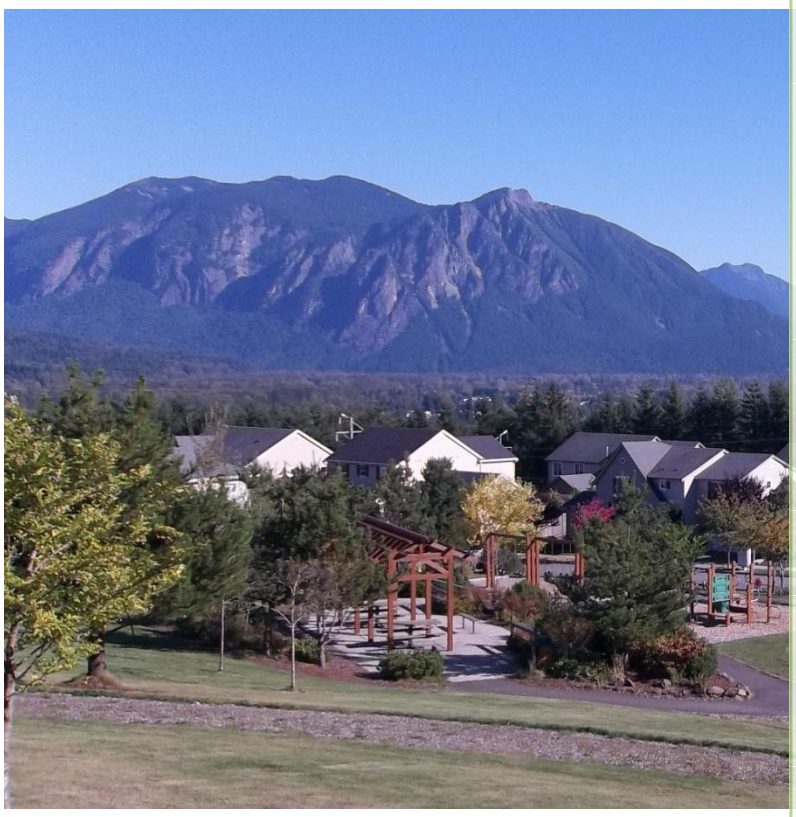
Urban Forest Strategic Plan



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Mission

Snoqualmie is dedicated to protecting and managing its vibrant urban forest as a cohesive ecosystem, to enhance its environmental benefits and its contribution to community livability, today and for generations to come.

The nation behaves well if it treats its natural resources as assets which it must turn over to the next generation increased, and not impaired, in value.
- Theodore Roosevelt

TABLE OF CONTENTS

APPENDICES:

Executive Summary

Snoqualmie is a community with a vibrant urban forest. Realizing it must develop an intelligent system of care for this valued asset, the City sought direction on how to build a sustainable urban forestry program. Through a guided process considering multiple aspects and components of this initiative, City staff and Snoqualmie Ridge management developed a comprehensive set of urban forestry goals. Of the key objectives, Snoqualmie identified these priorities:

- Establish a diverse tree population suitable for the urban environment and adapted to the region.
- Acquire a comprehensive understanding of the City tree resource to direct its management.
- Develop and implement a comprehensive urban forest management plan community-wide.
- Develop and maintain adequate staff and funding to implement a City urban forestry program.
- Ensure all city departments and other public agencies cooperate with common urban forestry goals and objectives.
- Cultivate citizen understanding and cooperation in urban forest management, recognizing the urban forest is vital to Snoqualmie's environmental, social, and economic well-being.

With a clear vision of where the City wants to go, this plan provides several strategies to develop the road map. Many are suggested as short-term tasks and are relatively cost-effective in moving Snoqualmie toward a city urban forestry program. The success of the plan heavily relies on support of these strategies by both the City decision makers and the community. Adequate funding and resources committed to a program are critical to cultivate a sustainable urban forest.

Introduction

There are many definitions for an *urban forest,* but it most commonly refers to all the trees and associated vegetation in a community. Often trees are planted individually in the suburban and urban environment, though many preserved natural areas in a city have native forest remnants. Vegetation in residential and commercial landscapes also contributes to the urban forest. No matter the diverse origins of planned or naturally occurring trees, they all depend upon, and interact with, the natural mediums of local soil, water and climactic conditions. Therefore, a healthy urban forest is best managed as an entire forest ecosystem.

Like other progressive municipalities, Snoqualmie has a goal to better manage its urban forest; the City emphasized this commitment by becoming a Tree City USA in 2010 and hiring a certified arborist. Currently the city has thousands of trees that provide tremendous benefits and have high value, but no cohesive plan for managing these assets. Realizing its limited resources, the City

sought assistance in developing a strategic plan toward a more sustainable urban forestry program. With a grant from the Washington State Department of Natural Resources, in partnership with the USDA Forest Service, the City seeks a clear direction for a more effective and cost-efficient management of public trees and urban forest. Terra Firma Consulting was contracted to work with City staff and stakeholders to develop a strategic plan that addresses how to manage and maintain public trees and lead the City to more specific action plans and budgets over time.

An urban forest strategic plan is a living document that outlines where Snoqualmie wants to go regarding its urban forest, and ideas of how to get there. Part of this plan includes an overarching mission statement under which all goals and strategies align. In concert, the plan uses a sustainable urban forestry model to demonstrate the comprehensive nature of resource management, to identify the feasible goals to strive for, and outline key priorities in which to focus short-term action steps. The strategic plan recommendations are to guide the community over the next 5-10+ years regarding planning, management and maintenance of public trees based on the identified goals and priorities. Annual work plans with budget implications would be generated from the strategic plan.

The plan is also intended to help promote a more unified effort to manage the entire urban forest between the City and residents, business owners, utilities, and other tree stewards in the community. Longer-term strategies are also laid out to give further direction as the plan evolves and goals are achieved. The foundation of the plan ensures that Snoqualmie's urban forestry program can become more sustainable over time.

The development of this strategic plan is a collaborative process between City staff and a major stakeholder (Snoqualmie Ridge Association management) facilitated by an urban forestry consultant. As part of the education about urban forestry for both the staff and the public, a sustainable urban forestry matrix is used to guide the conversation and reach collective support for a solid plan framework.

The Urban Forest as a Natural Resource

The City of Snoqualmie understands that it needs to better manage its trees and urban forest. Both staff and community make the connection that it's prudent to manage trees as assets because they provide many tangible benefits to the community. Some of the benefits from Snoqualmie's urban forest* is that it:

- Reduces stormwater runoff and erosion
- Provides shade and cooling for fish-bearing streams
- Improves air quality and mitigates wind effects
- Provides wildlife habitat
- Increases property values

* For more information, see Appendix A.

Every tree also has a monetary value. For example, if one is damaged by a car crash, there is a landscape value that is considered in its replacement cost. Trees, like other assets, also have

maintenance costs, such as pruning young trees for structural integrity or for clearance on roadways and trails. Trees also have public safety liabilities that must be accounted for, for instance, when they become structurally unsafe or die and fall into the road or onto a park trail or sports field.

A proactive mitigation program with high risk trees, which includes removal, replacement, and where appropriate, leaving habitat snags (see photo), is responsible stewardship of the urban forest.

< Newly-made snag (middle) of a large fir for wildlife habitat.

Assessment of Snoqualmie's Urban Forest

Recently, Snoqualmie had three important studies done on its urban forest. In 2012, Plan-It Geo assessed the urban tree canopy cover for Snoqualmie.* In addition, two street tree inventories were performed in Snoqualmie Ridge (Davey Resource In 2011 and Community Forestry Consultants in 2013), collecting data on nearly 5,000 trees of an approximate total population of 8,000. These projects provided some interesting information about Snoqualmie's trees:

- The overall tree cover in Snoqualmie is estimated at 43%, considered an optimal level to achieve significant ecosystem benefits.
- Snoqualmie has lost around 20% of forest cover since 1998.
- Three quarters of the City's tree canopy is on public land and ROW.
- The street trees inventoried in Snoqualmie Ridge are estimated to have an appraised value of over $2 million.
- The true replacement cost for the street tree population is $8-12 million.
- A majority of the inventoried trees are young; all less than 12" diameter.
- A majority of the street tree population inventoried requires corrective pruning for structural integrity and future risk reduction.
- The streetscape is fairly well stocked with only 260 planting spaces identified.

*While the intent of this plan is not to re-examine the Snoqualmie tree canopy analysis and history, these metrics do indicate some trends.

Current City Urban Forestry Efforts

Snoqualmie has made great strides recently for advancing urban forestry regulations, maintenance, budgeting, certification and education. These include:

- Sustainability initiative: The City launched a "Sustainable Snoqualmie" initiative in 2009 that included surveys of citizens and forums to educate citizens on green practices, including urban forestry best practices and support of a possible street tree utility tax.

- Tree regulations: Regulations protecting public trees in Snoqualmie were adopted in 2010 to safeguard trees in parks, street rights-of-way, and historic trees of significance with the City's first landmark tree program.

- Tree maintenance plan: Following adoption of the above regulations, an overall tree maintenance plan was adopted in 2010. The plan lays out a schedule of activities to ensure trees are monitored for health, pruned for their best vitality and properly planted to thrive in the sometimes difficult soil conditions in Snoqualmie.

- Tree budgeting: In 2013, the City spent $391,752 on all matters related to trees, which helped Snoqualmie achieve a Tree City USA Growth Award. While this figure is clearly above the allocated $20,000 of General Fund budget for tree planting, this money was expended inter-departmentally and as part of multiple infrastructure renovation projects.

- Tree expertise: In May 2010, the City hired its first ISA-certified arborist to assist in the proper care of its urban forest and train other employees.

- Tree education: Since 2011, the city has offered an annual series of free classes to residents on appropriate tree care practices. Topics include structural pruning and right tree/right place.

- Restoration projects: from 2012-2014, the City has partnered with Washington State Department of Natural Resources, gaining a crew dedicated to Urban Forest Restoration. Invasives have been removed and native plants and trees planted on several sites throughout the City.

- Tree inventory: In 2011 and 2013, the City of Snoqualmie completed street tree inventories for 5,000 trees thanks to funding support from the U.S. Forest Service and Washington State Department of Natural Resources. In 2014, the City purchased TreeWorks software, an asset-management and inventory program that will be used to complete the street tree inventory.

These current efforts, while commendable, still leave portions of the City tree resource unattended. This Strategic Plan will help to unify these various efforts under a common framework in order to close the gaps in service, and hence, ensuring intelligent stewardship moving forward.

City Plans and Policies

The City has several established documents and plans that have guided its programs and policies. The City's Open Space, Parks, and Recreation Plan (2012), Comprehensive Plan (2013 Draft), and Sustainability Strategy (2009) resonate well with an urban forest strategy. In particular, there is an Urban Forestry section of the Open Space, Parks, and Recreation Plan that includes an objective and several policies. These policies are being incorporated into the Comp Plan update as part of the Environment Element.

The adopted objective is:

> *"Promote tree planting, preservation, and maintenance on public and private lands to enhance the city's beauty, environmental health, wildlife habitat, and to take advantage of the economic value contributed by urban forests."*

The twelve priorities below this objective have similar focus on the proper direction to go for urban forestry in Snoqualmie. In an effort to support aligned statements, these priorities are categorized in the three major components of an urban forestry program in Appendix D.

The objective above lends well to creating a mission statement that captures the commitment and reason for developing a more sustainable program. The proposed language also borrows from other communities' in the region that are on a similar path. The following mission statement emerged:

Snoqualmie is dedicated to protecting and managing its vibrant urban forest as a cohesive ecosystem, to enhance its environmental benefits and its contribution to community livability, today and for generations to come.

As mentioned before, the urban forest is considered a compilation of the trees and associated vegetation. The reference of it being an **ecosystem** engenders more of a community of organisms – plants, animals, fungi, microbes – that interact as a dynamic system. Biodiversity, disturbance, and succession are influences to the system. The urban forest is **cohesive** in nature, because it is an assemblage of both native and non-native species crossing public and private property lines making it contiguous and functioning as a system.

Benefit to the environment refers to the ecological benefits of providing wildlife habitat and shade to fish-bearing creeks as well as performing as air & water pollution filters and mitigation of flooding and erosion.

Livability of the community pertains not only to the social and economic benefits the urban forest provides but also the importance to balance with other community values such as solar access, land use, and gardening.

Strategic Planning Process

In order to begin the conversation about a sustainable urban forestry program for the City of Snoqualmie, an "urban forest sustainability" matrix was used. The three categories - vegetative resource, resource management, and community framework, along with performance indicator spectra and key objectives- are based on a sustainability model developed by Clark, et al (1997). The criteria in each category are comprehensive, demonstrating all the aspects of an urban forestry program to consider when setting goals and priorities.

The matrix was distributed to City staff and one stakeholder to introduce these concepts. The selected participants were:

- Dan Marcinko, Public Works and Interim Parks Director
- Larry White, Parks Superintendent
- Dave Dembeck, Parks Crew Lead
- Phil Bennett, Parks Arborist
- Nancy Tucker, Planning Director
- Lauren Hollenbeck, Senior Planner
- Nicole Sanders, Associate Planner
- Amy Atchison, Snoqualmie Ridge ROA Manager

Each recipient was instructed to indicate on each criterion spectrum where they see the City is *currently,* and which level is the *desired* performance benchmark to achieve for Snoqualmie. They were also asked to consider which of the 24 key objectives would be potential top priorities to focus on short-term, all the while understanding that each criterion would still be addressed in the strategic plan.

The numerous responses were combined onto one matrix template that was presented back to the group on February 11, 2014. Each criterion in the three categories was discussed as well as the varying the desired levels (goals) and top objectives (priorities) for the strategic plan to focus on for short-term strategies. During these discussions, there was no focus on budget, required resources, or timeline for any item, as the intent of the process was to identify direction for future budget and resource conversations. A joint meeting with all the participants was held March 5th in order to reach a collective consensus on both the goals and priorities. The resulting matrix with the proposed goals and priorities is Appendix B.

The proposed goals and priorities were provided to the Parks Board and the Planning Commission at their March 17th meetings. On April 21st, the draft plan was presented to the Planning & Parks Committee, the Parks Board, and the Planning Commission for comment. The final draft was introduced to City Council on May 12th for final adoption at their second meeting in May.

Identified Key Priorities

With the work with City staff and Snoqualmie Ridge management, the identified key objectives for the Snoqualmie Urban Forest Strategic Plan are as follows:

1. Establish a diverse tree population suitable for the urban environment and adapted to the region.

2. Compile a comprehensive inventory of the City tree resource to direct its management.
    a. Detailed understanding of the condition and risk potential of all publicly-managed trees.
    b. Detailed understanding of the ecological structure and function of all natural areas.

3. Develop and implement a comprehensive urban forest management plan community-wide.
    a. All publicly-owned, intensively managed trees are maintained to maximize current and future benefits.
    b. All public trees are managed with safety as a high priority.
    c. Urban forest renewal is ensured through a comprehensive tree establishment program driven by canopy cover and diversity objectives.

4. Develop and maintain adequate funding to implement a city-wide urban forest management plan.

5. Employ and train adequate staff to implement city-wide urban forestry program.
    a. Ensure all city departments and other public agencies cooperate with common urban forestry goals and objectives.

6. Instill a general public understanding the role of the urban forest: The urban forest is recognized as vital to Snoqualmie's environmental, social, and economic well-being.
    a. At the neighborhood level, citizens understand and cooperate in urban forest management.

Snoqualmie's Urban Forestry Goals & Strategies

Strategies are grouped in this narrative under the following categories:

A. Vegetative Resource
B. Resource Management
C. Community Framework

This section explains the criteria, states Snoqualmie's goal for each, and offers some suggested strategies. The criteria with an asterisk (*) are the identified priorities for the program, and therefore, have strategies that can be done in the near future to progress toward those goals.

The nature of the urban forest and the community is distinctly different between the Snoqualmie Ridge and the lower, historic Downtown. Because of this, some of the strategies specifically focus on one of the two areas. Public areas and parks are generally considered similar throughout the community and thus, those relevant strategies can be applied across the board.

A note that the strategies are also organized in Appendix C according to a suggested timeline of implementation as short-, mid-, and long-term or ongoing. In addition, Appendix E lists strategies in their order of appearance in the document, to help refer to more detailed information in the document. Both are intended to increase this plan's utility and ease in future implementation.

A. VEGETATIVE RESOURCE

The criteria in this category relate to the composition and condition of the urban forest. The performance indicators range in the level of diversity and known health of the trees across the community. These are generally used as performance benchmarks to assess the effectiveness of resource management and the community framework, the other categories. In general, the major strategies to achieve diversity and health goals are:

- For age diversity, planned regeneration and good management and preservation of the highly valued mature trees in the community.
- For species suitability and distribution, use of a diverse and appropriate species list for all community plantings.
- For a healthier and safer tree population, responsive management to address public hazards and optimize the urban forest's role in community benefits.

1. Relative Canopy Cover

This criterion refers to the amount of tree canopy cover compared to the amount of **available** planting space. As stated in the UTC report (2012), planting spaces are areas where a tree can be planted, as in, open ground available to plant. This can be in passive areas of parks, planting strips along streets, even landscape islands in parking lots. Technically, this can be anywhere where there is no impervious surface (roads, rooftops, etc.), but certain land uses, such as ball fields and golf courses would not be reasonable areas to include in the potential. It can also include available space on private property.

From the Urban Tree Canopy Assessment Project (prior to Mill Site annexation), they estimated the following percentages of existing and potential cover by area:

Total Acres of land in Snoqualmie – 4,046
Acres of existing tree canopy – 1,769 (44%)
Acres of impervious land cover – 803 (20%)
Acres of possible tree canopy (excluding ball fields, golf course fairways, etc.) – 631 (16%)

Combining the acreage of existing canopy with the possible canopy acreage without trees, results in a total acreage of potential tree canopy at 2,400 acres. The existing tree canopy occupies 75% or three quarters of this potential.

The different benchmarks along the spectrum offer levels of cover as a percentage of the potential planting space in the community. While it may seem logical to plant for tree cover in all possible planting spaces, the key objective is to achieve a climate-appropriate degree of tree cover. In hot,

sunny climates, where shade of buildings and other impervious surfaces is extremely important, as well as stormwater abatement, the amount of appropriate cover may be very high. In the Pacific Northwest, tree canopy is one of several strategies used to mitigate stormwater. This ecological function must be balanced with the need for reasonable solar access and other landscaping needs (e.g. vegetable gardening).

There is a specific request by the City to set a target canopy cover goal with this planning process. Instead of an average total canopy cover, this criterion of relative canopy cover is much more relevant to the discussion and therefore, a more appropriate goal to focus on.

Snoqualmie's Goal: The existing tree cover is no less than 70% of the available planting space to maximize the ecological benefits and allow for a diverse vegetative cover and landscapes. ***Quantitatively, Snoqualmie is in this range. Strategies are recommended to maintain and enhance public canopy cover appropriately.***

Strategies –

- Restoration projects in the park and open space system that include trees in appropriate spaces.
- Update Street Tree List with space requirements for mature size.

2. Age Distribution of Trees

On a community level, the general measurement for age of trees is based on size. The larger the tree, the older it most likely is. The diameter classes referred to on the spectrum are size ranges in diameter to grossly categorize young, growing, mature, and over-mature trees in the community. Consideration of species' growth rate and mature size are factors to further determine how well the size ranges correlate with age of the population. Age diversity is key to avoiding mass age-related mortality (simultaneous die-off of trees *en masse* in the same age range) and to ensure perpetual renewal of the urban forest.

Snoqualmie's Goal: None of the size classes represents more than half of the tree population.

Strategies -

- Run reports on new street tree inventory to see the distribution of the size classes and species in the tree population and determine opportunities for best management practices to maintain age diversity.
- Develop a regeneration planting plan for the City based on publically-owned areas needing new plantings.
- Identify any mature and/or rare tree species or historic groves in the community for the City's new Landmark Tree Program.

3. Species Suitability

Diversity of species and the appropriateness of those species in the area are important factors to consider for a healthy urban forest.

The good news about our region is that a huge variety of tree species can grow in our climate, but not all grow well. It's important that tree selection is based on how well the species grows in the area and has minimal maintenance issues, like drought tolerance and resistance to pests and disease. For instance, species from high elevations (ex. Colorado blue spruce, sub-alpine fir) don't do well in our coastal climate and quickly succumb to pests. Still others, like the katsura, do grow here but cannot thrive without ample irrigation.

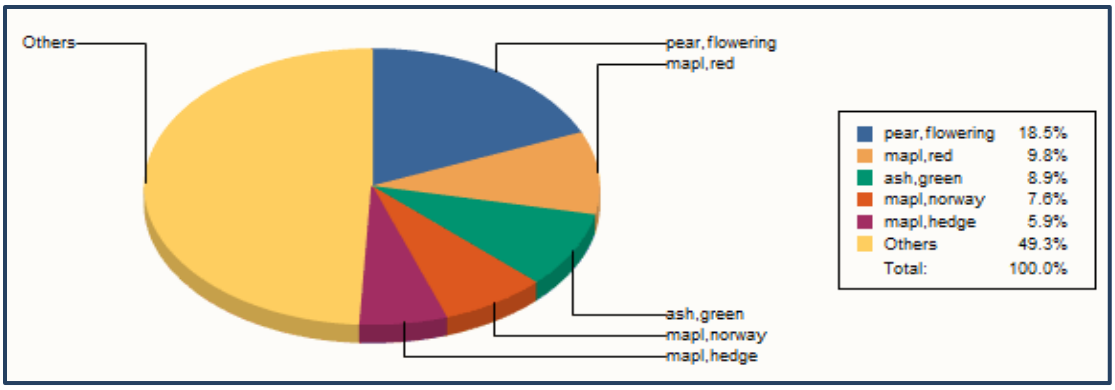
Unfortunately, some native species also are not performing well. Our state tree, the Western hemlock, is rapidly dying off in the Puget Sound area, and our native dogwood and Pacific madrone are often victims to chronic foliar and canker diseases. Urban foresters are trying to anticipate the effects of climate change locally, and many of these health issues may be connected to this shift. Above all, the community strengthens the sustainability of its urban forest by using suitable species that flourish with a low degree of maintenance.

Snoqualmie's Goal: More than 75% of the trees are of species considered suitable for the area.

4. Species Distribution*

Diversity of the species in the population is equally critical. Too often, a small palette of trees is used in most landscape designs and in street improvements. The lack of diversity can create a situation in which a pest or disease can wipe out a significant portion of the population. The constant threat of pests and diseases heading our way cannot be ignored but rather can be alleviated through a diverse array of tree species in the community.

As stated in the Snoqualmie Street Tree Inventory Summary Report (2013), the ideal diversity goal is to avoid one *genus* representing more than 10% of the population. To illustrate this, the species data from the recent inventory of 2,143 street trees show that maples (genus) represent 23% of the population inventoried, and flowering pear over 18%. The intent is to diversify the population in future plantings so that one species does not dominate the urban forest composition.



Species identified in street tree inventory project, 2013.

This species diversity is best achieved by focusing on the opportunities in replacement and new planting efforts. This would be in regards to not only the street tree population but for public landscapes (parks, city properties) and required landscapes with commercial and multi-family residential development.

Snoqualmie's Goal: No species represents more than 10% of the street and public landscape tree population.

Strategies for species suitability and diversity -

- Update Tree List - section for unimproved ROW, natural areas, open spaces and section for improved ROW – include detailed information on growth, space limitations, maintenance issues.
- Enforce compliance with development to put right tree in right place.
- Develop a mini-arboretum of suitable tree species (both native and non-native) for observation and education.
- Through informational materials available on the city's website and through technical assistance provided by the City's urban forester, advise city residents regarding tree selection to support species suitability and diversity.

5. Condition of Publicly-Managed Trees*

Understanding the condition of trees helps in prioritizing the management of the urban forest. Part of a tree inventory is rating the condition of a tree from excellent to very poor (or dead). Whether it is a sample plot inventory, such as in a park, or a complete tree inventory in the rights-of-way, assessing the condition of the trees will impact the decisions made about the City's maintenance work plan.
Along with condition, a necessary assessment of a tree is its risk of failure and likelihood to cause harm or damage. There is an industry rating system for such tree risk assessments that is commonly used as part of a tree inventory.

Snoqualmie's Goal: A comprehensive tree inventory of publicly-owned trees that includes detailed tree condition and risk ratings.

Supporting Resource Management Objectives:

1. Comprehensive inventory of the tree resource to direct its management.
2. Urban forest renewal is ensured through a comprehensive tree establishment program driven by canopy cover and population diversity.
3. All public trees are managed with safety as a high priority.

Strategies -

- Analyze new street tree inventory and develop an annual work plan and budget to address needed action.
- Conduct a sample-plot inventory in the mature forested buffers in Snoqualmie Ridge to identify priority problem areas requiring immediate attention.

6. Publicly-Owned Natural Areas*

The objective for this criterion is a detailed understanding of the ecological structure and function of all publicly-owned natural areas. Snoqualmie has extensive mature forest stands throughout the community, and they provide the highest ecosystem benefits. In order to maintain the structure and function of these forests, analysis of the condition (pest and disease issues), diversity, and potential for forest renewal is paramount.

Snoqualmie's Goal: The ecological structure and function of all publicly-owned natural areas are documented through an ecosystem analysis and included in the city-wide GIS.

Strategies:

- Perform ecosystem analysis (I-Tree Eco) on the public forested buffers and mature forest stands to quantify the ecosystem benefits.
- Develop management/stewardship plans based on the analysis and assessments; implement and monitor.

7. Native Vegetation

The local, natural biodiversity found in the city needs to be preserved and enhanced to support native ecosystems. The appropriate publicly-managed places with the most potential are in open spaces, reserves, and passive parklands. The appropriate actions include restoration plantings and invasive species eradication. High use and developed areas have least potential for native vegetation success.

Snoqualmie's Goal: Native species are specified where appropriate in publicly-managed areas; invasive species are aggressively eradicated.

Strategies:

- Review all city projects for potential and appropriateness to use native species.
- Develop (or obtain) a detailed list of native species as a City and community resource.
- Support community efforts in invasive species eradication.

B. RESOURCE MANAGEMENT

The criteria in this resource management speak to the significant components of a city urban forestry program – staff, funding, resources, planning, policy, and operations.

1. Tree Inventory*

As mentioned in the Vegetative Resource section, understanding the needs and composition of the urban forest requires comprehensive information about the tree resource to direct its management. Performing a tree inventory is the most common tool with which to collect important data such as species, size, condition, risk level, and location. Usually this is done along the rights-of-way and in landscaped park and other public areas. For forested open space, sample plots are taken to get a snapshot of the condition and composition of that sector of the urban forest. Capturing all these data in the City's GIS mapping is particularly useful to visualize the resource in relation to other aspects of the community.

Snoqualmie's Goal: Complete inventory of street and park trees and sample-based inventory of privately and publicly-managed open space included in the city-wide GIS.

Strategies:

- Complete the street tree inventory of Snoqualmie Ridge and collect data on Downtown street trees.
- Perform sample-plot inventories on City-owned natural areas.
- Coordinate with Snoqualmie Ridge ROA on possible sample-plot inventory efforts in ROA-managed buffers.

2. Canopy Cover Assessment

Mapping the urban tree cover using satellite imagery is another way to analyze different characteristics of the urban forest. Canopy cover can be compared to impervious surface to determine the proportions, especially as it relates to stormwater mitigation. The amount of possible planting area for more tree canopy can also be obtained with this tool.
In 2011, Snoqualmie did receive data and an urban tree canopy assessment report that discussed these different aspects of the canopy cover. In fact, the relative canopy cover calculations used in the Vegetative Resource section were from that study. The key objective to this tool is to have high resolution assessments of the existing and potential canopy cover for the entire community.

Snoqualmie's Goal: Mapped urban tree cover using aerial photographs or satellite imagery included in city-wide GIS. ***Snoqualmie has achieved this goal. Strategies would include regular assessments performed to gauge progress toward canopy cover benchmarks.***

Strategies:

- Perform an urban tree canopy assessment every five years to document change in the urban forest community-wide.

3. City-wide Management Plan*

A comprehensive urban forest management plan provides a specific road map for annual work and budget that is aligned with the mission and goals of an urban forestry program. With key partners, such as Snoqualmie Ridge ROA, Puget Sound Energy, the Chamber of Commerce, and the Tribe, the City has an opportunity to cooperate and coordinate efforts for the tremendous forest resources found throughout the community.

Snoqualmie's Goal: Strategic multi-tiered plan for public and private forest resources accepted and implemented with adaptive management mechanisms.

Strategies:

- Systematically develop an annual work plan for public lands with expected timelines, resource needs, and budget following priorities set by the community (through this plan or through adaptive management mechanisms).
- Establish performance measures for the urban forestry program to ensure actions and initiatives are aligned with priorities and goals.
- Review the Snoqualmie Ridge ROA's annual assessments of their forested buffers and open space tracts to find ways to strengthen management for the collective resource.

4. Municipal-wide Funding*

Without funding, a management program cannot be successful. These days, cities must be creative in developing and maintaining adequate funding to execute needed work identified in the management plan. In the Pacific Northwest, urban forestry can be linked effectively to stormwater management for a city (Vancouver, WA), and therefore, funding could be garnered from other departments that have similar goals.

Snoqualmie's Goal: Funding to provide for a measurable increase in urban forest benefits.

Strategies:

- Demonstrate to City Council the value of the urban forest as an asset of the community to receive recognition as a viable city program.
- Perform a cost-benefit analysis comparison of actual tree expenditures and a true program budget for the urban forestry program.
- Develop an urban forestry program budget beyond the current planting line item to include tree maintenance, tree risk management, stewardship planning, tools and equipment, and consulting services for trees in ROW, parks, and open space.

- Secure non-General Fund program funding sources – utility tax (supported by sustainability survey), Surface Water utility funds, etc.

5. City Staffing*

Along with funding, staffing resource is just as critical for the success of an urban forestry program. The key objective is to employ and train adequate staff to implement the program and plan.

Snoqualmie's Goal: Dedicated staff are certified and qualified with regular professional development.

Strategies:

- Identify a framework to establish dedicated resources for a City urban forestry program.
- Refine job description for the Urban Forester position to include this strategic plan as guiding document.

6. Tree Establishment

Part of a resource management plan includes a planting or establishment program. Maintaining any resource requires renewal to ensure perpetuity and optimal benefits. The key objective is to ensure urban forest renewal through planning and implementation, and such a program is best driven by canopy cover, species diversity, and species distribution objectives.

Snoqualmie's Goal: Tree establishment is directed by needs derived from a tree inventory and is sufficient to meet canopy cover objectives.

Strategies:

- Continue to include in the street tree work plan, a removal and replacement component as well as new plantings to establish a healthy street tree population.
- With the sample-plot inventory of forested buffers and ongoing management of natural areas, identify opportunities for forest renewal.
- Evaluate and update Snoqualmie Ridge II landscape standards for future development.

7. Street Tree Maintenance*

Some trees require regular maintenance in order to survive in the urban setting. Trees in the Right-of-Way are the likely candidates for this level of management. However, in Snoqualmie the street tree population, particularly on the Ridge, are young and require structural, corrective pruning. Addressing structural issues and defects while the trees are small saves the City costly expenses to manage these trees when they mature and possibly pose a threat to public safety. Another key objective is to maintain these trees to maximize current and future benefits. Good tree health and condition ensure maximum longevity.

Snoqualmie's Goal: All street trees are systematically maintained on a 5-year cycle, and young trees are structurally pruned if needed.

Strategies:

- Conduct a street tree inventory using Tree Works on the Downtown population.
- Develop a separate young tree pruning program for Snoqualmie Ridge street trees.

8. Tree Risk Management*

Trees near people and structures have a certain level of risk to cause damage or injury. Assessing the level of risk involves evaluating the tree for defects that could increase its probability of failure and determining the size of the part likely to fail. Considering these factors with proximity to valuable targets, we can assess risks with the trees, and determine best ways to manage or minimize the risk. The key objective is that all publicly-managed trees near targets are managed with safety as a high priority.

Snoqualmie's Goal: Tree risk management program is in place and includes inventory with detailed tree failure risk ratings and policy to reduce hazards within a maximum of one week from confirmation of high hazard potential.

Strategies:

- Include tree risk ratings in any future street tree inventory work.
- Perform regular tree risk assessment on appropriate trees in parks, open space, and trails where there is a public presence or adjacent targets.
- Develop a tree risk assessment policy for all public trees.

9. Tree Protection Policy

Normally, much of the urban forest resides on private property. In Snoqualmie, 71% of the City's tree canopy is found on public land, mostly as forested open space. The benefits derived from large and mature trees are tremendous, and the ability to have them safely retained community-wide is important. Along with public tree management, municipal policies around private tree protection, especially during development can be effective to that end, and must be consistently enforced.

Snoqualmie's Goal: Maintain a suite of integrated policies that ensure the protection of trees through regulations for tree protection on public lands that are consistently enforced and supported by significant deterrents; requirements for tree preservation and landscaping on private land as part of development; and education and assistance to individual homeowners regarding tree maintenance and replacement.

Strategies:

- Strengthen the education component to the existing tree protection policy and process.

- Assess the effectiveness of compliance to consider better incentives and enforcement.

10. Publicly-owned Natural Areas Management – Planning and Implementation

Properly managing the forested open space and natural areas of the community requires appropriate planning and implementation. A stewardship plan, which connotes a community engagement in the process, is developed to support action that protects and where needed, enhances the ecological structure and function of this part of the urban forest. These plans often include invasive eradication and urban forest renewal with appropriate native vegetation, along with community participation in the stewardship.

Snoqualmie's Goal: A stewardship plan in effect for each natural area focused on sustaining the ecological structure and function of the feature.

Strategies:

- Develop a stewardship plan framework to use for the natural areas that is based on the analysis and assessment of the forest condition and potential for renewal.
- Consider offering community stewardship opportunities to participate in the management of these areas – invasive removal, plantings, appreciation for native forests & wildlife habitat, etc.

C. COMMUNITY FRAMEWORK

This category offers all aspects and possible community relationships that impact the sustainability of the urban forest. The criteria stress the importance of cooperation and deep understanding of the value of the urban forestry for a successful program.

1. Public Agency Cooperation*

The key objective is to ensure all city departments cooperate with common goals and objectives around the proper management of the urban forest.

Snoqualmie's Goal: Municipal policy implemented by formal interdepartmental/interagency teams on all municipal projects and activities.

Strategies:

- Formalize a City "Tree Team" with guidelines/policy for inter-departmental coordination.
- Review annual tree work plan from utilities (PSE?) to anticipate interagency coordination and public awareness.

2. Involvement of Institutional Landholders

Large landholders in the community have a potential to impact the urban forest depending on how they manage their forested lands. Schools, golf clubs, hospitals, tribes, and utilities need to embrace city-wide goals and objectives for the urban forest, and ideally develop resource management plans.

Snoqualmie's Goal: Clear goals for tree resource management by landholders; incentives promote preservation of private trees.

Strategies:

- Consider using the stewardship plan framework with large landholders to streamline approval (incentivize) for tree removal and management of their reserves.

3. Green Industry Cooperation

Nurseries, landscapers, and arborists have great influence on the public perception of proper tree selection and care. The key objective is the green industry operates with high professional standards and commits to city-wide goals and objectives.

Snoqualmie's Goal: Shared vision and goals including the use of professional standards.

Strategies:

- Work with local nurseries to promote City's Tree List;
- Consider a City vendor list of approved tree care companies for street tree work.

4. Neighborhood Action*

The key objective is that citizens understand and cooperate or participate in urban forest management, ideally at the neighborhood level. The most effective way to achieve this is to engage the neighborhood associations with the program through education, advocacy and active stewardship.

Snoqualmie's Goal: City-wide coverage and interaction, particularly engagement of neighborhood groups and Snoqualmie Ridge ROA with the urban forestry program.

Strategies:

- Continue popular public workshops and connect participants with community projects.
- Consider a Forest Stewardship training program modeled after Master Gardeners.
- Partner with other stewardship programs (Audubon, Mountains to Sound Greenway, Snoqualmie Tribe).

5. Citizen-Municipal-Business Interaction

The key objective is all constituencies in the community interact for the benefit of the urban forest. One of the main roles for dedicated staff or a citizen tree board is to maintain good communication with businesses, citizens, and residential associations in an accessible and consistent manner.

Snoqualmie's Goal: Informal and general cooperation between the City, citizens, and businesses around urban forestry goals.

Strategies:

- Continue communication and coordination with Snoqualmie Ridge ROA management.
- Engage the local Chamber of Commerce on the benefits of trees in business districts (Downtown).

6. General Awareness of Trees as a Community Resource*

The most effective way to get the general public understanding the role of the urban forest is through education and participation. A successful outcome is public support of a City urban forestry program and City Council approval for adequate funding of a program.

Snoqualmie's Goal: The urban forest is recognized as vital to Snoqualmie's environmental, social and economic well being.

Strategies:

- Consider a Forest Stewardship training program modeled after Master Gardeners.
- Expand the annual Arbor Day celebration for more public interaction.
- Develop a program around the new Landmark Tree legislation to raise the awareness of the significant trees in the community.

7. Regional Cooperation

The effectiveness of a program can be enhanced when a city provides for cooperation and interaction among neighboring communities and regional groups.

Snoqualmie's Goal: Regional planning is in effect.

Strategies:

- Participate in the Puget Sound Urban Forestry group (meets quarterly) headed by WADNR program.
- With this plan, encourage other Valley communities to develop similar strategies for their urban forestry efforts.

Summary of Strategies

From the specific strategies to work toward Snoqualmie's goals for urban forestry, 29 tasks are summarized in Appendix C. Along with the strategies, a suggested timeline for each is provided, as well as the budget implications for the task or strategy. Again, the strategies' order of appearance in the plan is shown in Appendix E.

Short-term strategies are provided to address the priorities identified by staff and supported by interested stakeholders. They are considered as low-hanging and cost effective activities and are identified as critical to generate the necessary momentum for a sustainable urban forestry program for the Snoqualmie community. If the City has no capacity to take on these tasks, it is advised that a consultant is contracted to further analyze the needs and resources, develop a work plan and budget proposal, and provide a cost-benefit analysis for key initiatives.

The timing of strategies is dependent on many factors. Public support of a program that encompasses the importance and value of the urban forest is necessary for the City decision makers to invest the required funding and staff to implement. Once the appropriate resources are in place, many strategies could be tackled on a shorter timeline.

As with any strategic plan, the priorities and actions can evolve, and subsequent work plans are often crafted to match the current reality of what can reasonably be accomplished. The beauty of the strategic plan is that it is just one set of navigation instructions to get from where you are to where you want to go. The City may find other ways to get to the same destination and can adjust the duration of the trip, so to speak.

Dawn redwoods on SE Ridge Street

Conclusion

Snoqualmie is a community with a vibrant urban forest. Realizing it is a valued asset that needs systematic management, the City needed direction on building a sustainable urban forestry program. Through a guided process considering all aspects and components of this initiative, City staff and Snoqualmie Ridge management developed a comprehensive set of goals for urban forestry, with the identified key priorities to:

- Establish a diverse tree population suitable for the urban environment and adapted to the region.
- Acquire a comprehensive understanding of the City tree resource to direct its management.
- Develop and implement a comprehensive urban forest management plan community-wide.
- Develop and maintain adequate staff and funding to implement a City urban forestry program.
- Ensure all city departments and other public agencies cooperate with common urban forestry goals and objectives.
- Cultivate citizen understanding and cooperation in urban forest management, recognizing the urban forest as vital to Snoqualmie's environmental, social, and economic well-being.

With a clear vision of where the City wants to go, several strategies have been provided in this plan to develop the road map. Many are suggested as short-term tasks and relatively cost-effective in moving Snoqualmie toward a city urban forestry program. The success of the plan heavily relies on support of these strategies by both the City decision makers and the community. Adequate funding and resources committed to a program are critical to move forward to a more sustainable urban forest.

Appendix A

Urban Tree Benefits

The benefits of urban trees, sometimes called "ecosystem services", include environmental, economic, and social values. These are direct or indirect benefits provided by urban forests and individual trees that are often dismissed or underrepresented when valuing infrastructure because they don't readily have an associated dollar value. Types of tree benefits are listed and briefly described below. While none alone are a "silver bullet", when combined, trees and the collective urban forest are an impressive part of the solution for sustainability during urban planning and community development.

Environmental "Services" of Urban Trees:

- Air Quality – trees absorb, trap, offset and hold air pollutants such as particulate matter, ozone, sulfur dioxide, carbon monoxide, and CO_2.
- Greenhouse Gases (GHGs) and Carbon – trees store and sequester carbon through photosynthesis as well as offset carbon emissions at the plant due to energy conservation.
- Water Quality and Stormwater Runoff Mitigation – trees infiltrate, evapo-transpire, and intercept stormwater while also increasing soil permeability and ground water recharge.
- Erosion control – tree roots hold soil together along stream banks and steep slopes, stabilizing soils and reducing sedimentation issues in water bodies.
- Urban heat island effect – trees cool the air directly through shade and indirectly through transpiration, reducing day and nighttime temperatures in cities.
- Increased wildlife habitat – Trees create local ecosystems that provide habitat and food for birds and animals, increasing biodiversity in urban areas.

Economic "Services" of Urban Trees:

- Property value – numerous studies across the country show that residential homes with healthy trees add property value (up to 15%).
- Energy conservation – trees lower energy demand through summer shade and winter wind block, additionally offsetting carbon emissions at the power plant.
- Retail and Economic Development – trees attract businesses, tourists, and increase shopping.
- Stormwater facilities – trees and forests reduce the need for or size of costly gray infrastructure.
- Pavement – tree shade increases pavement life through temperature regulation (40-60% in some studies).

Social "Services" of Urban Trees:

- Public health – trees help reduce asthma rates and other respiratory illnesses.
- Safe walking environments – trees reduce traffic speeds and soften harsh urban landscapes.
- Crime and domestic violence – urban forests help build stronger communities. Places with nature and trees provide settings in which relationships grow stronger and violence is reduced.
- Connection to nature – trees increase our connection to nature.
- Noise pollution – Trees reduce noise pollution by acting as a buffer and absorbing up to 50% of urban noise (U.S. Department of Energy study).

From: Benefits of Trees and Urban Forests: A Research List
http://www.actrees.org/files/Research/benefits_of_trees.pdf, Published August 2011

Snoqualmie Staff SnoRidge ROA Results*
March 5, 2014

APPENDIX B

**This matrix shows the relative weights derived from the City staff and ROA Strategic Planning process (see Plan page 10). The exercise helped delineate performance indicators for the City to work towards in the Urban Forest Strategic Plan Indicators are high-level, and can be implemented through a range of options which the City may individually weigh as they are developed over time.*

Vegetative Resource Criteria and Indicators

(#) = votes for indicator ; **green** = consensus goal (lighter green is a split/interim)

= votes for objective as priority

orange = priority

Criteria	Performance Indicator Spectrum				*	
	Low	Moderate	Good	Optimal		Key Objective
1. Relative Canopy Cover	The existing canopy cover equals 0-25% of the potential.	The existing canopy cover equals 25-50% of the potential.	The existing canopy cover equals 50-75% of the potential. **(1-0)**	The existing canopy cover equals 75-100% of the potential. **(3-4)**	2	Achieve climate-appropriate degree of tree cover, community-wide
2. Age distribution of trees in the community	Any relative diameter class (size range equating to age) represents more than 75% of the tree population.	Any diameter class represents between 50% and 75% of the tree population.	No diameter class represents more than 50% of the tree population. **(2-2)**	25% of the tree population is in each of four diameter classes. **(2-2)**	2	Provide for uneven-aged distribution city-wide as well as at the neighborhood/ROA level.
3. Species suitability	Less than 50% of trees are of species considered suitable for the area.	50% to 75% of trees are of species considered suitable for the area. **(1-0)**	More than 75% of trees are of species considered suitable for the area. **(0-3)**	All trees are of species considered suitable for the area. **(3-1)**		Establish a tree population suitable for the urban environment and adapted to the regional environment.
4. Species distribution	Fewer than 5 species dominate the entire tree population city-wide.	No species represents more than 20% of the entire tree population city-wide.	No species represents more than 10% of the entire tree population city-wide. **(4-1)**	No species represents more than 10% of the entire tree population at the neighbourhood level. **(0-3)**	3	Establish a genetically diverse tree population city-wide and at the neighborhood level.
5. Condition of Publicly-managed Trees (including ROW trees)	No tree maintenance or risk assessment. Request based/reactive system. The condition of the urban forest is unknown	Sample-based inventory indicating tree condition and risk level is in place.	Complete tree inventory which includes detailed tree condition ratings. **(1-0)**	Complete tree inventory which includes detailed tree condition and risk ratings. **(3-4)**	5	Detailed understanding of the condition and risk potential of all publicly-managed trees

APPENDIX B

6. Publicly-owned natural areas (e.g. woodlands, sensitive areas, etc.)	No information about publicly-owned natural areas.		Publicly-owned natural areas identified in a "natural areas survey" or similar document [PROS plan].		The level and type of public use in publicly-owned natural areas is documented		The ecological structure and function of all publicly-owned natural areas are documented through an **Ecosystem** Analysis and included in the city-wide GIS. **(4-4)**		3	Detailed understanding of the ecologicalstructure and function of all publicly-owned natural areas.
7. Native vegetation	No program of integration		Voluntary use of native species on publicly and privately-owned lands; invasive species are recognized.		The use of native species is encouraged on a project-appropriate basis in actively managed areas; invasive species are recognized and discouraged; some planned eradication. **(0-1)**		The use of native species is required on a project-appropriate basis in all public and private managed areas; invasive species are aggressively eradicated. **(4-3)**		2	Preservation and enhancement of local natural biodiversity

Snoqualmie Staff SnoRidge ROA Results*
March 5, 2014

APPENDIX B

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Resource Management Criteria and Indicators

(#) = votes for indicator ; **green** = consensus goal (lighter green is a split/interim)

= votes for objective as priority
orange = priority

Criteria	Performance Indicator Spectrum								*	Key Objective
	Low		Moderate		Good		Optimal			
1. Tree Inventory	No inventory		Complete or sample-based inventory of publicly-owned trees		Complete inventory of publicly-owned trees AND sample-based inventory of privately-owned trees. **(4-0)**		Complete inventory of publicly-owned trees AND sample-based inventory of privately-owned trees included in city-wide GIS. **(0-4)**		5	Comprehensive inventory of the tree resource to direct its management. This includes: age distribution, species mix, tree condition, risk assessment.
2. Canopy Cover Assessment	No inventory		Visual assessment		Sampling of tree cover using aerial photographs or satellite imagery; I-Tree;		Mapped urban tree cover using aerial photographs or satellite imagery included in city-wide GIS. **(4-4)**		1	High resolution assessments of the existing and potential canopy cover for the entire community.
3. City-wide management plan	No plan		Existing plan limited in scope and implementation		Comprehensive plan for publicly managed forest resources accepted and implemented. **(4-0)**		Strategic multi-tiered plan for public and private forest resources accepted and implemented with adaptive management mechanisms.**(0-4)**		4	Develop and implement a comprehensive urban forest management plan for private and public property.
4. Municipality-wide funding	Funding for only emergency reactive management		Funding for some proactive management to improve the public portion of urban forest.		Funding to provide for a measurable increase in urban forest benefits. **(2-2)**		Adequate private and public funding to sustain maximum urban forest benefits. **(2-2)**		3	Develop and maintain adequate funding to implement a city-wide urban forest management plan

Snoqualmie Staff SnoRidge ROA Results*
March 5, 2014

APPENDIX B

5. City staffing	No staff.		Limited trained or certified staff.		Dedicated staff are certified arborists with regular professional development. **(3-2)**		Multi-disciplinary team within an urban forestry program. **(1-2)**		6	Employ and train adequate staff to implement city-wide urban forestry plan
6. Tree establishment, planning and implementation	Tree establishment is ad hoc (no plan or budget)		Limited tree establishment occurs on an annual basis with minimal budget.		Tree establishment is directed by needs derived from a tree inventory or strategy		Tree establishment is directed by needs derived from a tree inventory and is sufficient to meet canopy cover objectives. **(4-4)**			Urban Forest renewal is ensured through a comprehensive tree establishment program driven by canopy cover, species diversity, and species distribution objectives
7. Maintenance of publicly-owned, intensively managed trees (not open space)	No maintenance of publicly-owned trees		Publicly-owned trees are maintained on a request/reactive basis. No systematic (block) pruning.		All publicly-owned trees are systematically maintained on a cycle longer than five years. **(1-1)**		All mature publicly-owned trees are maintained on a 5-year cycle. All immature trees are structurally pruned. **(3-3)**		3	All publicly-owned, intensively managed trees are maintained to maximize current and future benefits. Tree health and condition ensure maximum longevity.
8. Tree Risk Management	No tree risk assessment/ remediation program. [Request based/reactive system?] The condition of the urban forest is unknown		Sample-based tree inventory which includes general tree risk information; Request based/reactive risk abatement program system.		Complete tree inventory which includes detailed tree failure risk ratings; risk abatement program is in effect eliminating hazards within a maximum of one month from confirmation of hazard potential. **(1-3)**		Complete tree inventory which includes detailed tree failure risk ratings; risk abatement program is in effect eliminating hazards within a maximum of one week from confirmation of hazard potential. **(3-1)**		1	All publicly-owned trees are managed with safety as a high priority.

Snoqualmie Staff SnoRidge ROA Results*
March 5, 2014

APPENDIX B

9. Tree Protection Policy Development and Enforcement	No tree protection policy		Policies in place to protect public trees.		Policies in place to protect public and private trees with enforcement desired. **(0-2)**		Integrated municipal wide policies that ensure the protection of trees on public and private land are consistently enforced and supported by significant deterrents. **(4-1)**		The benefits derived from large-stature/mature trees are ensured by the enforcement of municipal wide policies.
10. Publicly-owned natural areas management planning and implementation	No stewardship plans or implementation in effect.		Reactionary stewardship in effect to facilitate public use (e.g. hazard abatement, trail maintenance, etc.)		Stewardship plan in effect for each publicly-owned natural area to facilitate public use (e.g. hazard abatement, trail maintenance, etc.). **(2-0)**		Stewardship plan in effect for each publicly-owned natural area focused on sustaining the ecological structure and function of the feature. **(2-3)**		1 The ecological structure and function of allpublicly-owned natural areas are protected and, where appropriate, enhanced.

Snoqualmie Staff SnoRidge ROA Results*
March 5, 2014

APPENDIX B

**This matrix shows the relative weights derived from the City staff and ROA Strategic Planning process (see Plan page 10). The exercise helped delineate performance indicators for the City to work towards in the Urban Forest Strategic Plan Indicators are high-level, and can be implemented through a range of options which the City may individually weigh as they are developed over time.*

Community Framework Criteria and Indicators

= votes as priority

(#) = votes for indicator ; **green** = consensus goal (lighter green is a split/interim)

orange = priority

Criteria	Performance Indicator Spectrum								*	Key Objective
	Low		Moderate		Good		Optimal			
1. Public agency cooperation (inter-departmental and with utilities)	No communication or conflicting goals among departments and or agencies.		Common goals but no coordination or cooperation among departments and/or agencies.		Informal teams among departments and or agencies are functioning and implementing common goals on a project-specific basis. **(1-1)**		Municipal policy implemented by formal interdepartmental/ interagency working teams on ALL municipal projects. **(3-3)**		4	Ensure all city department cooperate with common goals and objectives.
2. Involvement of large institutional land holders (ex. hospitals, campuses, utility corridors)	No awareness of issues		Educational materials and advice available to landholders.		Clear goals for tree resource by landholders. Incentives for preservation of private trees. **(2-2)**		Landholders develop comprehensive tree management plans (including funding). **(2-2)**		2	Large private landholders embrace city-wide goals and objectives through specific resource management plans.
3. Green industry cooperation	No cooperation among segments of the green industry (nurseries, tree care companies, etc.) No adherence to industry standards.		General cooperation among nurseries, tree care companies, etc.		Specific cooperative arrangements, such as purchase certificates for "right tree in the right place" **(2-0)**		Shared vision and goals including the use of professional standards. **(2-4)**			The green industry operates with high professional standards and commits to city-wide goals and objectives.

Snoqualmie Staff SnoRidge ROA Results*
March 5, 2014

APPENDIX B

4. Neighborhood action	No action		Neighborhood associations/HOA's exist but are minimally engaged or a limited number are engaged.		City-wide coverage and interaction. **(0-1)**		All neighborhoods/ROA's organized and cooperating. **(4-3)**		1	At the neighborhood level, citizens understand and cooperate in urban forest management.
5. Citizen-municipality-business interaction	Conflicting goals among constituencies		No interaction among constituencies.		Informal and/or general cooperation. **(2-3)**		Formal interaction e.g. Tree board with staff coordination. **(2-1)**		2	All constituencies in the community interact for the benefit of the urban forest.
6. General awareness of trees as a community resource	Trees not seen as an asset, a drain on budgets.		Trees seen as important to the community.		Trees acknowledged as providing environmental, social and economic services. **(1-0)**		Urban forest recognized as vital to the communities environmental, social and economic well-being. **(3-4)**		2	The general public understanding the role of the urban forest.
7. Regional cooperation	Communities independent.		Communities share similar policy vehicles.		Regional planning is in effect. **(2-3)**		Regional planning, coordination and /or management plans. **(2-1)**			Provide for cooperation and interaction among neighboring communities and regional groups.

APPENDIX C: Snoqualmie's Strategies with Timeline & Budget

	STRATEGY	SHORT 1-5 YRS	MID 6-10 YRS	LONG >10 YRS	BUDGET
1	Complete street tree inventory	√			$$
2	Refine Urban Forester job description	√			$
3	Framework & budget for a City program	√			$$$
4	Secure funding sources for program – curbside utility tax, Surface Water utility	√			$-$$
5	Update Street Tree List	√			$
6	Develop tree risk management policy & program for street trees and parks	√			$-$$
7	Staff to CTMI training	√			$
8	Young street tree pruning program	√			$
9	Expand Arbor Day celebration – public awareness	√			$-$$
10	Formalize City Tree Team – intercity, interagency communication, coordination	√			$
11	Develop the Landmark Tree Program	√			$-$$
12	Update Snoqualmie Ridge II landscape standards	√			$
13	Annual program work plan using strategic plan (include performance measures)	√	√	√	$
14	Develop annual work plan from street tree inventory	√	√	√	$$
15	Review city projects for native species use	√	√	√	$
16	Continue public education for tree care	√	√	√	$
17	Partner with other stewardship programs	√	√	√	$
18	Support community invasive species removal efforts	√	√		$-$$
19	Stewardship/regeneration plans for City and Ridge open space	√	√		$-$$
20	Interact with regional and Valley cities	√	√		$
21	Obtain detailed list of native species	√	√		$
22	Mini-arboretum of suitable tree species		√		$
23	Informational materials advising homeowners on appropriate species for replanting	√			$
24	Improve compliance – right tree, right place, incentives, enforcement		√		$$
25	Ecosystem Analysis of city open space		√		$-$$
26	Urban Tree Canopy Assessment update		√		$
27	Forest Stewardship training & volunteer program		√		$$
28	Work with local nurseries to promote right tree, right place		√		$
29	Stewardship plan framework with landholders and managers		√	√	$
30	List of approved tree care companies for street tree work		√	√	$

$ = $1-5k; $$ = $5-15k; $$$ = at least $25k

APPENDIX D

2012 Open Space, Parks and Recreation Plan

Urban Forestry Policies Addressed in Strategic Plan

Strategic Plan - Vegetative Resource

9.B.8.4 - Encourage the selection of species appropriate to projects, locations and site conditions to minimize conflicts with existing or planned public infrastructure.

9.B.8.7- Provide adequate diversity for the local ecosystem by varying tree species, distribution, forms, textures, flowering characteristics and other aesthetic benefits to enhance city street environments.

9.B.8.8 - Help identify and encourage removal of invasive species and noxious weeds to protect native plant and animal habitat on public property, and educate citizens on the importance of their removal on private property.

9.B.8.9 - Encourage the use of native and/or regionally produced edible plants and fruit-bearing trees.9.B.8.1 Fully implement urban forestry standards and programs that provide education, encouragement and assistance for planting, maintaining and preserving trees on private property, street frontage planter strips, parks and natural open spaces.

9.B.8.12 - Balance objectives for tree preservation with considerations of preservation of view sheds, solar access, wind protection or shade within a development and/or on adjacent property.

Strategic Plan - Resource Management

9.B.8.2 - Plant street trees on all new streets and ensure they are prioritized in improvement plans for existing city streets.

9.B.8.3 - Buffer residential neighborhoods from the adverse effects of highways and principal arterials by planting and preserving existing street trees.

9.B.8.5 - In constructing new streets, sidewalks and utilities, minimize impacts on existing or proposed trees through appropriate species selection, placement, and prioritizing native tree species to enhance the natural landscape.

9.B.8.6 - On lands being converted from timber production, integrate trees preserved in naturalistic settings in the development of the property.

9.B.8.10 - Develop a citywide canopy cover survey to protect and enhance the current coverage offered by our urban forest and ensure that the forest‟s air, water quality, water management and economic benefits continue in perpetuity or are enhanced in the future.

Community Framework

9.B.8.2 - Ensure that trees are an important part of public investments made for economic development and redevelopment activities.

9.B.8.11 - Maintain the landmark tree program to inventory, protect and maintain trees with historic significance or other community value and prioritize preservation of these trees during development project planning.

APPENDIX E

Strategies in Order of Appearance in Strategic Plan

A. Vegetative Resource

Relative Canopy Cover (p. 13)

- Restoration projects in the park and open space system that include trees in appropriate spaces.
- Update Street Tree List with space requirements for mature size.

Age Distribution of Trees (p.13)

- Run reports on new street tree inventory to see the distribution of the size classes and species in the tree population and determine opportunities for best management practices to maintain age diversity.
- Develop a regeneration planting plan for the City based on areas needing new plantings.
- Identify any mature and/or rare tree species or historic groves in the community for the City's new Landmark Tree Program.

Species Suitability and Distribution (p. 15)

- Update Tree List - section for unimproved ROW, natural areas, open spaces and section for improved ROW – include detailed information on growth, space limitations, maintenance issues.
- Enforce compliance with development to put right tree in right place.
- Develop a mini-arboretum of suitable tree species (both native and non-native) for observation and education.
- Through informational materials available on the city's website and through technical assistance provided by the City's urban forester, advise city residents regarding tree selection to support species suitability and diversity.

Condition of Publicly-Managed Trees (p. 16)

- Analyze new street tree inventory and develop an annual work plan and budget to address needed action.
- Conduct a sample-plot inventory in the mature forested buffers in Snoqualmie Ridge to identify priority problem areas requiring immediate attention.

Publicly-Owned Natural Areas (p. 16)

- Perform ecosystem analysis (I-Tree Eco) on the public forested buffers and mature forest stands to quantify the ecosystem benefits.
- Develop management/stewardship plans based on the analysis and assessments; implement and monitor.

Native Vegetation (p. 16)

- Review all city projects for potential and appropriateness to use native species.

- Develop (or obtain) a detailed list of native species as a City and community resource.
- Support community efforts in invasive species eradication.

B. Resource Management

Tree Inventory (p. 17)

- Complete the street tree inventory of Snoqualmie Ridge and collect data on Downtown street trees.
- Perform sample-plot inventories on City-owned natural areas.
- Coordinate with Snoqualmie Ridge ROA on possible sample-plot inventory efforts in ROA-managed buffers.

Canopy Cover Assessment (p. 18)

- Perform an urban tree canopy assessment every five years to document change in the urban forest community-wide.

City-wide Management Plan (p. 18)

- Systematically develop an annual work plan with expected timelines, resource needs, and budget following priorities set by the community (through this plan or through adaptive management mechanisms).
- Establish performance measures for the urban forestry program to ensure actions and initiatives are aligned with priorities and goals.
- Review the Snoqualmie Ridge ROA's annual assessments of their forested buffers to find ways to strengthen management for the collective resource.

Municipal-wide Funding (p. 18-19)

- Demonstrate to City Council the value of the urban forest as an asset of the community to receive recognition as a viable city program.
- Perform a cost-benefit analysis comparison of actual tree expenditures and a true program budget for the urban forestry program.
- Develop an urban forestry program budget beyond the current planting line item to include tree maintenance, tree risk management, stewardship planning, tools and equipment, and consulting services for trees in ROW, parks, and open space.
- Secure non-General Fund program funding sources – utility tax (supported by sustainability survey), Surface Water utility funds, etc.

City Staffing (p. 19)

- Identify a framework to establish dedicated resources for a City urban forestry program.
- Refine job description for the Urban Forester position to include this strategic plan as guiding document.

Tree Establishment (p. 19)

- Continue to include in the street tree work plan, a removal and replacement component as well as new plantings to establish a healthy street tree population.
- With the sample-plot inventory of forested buffers and ongoing management of natural areas, identify opportunities for forest renewal.
- Evaluate and update Snoqualmie Ridge II landscape standards for future development.

Street Tree Maintenance (p. 20)

- Conduct a street tree inventory using Tree Works on the Downtown population.
- Develop a separate young tree pruning program for Snoqualmie Ridge street trees.

Tree Risk Management (p. 20)

- Include tree risk ratings in any future street tree inventory work.
- Perform regular tree risk assessment on appropriate trees in parks, open space, and trails where there is a public presence or adjacent targets.
- Develop a tree risk assessment policy for all public trees.

Tree Protection Policy (p. 20)

- Strengthen the education component to the existing tree protection policy and process.
- Assess the effectiveness of compliance to consider better incentives and enforcement.

Publicly-owned Natural Areas Management (p. 21)

- Develop a stewardship plan framework to use for the natural areas that is based on the analysis and assessment of the forest condition and potential for renewal.
- Consider offering community stewardship opportunities to participate in the management of these areas – invasive removal, plantings, appreciation for native forests & wildlife habitat, etc.

C. Community Framework

Public Agency Cooperation (p. 21)

- Formalize a City "Tree Team" with guidelines/policy for inter-departmental coordination.
- Review annual tree work plan from utilities (PSE?) to anticipate interagency coordination and public awareness.

Involvement of Large Institutional Landholders (p. 22)

- Consider using the stewardship plan framework with large landholders to streamline approval (incentivize) for tree removal and management of their reserves.

Green Industry Cooperation (p. 22)

- Work with local nurseries to promote City's Tree List;
- Consider a City vendor list of approved tree care companies for street tree work.

APPENDIX E

Neighborhood Action (p. 22)

- Continue popular public workshops and connect participants with community projects.
- Consider a Forest Stewardship training program modeled after Master Gardeners.
- Partner with other stewardship programs (Audubon, Mountains to Sound Greenway, Snoqualmie Tribe).

Citizen-Municipal-Business Interaction (p. 23)

- Continue communication and coordination with Snoqualmie Ridge ROA management.
- Engage the local Chamber of Commerce on the benefits of trees in business districts (Downtown).

General Awareness of Tree as a Community Resource (p. 23)

- Consider a Forest Stewardship training program modeled after Master Gardeners.
- Expand the annual Arbor Day celebration for more public interaction.
- Develop a program around the new Landmark Tree legislation to raise the awareness of the significant trees in the community.

Regional Cooperation (p. 23)

- Participate in the Puget Sound Urban Forestry group (meets quarterly) headed by WADNR program.
- With this plan, encourage other Valley communities to develop similar strategies for their urban forestry efforts.