



City of Tacoma
Community and Economic Development Department

Agenda Item
GB-1

TO: Planning Commission

FROM: Donna Stenger, Long-Range Planning Division Manager

SUBJECT: Annual Amendment # 2012-6: Urban Forestry Code Revisions

DATE: September 29, 2011

On October 5th, the Planning Commission will continue its discussion of proposed changes to the landscaping-related provisions of the Land Use Regulatory Code, that are intended to implement recent policy direction on Tacoma's urban forest. Staff from the City's Environmental Services Division will provide additional information building on the Commission's September 7th discussion and providing responses to Commission questions.

The first part of the presentation will provide background on the Urban Forestry Program, its connection to the Surface Water Program and the numerous elements that already exist or are under development and/or consideration to support surface water and urban forestry program objectives. Though the product of our discussions with the Planning Commission will be proposed regulatory code changes, it is important to understand that only a portion of the progress necessary to achieve the 30% canopy coverage goal would result from code requirements. Additional progress would result from the other actions being pursued by the Urban Forestry Program.

The remainder of the presentation will include discussion of tree canopy goals and how they could play out across the range of land uses present in Tacoma. The Commission will have the opportunity to view the City's current canopy coverage applied by land uses and begin a discussion of canopy coverage goal-setting by land use.

Staff is looking forward to a dialog with the Commission on these concepts as we begin to develop a direction for the proposed changes to the Land Use Regulatory Code landscaping provisions. To facilitate the Commission's review and discussion, staff has prepared three attachments:

1. Tacoma Canopy Cover 101: Provides background information on tree canopy coverage and analysis of key issues in establishing an approach to achieve Tacoma's 30% canopy coverage goal.

2. Tacoma Canopy Cover and Goals by Land Use: This tool is useful in understanding how canopy coverage goal-setting could vary by land use. The table provides a land use breakdown of the city and the current canopy coverage for each land use; a column showing what canopy coverage in public rights-of-way would be necessary to achieve 30% citywide; and, a column with canopy goals for each land use, totaling 30% citywide. At the meeting, the Commission will have the opportunity to try out different goal-setting approaches to see what affect they would have on the citywide total.

3. Tree and Landscaping Manual, City of Portland, Oregon: This example is provided to demonstrate how implementation of proposed code changes could look, including addressing the intention of increasing ease of use and reduction of staff time for review. The Urban Forestry Program is developing an Urban Forest Manual with similar approaches to this example, which would become an integral part of implementing landscaping-related changes to the land use code such as a land-use canopy-based goal approach.

If you have any questions or requests please contact Ramie Pierce at 591-2048 or trees@cityoftacoma.org, or Elliott Barnett at 591-5389 or elliott.barnett@cityoftacoma.org.

Attachments (3)

c: Peter Huffman, Assistant Director

ATTACHMENT #1:

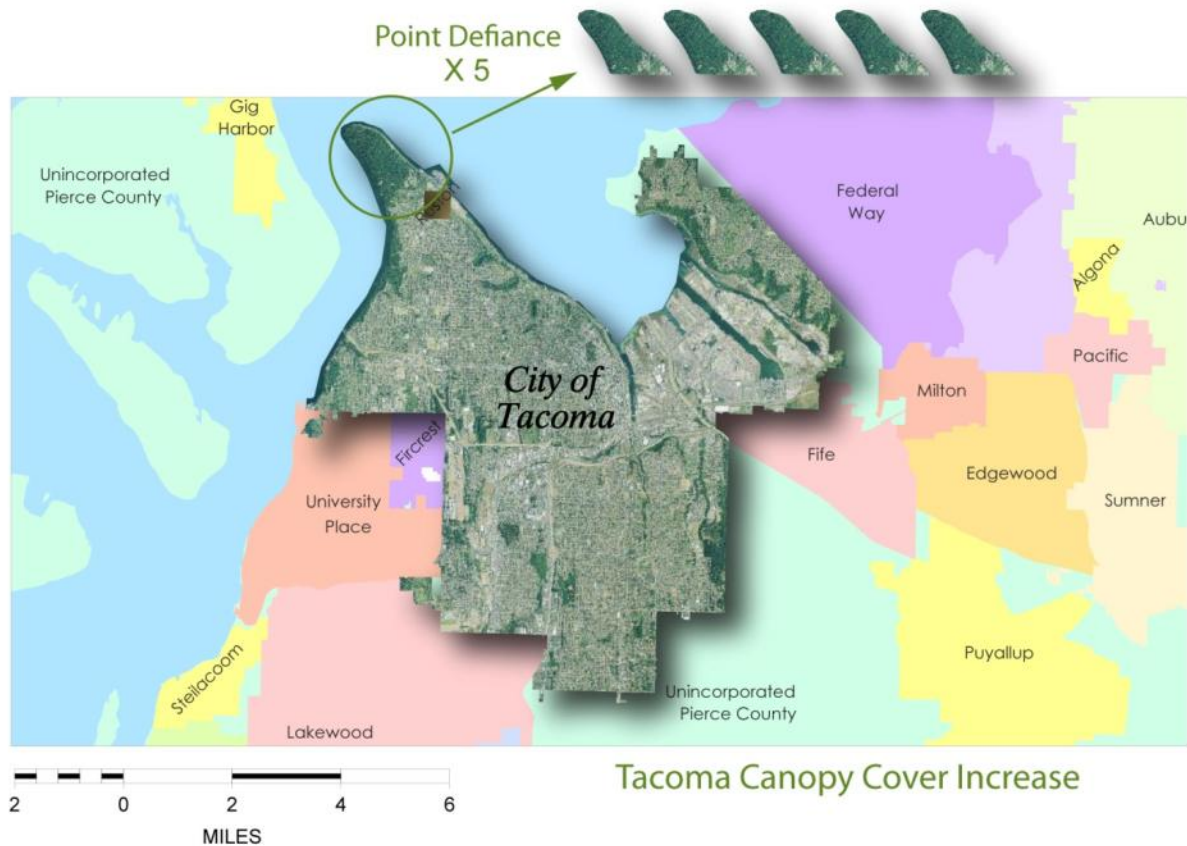
Tacoma Canopy Cover 101

The City of Tacoma's total land area is 49.4 miles².

According to the University of Washington's 2011 Tacoma Canopy Cover Assessment using 2009 data, the current canopy coverage is 9.38 miles², or 19% of the City.

To achieve the 30% canopy coverage goal for the City of Tacoma, approximately 14.82 miles² of land will need to be covered by tree canopy in total. This is an increase of 5.44 miles².

This needed increase in canopy cover is an area approximately 5 times the area of Point Defiance Park (1.01 miles²).



It is important to note that this canopy can occupy the same space as other infrastructure, i.e. sidewalks, buildings, streets, etc. It is not the intent to set aside land specifically for canopy cover increase, but rather to integrate this canopy into the urban fabric.

Business as Usual

The 2011 inventory of selected street trees conducted through the Strategic Urban Forestry Management Plan for the Neighborhood Business Districts (SUFMP-NBD) included over 1,200 trees. Street trees in the public right-of-way and medians were included in the data collection.

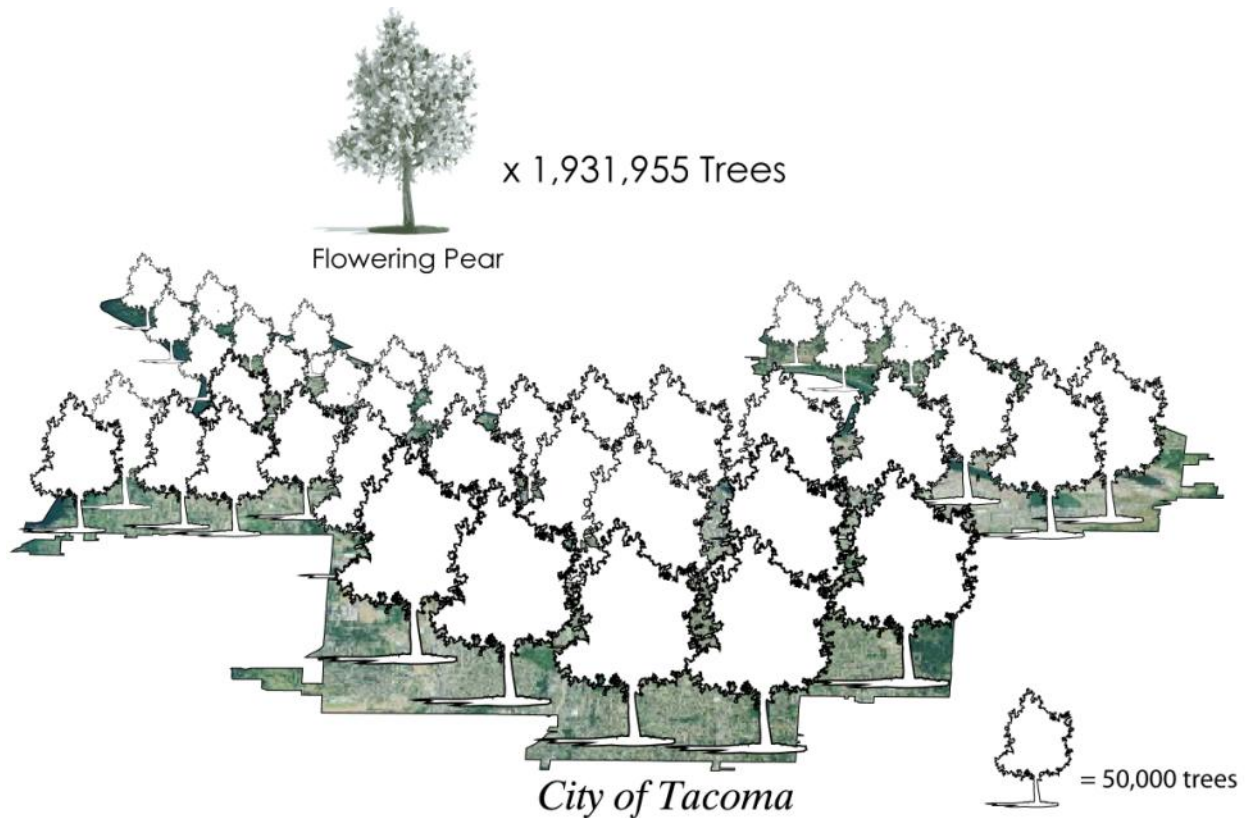
This inventory concluded that over 40% of the tree species located in the neighborhood business districts (NBDs) are represented by only four species. 21% of the NBD tree population is Flowering Pear (*Pyrus calleryana*).

Statistically, the height of Flowering Pear after 20 years of growth is only 30 feet, with a canopy spread of one-third of its height (10 feet diameter or 78.5 feet²). The 20 year mark is significant, as this is when the tree is known to decline from the narrow crotch angles causing the tree to split (Auburn University Horticulture).

The Insufficiencies of Prescribing Tree Quantity Instead of Canopy Cover Percentage

Although the SUFMP-NBD tree inventory cannot be used explicitly to represent the tree species diversity for the entire City of Tacoma, it does illustrate the potential tree species population if only tree quantity is regulated (as opposed to quality / percentage).

If we were to attempt to reach the canopy cover goal of 30% coverage by only prescribing tree quantity, it would take 1,931,955 Flowering Pear or trees of an equivalent size.



The accuracy of this number is only sufficient if the current population of trees does not decline, and if all of the newly planted trees reach their full potential canopy spread in 20 years.

Can Street Trees Alone Accomplish the 30% Goal?

Rights-of-way in the City of Tacoma are the second largest land use (next to single-family residences) at 12.8 miles² or 26% of the City. Currently, the Rights-of-way have a 9.15% canopy cover, or 1.17 miles². If we were to increase the canopy cover in the rights-of-way to 100% coverage, we would bring the total City-wide coverage to 22.6 miles² or 45.74%.

However...

The current street tree regulations for developments that are not exempt from landscaping requirements in all residential, commercial, x-district, port maritime and industrial districts require 3 trees per 100 feet of site street frontage.

If we were to plant the aforementioned 1,931,955 Flowering Pear or equivalent sized trees strictly in the Rights-of-Way according to the 3 trees per 100 feet of site street frontage requirement, it would take 64,398,512 linear feet of site street frontage (12,196.69 miles). This linear footage is 4.46 times the distance from Seattle, Washington to Miami, Florida.

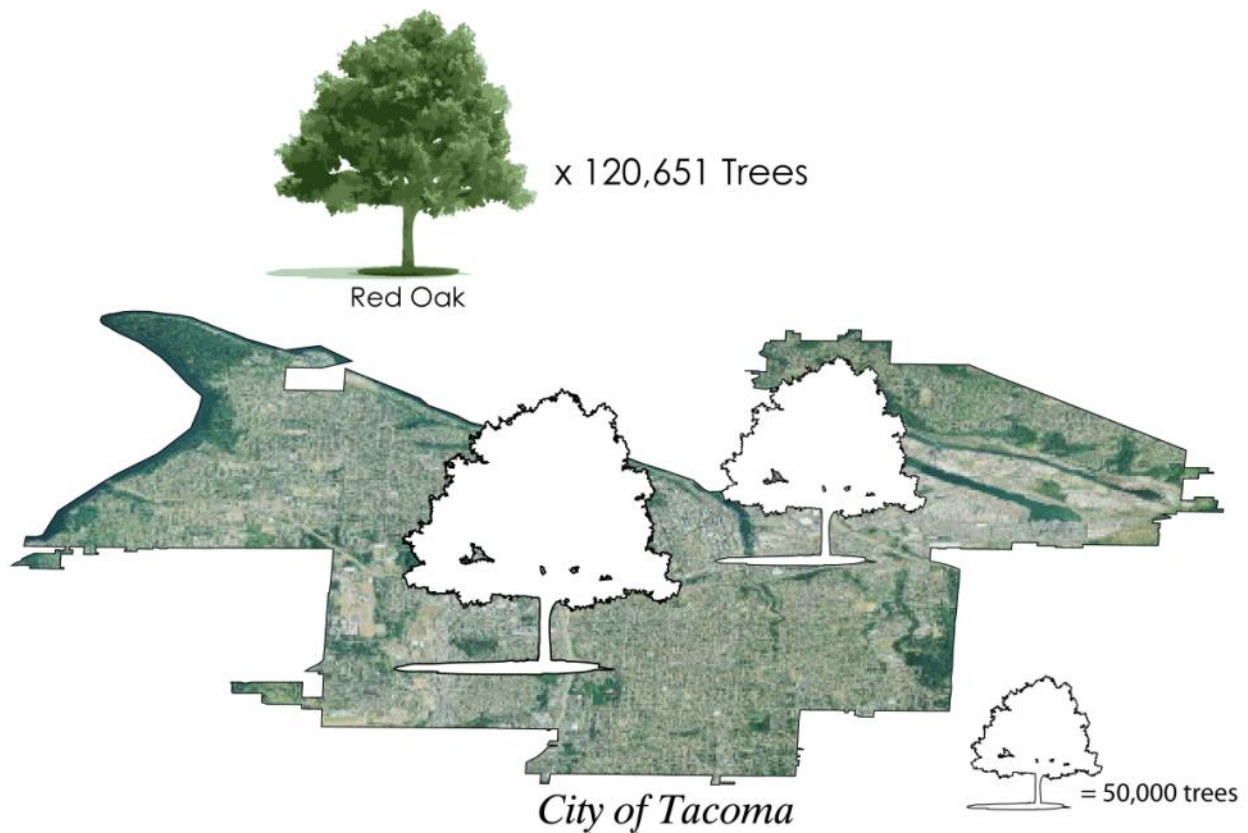


Incorporating Quality

Insofar, the statistics for new tree planting to reach the 30% tree canopy coverage have been derived from the extreme of only planting the most commonly found tree in the SUFMP-NBD tree inventory. Exploring the other end of the spectrum can give incite as to how the number of trees that need to be planted can be greatly reduced by exploring tree species with larger canopies. It is important to note that larger canopy trees are not desirable or feasible in all planting situations.

Red Oak (*Quercus rubra*) is a commonly used tree in the urban environment, and has a typical mature canopy spread of forty feet in diameter (1,257 feet²). The Flowering Pear by comparison is only 6.24% the canopy cover of the Red Oak.

To accomplish the canopy cover goal of 30% coverage by exclusively planting Red Oaks or a species of similar size it would take 120,651 trees.

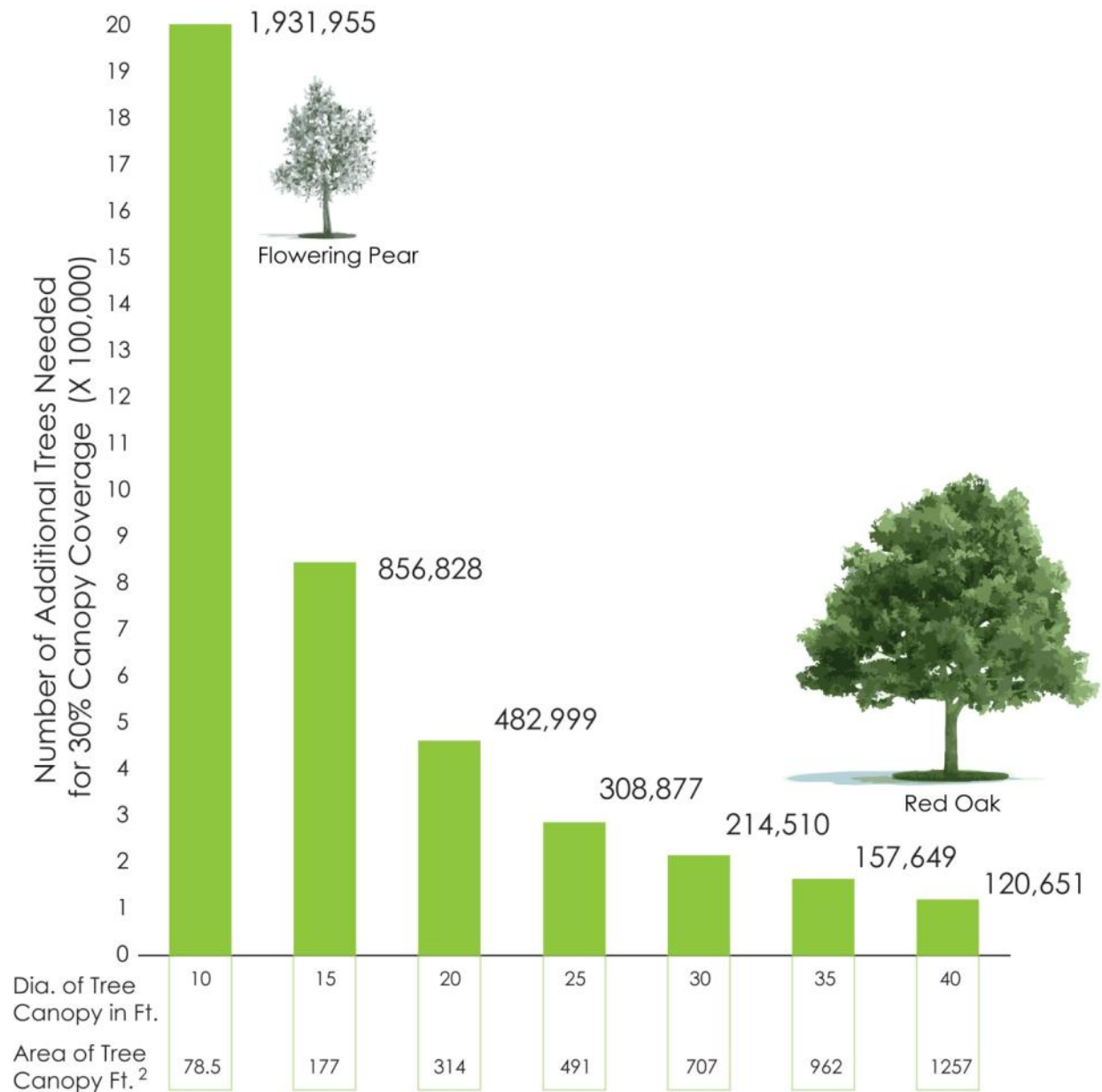


If we were to plant the 120,651 Red Oak or equivalent sized trees only in the Rights-of-Way, according to the 3 trees per 100 feet of site street frontage requirement, it would take 4,021,705 linear feet of site street frontage (761.69 miles). This linear footage is roughly the distance from

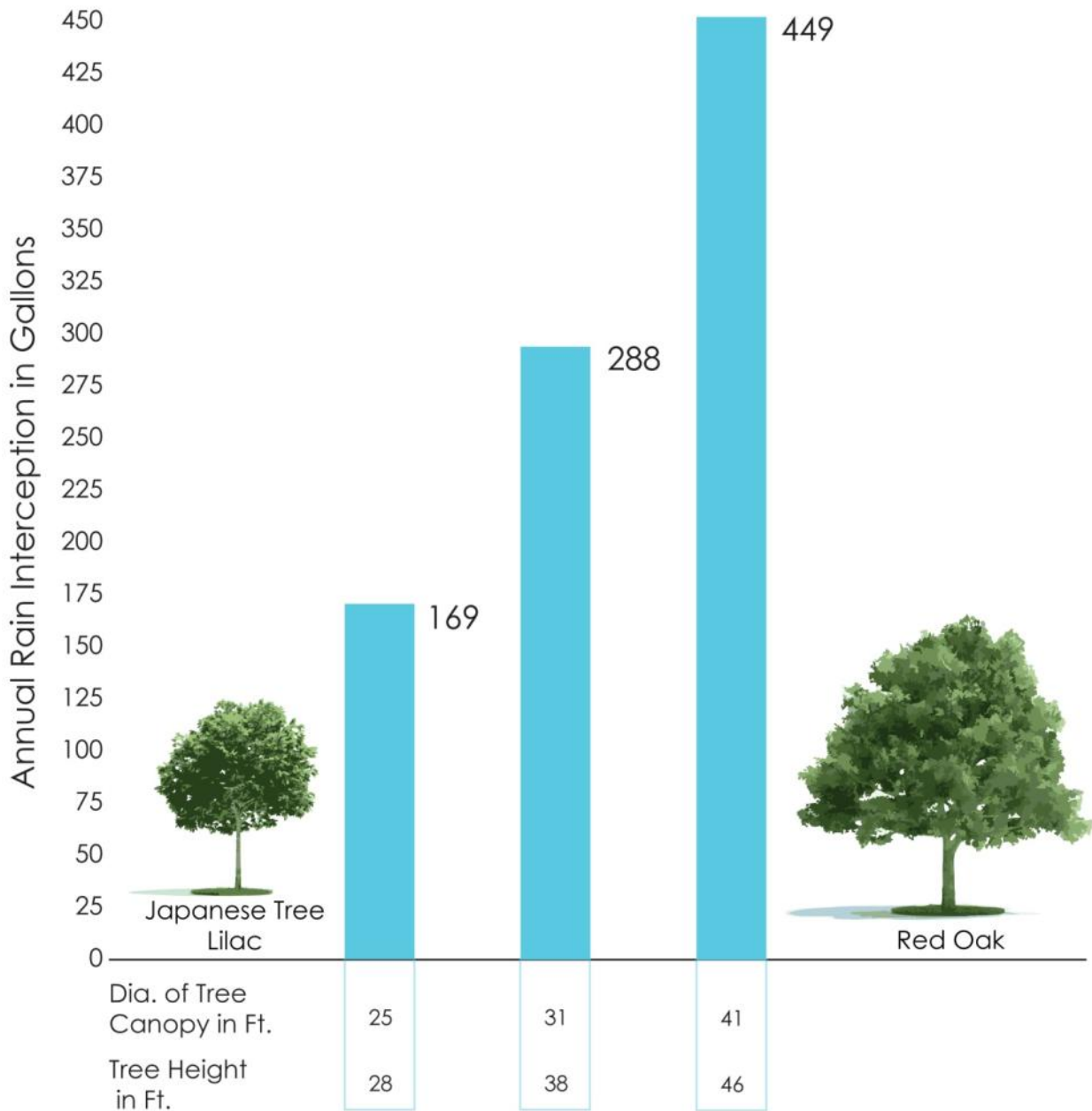
Seattle, Washington to Reno, Nevada (752 miles).



Other Typical Urban Tree Planting Statistics



Additional Trees Needed to Reach 30% Canopy Coverage Based on Canopy Size



Annual Rainfall Interception for Small Medium and Large sized Residential Yard Trees 20 Years after Planting

	Diameter of Tree Canopy (Feet)				
	15	20	25	30	35
ROW linear miles needed	5,409.27	3,049.24	1,949.98	1,354.23	995.258
Street Tree species	Swamp Magnolia, Hardy Silver Gum, Bald Cypress, Hinoki Cypress, Star Magnolia	Amur Maple, Butterfly Magnolia, Stewartia, Umbrella Pine, Persian Ironwood	Chinese Dogwood, Japanese Snowbell, Dove Tree, Antarctic Beech, Oregon Myrtle	Redbuds, Silk Tree, Italian Alder, Golden Locust, Deodar Cedar	Yellowwood, Red & Scarlet Oaks, Hackberry, Pagoda Tree, Zelkova

Addressing Canopy Cover Percentage

Maintaining a total number of planted trees requirement, based on zoning, is highly variable. The resulting canopy coverage is dependent on species selection, trees health, tree maintenance, and many other factors.

Transitioning to a canopy coverage requirement per land use will result in a much more predictable and measureable canopy cover increase within the City of Tacoma. Canopy cover requirements will also incentivize planting and retaining larger trees through development. Retaining and planting trees with larger canopies will have much greater positive ecological benefits to the City of Tacoma.

ATTACHMENT #2: Tacoma Canopy Cover and Goals by Land Use

Land Use	Sq MI	%of city	Actual Cover (%)	Canopy ROW Goal only	Canopy Cover Goal (%)	Canopy Goal (Sq Mi)
Commercial/Mixed Use (CM)	3.6	7.3%	3.7%	3.7%	15%	0.54
Downtown (DN)	0.5	1.0%	3.1%	3.1%	10%	0.05
Developed Park (DP)	1.9	3.9%	28.7%	28.7%	35%	0.665
Major Institution (MA)	3	6.1%	6.8%	6.8%	20%	0.6
Multi-Family (MF)	2.2	4.4%	19.0%	19.0%	25%	0.55
Manufacturing/Industrial (MI)	5.6	11.4%	3.7%	3.7%	10%	0.56
Parks Natural Area (PN)	4.2	8.5%	74.6%	74.6%	80%	3.36
Single Family (SF)	15.5	31.4%	23.0%	23.0%	35%	5.425
ROW/Non-Parceled Areas	12.8	26.0%	9.2%	50.0%	25%	3.2
	49.94	100%	19%	30%	30%	14.95

Tree and Landscaping Manual



City of Portland, Oregon - Bureau of Development Services

1900 SW Fourth Avenue • Portland, Oregon 97201 • 503-823-7300 • www.portlandoregon.gov/bds



Guide to the Manual

The manual consists of several sections:

What rules apply and how to use the manual..... 3

This manual is intended as a guide to the Zoning Code sections dealing with trees and landscaping. Before finalizing your plans, contact the Bureau of Development Services Planning and Zoning section at 503-823-7526, or in the Development Services Center (DSC), first floor at 1900 SW 4th Avenue, Portland.

Frequently Asked Questions 9

This section presents information about why and how landscaping is required, what permits may be needed, and related matters.

Landscaping standards..... 13

This section defines and illustrates the different landscape standards. L1 is general landscaping, L2 and L3 are screening standards, L4 is a standard for high walls, L5 is a standard for berms, P1 is a standard for landscaping the interior of parking lots, and T1 is a standard for trees at new residential development.

Maintenance, irrigation, protection, etc..... 37

This section outlines requirements for landscape plans, landscape installation and irrigation, maintenance, and protection of trees and other plant materials. It also shows how to maintain sight lines for security and to keep plants from blocking pedestrian ways.

Plant materials and the Suggested Plant Lists..... 39

This section lists trees and other plants that may be suitable for areas where landscaping is required. In addition, the section includes such information as the spacing distance of different plants, the size categories of trees, whether plants are native to Portland, and whether they prefer sun, shade, or a mixture of the two.



Tree and Landscaping Manual



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What Rules Apply?

The landscaping standards that apply to your site depend upon the zoning and the type of development you plan. Each type of development has certain landscaping standards that usually apply. To get started, check the table below for the standards that are most likely to apply to your project:

Caution: this table is intended only to guide you to the standards that apply to most projects. Some projects require special screening, native plantings or other specialized landscaping. In addition, the City's Stormwater Management Manual and Erosion Control Manual have separate landscaping requirements.

Zone and Type of Development	Requirements	Landscaping Standards
Single Dwelling Zones 1) 1&2 Family	1) Tree preservation and planting, 33.110.282	T1
Multi-Dwelling Zones 1) 1&2 Family 2) Multi Family	1) Tree preservation and planting, 33.120.237 2) Minimum landscaped area, Table 120-3 and 33.120.235 Setbacks, Table 120-3 and 33.120.220 Parking Areas and Driveways, 33.266.130	T1 L1 L1, L2 L2, L3, P1
Commercial Zones 1) 1&2 Family 2) All other (multi-family, retail, office, other commercial)	1) Tree preservation and planting, 33.130.227 2) Minimum landscaped area, Table 130-3 and 33.130.235 Setbacks, Table 130-3 and 33.130.215 Landscaping abutting an R-zoned lot line, Table 130-3 and 33.130.215.B Parking Lots, 33.266.130 3) Exterior display and storage	T1 L1 L1, L2 L3 L2, L3, P1
Employment and Industrial Zones	1) Minimum landscaped area, Table 140-3 and 33.140.225 Setbacks, Table 140-3 and 33.140.215 Landscaping abutting an R-zoned lot line, Table 140-3 and 33.140.215.B Parking Lots, 33.266.130 2) Exterior display and storage landscaping, 33.140.245	L1 L1, L2 L3 L2, L3, P1

There are several other factors that may affect the rules that apply to your landscaping. For example, special rules apply to work in an environmental zone.

The table below shows where to look for guidance about other landscaping rules:

Development or activity	Find it in Zoning Code	Find it in the manual
Plant and tree selection	33.248.030 Plant Materials	Plant Material Selection and the Suggested Plant Lists
Installation, maintenance and irrigation	33.248.040 Installation and Maintenance	Maintenance, irrigation, protection, etc. Planting information is also presented in the Plant Material Selection and Suggested Plant Lists sections.
Tree protection	33.248.068 Tree Protection Requirements Tree preservation plans are described in 33.248.065 Tree Preservation Plans.	Maintenance , irrigation, protection, etc. Describes the tree protection requirements and alternative tree preservation plans. Standard T1 describes tree preservation plans and illustrates root protection zones and protective fencing.
Tree preservation for Lend Divisions	33.630 Tree Preservation	Not in the Manual
All development in Environmental zones	33.430 Environmental Zones • Columbia South Shore • Cascade Station • Pleasant Valley	Not in the Manual
All development in Greenway zones	33.440 Greenway Zones	Not in the Manual
Tree cutting	In both Title 20 and the Zoning Code.	See the Frequently Asked Questions section in the front of the Manual.
Street trees	Regulated by the Urban Forester. Not in the Zoning Code.	Not in the Manual
Stormwater maintenance	In Title 17 and the Stormwater Management Manual. Not in the Zoning Code	Not in the Manual
Erosion control	In Title 10 and the Erosion Control Manual. Not in the Zoning Code	Not in the Manual

The amount of area that must be landscaped may include a minimum landscaped area, landscaped setbacks or a combination of these. These requirements are found in the Zoning Code in Table 110-3 for Single-Dwelling Zones, Table 120-3 for Multi-Dwelling Zones, Table 130-3 for Commercial Zones, and Table 140-3 for Employment and Industrial Zones.

How to Use the Manual

This manual describes how to landscape areas that are required by the Zoning Code to have trees or other landscaping. It does not include information about street trees, which are regulated by the City's Urban Forestry Division, 503-823-4489.

The manual also does not describe the City's requirements for stormwater management or erosion control. For stormwater management requirements, refer to the *Stormwater Management Manual*, which is available on the Bureau of Environmental Services website at www.portlandonline.com/bes. For erosion control requirements, refer to the *Erosion Control Manual*, located on the Bureau of Development Services website at www.portlandonline.com/bds.

To use the *Tree and Landscaping Manual*, you should know what kind of development you want, where the property is, what zone the property is in (including any overlays or plan districts), and the general layout of the development you propose (i.e., at least a rough site plan).

For all development projects, you should contact the Planning and Zoning staff at 503-823-7256 or come into the Development Services Center at 1900 SW 4th Avenue for help determining the specific zoning regulations for your site and whether landscaping is required.

For all development of new structures or parking facilities, here's a list of the information you should gather about your project:

Site Information	
Location or address:	
Base zone	Overlay zone
Plan Districts	Site Area
Answer the following for all projects other than one and two family residences:	
Required setback	Length of each lot line
Lot line abutting an R-zoned lot (L3 required in C, E, and I zones)	
<input type="checkbox"/> yes <input type="checkbox"/> no Will any setback be 30 feet deep or more? L1, plus extra shrubs if wide	
Minimum landscaped area required (at least L1)	
Requirement for screening abutting an R-zoned lot? (L3)	
Parking Lots (see 33.266.130 in the Zoning Code)	
Number of parking spaces	
Interior landscaping required (if over 10 spaces) @ 45 sq. ft. per space (P1)	
Length of parking lot edges (perimeters, L2 unless abutting R-zoned lot)	
Width of perimeters, ft.	Area of perimeters (length x width), sq. ft.

After you have gathered this information, read in the Manual about the standards that apply (L1, L2, etc.). Then go to the *Landscaping Calculations Worksheet* and *Plant Coverage* pages.

Use the *Landscaping Calculations Worksheet* to calculate how many trees, shrubs, and ground cover plants you will need to fill your landscaped areas.

Some of the calculations are based on numbers of parking spaces, some on square footage, and some on the length of perimeters.

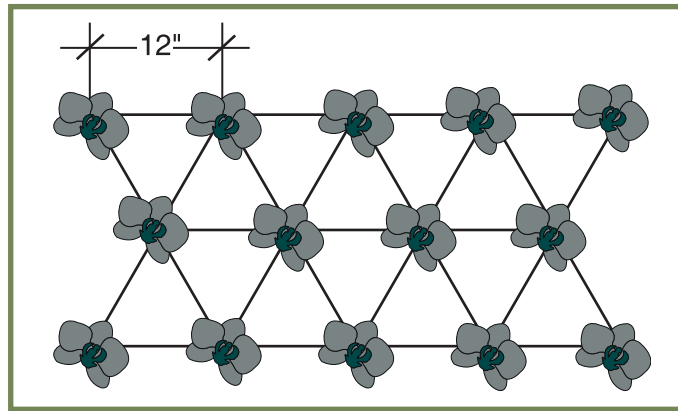
Landscaping Calculations Worksheet

Landscape Area Calculations						
Perimeter length, in feet		Perimeter area, in square feet		L1 area, in square feet		
Parking Lot Calculations, where applicable						
Number of parking stalls			Parking stalls with front 2 feet landscaped			
Interior landscaped area required in square feet (at 45 sq.ft. per parking stall)						
Parking lot perimeter length, in feet			Parking lot perimeter area, in square feet			
Plant Materials Calculations						
Trees	Perimeters (L standards)			Parking Lot Interiors		
	Standard	Linear feet	Number of trees	Standard	Number of stalls	Number of trees
Large	1 tree per 30 linear feet			1 tree per 4 parking stalls		
Medium	1 tree per 22 linear feet			1 tree per 3 parking stalls		
Small	1 tree per 15 linear feet			1 tree per 2 parking stalls		
TOTALS						
Shrubs	Perimeters (L standards)			Parking Lot Interiors		
	Standard	Linear feet	Number of shrubs	Standard	Number of stalls	Number of shrubs
Shrubs	1 shrub per ___ linear feet			1.5 shrubs per parking stall		
	1 shrub per ___ linear feet			1 shrub per stall with 2 front feet landscaped		
TOTALS						
Ground Cover	Perimeters (L standards)			Parking Lot Interiors		
	Coverage per 100 sq. feet	Area in sq. feet	Number of plants	Coverage per 100 sq. feet	Area in sq. feet	Number of plants
Plant #1	___ plants			___ plants		
Plant #2	___ plants			___ plants		
Plant #3	___ plants			___ plants		
Plant #4	___ plants			___ plants		
Plant #5	___ plants			___ plants		
Plant #6	___ plants			___ plants		
TOTALS						

Plant Coverage

The landscaping standards require that ground cover plants be planted so that they fill in the landscaped area within three years. The ground cover plant lists include plant spacing recommendations. If you select a plant not on the lists, you must provide the Bureau of Development Services (BDS) with plant spacing information either from published sources, such as the *Sunset Western Garden Book*, from Internet sources, or from cut sheets provided by the nursery. You must identify the source of the information so that BDS can verify it.

Ground cover plants other than turf forming grasses must be planted in triangular spacing, as shown below. In this illustration, the plants are planted on a 12 inch triangular spacing.



To calculate the number of ground cover plants needed to meet the standards, use the table below.

If the spacing for the plant is:	You need this many plants per 100 square feet of area:
6 inches	460
8 inches	260
10 inches	167
1 foot	115
1.5 feet	51
2 feet	29
2.5 feet	19
3 feet	13
4 feet	7
5 feet	5

