DEVELOPMENT TREE REMOVAL & REPLACEMENT

Any land use or development removing trees must submit a major tree permit in conjunction with their land use application. Additionally, a tree retention plan must be submitted to show tree protection measures and ensure compliance with **BMC 19.26**. A tree replacement plan (**19.26.100)** is required when tree credits are not met by existing trees

Tree Retention Plan and Tree Protection BMC 19.26.080 and 19.26.090

A tree retention plan is required when there is disturbance proposed within critical root zones of retained trees. This must demonstrate the tree protection measures in **19.26.090**. A tree replacement plan is required when there are not sufficient trees to meet the minimum tree credits

Suggested Steps

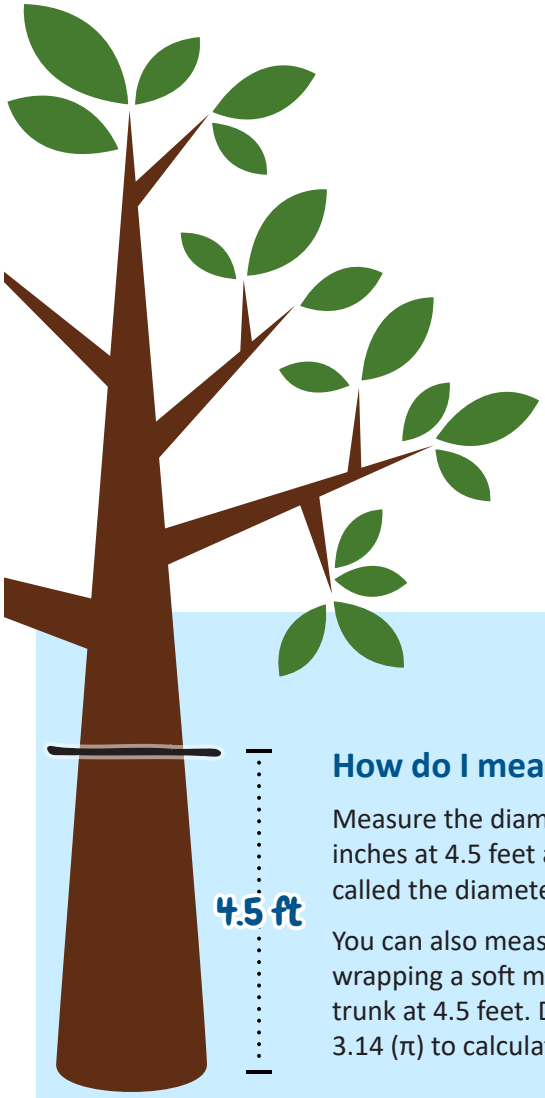
1. Identify the developable area (i.e., land within **critical area** and their buffers, public rights-of-way, private streets, shared driveways, and public trails shall be excluded), and calculate the required tree credits. Vegetation in **shoreline management areas**, **critical areas**, or their buffers are regulated separately from BMC 19.26. Trees in the public right-of-way are regulated by **BMC 12.38**.
2. Survey tree locations within the developable area, or those within 30 feet that could be impacted by development. In conjunction with an arborist report designating trees for retention to meet minimum required tree credits and show exceptional trees on all plans. All trees must have numbers on the plans that correspond to physical tags on the trees.
3. If proposing to remove an exceptional tree document how it cannot be retained with the deviations in **BMC 19.26.040(2)(C)**.
4. Show tree protection fencing and other tree protection measures for all significant and exceptional trees proposed to be retained. All trees proposed for removal shall be marked with an X.
5. Exceptional trees retained with deviation **BMC 19.26.040(2)(C)** must post a bond which shall be applied by the Urban Forest Planner, for the appraised landscape value, using the latest edition of the "Guide for Plant Appraisal." The bond for the tree(s) shall be posted for a three-year survival period after the conclusion of development.
6. If trees are to be replanted for compliance with landscape standards or to meet minimum tree credits show the size and location of trees on the landscape or tree replacement plan. Post a three-year maintenance bond for these trees.
7. If the Director determines it is not feasible to replant on the site, pay the fee-in-lieu (see the Tree Permit Worksheet).
8. Prior to construction have the Urban Forest Planner on-site to inspect tree protection measures, including but not limited to:
   a. Tree protection fencing
   b. Woodchip mulch within tree protection fencing.
   c. Signs posted on tree protection fencing.
   d. Associated fines posted for illegal tree removal.
9. After construction, have the Urban Forest Planner inspect trees designated for retention, planted trees, and landscaping. If trees are not present or unhealthy conduct restoration or pay fines as applicable.

Significant and Exceptional Trees: Retention Plan

The applicant must submit a tree retention plan prepared by a Qualified Tree Professional, concurrent with a land use review application, grading permit application, building permit application, preliminary subdivision application, or short subdivision application (whichever is reviewed and approved first; applications available on the City's website).

The tree retention plan should include a tree map that identifies the location, size (Diameter at Standard Height), and species of all significant and exceptional trees on a site. The tree map must:

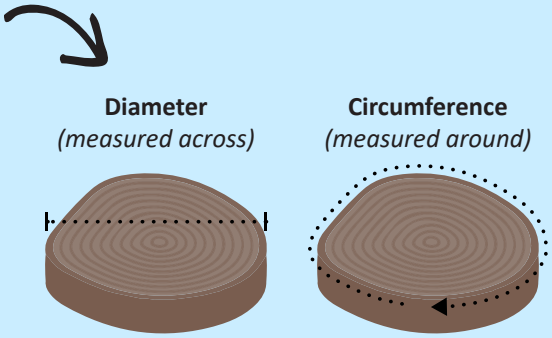
- Show the location and species of each significant and exceptional tree.
- Show the location of any tree designated as an exceptional tree with a unique symbol.
- Clearly mark all trees proposed for removal with an X.
- Show the location of trees within 30 feet of any clearing or grading that could be impacted by development.
- Labels trees on all plan sheets with numbers that correspond to physical tags on the trees.
- Show the location of the critical root zone(s) and tree protection zone(s), showing the tree protection fencing at the extent of the tree protection zone. Tree protection fencing shall be on all plans that involve ground disturbance, such as but not limited to grading, demolition, landscaping, and stormwater.



How do I measure an existing tree?

Measure the diameter of the tree trunk in inches at 4.5 feet above the ground. This is called the diameter at standard height (DSH).

You can also measure the circumference by wrapping a soft measuring tape around the trunk at 4.5 feet. Divide the circumference by 3.14 (π) to calculate DSH.



Significant and Exceptional Trees: Protection

To provide the best protection for significant and exceptional trees:

1. No clearing or development activity shall be allowed on a site until approval of tree retention and landscape plans.
2. An area of prohibited disturbance, generally corresponding to the Tree Protection Zone (TPZ) of the significant and/or exceptional tree(s) shall be protected during construction with a temporary 6-foot-high chain-link fence and include warning signs "Tree Protection Zone – Keep Out" every 20 feet. The fencing shall be installed prior to issuance of development permits for the site and removed once the project is complete. Fencing shall be inspected by the Urban Forest Planner prior to grading.
3. Each retained exceptional tree shall have a sign with the fine associated for removal as provided in **Table 19.26.160-1**. The sign must be affixed to the nearest fence panel or affixed to the tree in a manner that does not damage the tree. Signs must be visible and maintained throughout the duration of the project.
4. No impervious surfaces, fill, excavation, or storage of construction materials or equipment shall be permitted within the area defined by such fencing. Temporary access within the TPZ must be approved and monitored by a qualified tree professional at the expense of the applicant.
5. Each TPZ must be covered with 4 inches of coarse arborist woodchips to clearly delineate the TPZ, retain moisture, and protect soils throughout construction. Supplemental irrigation will be required if the woodchip layer cannot sufficiently maintain soil moisture throughout construction.
6. The grade level shall not be lowered or raised within the TPZ without a report provided by a qualified tree professional and approval of the director. Approved excavation within the TPZ must use low-impact excavation methods, such as directional boring, pneumatic (air) or hydro excavation, or hand digging to minimize disturbance to the trees. Any roots 2 inches diameter or greater that cannot be retained must be cleanly cut at the extent of excavation to prevent damage to the root beyond excavation. Exposed roots must be covered with burlap or plastic sheeting and kept wet throughout construction.



Exceptional Trees
BMC 19.10.545.1

Exceptional trees are large trees, generally 30 inches Diameter at Standard Height (DSH) or larger, or the size listed in **Table 19.26.040-1**.

Exceptional trees are required to be retained unless they will limit the constructable building coverage to less than 85% of the maximum building coverage area allowed pursuant to **BMC 19.15**.

Deviations in development standards to allow for retention of exceptional trees include:

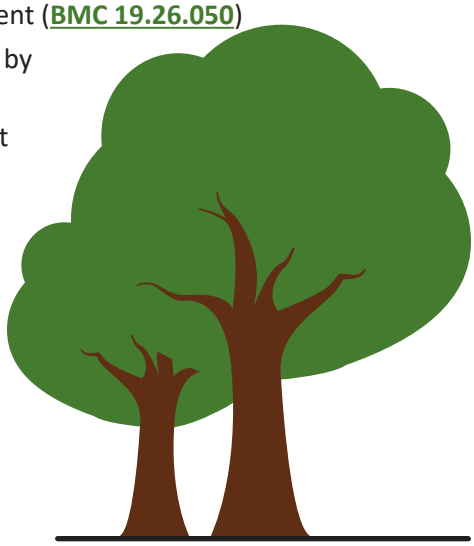
- For a single-family residence, building coverage may be increased by 20% or a reduction of the front yard setback by up to 10 feet may be granted. If such a departure is granted, the departure shall be no greater than the development potential lost in tree protection zones.
- For uses outside single-family, an additional 10 feet of height may be granted equivalent to the area lost from the tree protection zone. An additional 10 feet of height may be granted to accommodate floor area that is equivalent to the square feet of the tree protection zones multiplied by the total number of floors proposed by the project.
- Parking reduction. A reduction in the parking quantity required by **BMC 19.15** and **BMC 19.20.040** may be permitted in order to protect an exceptional tree if the reduction complies with **BMC 19.20.040(3)** and would result in a project that would avoid the tree protection zone.

Tree Replacement
BMC 19.26.100

Tree replacement is required when removing trees in critical areas and their buffers, shorelines, and in the right-of-way. Tree replacement is also required when going below the required minimum tree credits (**Table 19.26.050-1)**, removing healthy significant trees beyond the allowances in **Table 19.26.060-1**, and during development.

A tree replacement plan is required when replacement trees are required. This can be part of the landscaping plan or a separate document.

- Required to replace trees to bring the lot to the minimum tree credit requirement (**BMC 19.26.050**)
- During development, each healthy exceptional tree removed must be replaced by three trees.
- If the director determines it is not feasible to plant all the required replacement trees on the site, a fee-in-lieu (currently $700/tree, however that rate may change) can be collected per tree.



Critical Root Zone (CRZ)
BMC 19.10.093

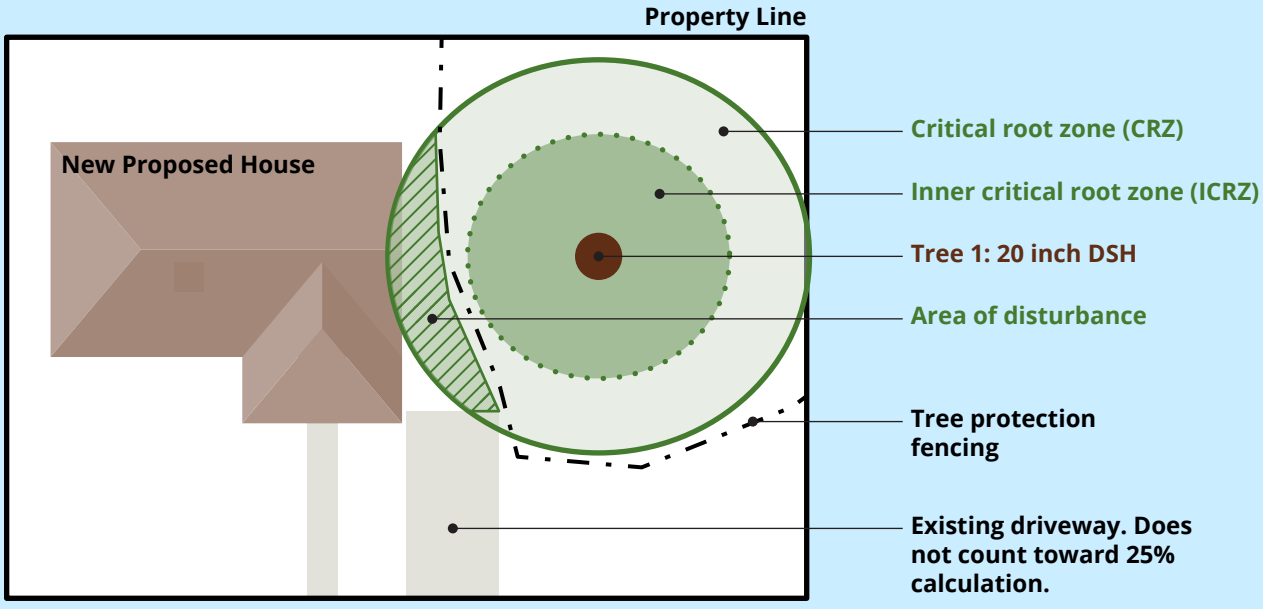
Critical root zone or CRZ is an area around the tree that is equal to one-foot radius from the center point of the tree for each 1 inch of tree trunk diameter measured at the diameter at standard height (DSH).

The **inner critical root zone (ICRZ)** is an area around the tree that is equal to a half-foot radius from the center point of the tree for each 1 inch of tree trunk diameter measured at DSH. This is equivalent to half of the radius for the CRZ. This is an area with a high concentration of structural roots and should not be disturbed.

The **Tree Protection Zone (TPZ)** is equal to the CRZ OR an area sufficient to protect the tree during and after development as recommended by a qualified tree professional. Under no circumstances can impacts occur within the ICRZ and grading impacts cannot exceed more than 25% of the total CRZ. Other limited disturbances may be considered at the discretion of the director provided they will not cause damage to the tree.

When developing a property, all trees designated for retention shall show the CRZ, ICRZ, and TPZ if different from the CRZ. For example, if a 20-inch Douglas-fir was slated for retention, the tree protection plan must show a circle with a 40-foot diameter (the CRZ) and a 20-foot diameter (the ICRZ). If disturbance is proposed within the CRZ (disturbance is allowed in up to 25% of that area provided the health and structure of the tree will remain intact and no disturbance occurs within the ICRZ), then the TPZ would be the area minus the disturbance areas. In situations where alternative excavation or special tree protection methods are required the tree protection fencing must be installed at the CRZ and then adjusted to the final TPZ when the work is to be performed.

Example (not to scale) of critical root zone and location of tree protection fencing which represents the Tree Protection Zone. Disturbance is allowed in up to 25% of the Critical Root Zone, however, no disturbance is allowed within the inner critical root zone.



Tree 1 has a CRZ with a radius of 20 feet. Total area in CRZ is 1,256 square feet (3.14 x 20^2).

Disturbance is shown in the hatched area and is equal to 150 square feet or 12%.

Minimum Tree Credit Density

All pieces of property, regardless of zoning or use, within the City of Burien are required to maintain a minimum tree credit density (BMC 19.26.050). The tree credit requirement is calculated by land use type as shown below (Table 19.26.050-1).

Developable area excludes critical areas and their buffers, public rights-of-way, private PUD streets, shared driveways, and public trails.



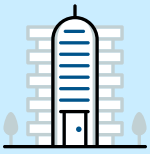
Single-family (detached dwellings, ADUs, and DADUs) and townhouses on individual lots.

1.0 Required minimum tree credits per 1,000 ft² of developable area.



Multi-family (attached dwellings including townhouse apartments and cottage housing).

1.0 Required minimum tree credits per 1,000 ft² of developable area.



Commercial, industrial, or landscape categories C, D, and F.

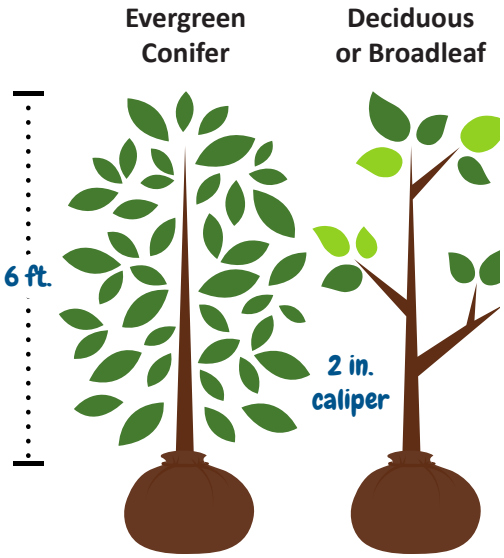
0.15 Required minimum tree credits per 1,000 ft² of developable area.

Tree Credit Chart

Credits are derived from the size of a tree (Table 19.26.050-2). See the Development Tree Removal & Replacement Fact Sheet for how to measure DSH.

Existing Significant and Exceptional Trees							
Tree Diameter at Standard Height (DSH)	≥6 & ≤10 in.	>10 & ≤14 in.	>14 & ≤18 in.	>18 & ≤22 in.	>22 & ≤26 in.	>26 & <30 in.	≥30 in. & all exceptional trees
Credits Per Tree	1	2	3	4	5	7	9

Planted Trees		
Tree Size	6-ft. tall evergreen conifer	2-in. caliper deciduous or broadleaf tree
Credits Per Tree	2	1



How do I calculate minimum tree credit density?

Minimum tree credit density is based on the type of development and the amount of developable area.

When this calculation does not result in a whole number the number is rounded to the nearest whole number (in this case 7).

Example:

A single family residential property has **7,200 ft²** of developable area (i.e., excludes land within critical areas and their buffers, public ROWs, private streets, shared driveways, and public trails).

$$\frac{7{,}200\ ft^2}{1{,}000\ ft^2} = 7.2 \text{ minimum tree credits} \Rightarrow \textbf{7 minimum tree credits}$$

Scenario A

There are two 20-inch Douglas-fir trees, one 15-inch red oak, and three 6-inch bigleaf maples currently on the property.

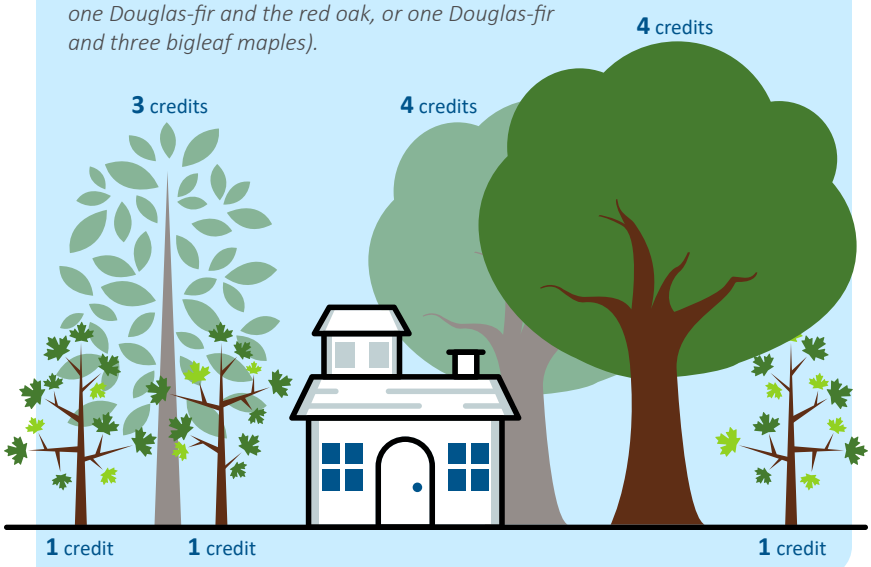
20-inch Douglas-fir = **4** tree credits x **2** trees = **8** tree credits

15-inch Red Oak = **3** tree credits x **1** tree = **3** tree credits

6-inch Bigleaf Maple = **1** tree credit x **3** trees = **3** tree credits

Total tree credits on site: **8 + 3 + 3 = 14 tree credits**.
Minimum required tree credits are met and exceeded.

If development requires tree removal the minimum tree credits can be met by a combination of retention options (e.g., both Douglas-fir trees can be retained, one Douglas-fir and the red oak, or one Douglas-fir and three bigleaf maples).



Scenario B

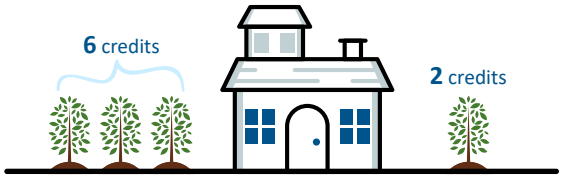
If the same property had no trees on the site it would need to plant trees to reach the required 7 tree credits. Each 2-inch caliper deciduous or broadleaf tree counts for 1 tree credit. Each 6-foot-tall evergreen conifer planted counts as 2 tree credits

The minimum required credits can be reached by planting seven deciduous trees or four evergreen coniferous trees, or some combination of the two.

Seven new deciduous trees



Four new evergreen coniferous trees



Combination of new deciduous & evergreen trees



How do I calculate minimum tree credit density?

Minimum tree credit density is based on the type of development and the amount of developable area.

When this calculation does not result in a whole number the number is rounded to the nearest whole number (in this case 7).

Example:

A single family residential property has **7,200 ft²** of developable area (i.e., excludes land within critical areas and their buffers, public ROWs, private streets, shared driveways, and public trails).

$$\frac{7{,}200\ ft^2}{1{,}000\ ft^2} = 7.2 \text{ minimum tree credits} \Rightarrow \textbf{7 minimum tree credits}$$

Scenario C

There are two 20-inch Douglas-fir trees, one 15-inch red oak, and three 6-inch bigleaf maples currently on the property.

20-inch Douglas-fir = **4** tree credits x **2** trees = **8** tree credits

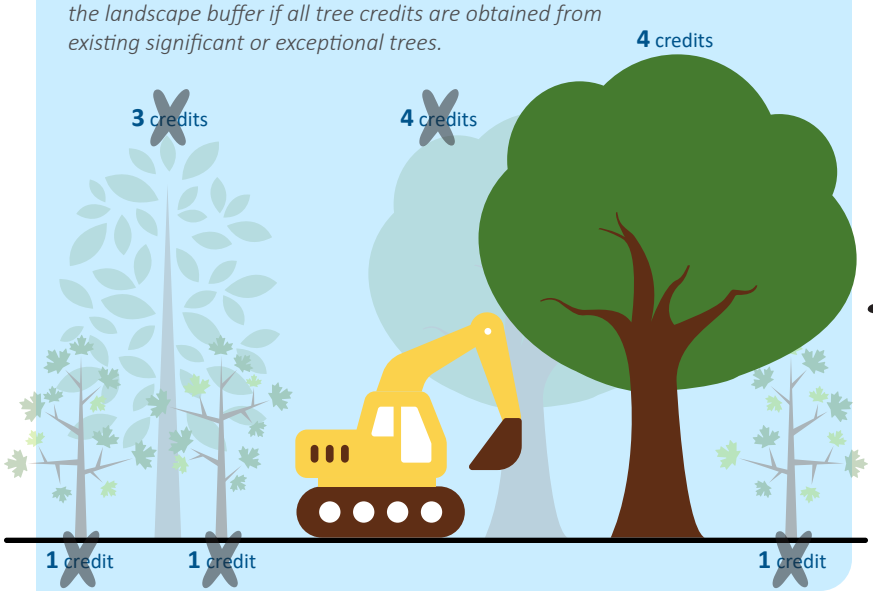
15-inch Red Oak = **3** tree credits x **1** tree = **3** tree credits

6-inch Bigleaf Maple = **1** tree credit x **3** trees = **3** tree credits

Total tree credits on site initially: **8 + 3 + 3 = 14 tree credits**.

When there are existing trees on the property, a minimum of 50% of the required tree credits must be met from existing trees; the remaining 50% can be met from existing trees, replacement trees, or a combination of the two.

Alternative: An applicant can receive a 25% reduction in the landscape buffer if all tree credits are obtained from existing significant or exceptional trees.



In order to construct a house, one Douglas-fir, one red oak, and all three bigleaf maples need to be removed leaving 4 tree credits remaining on the property (14 credits – 4 credits (one Douglas-fir) – 3 credits (one red oak) – 3 credits (three bigleaf maples) = 4 credits).

20-inch Douglas-fir = **4** tree credits x **1** trees = **4** tree credits

Total tree credits remaining on site: **4 tree credits**.

Since 7 credits are required on the lot, 50% of the requirement is met by retaining one Douglas-fir. The remaining three credits can be met by planting three deciduous trees or two evergreen coniferous trees, or one of each.



Three new deciduous trees

+



Two new evergreen coniferous trees



Combination of new deciduous & evergreen trees