

**2024**

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**TREE CANOPY  
MONITORING  
REPORT**

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**January 1 - December 31, 2024**

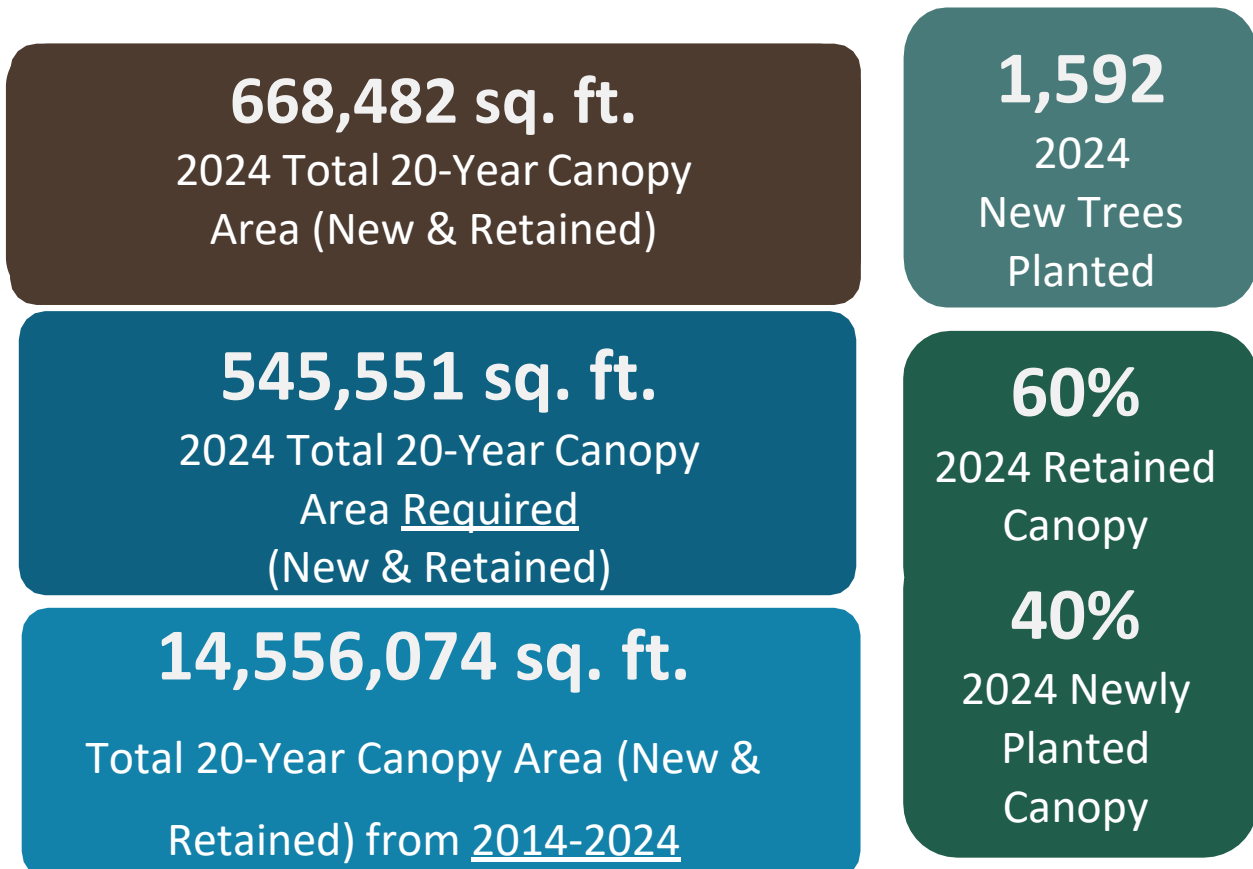


## Executive Summary

Snohomish County Planning and Development Services (PDS) has produced an annual Tree Canopy Monitoring Report since 2014 in accordance with Snohomish County Code (SCC) 30.25.014. The Tree Canopy Monitoring Report details the amount of tree canopy preserved and planted for new residential permits in urban unincorporated Snohomish County. The 2024 Tree Canopy Monitoring Report outlines the 2024 results and features a new online tool that reviews all the data of the approved landscaping permits from the past ten years of tree canopy monitoring reports in the Urban Tree Canopy Monitoring Report 10 Years in Review [Dashboard](#).

All new residential developments are subject to tree canopy requirements except those listed in SCC 30.25.016(1). For every application involving new tree plantings, the applicant must calculate their canopy growth maturity in a 20 year time span to meet the tree canopy requirements in SCC 30.25.016(3). Every proposed landscape plan that was approved in 2024 met or exceeded the minimum 20-year tree canopy coverage required in SCC 30.25.016(3). Four out of 26 of the landscape plans (15%) exceeded their minimum tree canopy requirements by at least five percent or more. This is compared to 2022 which had nine out of 49 (18%) landscape plans, seven out of the 44 landscape plans (16%) in 2021, and 2020 which had 13 out of 50 landscape plans (26%) that greatly exceeded their required tree canopy coverage.

### Summary of 2024 Urban Tree Canopy Monitoring:



Outside of the dashboard, trends in tree canopy statistics, tree species diversity, trees planted, and application history in Snohomish County from the previous reports are located here:

<https://snohomishcountywa.gov/2737/Tree-Canopy-in-Landscaping>.

# Introduction

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To help assess the effectiveness of tree canopy regulations, Snohomish County Council passed Amended [Ordinance No. 14-073](#) on October 8, 2014, to require a tree canopy monitoring report. In particular, the 2014 ordinance modified landscaping requirements for urban residential developments, and the monitoring report provision was added to determine the benefit of these changes over time. These regulations are in [Chapter 30.25](#) of the Snohomish County Code (SCC) and require the Department of Planning and Development Services (PDS) to prepare an annual tree canopy monitoring report that is submitted to the County Council by January 31st of each year.

Per SCC 30.25.014, PDS is required to provide data on the following five topics for the applications it approved within the reporting period:

1. The number of applications exempted from tree canopy requirements by each of the exemptions in SCC 30.25.016(1).
2. The number of applications to which the tree canopy requirements are applied, subtotaled by type of application.
3. The number of applications using the Tree Survey method and the number using the Aerial Estimation method for estimating existing tree canopy (applicable when the retention of existing canopy is to be used – in whole or in part – to meet the requirements).
4. For each application to which the tree canopy requirements are applied:
  - a. The tree canopy required by Table 30.25.016(3) prior to any adjustments.
  - b. Any adjustments to the required tree canopy, the specific type of incentive or other adjustments, and the specific code authority for the adjustment.
  - c. The required tree canopy after all adjustments are made.
  - d. The use and effect of applying any other incentives for tree retention.
  - e. The result of the calculation of existing canopy.
  - f. The canopy of trees retained.
  - g. The number of new trees planted.
  - h. The result of the calculation of 20-year canopy.
5. For every allowable type of adjustment, the total number of applications that used it and the total reduction in required tree canopy resulting from it.

# Monitoring report updates

Table 1 outlines how the reporting methodologies have changed since the first tree canopy monitoring report in 2015.

**Table 1. Tree Canopy Monitoring Report Data Collection Methods 2015-2024.**

Report Year	Data Collection Method
2015 & 2016	Included data for proposed landscaping plans for <i>all</i> residential land use applications within the urban growth area that were either submitted or approved in the prior year.
2017 & 2018	Included only data from landscape plans for <i>approved</i> development activities that were subject to tree canopy regulations in SCC 30.25.016. Data collection timeframes varied and generally included the previous year's approved landscape plans (but also included more than a 12-month timeframe)
CY 2018 & CY 2019	These reports follow the same methodology as the 2017 and 2018 reports, apart from limiting the timeframe to 12 months. The timeframe for data collection is now a calendar-year (CY), and the report titles reflect this change.
2020- 2024	These reports follow the same methodology established as the previous three years. The 2020-2024 reports have removed the calendar-year based title heading for further clarity.

The methodology for data collection has evolved since 2015. The 2015 tree canopy monitoring report includes data for proposed landscaping plans for development applications that were either submitted or approved in 2014. Similarly, the 2016 report included data for proposed landscaping plans for development applications that were either submitted or approved in 2015. PDS revised the reporting methodology in 2017 to improve accuracy by including data only from landscape plans of residential developments that were approved in 2017.

Over time, the data collection methodology for the annual tree canopy monitoring reports has changed to incorporate the recommendations of staff to improve data collection. A diversity of tree species in new plantings has been a requirement in county code since 2014, [SCC 30.25.016\(3\)](#). PDS staff first began to record the diversity of newly planted tree species within the monitoring report in 2021. The full list of Tree species is located here: [Tree Canopy List](#). Documenting the tree type diversity gives detail into the kind of trees most applicants planted and the distribution of native vs. non-native trees.

The published reports from 2015-2016 included landscaping plans that were submitted but not approved in the year of submittal. This allowed some of the same applications to be included in the next year's monitoring report as well, and that created the potential for trees to be double counted. To avoid double counts in the reporting period between 2014-2016, the applications

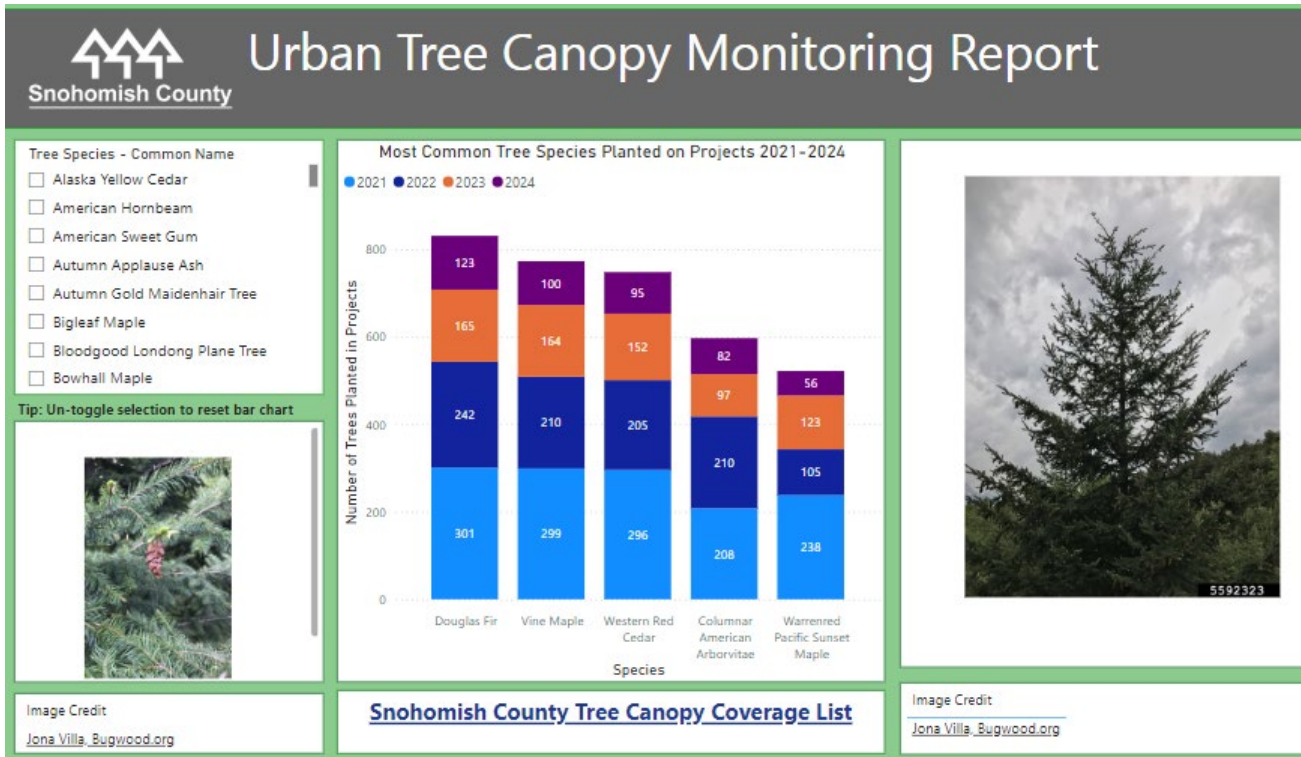
included in the 2024 report reassess the data between 2014-2016 to only include applications approved in that reporting year using 12 months as a calendar year timeframe. Since 2018, all tree canopy monitoring reports use the methodology of the calendar year (CY) as the timeframe for data collection. Creating a standardized 12-month reporting period and reassessing all tree canopy monitoring reports landscape plans allows each year's tree canopy monitoring reports to be consistently compared over time. The reassessment reflects the true quantity of tree canopy coverage change since 2015.

## Tree Canopy Monitoring Dashboard

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PDS launched a new data visualization tool, called the Tree Canopy Monitoring [Dashboard in 2024 to accompany the monitoring report](#). The data gathered for the 2024 Tree canopy monitoring report is integrated into the Dashboard analysis. This tool gives the public a summary of the changes in tree canopy coverage over the past ten years in urban unincorporated Snohomish County. Utilizing Power BI, the dashboard provides a cumulative insight into how applicants have met and often exceeded the required tree canopy regulations over time. Dashboard users can also gain insights into the application history, tree canopy statistics, and tree species information over the past ten years of reporting. Additionally, the dashboard includes the latest tree canopy aerial maps of the unincorporated Urban Growth Areas (UGAs) in Snohomish County and the Southwest Urban Growth Area (SWUGA) that were used for the 2024 Comprehensive Plan update. These maps are the most recent imaging conducted by the Surface Water Management team (SWM) from 2022 that are available for the public.

The dashboard overview features include a record of tree species diversity within newly planted trees, tree canopy statistics, and new unincorporated urban residential permit application history over time. The dashboard shares the totals of the required tree canopy on new projects between 2015 and 2024, and how applications exceeded the required tree canopy coverage for the cumulative 20-year tree canopy calculations for new and retained canopy. Every year applicants have met or exceeded the required canopy coverage needed to fulfill the code regulations for canopy retention in all new residential projects.



**Photo 1: Tree species diversity page from the Tree Canopy Monitoring Dashboard**

All new urban residential permit applications approved between 2015 and 2024 are represented in the new Tree Canopy Monitoring Dashboard. dashboard will be updated to include the latest 2024 aerial images of tree canopy coverage in Snohomish County once it is finalized by the Surface Water Management (SWM) division.

## Tree Canopy Coverage Analysis Background

To establish a baseline percentage for tree canopy coverage in the UGA in the 2014 regulations, the county relied on a high-level GIS analysis of the National Land Cover Data provided by the US Geologic Service (USGS). This data was analyzed in 2013 utilizing USGS Land Cover Data from 2011. USGS releases updated land cover data every 2 to 3 years. The analysis in 2013 determined that the unincorporated UGAs of Snohomish County contained an estimated 30% canopy coverage between public and private lands. Ordinance 14-073 sought to maintain 30% tree canopy coverage in unincorporated UGAs of Snohomish County. Snohomish County Code does not currently require further analysis of USGS Land Cover Data post 2013, and canopy coverage is measured individually by permits.

While the monitoring report is not required to utilize updated USGS maps, to better understand how tree canopy coverage was changing throughout the county, PDS updated the tree canopy coverage maps within unincorporated urban Snohomish County for the 2020 Tree Canopy Monitoring Report. Both the original and updated analysis of satellite imagery covered the entire urban unincorporated areas, although Snohomish County's tree canopy regulations only apply to new urban residential development. The 2020 Tree Canopy Monitoring Report included an updated tree canopy coverage analysis that used canopy coverage data from the USGS National Land Cover Database and the National Oceanic and Atmospheric Administration (NOAA) National Agriculture Imagery Program that was then analyzed by Snohomish County's SWM division. Three maps and datasets were reviewed 2011 USGS data, 2016 USGS data, and the 2015 NOAA/SWM data.

The 2024 Tree Canopy Monitoring report includes new mapping that was created for the 2024 Comprehensive Plan Update. Generated by Snohomish County's SWM team, these maps offer enhanced insights into the types and maturity of trees forming the canopy. The 2024 maps use tree canopy coverage data through satellite imagery of forested areas via NOAA's Coast Change Analysis Program (CCAP) and Light Detection and Ranging (LiDAR) systems. NOAA's CCAP, a remote sensing technology, furnishes high-resolution land cover data, while LiDAR employs laser sensors to measure surface coverage, yielding more comprehensive landscape insights. Compared to previous reports utilizing USGS datasets, the now NOAA's data offers greater detail. The 2020 aerial canopy imagery provides comprehensive tree canopy coverage across the entire [unincorporated Urban Growth Area \(UGA\)](#) and more specifically within the unincorporated [Southwest Urban Growth Area \(SWUGA\)](#). The SWUGA is a subset of all unincorporated UGAs in the county and is highlighted because of the anticipated population growth and increasing developments in this area.





Photo 2: North Creek Condominiums, Bothell. Photo Credit PDS Staff

## Future Tree Canopy Mapping

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The Snohomish County 2024 Comprehensive Plan Update amended the Natural Environment Element to include a subelement on urban tree canopy policies that seek to preserve and restore urban tree canopy equitably across urban unincorporated Snohomish County. The new subelement under NE Goal 9, outlines strategies to achieve a healthy urban forest, including tree canopy cover, to contribute to the economic vitality of the community, increase environmental stability and resiliency, and promote a better quality of life. The policy expands on the currently required yearly tree canopy monitoring by identifying implementation and adaptive management strategies for evaluating and improving the proposed urban tree

WA DNR Tree Canopy GIS Data:

<https://data-wadnr.opendata.arcgis.com/>

To learn more about WA DNR Urban and Community Forestry Program:

<https://www.dnr.wa.gov/urbanforestry>

management program that will be reflected in future monitoring reports.

Snohomish County Council voted to adopt the urban tree canopy subelement as a part of the 2024 comprehensive plan update on December 4, 2024, and Snohomish County Executive Dave Somers signed Amended Ordinance No. 24-033 on December 12, 2024. The Urban Tree Canopy subelement originated through a council-initiated [Motion No. 22-096](#) that evolved into the adopted policies. [Policies](#) NE 9.A.1 and 9.A.6 support future mapping and tree canopy analysis, and the county will pursue designation as an Evergreen Community. Urban Tree Canopy Policy NE 9.A.6 also requires the county to perform periodic tree canopy monitoring and inventory to identify areas for protection and enhancement.

The subelement establishes a no net loss of urban tree canopy coverage that is met through an urban forest management plan to maintain canopy coverage while satisfying other GMA goals. The mapping used for the 2024 comprehensive plan update showed that in 2023, there was at least 38% tree canopy coverage in urban unincorporated Snohomish County. The county continues to surpass the previously established target of hitting at least 30% or higher tree canopy coverage in the urban unincorporated areas in Snohomish County that was established in amended [Ordinance No. 14-073](#). With the continued mapping updates on canopy coverage data, the county can better understand how effective the current policies are at complying with their original intent and provide better data for future reports to use for analysis. The aerial images reflect tree canopy coverage in Snohomish County has been conducted in 2024 and will be finalized and published to the public in 2025.



**Photo 3: Ballinger Park. Photo Credit PDS Staff**

To implement these mapping and assessment policies, the county has partnered with other cities,

tribes, and agencies to acquire high resolution imagery for 2018, 2020, 2022, 2024, and 2026 that can be used for tree canopy mapping. The collaborative efforts from partners at the Washington State Department of Natural Resources (DNR) and the Urban and Community Forestry Program (UCF) work to develop high-resolution urban canopy assessments for incorporated UGAs in King, Pierce, and Snohomish Counties. The assessments were used for the 2024 mapping used for the 2024 Comprehensive Plan update, and are available on the [Urban and Community Forestry in Washington State page](#).

The latest aerial images taken in 2024 will be finalized in 2025. The policies of the comprehensive plan will help make this annual monitoring report stronger by utilizing both self-reported tree canopy within applications as well as larger scale imaging. The tree canopy data from DNR has been used by the county to evaluate the tree canopy coverage in the incorporated UGAs, however, the county relies on Federal data for urban unincorporated areas. Snohomish County and PDS will continually pursue the use of updated Federal, State, and local data for future tree canopy coverage analysis.

## Tree Canopy Regulations

SCC 30.25.016 establishes a minimum amount of tree canopy to be provided for each new urban residential development on a sliding scale, depending on the type of residential construction (e.g., detached versus attached) and the number of lots or units (see Table 2). Under this approach, a higher canopy percentage is required for low density single family than multiple family developments to balance environmental goals with increased density, and to accommodate future population growth in an efficient manner. Table 2 presents the amount of tree canopy required for new residential development applications.

**Table 2. Tree Canopy Coverage Requirements (SCC 30.25.016(3))**

Type of Development	Required 20-Year Tree Canopy Coverage (gross site area)
<b>Subdivisions for Single Family Residential (10+ lots)</b>	30%
<b>Short Subdivisions for Single Family Residential (4 to 9 lots)</b>	25%
<b>Short Subdivisions for Single Family Residential (&lt; 4 lots)</b>	20%
<b>Single Family Detached Units, Cottage Housing, Townhouse, Multi-family (10+ units)</b>	20%

<b>Single Family Detached Units, Cottage Housing, Townhouse, Multi-family ( &lt; 10 units)</b>	15%
<b>Urban Center (residential and mixed use projects only)</b>	15%

Applicants can meet tree canopy requirements through tree retention, new plantings, or a combination of both. The requirements of Table 2 apply equally to sites with existing canopy and those that do not. The tree canopy requirements in SCC 30.25.016 were amended in 2009 by Ord. 08-101, and in 2014 by Ordinance 14-073. The 2009 tree replacement regulations only applied to sites with significant trees. The current tree regulations standards expand urban tree canopy requirements to redevelopment sites as well as sites that have been cleared in the past. Additionally, the current code does not require a one-for-one replacement requirement for significant trees, and this could cause heavily forested lots proposed for residential development to lose tree canopy when developed. This compromise was struck to balance the growing demand for housing and to comply with Growth Management Act (GMA) goals to incentivize growth in urban areas, reduce sprawl, protect the environment, and provide affordable housing. This was also a reason why the monitoring requirements were put in place originally, to determine whether the county was in fact losing canopy.

Retaining significant trees remains an objective of the current regulations, and developers are incentivized to retain both individual significant trees and stands of significant trees. The tree canopy regulations maintain the pre-2014 requirements that significant trees in critical areas and perimeter landscaping buffers be retained. The regulations also address species mix, encouraging more native trees to be planted to minimize disease and improve survivability. Finally, the regulations promote planting the right tree in the right place to ensure long term survivability. The full details on the current tree canopy requirements are available in code section [SCC 30.25.016](#).

## Measuring New and Existing Canopy

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Newly planted canopy calculations are measured by estimating what the square footage size of the tree will be when it is a 20-year old mature tree ([SCC 30.25.016\(4\)](#)). Snohomish County uses a [Tree Canopy Coverage List](#) of approved landscaping trees to measure the mature canopy area. Applicants can also provide a report from a qualified landscape designer for trees not on the Tree Canopy Coverage List. The existing canopy is measured using either an aerial survey or a tree survey done on-site. The aerial estimation method involves obtaining aerial imagery of the existing canopy on a landscaping application and measuring that overview of canopy coverage, while the tree survey measures the average canopy radius for all retained trees and divided by the gross site area of the application.

## Annual Report on Tree

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# Canopy: 5 Requirements

The assessment of the five reporting requirements, pursuant to SCC 30.25.014 outlined in the Introduction section of this report, is based on a review of approved residential development activities between January 1, 2015, to December 31, 2024, that are subject to the tree canopy regulations in SCC 30.25.016. Each of the five specific reporting requirements is discussed in the following sections.

## Report Requirement #1:

### Number of Applications Exempt from Requirements

The following activities, which are listed in SCC 30.25.016(1), are exempt from the tree canopy requirements in SCC 30.25.016:

1. Removal of any hazardous, dead, or diseased trees as necessary to remedy an immediate threat to person or property as determined by a letter from a qualified arborist;
2. Construction of a single family dwelling, duplex, accessory, or non-accessory storage structure on an individual lot created prior to April 21, 2009, or created by a subdivision or short subdivision for which a complete application was submitted prior to April 21, 2009;
3. Construction or maintenance of public or private road network elements, and public or private utilities including utility easements not related to development subject to chapters 30.23A, 30.34A, 30.41G, or 30.42E SCC;
4. Construction or maintenance of public parks and trails when located within an urban residential zone; and
5. Pruning and maintenance of trees.

Since PDS does not issue permits for pruning or the removal of hazardous trees, there is no method to accurately track and report these two activities. Collecting data for the three remaining exempted activities is also challenging because available permit data does not provide a means to track or report on these activities. As a result, no data was collected for this, or any past, reports.

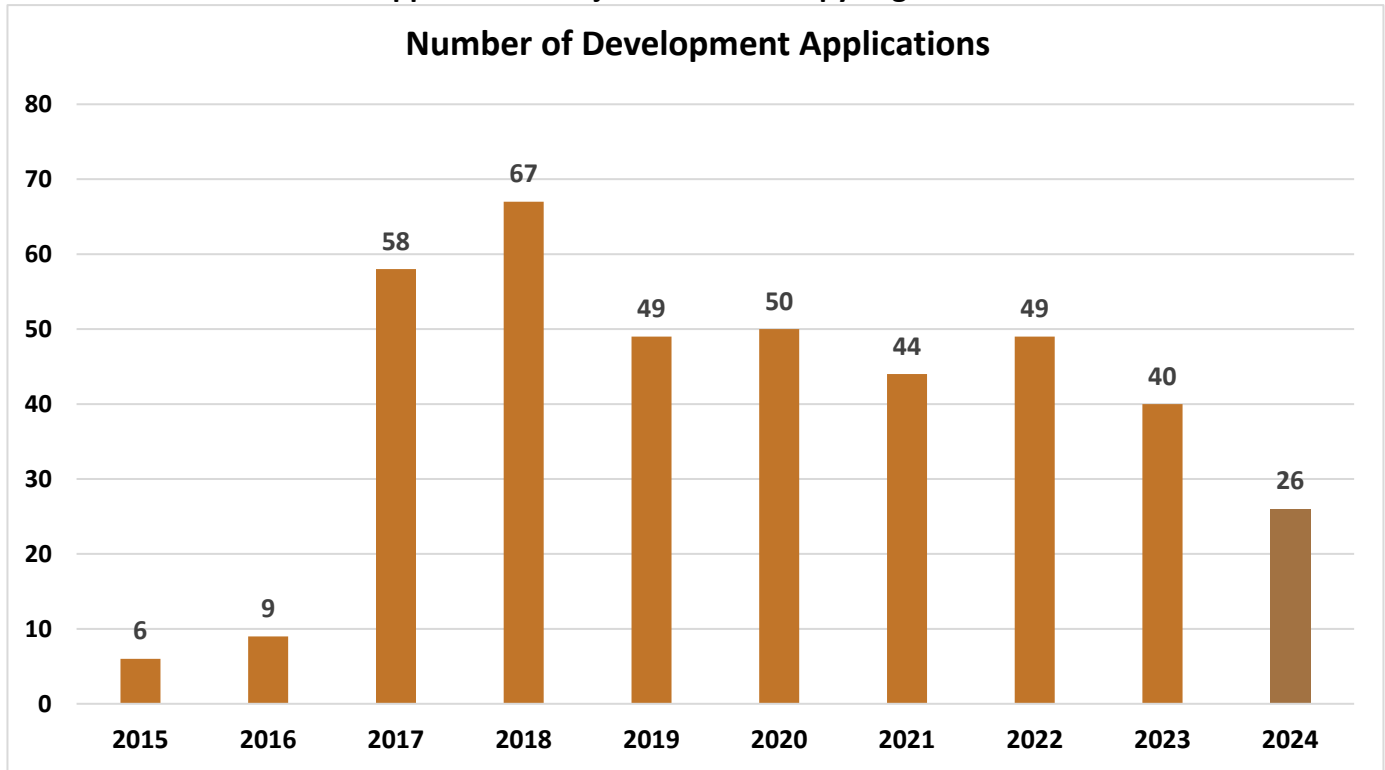
## Report Requirement #2:

### Number and Type of Applications

The second reporting requirement is to document the number and types of applications submitted each year from January 1, 2024, to December 31<sup>st</sup>, 2024. Chart 1 shows the overall trends of approved development permit applications that have been subject to tree canopy regulations since 2015. Table 3 summarizes the number and type of applications that are subject to the tree canopy

requirements in SCC 30.25.016. It should be noted that some of the townhouse applications also involved land subdivisions pursuant to SCC 30.41A.205 but were not double counted.

**Chart 1. Total Permit Applications Subject to Tree Canopy Regulations**



**Table 3. Number and Type of Applications (CY 2015 – 2024)**

Application Type	2015 report (1/14- 12/15)	2016 Report (1/16 – 12/16)	2017 Report (1/17- 12/17)	CY 2018 Report (1/18- 12/18)	CY 2019 Report (1/19 – 12/19)	2020 Report (1/20- 12/20)	2021 Report (1/21- 12/21)	2022 Report (1/22- 12/22)	2023 Report (1/23- 12/23)	2024 Report (1/24-12/24)	CY 2015 - 2024 Report Totals
Subdivision (10+ lots)	2	2	16	18	9	10	9	7	4	1	<b>79</b>
Short Subdivision (4 – 9 lots)	1	2	10	14	9	7	3	9	10	6	<b>71</b>
Short Subdivision (< 4 lots)	1	0	3	8	3	11	5	5	1	2	<b>39</b>
Single Family Detached Units (10+ units)	2	0	12	7	10	4	5	6	2	3	<b>51</b>
Single Family Detached Units (<10 units)	0	2	6	6	6	12	8	5	3	3	<b>51</b>
Cottage Housing (10+ units)	0	1	0	0	0	0	0	0	0	0	<b>1</b>
Cottage Housing (< 10 units)	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Townhouse (10+ units)	0	2	8	5	3	3	8	11	13	8	<b>61</b>
Townhouse (<10 units)	0	0	0	3	2	3	2	3	1	2	<b>16</b>
Multiple Family (10+ units)	0	0	2	3	4	0	1	0	0	0	<b>10</b>
Multiple Family (<10 units)	0	0	0	0	0	0	1	0	3	0	<b>4</b>
Urban Center (residential and mixed use only)	0	0	1	3	3	0	2	3	3	1	<b>16</b>
<b>Total</b>	<b>6</b>	<b>9</b>	<b>58</b>	<b>67</b>	<b>49</b>	<b>50</b>	<b>44</b>	<b>49</b>	<b>40</b>	<b>26</b>	<b>398</b>

## Report Requirement #3:

### Number of Applications Calculating the Retained Existing Tree Canopy

Applicants who propose retaining a portion or all of the existing tree canopy on a subject property to meet the minimum tree canopy requirements have two options for calculating canopy coverage: the tree survey method or the aerial estimation method. Under the tree survey method, the average 20-year canopy is calculated for each tree to be retained, whereas, under the aerial estimation method, an applicant can calculate the extent of the canopy by using a recent aerial photo.

Table 4 shows the number of applications that elected to retain tree canopy, and the specific method used to calculate existing canopy. Applicants that choose to plant new canopy, calculate their 20-year canopy coverage for each new tree planted as previously discussed in this report. The percentage of retained canopy in the approved landscape plans by report year is displayed in Table 5. For this reporting period, one application utilized the tree survey method while eight applied the aerial estimation method. The remaining 17 applications (65%) used new canopy to meet the required canopy coverage. There were three applications that relied on existing tree canopy only.

For the approved landscape plans that exclusively utilized new tree canopy to meet the canopy requirements, the landscape plans indicated that some existing canopy and some significant trees were still retained. This retention could have been to meet other landscaping, open space, or critical area requirements outside of the requirements SCC 30.25.016(3), although the retained trees were not counted towards the minimum canopy coverage requirement. This information is not included in the canopy calculations relied upon for this report primarily because the existing canopy coverage information was not consistently provided on these plans. This suggests that the data within this monitoring report could be underreporting the full extent of tree canopy.

Data presented in Table 4 suggests that aerial estimation is used more often by applicants to measure existing canopy potentially because it costs less than identifying individual trees within a tree survey. Despite the cost and labor for developers to conduct a tree survey and the canopy bonuses acquired through retaining significant trees, most applicants preferred to use the aerial estimation method. To further assess this trend, it may be useful to survey developers to better understand their reasoning for utilizing or not utilizing a particular incentive.

## Report Requirement #4 and #5:

### Data for Each Application & Number of Adjustments Used

These two reporting requirements require additional detailed information about each of the 26 applications approved during this reporting period. The specific data required for each application



is enumerated below and is provided in its original form within Appendix 2 to this report. For 2024, there were no bonuses used on any application. Table 5 focuses on retained canopy and Table 6 provides an aggregated overview of all the data requirements listed below.

1. The tree canopy required by Table 30.25.016(3) prior to any adjustments;
2. Any adjustments to the required tree canopy, the specific type of incentive or other adjustments, and the specific code authority for the adjustment;
3. The required tree canopy after all adjustments;
4. The use and effect of applying any other incentives for tree retention;
5. The result of the calculation of existing the canopy;
6. The canopy of trees retained;
7. The number of new trees planted; and
8. The result of the calculation of 20-year canopy.

**Table 4. Number of Applications by Method (CY 2019 – 2024)**

Tree Canopy Estimation Method	2015 Report (1/14 – 12/15)	2016 Report (1/15 – 12/16)	2017 Report (1/16 – 12/17)	CY 2018 Report (1/18 – 12/18)	CY 2019 Report (1/19 – 12/19)	2020 Report (1/20 – 12/20)	2021 Report (1/21 – 12/21)	2022 Report (1/22 – 12/22)	2023 Report (1/23 – 12/23)	2024 Report (1/24 – 12/24)	CY 2018-2024 Report Totals
Tree Survey	1	3	10	19	4	7	4	8	1	1	58
Aerial Estimation	3	2	21	11	15	19	11	15	15	8	119
New Canopy Only	2	4	27	37	30	24	29	26	24	17	220
<b>Total</b>	<b>6</b>	<b>9</b>	<b>58</b>	<b>67</b>	<b>49</b>	<b>50</b>	<b>44</b>	<b>49</b>	<b>40</b>	<b>26</b>	<b>398</b>
<b>% of Permits that Retained Canopy Coverage</b>	<b>67%</b>	<b>56%</b>	<b>54%</b>	<b>45%</b>	<b>39%</b>	<b>52%</b>	<b>34%</b>	<b>43%</b>	<b>45%</b>	<b>35%</b>	<b>44%</b>

**Table 5. Retained Tree Canopy Data (CY 2018 – 2024)**

Tree Canopy Estimation Method	2015 Report (1/14 -12/15)	2016 Report (1/15-12/16)	2017 Report (1/16-12/17)	CY 2018 Report (1/18 – 12/18)	CY 2019 Report (1/19 – 12/19)	2020 Report (1/20-12/20)	2021 Report (1/21-12/21)	2022 Report (1/22-12/22)	2023 Report (1/23-12/23)	2024 Report (1/24-12/24)	Cumulative Retained Canopy (CY 2015-2024)
Tree Survey (sq. ft.)	8,608	69,991	50,045	84,051	35,420	22,418	6,199	32,131	40,889	640	350,392
Aerial Estimation	478,288	49,005	2,555,698	253,004	475,231	1,041,803	370,662	523,339	349,776	249,457	6,346,263
Total Retained Canopy (sq. ft.)	486,896	118,996	2,605,743	337,055	510,651	1,064,221	376,861	555,470	390,665	250,097	6,696,655
<b>Percent of Total Canopy Coverage Retained</b>	<b>65%</b>	<b>36%</b>	<b>61%</b>	<b>19.9%</b>	<b>28.1%</b>	<b>51.8%</b>	<b>32.8%</b>	<b>43.4%</b>	<b>45%</b>	<b>60%</b>	<b>85%</b>

**Table 6. Aggregate Data for Approved Applications (CY 2018 - 2024)**

Reporting Requirement		2015 Report (1/14 - 12/15)	2016 Report (1/15 - 12/16)	2017 Report (1/16-12/17)	CY 2018 Report (1/18-12/18)	CY 2019 Report (1/19 - 12/19)	2020 Report (1/20-12/20)	2021 Report (1/21-12/21)	2022 Report (1/22-12/22)	2023 Report (1/23-12/23)	2024 Report (12/24-1/24)	Total (1/14-12/24)
Number of applications		6	9	58	67	49	50	44	49	40	26	398
Tree canopy required by code (sq. ft.)		506,144	290,023	3,293,214	1,464,513	1,455,244	1,933,354	1,126,694	1,107,055	689,974	545,551	12,411,766
Existing Canopy Retained	<i>Tree Survey (sq. ft.)</i>	8,608	69,991	50,045	48,559	35,420	22,418	6,199	32,131	40,889	640	350,392
	<i>Aerial Estimation (sq. ft.)</i>	478,288	49,005	2,555,698	2,555,698	475,231	1,041,803	370,662	523,339	349,776	249,457	6,346,263
New Canopy (sq. ft)		262,075	214,221	1,441,752	1,409,735	1,308,286	984,551	770,738	723,004	497,856	418,385	7,878,947
Total number of trees planted		761	570	5,294	4,297	3,989	2,844	3,306	2,766	1,816	1,592	27,235
Cumulative 20-year tree canopy calculation (sq. ft.)		748,971	333,217	4,047,495	1,686,790	1,818,937	2,054,772	1,147,599	1,278,474	888,521	668,482	14,556,074



Photo 5: North Creek Condominiums, Bothell. Photo credit PDS Staff.

## Tree Type Diversity

In past monitoring reports, there was a recommendation to track tree type diversity from the already provided planting information on the landscape plans. Incorporating this data into the report provides an improved picture of the new canopy diversity. The full species diversity list is in Appendix 1 of this report. There were 84 different tree species within the approved landscape plans of 2024. Table 7 shows the eight most frequently selected tree species out of the total 1,592 of all new trees approved in urban residential permits in 2024. The eight tree species in Table 7 represent 50% of all the trees that were planted in 2024.

For additional information about each tree listed here and in Appendix 1, please visit <https://snohomishcountywa.gov/2737/Tree-Canopy-in-Landscaping> and click the “Tree Canopy Database PDF.” Information about the species, growth type, drought tolerance, estimated 20-year canopy square footage, and more are included in this document.

**Table 7. Top 8 Planted Tree Species within Approved Applications**

Tree Species – Common Name	Tree Species – Scientific Name	Native Species	2024 Trees Planted	% of Trees planted in 2024
<b>Excelsa Western Red Cedar</b>	<i>Thuja plicata</i> 'Excelsa'	No	<b>134</b>	<b>8%</b>
<b>Douglas Fir</b>	<i>Pseudotsuga menziesii</i>	No	<b>123</b>	<b>8%</b>
<b>Paperback Maple</b>	<i>Acer Griseum</i>	No	<b>103</b>	<b>6%</b>
<b>Vine Maple</b>	<i>Acer circinatum</i>	Yes	<b>100</b>	<b>6%</b>
<b>Western Red Cedar</b>	<i>Thuja plicata</i>	No	<b>95</b>	<b>6%</b>
<b>Red Maple</b>	<i>Acer Rubrum</i>	Yes	<b>85</b>	<b>5%</b>
<b>Columnar Pyramidal Arborvitae</b>	<i>Thuja occidentalis</i> 'Fastigiata'	Yes	<b>82</b>	<b>5%</b>
<b>Freeman's Maple</b>	<i>Acer x freemani</i> 'Jeffersred'	No	<b>79</b>	<b>5%</b>
<b>Total:</b>			<b>801</b>	<b>50%</b>

## Highlights of the 2024 Monitoring Report

In total, 1,592 new trees were approved to meet the tree canopy requirements of SCC 30.25.016 for 2024. The landscaping plans also included other trees to meet other landscaping requirements, such as parking lot landscaping and street trees. Those trees are not always included in the canopy calculations (although they could be eligible if located on the subject property) because of the species mix requirements applicable to new canopy coverage trees. For this reason, the actual tree canopy provided by urban residential development is often under-reported by the canopy calculations provided by the applicants and compiled into this report. Similarly, the actual retention of tree canopy and existing significant trees is also likely under-reported and is often greater than is indicated by the canopy calculations. Since retention is required within perimeter landscaping and critical areas, there is often no tree survey performed in those areas where no land disturbance is planned. No canopy bonuses were used for the 2024 reporting period, compared to one in 2023, and six in 2022. Previously, developers stated that using bonuses may be too onerous and that may contribute to the lower use of bonuses used over time.

Overall, three projects met their canopy requirements exclusively through retention of the existing canopy, compared to seven from 2023, four from 2022, two from 2021, six from 2020, and one from CY 2019. 17 projects met their requirements entirely through the planting of new trees, and three projects met requirements through retaining existing tree canopy. The remaining six projects used a combination of canopy retention and new trees to meet the canopy requirements. This diversity of approach suggests that the regulations are flexible enough to accommodate different site conditions within the UGAs. It also indicates that the regulations are producing both canopy retention and new canopy creation within urban residential areas to help mitigate the inevitable loss of tree canopy from development on previously undeveloped urban sites.

Since pre-development tree canopy calculations are not required, except for projects and site areas where retention is used to meet the canopy requirements, it is not possible to measure the overall net change in the urban tree canopy using only the data available for these monitoring reports. Even if such canopy measurements were made, other factors, such as changes to landscaping after development approval despite requirements in code to retain proposed landscaping, would hamper efforts to accurately monitor changes in the overall canopy. These canopy calculations do not accurately reflect new canopy because they frequently exclude trees used to meet other landscaping requirements where species mix is not also required. The best tool for overall canopy monitoring remains the satellite imagery available that is discussed in 'Tree Canopy Coverage Analysis Background' found earlier in the report.

## Future Report Recommendations

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PDS staff intends to continue to refine administrative processes to make the documentation and review steps associated with the canopy regulations streamlined for both the customer and PDS staff. Staff has also explored ways to improve PDS's permit tracking system (AMANDA) for data collection and compilation processes required to complete this annual report. The following recommendations are measures that can streamline the administrative process and improve the quality of the data collected.

1. Develop an Urban Forest Management program to implement the urban tree canopy policies of the Comprehensive Plan in urban unincorporated areas. The new Urban Tree Canopy Subelement establishes a no net loss of urban tree canopy coverage that is met through an urban forest management plan, that is an update from the previous Amended Ordinance No. 14-073 that aimed to maintain 30% tree canopy coverage. The program evaluates the current tree canopy regulations and the reporting methodologies for collecting data in urban residential landscaping applications and the use of the best available practices and Lidar/Satellite imagery. The recent mapping for the proposed Urban Tree Canopy subelement updates county canopy coverage to a minimum of no net loss in the urban unincorporated areas that also balances other goals from the GMA. These policies include mapping analysis, new goals for urban tree canopy coverage, coordination with jurisdictions on tree canopy, pursuing Evergreen Community status, and more.
2. Continue to update the growing list of Native Tree Species. Providing an updated list to developers would help to broaden the available tree species to include in the landscape plan, potentially increase the diversity of trees selected within developments, and more accurately represent the predicted 20-year canopy coverage.
3. Ensure the Tree Canopy Calculation Worksheet is filled out completely by applicants. There are applications that leave questions on the Tree Canopy Calculation worksheet unanswered regarding the existing canopy that is retained or removed. Many applicants who opted to use the Aerial Estimation method, indicated some retention of existing

canopy but did not share the total existing tree canopy coverage. This leaves the existing canopy coverage as unavailable in our reporting process while accounting for the retained canopy data. Having the existing total canopy numbers of each site will support additional data analysis.

4. Continue to update the Urban Tree Canopy Monitoring Report Dashboard. This dashboard can continue to be used as a tool the public can leverage when considering how the county is monitoring tree canopy in Snohomish County over time.

# APPENDIX 1

Table 9: Tree Types Planted from January 1, 2022, through December 31, 2023.

Tree Species - Common Name	Scientific Name	Native	2021	2022	2023	2024
Alaska Yellow Cedar	<i>Chamaecyparis nootkatensis</i>	No	60	32	55	42
American Hornbeam	<i>Carpinus carolina</i>	No	16	55	7	36
American Smoketree	<i>Cotinus Obovatus</i>	No	0	0	0	1
American Sweet Gum	<i>Liquidambar styraciflua</i>	No	12	5	2	6
Autumn Applause Ash	<i>Fraxinus americana</i>	Yes	31	0	0	0
Autumn Gold Maidenhair Tree	<i>Ginkgo bilboa 'Autumn Gold'</i>	Yes	7	1	2	5
Bigleaf Maple	<i>Acer macrophyllum</i>	No	18	0	9	8
Bloodgood Londong Plane Tree	<i>Platanus acerifolia 'Bloodgood'</i>	No	3	0	0	0
Bowhall Maple	<i>Acer rubrum 'Bowhall'</i>	No	60	85	22	85
Chokecherry	<i>Prunus virginiana</i>	No	0	7	0	4
Columnar American Arborvitae	<i>Thuja occidentalis 'Fastigiata'</i>	Yes	208	210	97	82
Columnar Sargent Cherry	<i>Prunus sargentii 'Columnarus'</i>	No	6	6	6	0
Douglas Fir	<i>Pseudotsuga menziesii</i>	Yes	301	242	165	123
Eastern redbud	<i>Cercis canadensis</i>	No	0	11	17	5
Eddie's White Wonder Dogwood	<i>Cornus 'Eddies White Wonder'</i>	Yes	0	1	0	0
Edith Bougue Southern Magnolia	<i>Magnolia Grandiflora 'Edith Bougue'</i>	No	70	99	125	67
European Beech	<i>Fagus Sylvatica 'Dawyk Purple'</i>	Yes	2	0	0	0
European Plum	<i>Prunus domestica</i>	Yes	2	2	2	0
Excelsa Western Red Cedar	<i>Thuja plicata 'Excelsa'</i>	No	115	165	57	134
Flowering Peach	<i>Prunus persica</i>	No	2	2	2	0
Freeman's Maple	<i>Acer x freemani 'Jeffersred'</i>	No	0	65	18	79
Giant Green Arborvitae	<i>Thuja plicata 'Green Giant'</i>	Yes	37	85	69	49
Grand Fir	<i>Abies Grandis</i>	No	30	12	25	0
Green Column Maple/Black Maple	<i>Acer saccharum 'Green Column'</i>	No	0	2	0	0
Greenspire Linden	<i>Tillia cordata 'Greenspire'</i>	No	21	16	0	13
Hedge Maple	<i>Acer campestre</i>	No	7	5	0	7
Himalayan Birch	<i>Betula jaquemontii</i>	No	0	4	6	0
Hinoki cypress	<i>Chamaecyparis obtusa</i>	No	0	20	28	0
Incense Cedar	<i>Calocedrus decurrens</i>	No	130	98	36	54
Japanese Snowbell	<i>Styrax Japonicus 'Emerald Pagoda'</i>	No	1	5	6	13



<b>Tree Species - Common Name</b>	<b>Scientific Name</b>	<b>Native</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
Jonagold Apple	Malus x domestica 'Jona Gold'	No	2	2	2	0
Juniperus scopulorum	Juniperus scopulorum	No	7	26	10	0
Katsura Japanese Maple	Acer palmatum 'Katsura'	No	4	0	0	5
Katsura Tree	Cercidiphyllum japonicum	No	43	31	39	2
Kousa Dogwood	Cornus kousa	No	20	42	30	43
Kwanzan Cherry	Prunus serrulata 'Kwanzan'	No	4	4	5	0
Leyland Cypress	Cupressocyparis leylandii	No	13	24	0	4
Limber Pine	Pinus flexillis	No	0	6	0	0
Mountain Hemlock	Tsuga mertensiana	No	16	22	13	6
Noble Fir	Abies procera	No	2	0	0	0
Northern Red Oak	Quercus rubra	No	0	4	10	0
Northern White-Cedar	Thuja occidentalis	No	0	6	0	0
Oregon Ash	Fraxinus latifolia	Yes	56	0	5	15
Osakazuki Japanese Maple	Acer palmatum 'Osakazuki'	No	1	0	0	2
Pacific Madrone	Arbutus menziesii	No	240	0	3	0
Pacific Wax Murtle	Myrica Californica	No	102	43	92	27
Paper Birch	Betula papyrifera	No	23	7	0	0
Paperbark Maple	Acer griseum	No	75	119	25	103
Pear tree	Pyrus calleryana	No	46	40	0	0
Persian ironwood	Parrotia persica	No	2	0	0	0
Prariefire Crabapple	Malus x 'Prariefire'	No	0	7	8	0
Princeton Sentry	Ginkgo bilboa 'Princeton Sentry'	No	4	0	0	0
Pyramidal European Hornbeam	Carpinus betulus 'Fastigiata'	No	36	6	75	35
Quaking Aspen	Populus Tremuloides	Yes	4	40	6	3
Rainier Cherry	Prunus avium 'Rainier'	Yes	2	2	2	0
Raywood Ash	Fraxinus oxycarpa 'Raywood'	No	23	23	23	0
Red maple	Acer rubrum	Yes	9	18	22	85
Redspire Callery Pear	Pyrus calleryana 'Redspire'	No	109	63	7	10
Saskatoon Serviceberry	Amelanchier Alnfolia	No	34	30	33	6
Scarlet Oak	Quercus coccinea	No	88	5	15	2
Shademaster Honeylocust	Gleditsia triacanthos 'Shademaster'	No	60	33	3	3
Shore Pine	Pinus contorta	Yes	69	175	89	71
Silver Fir	Abies amabilis	Yes	6	0	0	0
Sitka Spruce	Picea sitchensis	No	7	4	4	0
Slender Hinoki Cypress	Chamaecyparis obtusa 'Gracillis'	No	40	22	6	27
Sour Gum	Nyssa Sylvatica	No	4	45	3	34

<b>Tree Species - Common Name</b>	<b>Scientific Name</b>	<b>Native</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
<b>Spire Cherry</b>	Prunus x hillieri 'Spire'	No	3	11	0	0
<b>Stellar Pink Dogwood</b>	Cornus x 'Rutgan'	No	1	3	0	0
<b>Subalpine Fir</b>	Abies lasiocarpa	No	15	3	0	0
<b>Sugar Maple</b>	Acer saccharum	No	3	7	3	0
<b>Tulip Tree</b>	Liriodendron Tulupera	No	11	16	0	0
<b>Vanderwolf's Pine</b>	Pinus flexillis 'Vanderwolf's Pyramid'	No	3	35	11	63
<b>Vine Maple</b>	Acer circinatum	Yes	299	210	164	100
<b>Warrenred Pacific Sunset Maple</b>	Acer truncatum x A. platanoides 'Warrenred'	No	238	105	123	56
<b>Washington Hawthorne</b>	Crataegus phaenopyrum	No	62	65	21	11
<b>Western Flowering Dogwood</b>	Cornus nuttalii	No	20	0	12	0
<b>Western Hemlock</b>	Tsuga heterophylla	Yes	25	18	23	0
<b>Western Larch</b>	Larix occidentalis	No	14	0	8	0
<b>Western Red Cedar</b>	Thuja plicata	No	296	205	152	95
<b>Whitebarked Himalayan Birch</b>	Betula utilis jacquemontii	Yes	2	0	6	0
<b>Zelkova 'Village Green'</b>	Zelkova serrata 'Village Green'	No	24	4	10	15
<b>TOTAL TREES</b>			<b>1,592</b>	<b>2,766</b>	<b>1,816</b>	<b>1,592</b>

\*For additional information about each tree listed here, please visit <https://snohomishcountywa.gov/2737/Tree-Canopy-in-Landscaping> and click the "Tree Canopy Database PDF". Information about the species, growth type, drought tolerance, estimated 20-year canopy square footage, and more are included in this document.

# APPENDIX 2

**Table 8: Detailed Information by Application for Approvals from January 1, 2024, through December 31, 2024.**

#	Application	Development Type	Tree Canopy Percent Required	Required Tree Canopy Area (sq. ft.)	Gross Site Area (sq. ft.)	Option 1 Total Retained Canopy Area with Bonus (sq. ft.)	Option 2 Total Retained Canopy Area with Bonus (sq. ft.)	New Canopy Area (sq. ft.)	Number of New Trees Planted	20 Year Canopy Area Proposed (New & Retained) (sq. ft.)	Total Tree Canopy Percent Proposed
1	Ambleside SFDU	Single Family Detached Units (10 or more units)	20%	41,877	209,386	-		41,945	159	13,514	20%
2	PNW 6lot Short Plat	Short Subdivision (4-9 lots)	25%	11,100	44,400	-	270.00	10,920	28	47,717	25%
3	Ashton Park SFDU	Single Family Detached Units (10 or more units)	20%	25,933	129,667	-	18197.00	8,218	38	6,589	20%
4	Lowell Heights ULS	Townhouse (10 or more units)	20%	65,466	327,332	-	160930.00	0		14,763	49%
5	Antrim Short Plat	Short Subdivision (less than 4 lots)	20%	6,245	31,227	640		5,795	21	32,787	21%
6	Grewal SFDU	Single Family Detached Units (less than 10 units)	15%	3,234	21,562	-	0.00	8,925	24	118,128	41%
7	ZNA	Short	25%	17,615	70,459	-	0.00	18,083	77	3,299	26%

	Construction	Subdivision (4-9 lots)									
8	Danilet SFDU	Single Family Detached Units (less than 10 units)	15%	3,169	21,126	-	0.00	3,600	8	49,116	17%
9	Putrya Short Plat	Short Subdivision (less than 4 lots)	20%	4,086	20,428	-	0.00	4,381	14	35,170	21%
10	Winsor Townhomes ULS SP	Townhouse (less than 10 units)	15%	3,440	22,934	-	0.00	3,734	11	7,390	16%
11	MSR Tambark 2 ULS	Townhouse (10 or more units)	20%	19,578	97,891	-	11,798	8,005	44	13,645	20%
12	Snohomish Garden Townhomes ULS	Townhouse (10 or more units)	20%	147,334	736,671	-	0.00	147,456	549	39,614	20%
13	Ivy Terrace Townhomes ULS	Urban Center (residential and mixed-use projects only)	15%	27,620	184,136	-	10,985	18,430	110	16,205	16%
14	Kalyan SFDU	Single Family Detached Units (less than 10 units)	15%	2,159	14,395	-	0.00	2,218	7	55,891	15%
15	Stark Villas ULS	Townhouse (10 or more units)	20%	22,479	112,394	-	0.00	22,554	152	18,216	20%
16	Duchess TH PRD ULS	Townhouse (10 or more units)	20%	17,215	86,075	-	24,029	0	0	6,585	28%
17	Fadden Short Plat	Short Subdivision (4-9 lots)	25%	9,206	36,823	-	0.00	9,393	31	28,864	26%
18	Lockwood Road PRD	Subdivision (10 or more lots)	30%	49,400	164,665	-	0.00	49,450	146	5,499	30%

19	SS Cascadian Townhomes	Townhouse (less than 10 units)	15%	1,921	12,808	-	0.00	1,992	5	11,572	16%
20	Energy Star Alderwood Townhomes	Townhouse (10 or more units)	15%	2,006	13,373	-	0.00	2,440	14	8,622	18%
21	Towns at 156th ULS	Townhouse (10 or more units)	20%	3,497	17,485	40,889	0.00	3,580	18	40,889	20%
22	Tambark North PRD SP	Short Subdivision (4-9 lots)	25%	9,624	38497	0	0.00	9,700	27	18,467	25%
23	Fernwood SFDU	Single Family Detached Units (10 or more units)	20%	10,870	54,350	-	0.00	10,901	29	4,205	20%
24	Seattle Hill Rd SP	Short Subdivision (4-9 lots)	25%	12,888	51,552	-	0.00	13,026	30	2,422	25%
25	IH NW Estates ULS	Townhouse (10 or more units)	20%	11,947	59,735	-	21,229	0	0	13,041	36%
26	Baggerly Short Plat	Short Subdivision (4-9 lots)	25%	15,640	62,561	-	2,019	13,639	50	2,890	25%