees in the urban forest according to this criterion.

Homeowner/Landowner Perspective

The homeowner/landowner perspective focused on how individuals might visit the website to learn about tree care on their property and how they can determine whether or not a permit is required to achieve their objectives. Considerations for improvement are as follows:

- The **Planting & Care** tab provides very thorough guidance for best practices in tree selection, planting, and mature tree care.
    - The subsection **Protecting** describes protecting trees during construction. This subsection should be reviewed for clarity and more directly link to other City Codes. A link to the Tree Protection Ordinance (SMC 25.11) should be available within the text to encourage users to learn more about the more detailed requirements.
- Regarding "Illegal Tree Removal on Private Property," The home page link should navigate to the illegal cutting section in **Regulations**. It's more comprehensive and could still guide the user toward reporting tree issues or determining if their own planned activity is illegal or regulated.

Developer Perspective

The developer perspective considered professions such as architects, arborists, and contractors. These users are likely to navigate directly to the **Regulations** tab. Considerations for improvement are as follows:

- A section can be added to address how to measure a tree. This could be helpful for those who are making preliminary determinations about significant trees and exceptional trees. There are references to DBH on the website, but the City could point to clear instructions around measurement. Currently, the only way to find out how to measure DBH is to click on the **Regulations** tab and follow the link to the designation of exceptional trees and read the Director's Rule.

Volunteer/Enthusiast Perspective

Other probable users of the site are potential volunteers and tree enthusiasts. These users would be navigating the website to learn about trees in Seattle and find ways to get involved. The **Benefits** tab provides excellent resources to guide users through all of the benefits that trees provide. Considerations for improvement are as follows:

- The **Management Plan** section has a **work plan** tab that is outdated and only goes to 2017.
- The **Management Plan** section has a **Progress Reports** tab that is outdated and only goes to 2017.
- The **Street Tree Inventory Story Map** is a powerful visualization of the urban forest and is increasingly popular with municipalities around the country. Consider changing the title to “Urban Forest Story Map” and expand the messaging to help anyone interested know that there is an opportunity to explore more spatial data. More information about SDOT pruning cycles, park trees and park programs should be integrated into the Story Map. Also, as suggested in the GAP analysis, when the City has information about the relative performance index (RPI) of trees, the information could be a valuable public tool for choosing which trees to plant.

Appendix A - Core Team and DRG Assessment Results

Vibrant Cities Lab – Current Status

		Current							
TOPIC	TOPIC DESCRIPTION	Sandra Pinto de Bader (OSE)	Chanda Emery (SDCI)	Jana Dilley (SPU)	Maggie Glowicki (SDCI)	Brennon Staley (OPCD)	Darren Morgan (SDOT)	DRG	City AVERAGE
1	Measure your current tree canopy and set goals	3	4	2	2	4	2	4	3
2	Urban Forest Inventory and Assessment	4	5	4	5	5	4	3	5
3	Know what's happening to trees in your community	4	6	undefined	0	5	4	4	4
4	Urban forest Characteristics	1	1	3	-2	1	1	0	1
5	Engaging peers and residents in process	7	6	8	11	14	7	5	9
6	Creating essential, effective public/private partnerships	4	2	3	1	5	3	3	3
7	Resource Management: Planning	6	3	-1	2	5	0	2	3
8	Resource Management: Implementation	7	6	15	-1	10	9	8	8
9	Resource Management: Monitoring and Maintenance	3	4	7	6	9	6	1	6

Vibrant Cities Lab – Goal State

		GOAL							
TOPIC	TOPIC DESCRIPTION	Sandra Pinto de Bader (OSE)	Chanda Emery (SDCI)	Jana Dilley (SPU)	Maggie Glowicki (SDCI)	Brennon Staley (OPCD)	Darren Morgan (SDOT)	DRG	City AVERAGE
1	Measure your current tree canopy and set goals	4	2	4	2	4	4	4	3
2	Urban Forest Inventory and Assessment	7	8	6	7	5	5	8	6
3	Know what's happening to trees in your community	8	12	undefined	2	9	7	7	8
4	Urban forest Characteristics	4	6	6	-2	5	4	3	4
5	Engaging peers and residents in process	16	16	16	14	16	14	10	15
6	Creating essential, effective public/private partnerships	8	11	11	9	9	7	6	9
7	Resource Management: Planning	12	12	10	9	10	7	7	10
8	Resource Management: Implementation	20	24	24	17	22	20	16	21
9	Resource Management: Monitoring and Maintenance	11	16	11	16	14	10	8	13

Vibrant Cities Lab – Gap Score

TOPIC	TOPIC DESCRIPTION	Sandra Pinto de Bader (OSE)	Chanda Emery (SDCI)	Jana Dilley (SPU)	Maggie Glowicki (SDCI)	Brennon Staley (OPCD)	Darren Morgan (SDOT)	DRG	City AVERAGE
1	Measure your current tree canopy and set goals	1	-2	2	0	0	2	0	1
2	Urban Forest Inventory and Assessment	3	3	2	2	0	1	5	2
3	Know what's happening to trees in your community	4	6	undefined	2	4	3	3	4
4	Urban forest Characteristics	3	5	3	0	4	3	3	3
5	Engaging peers and residents in process	9	10	8	3	2	7	5	7
6	Creating essential, effective public/private partnerships	4	9	8	8	4	4	3	6
7	Resource Management: Planning	6	9	11	7	5	7	5	8
8	Resource Management: Implementation	13	18	9	18	12	11	8	14
9	Resource Management: Monitoring and Maintenance	8	12	4	10	5	4	7	7