Case Studies:
Tree Preservation During Development

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Introduction

The City of Camas has been actively considering revisions to municipal code with the intent of improving or enhancing regulations relating to trees in the urban forest. As part of this project, Davey Resource Group was contracted to investigate some of the challenges experienced by City staff associated with the administration of Camas Municipal Code 18.31.080, Tree Retention. This particular code is positioned within Chapter 18.31, Sensitive Areas and Open Space.

Within the city limits, there exist parcels and natural areas that are not critical areas defined elsewhere in City code. City staff are challenged to evaluate and encourage tree retention plans from developers when these parcels are developed. Under existing code, healthy and large stature trees on undeveloped parcels can be removed prior to, or as a part of, a development application. There is currently little direction for preserving existing trees or for allowing options for mitigation when healthy trees are removed.

Davey Resource Group researched code language in some other municipalities that encourage tree preservation, retention or planting, including developing provisions for maintaining minimum shading requirements over pavement, establishment of tree tracts (preserved natural areas) or a minimum percentage of tree retention. The goal of this assignment was to examine how other municipalities have addressed similar issues. Specifically: .

1. Is there a common minimum requirement for shade preservation?
2. How is the determination made on whether/when trees are required for retention?
3. What language is used to prevent tree removal prior to the permitting process?
4. Are there provisions for substitution in some landscaping requirements when trees are preserved?
5. Are mitigation fees collected for trees that cannot be replaced on site?

To answer these questions, an internet search was performed to identify municipal codes in other jurisdictions which could provide examples and precedence. This research was generally limited to municipalities in Washington State and was not a comprehensive review of all municipal codes within the state. Example codes in this report were selected because they provide distinct language from municipal codes in communities that could be considered bedroom communities with similar development challenges to those experienced by Camas.

Camas - Existing Code Language

For reference, the following excerpts are provided from Camas Municipal Code"

18.31.010 - Purpose.

> The guidelines, criteria, standards, special studies, and open space requirements in this chapter are intended to identify, protect, and preserve lands and areas within the city which are characterized by the presence of environmentally sensitive or valuable features and resources. These areas may include: steep slopes and areas of unstable soils, wetlands, streams, and watercourses. Certain activities, such as vegetation removal and the addition of impervious surfaces within these areas, unless regulated by the city, pose a potential threat to life, property, public health, and welfare. Unregulated activities also pose a significant threat to important environmental features and communities, and to the functions and values they perform. This chapter is also intended to implement the goals and policies of the comprehensive plan; to protect critical areas within the city as required by state policies, guidelines, and rules; to provide property owners and members of the public with notice as to the location and distribution of sensitive areas within the city; and to require special studies to help identify environmentally sensitive and valuable areas within the city. Such plans and studies shall be prepared by qualified professionals.

…

18.31.080 - Tree retention.

A. A tree survey, conducted by a qualified biologist, landscape architect, or arborist, shall be conducted for all lands proposed to be developed and listed under Section 18.31.020. A survey shall not be required for lands proposed to be retained as undeveloped open space.

B. To the extent practical, existing healthy significant trees shall be retained. Preservation of groups of significant trees, rather than individual trees shall be preferred. All grading shall take place outside the drip line of those significant trees to be retained, except that the city engineer may approve grading within the drip line if it can be demonstrated that such grading can occur without damaging the tree or trees.

Shade Requirements

Is there a common minimum requirement for shade?

There are no common minimum requirements for shade in Washington state. Typically, shade requirements are associated with parking lot designs. What appears to be common is the research that provides the background for shade requirements on parcels. An internet search revealed

A study performed by Klaus Scott et al (1999) demonstrated how parking lot microclimates with 50% canopy of tree cover lowers the ambient temperatures for parked vehicles by approximately 4-8 F. (Effects of Tree Cover on Parking Lot Microclimate and Vehicle Emissions", Klaus Scott et al, Journal of Arboriculture 25(3), May 1999 p. 129 -142.)

At the City of Newcastle, WA (near Bellevue), shade trees are required using a per stall metric. **Newcastle Municipal Code** 18.16.070

B. Land Use Type	Trees per Stall – Within CBC Overlay Zone	Trees per Stall – Within All Other Zones
Commercial or Industrial	1:5	1:5
Residential or Institutional	1:5	1:10

Tree Retention Determination Methods

How is the determination made on whether/when trees are required for retention?

Two municipalities in washington provide distinct language relating to tree retention requirements; Newcastle and Olympia. The City of Newcastle makes use of code language that establishes trees of a certain size as "significant" and then proceeds to limit within the code, the activities that can be performed with regards to management of these trees. The City of Olympia has instead chosen to establish a tree density requirement on properties which instead of protecting individual trees, encourages tree retention in order to meet larger canopy goals across their municipal landscape.

NEWCASTLE

A comprehensive set of codes surrounding tree retention during development. The entire retention code involves significant trees. These are defined as follows:

> **18.06.598 Significant tree** - *An existing healthy tree which, when measured four feet above grade, has a minimum diameter of:*
> > *A. Eight inches for evergreen trees; or*
> > *B. Twelve inches for deciduous trees.*

Once a tree is significant, the NMC outlines requirements for retention based on percentages. This approach is fairly common amongst municipalities in the greater Puget Sound Metro region that have tree retention requirements, but Newcastle provides good examples of how significant tree retention objectives can be described in in city code. These include provisions for interior versus perimeter landscaping, sensitive areas, buffers and recognition that some significant trees may not be practical for retention:

> **18.16.130 Significant trees – Retention required.**
> *Except as provided in NMC 18.16.170, significant trees shall be retained in all residential, commercial, industrial or institutional developments as follows:*
>
> *A. All significant trees located within any required perimeter landscaping area shall be retained;*
>
> *B. Twenty-five percent of the significant trees located in the interior of the lot, excluding sensitive areas or their buffers, shall be retained in a residential or institutional development;*
>
> *C. Five percent of the significant trees located in the interior of the lot, excluding sensitive areas or their buffers, shall be retained in commercial or industrial*

developments;

D. The following activities shall require a clearing and grading permit and shall conform to the provisions of this chapter and Chapter 14.15 NMC:

1. Clearing of 2,500 square feet of contiguous land area including native soils and vegetation; or

2. Removal of 10 or more significant trees as defined under NMC 18.06.598. Tree replacement for removal of significant trees shall be required to comply with on-site tree replacement in accordance with NMC 18.16.170;

E. Utility developments and mineral extraction operations shall be exempt from the significant tree retention requirements of this chapter;

F. If significant trees were previously located in a closed, forested situation, an adequate buffer of smaller trees shall be retained or replaced on the fringe of such significant trees;

G. A grouping of three or more existing trees with canopies that touch or overlap may be substituted for each required significant tree, provided each tree has a diameter of at least three inches when measured four feet above grade;

H. Except as provided in subsection (I) of this section, significant trees to be retained shall not include significant trees that are:

1. Damaged or diseased;

2. Safety hazards due to potential root, trunk or primary limb failure, or exposure of mature trees which have grown in a closed, forested situation; and

I. At the discretion of the city, damaged or diseased or standing dead trees may be retained and counted toward the significant tree requirement if demonstrated that such trees will provide important wildlife habitat and are not classified as danger trees. (Ord. 2016-551 § 2 (Exh. 1); Ord. 2014-488 § 3 (Exh. A); Ord. 2001-248 § 32; Ord. 2000-210 § 42; Ord. 98-176 § 1; Ord. 45 § 1, 1994; Ord. 18 § 1, 1994).
18.16

The link to this code:
http://www.codepublishing.com/WA/Newcastle/html/Newcastle18/Newcastle1816.html#18.16.130

Olympia

All pieces of property, regardless of zoning or use, within the City of Olympia are required to maintain a minimum tree density (OMC 16.60.080). The density requirement is 30 tree units per acre.   A "Tree Unit" has a general relationship to its diameter at breast height (dbh), but is not necessarily 1 to 1. Examples:

        a. 1"-6" DBH = 1 tree unit.
        b. 16" = 3 tree units
        c. 19" = 4.5 tree units

A tree removal permit is only required when the proposed trees for removal will drop the property below the minimum tree density requirement.

Olympia Tree Density Calculator
http://olympiawa.gov/~/media/Files/CPD/Urban%20Forestry/How%20to%20Calculate%20Tree%20Density.pdf?la=en

Details tree density requirements for developed and un-developed property
http://www.codepublishing.com/WA/Olympia/html/Olympia16/Olympia1660.html#16.60.080

Language That Limits Removal

What language is used to prevent tree removal prior to the permitting process?

Washington State Laws

In absence of municipal codes controlling tree removal, Washington State Law under the forest protection act (Title 76), requires landowners with a forest to have a forest practices permit if they decide to initiate cutting or removal or other regulated activities that alter the natural systems on the property.

http://app.leg.wa.gov/RCW/default.aspx?cite=76.09.010
http://app.leg.wa.gov/RCW/default.aspx?cite=76.09.240

Olympia

Olympia has a minimum tree density requirements for all properties.

http://www.codepublishing.com/WA/Olympia/html/Olympia16/Olympia1660.html#16.60.080

Bainbridge Island

Bainbridge Island has 'significant trees' and established permit requirements for land clearing. Although the language provides for some amount of clearing without requiring a permit, This effectively limits conversion of land prior to a permit application.

http://www.codepublishing.com/WA/BainbridgeIsland/html/BainbridgeIsland16/BainbridgeIsland1618.html

Vancouver

The City of Vancouver has developed sophisticated tree removal permit requirements that consider a tree's size, it's location and the lot zoning. In many cases, a permit is required.

http://www.cityofvancouver.us/sites/default/files/fileattachments/public_works/page/1341/doineedatreepermit.pdf

Redmond

The City of Redmond, acknowledges the Washington State Laws in their municipal code regarding forest practice permittees. The language sets a limit on land use permits. This strategy encourages natural processes to reforest the site.

> ***21.72.020 Permits Required - F. Forest Practices Permittees****. Permittees under Class IV - General forest practice permits issued by the Washington State Department of Natural Resources (DNR) for the conversion of forested sites to developed sites are also required to obtain a tree removal permit from the City. For all other forest practice permits (Class II, III, IV – special permit) issued by DNR for the purpose of commercial timber operations, no land use permits will be issued for six years following tree removal.*

http://online.encodeplus.com/regs/redmond-wa/export2doc.aspx?pdf=1&tocid=005.009&file=doc-005.009-pid-80.pdf

Provisions for Substitutions

Are there provisions for substitution in some landscaping requirements when trees are preserved?

Newcastle

For this question, the City of NewCastle provides a good example of code language that provides City staff with the ability to allow deviations and substitutions within develop applications. These provisions for substitution are available when code perimeter landscaping, or interior landscaping provide better functions to the property than meeting basic tree retention requirements.

CNC 18.16.060 Landscaping – Interior lot lines.
A 20-foot width of Type II landscaping shall be included where development within the CBC abuts all other zones outside the CBC, unless the director allows reductions or modifications of this standard as follows:
a. The director may allow up to a 50 percent reduction of the required width if the landscape design incorporates vegetated screens, walls or other architectural barriers at least six feet in height and a narrower strip of more densely planted trees and shrubs;
b. The director may allow up to a 25 percent reduction of the required width of the perimeter landscaping when a development retains all healthy significant trees within the required 20-foot width buffer and the retained trees provide a screening function;
c. The width of the perimeter landscaping may be averaged, provided the minimum width is not less than 10 feet in any location determined by the director to be high activity areas;
d. The director may allow modification of the landscape requirement when existing conditions on or adjacent to the site, such as significant topographic differences, vegetation or utilities, would render application of this chapter impractical, ineffective or result in scenic view obstruction;
e. When an existing structure other than a fence or wall precludes installation of the total amount of required site perimeter landscaping, the director may allow modification of these requirements as necessary to accommodate the existing condition while remaining consistent with the purpose of this chapter and the intent of this section; and
f. In no case shall the director allow less than 10 feet of landscaping unless subsection (B)(2)(d) or (e) of this section applies.

Lacy

The City of Lacy provides example language where cities require Tree Tracts as part of land development applications. A "Tree Tract" is a portion of land designated for the preservation and protection of existing trees or the planting of new trees to maintain tree canopy at a development site. In addition to providing an opportunity for developments to clear land as desired, the tree tract requirement at the City of Lacy also presents language that can transfer ownership of the tree tract over to the City. These options for transferring ownership of natural areas or 'Tree Tracts' may be a suitable strategy for accepting substitutions in landscaping requirements.

http://www.codepublishing.com/WA/Lacey/html/Lacey14/Lacey1432.html#14.32.064

Fee In-Lieu When Trees Can't Be Replaced

Are mitigation fees collected for trees that cannot be replaced on site?

Providing developers with the opportunity to pay fees in-lieu of meeting their landscaping requirements is becoming increasingly common within municipalities.   Precedence for this option can be found at the National level, with the US Army Corp of Engineers. In a [Federal Rule](#) ([PDF](#) file 567 KB) published in April 2008, The U.S. Army Corps of Engineers (the Corps) and the U.S. Environmental Protection Agency (EPA) define an in-lieu fee program as:

- *"A program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements... Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor."*

In King County, the county government describes the fee in-lieu approach as an option for ensuring that mitigation is achieved, even when not possible at the proposed project site:

> *When permitted projects will create unavoidable impacts to the environment, project sponsors must offset, or "mitigate" the environmental impacts associated with the project. The mitigation process includes avoiding and minimizing impacts as much as possible, and then making up for any unavoidable impacts through implementation of a mitigation project. Mitigation projects can occur on-site (at or near the place where the impact project occurs) or off-site. King County Code prioritizes on-site mitigation when it is ecologically feasible and likely to succeed long-term. However, if mitigation on or adjacent to the development site is impractical or won't result in meaningful ecological benefit, off-site mitigation becomes an option under King County code and state and federal rules. Off-site mitigation options may include use of a mitigation bank, "permittee-responsible" mitigation, or in-lieu fee mitigation through the Mitigation Reserves Program.*

http://www.kingcounty.gov/services/environment/water-and-land/wetlands/mitigation-credit-program.aspx

Example of Cities found with Fee in-Lieu options

The following list was gleaned from the results of a keyword search using Google with the search terms "fee in-lieu" , "washington", and "trees".   Further investigation reveals some variation in how these fees are calculated, and where the funds collected get applied.   Cities with fee in-lieu options in their codes include:

<div align="center">

City of Redmond
City of Federal Way
City of Newcastle
City of Shoreline
City of Port Angeles
City of Lake Forest Park
City of Renton
City of Kenmore

</div>

City of Redmond

As an example, the City of Redmond calculates fee in-lieu to include the cost of the trees. More importantly, it also includes in the fee, all costs associated with establishment care:

> ***21.72.080 E.2. -Tree Replacement Fee*** *A fee in lieu of tree replacement may be allowed, subject to approval by the Administrator after careful consideration of all other options. A tree replacement fee shall be required for each replacement tree required but not planted on the application site or an offsite location.*
>
> > *(i) The amount of the fee shall be the tree base fee times the number of trees necessary to satisfy the tree replacement requirements of this section. The tree base fee shall cover the cost of a tree, installation (labor and equipment), maintenance for two years, and fund administration.*
> > *(ii) The fee shall be paid to the City prior to the issuance of a tree removal Permit.*
> > *(iii) Fees collected under this subsection shall be expended only for the planting of new trees in City-owned parks, open spaces or rights-of-way.*

http://online.encodeplus.com/regs/redmond-wa/export2doc.aspx?pdf=1&tocid=005.009&file=doc-005.009-pid-80.pdf

City of Renton

At the City of Renton, code language is much more limited. Fee in-lieu options are still at the City's discretion, but only cover the cost of the tree and installation. No funding for establishment care is required in this code. The code does directly designate the funds to be allocated to the Urban Forestry Program fund which provides more discretion to the City with how the funds get allocated.

> ***4-4-130 H.1.E iii. Fee in Lieu****: When the Administrator determines that it is infeasible to replace trees on the site, payment into the City's Urban Forestry Program fund may be approved in an amount of money approximating the current market value of the replacement trees and the labor to install them. The City shall determine the value of replacement trees.*

http://www.codepublishing.com/WA/Renton/#!/Renton04/Renton0404/Renton0404130.html

City of Port Angeles

Similar to the previous examples, the City of Port Angeles provides a fee in-lieu option, but it only appears to relate to street tree replacement requirements. Another distinction in this code is the fee is determined by the Community Forester (a city staff position):

> ***11.13.050 B.3. Street tree requirements in previously developed area. In addition to the above requirements, the following also apply:*** *Where new street trees cannot be planted due to portions of rights-of-way having been previously paved or otherwise rendered unsuitable to plant trees, a fee-in-lieu of planting is required. Such fee shall be determined by the Community Forester per City Policy and deposited into the Community Forestry Fund.*

https://library.municode.com/wa/port_angeles/codes/code_of_ordinances?nodeId=TIT11STSI_CH11.13STTR_11.13.050STTRENRE

Concluding Remarks and Recommendations

From the information acquired in this limited research project, the City of Camas has the opportunity to improve the clarity of city code and establish limits on property development that encourage tree retention. Examples set by other cities include the following:

- **Significant Tree Retention Requirements** - The City of Camas could enact requirements that control the removal of significant trees on a property by requiring a permit process and/or mandating minimum tree density requirements.

- **Shade Requirements** - Trees provide environmental benefits, and the City could enact code requirements that would help the City meet canopy or shade objectives. Alternatively, the City could enact code requirements that relate to another environmental benefit such as Stormwater mitigation.

- **Fee in-lieu** - The City could enact code language that provides fee in-lieu opportunities for developers. Funds set aside in a tree bank could be used to improve the urban forest in other areas of the City when a development cannot meet tree retention objectives on-site.

- **Deviations and Substitutions** - Code revisions can include language that permits deviations from code requirements when the City determines that development proposals could meet City urban forestry objectives by other means.