

University of Pittsburgh Campus Tree Care Plan

Last Updated: December 17, 2021



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Purpose

The University of Pittsburgh is dedicated to achieving a healthy, inclusive, and sustainable campus at our Oakland campus, including natural and built landscapes that reflect the core values of the University. Pitt is committed to the health and wellbeing of our communities; stewardship of our natural systems; a unified campus aesthetic brought about by integrating intrinsically beautiful natural systems into our dynamic, urban campus; and creating harmony with the historical architecture and culturally significant landscapes and places that comprise the University of Pittsburgh.

This University of Pittsburgh “Campus Tree Care Plan” articulates policies for the preservation, planting, and removal of trees on our Pittsburgh campus. The Campus Tree Advisory Committee used the *Pitt Sustainability Plan*’s goal of increasing tree canopy 50% by 2030, the University’s Sustainable Landscape Guidelines and Institutional Master Plan (IMP), and Tree Pittsburgh’s Urban Forest Management Plan as foundations to inform the planting and maintenance guidelines below and ensure alignment with broader campus and community contexts.

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Pitt Tree Goals & Targets

- 1) The 2018 *Pitt Sustainability Plan* set a goal to increase tree canopy across all campuses 50% by 2030, compared to the 2017 baseline. Given its urban context, the University of Pittsburgh's Oakland campus strives to increase tree canopy as a means of achieving goals set forth in the *Pitt Sustainability Plan and Institutional Master Plan*. The University is investigating how to increase tree canopy on and off campus through community and local organizations partnerships.
- 2) Maintaining existing trees and proposing new trees is essential to fostering a significant increase in canopy that will align with the site-wide University goal. In order to encourage advancements towards IMP goals, the University will implement tree preservation goals that overlap with and reinforce the Sustainable Landscape Design Principles.
- 3) Create a single Pittsburgh campus digital tree inventory to be used for campus planning purposes, tree management, academic exercises, and the general public. The tree inventory should be updated annually at a minimum by Facilities Management and/or Planning, Design, and Real Estate and reviewed by the Campus Tree Advisory Committee, including faculty representatives, students, the Grounds Manager, and future campus arborist.
- 4) Create a Campus Tree Planting Strategy that includes plans to introduce new, native trees on-campus and as street trees, while developing a campus-wide tree age structure of mature and young trees that addresses the ongoing replacement of mature trees in decline. This plan also includes, prioritizing natives, removing invasive species, and replanting using ecological principles.

Tree Preservation Goals

Preserving existing trees is essential to fostering a significant increase in tree canopy. In order to encourage advancements towards IMP goals, the University will implement the following tree preservation goals. These goals overlap with and reinforce the Sustainable Landscape Design Principles, outlined in the Sustainable Guidelines reinforced by the Pitt Sustainability Plan.

- a) Protect trees identified to remain during new construction, renovations, infill development, and greenfield construction
 - i) Tree roots, trunks, and canopies should be well outside of the limits of development
 - ii) Tree protection fences should be utilized around the trees predicted root zone extents
 - iii) Construction entrances should be planned to avoid tree stands
- b) New site designs should consider pervious or permeable pavements to promote extended root systems for trees
- c) Landscape designs should locate shade trees away from paved surfaces to encourage maturation of tree heights and canopies
- d) Partner with Oakland community and groups to replant street trees
- e) Provide tree wells with a minimum area of 30 SF and a minimum width of 3', additional SF to be evaluated based on specific location
- f) Monitor health of significant trees on campus
 - i) Utilize GIS data to identify trees susceptible to current and possible diseases, pests, and fungi
 - ii) Proposed treatments for trees that are in poor health
 - iii) Remove trees if diseases are highly contagious
- g) Plant new shade trees at a spacing that factors in mature canopy size
 - i) Trees will compete for root and canopy space if planted too close together

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- h) Require designers to maintain a percentage of tree cover within future RFPs
 - i) RFP should reference Division S: Sustainable Landscape Design Guidelines and the IMP Environmental Protection section
 - ii) Designers of new construction and renovations should take into consideration the preservation of a minimum percentage of existing canopy prioritizing mature healthy trees and propose a percentage that aligns with the goal of increasing net tree canopy

Responsible Authority

This *Campus Tree Care Plan* will be enforced by the Office of Planning, Design, and Real Estate (PDRE) in partnership with the Office of Facilities Management's Grounds and Construction teams (FM). Compliance with the practices described here are mandatory for both internal and contracted landscaping work. Projects falling outside this realm will be reviewed at least biweekly by PDRE and FM at their regular meeting. To ensure compliance with the tree care plan, projects regarding existing grounds and landscaping are likely to be referred to the Senior Manager of Grounds, who is responsible for the day-to-day compliance and operation of the tree care plan. Larger projects requiring an external expert or specialty may be referred by PDRE & FM to a third-party and/or internal project manager, which will also be directed to provide solutions in compliance with the tree care plan.

The Campus Tree Care Advisory Committee will be responsible for reviewing the annual progress of the Tree Care Plan and providing guidance.

Campus Tree Advisory Committee

A subcommittee of the [Chancellor's Advisory Council on Sustainability](#), the University of Pittsburgh's Campus Tree Advisory Committee was established in Summer 2019 to coordinate University efforts surrounding trees, including, but not limited to:

- Aspiring towards [Pitt Sustainability Plan](#) goals of increasing the tree canopy on campus 50% by 2030.
- Creating and maintaining this *Campus Tree Care Plan*, which establishes tree planting & maintenance practices that are conducive to healthy tree populations.
- Leading the University's application for Tree Campus USA certification through the [Arbor Day Foundation](#)
- Raising awareness about trees and their important contributions to the protection, beauty, and conservation of our campus landscape,
- Fostering tree conservation efforts within the Pitt community.



Committee Members vary over time, but are acknowledged at the end of this plan.

As such, the Committee developed this Campus Tree Care Plan to establish planting and maintenance practices conducive to healthy tree populations and lead the University's application process for Tree Campus USA certification through the Arbor Day Foundation.

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Campus Tree Advisory Committee representatives can serve for consecutive years if they are committed to helping maintain the beauty of the campus landscape, while protecting the environment and fostering conservation efforts within the community. The committee must be comprised of a Facilities Management, faculty, staff, student, and community member representatives. The committee membership will be reviewed and adjusted annually.

Campus Tree Care Practices

The campus tree care practices outlined below will be followed for new plantings, landscaping projects, and foreseeable maintenance of the tree canopy on campus. Campus tree care practices and procedures will be conducted pursuant to the guidelines of tree-care established by the International Society of Arboriculture (ISA) and the American National Standard for Tree Care Operations.



Campus Tree Strategies

- 1) Site future trees in streetscapes and urban conditions in a manner that reduces the impact of potential stressors on tree health, including, but not limited to:
 - Soil compaction
 - Poor nutrient deficient soils
 - Soils with low water storage capacity
 - Deicing salts, root injuries
 - Physical damage to roots, trees and/or bark
 - Extreme temperatures
 - Reduced moisture availability due to restricted roots and surrounding impervious pavement
 - Lack of adequate sun exposure (due to building shading)
 - Inadequate soil volumes
 - Limited spacing between trees and limited size of tree opening
- 2) Replace mulched hillsides with native tree and successional plantings
- 3) On steep slopes, reduce lawn and integrate successional vegetation to gradually return grass slopes to woodlands/urban forests with native canopy and understory trees to create wooded slopes.
- 4) Increase number of street trees around campus, including increasing root growing zones under trees in sidewalks.
- 5) Introduce native trees in and near surface parking areas, including native canopy trees to create shade in and near large surface parking areas to reduce heat island effect.
- 6) Select areas of neglect in Oakland and partner with community to provide reforestation efforts with the permission of landowners.

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Campus Tree Inventory

As part of the 2021 Institutional Master Plan, a complete list of trees on the Pittsburgh campus was compiled. Almost 4,000 trees over 4" diameter at breast height (DBH)¹ were documented, encompassing a diverse range of species and maturity size. The data collected includes species, approximate DBH, tree condition, and approximate canopy size. Refer to the Appendix for the tree survey overview.

Tree Species Diversity Guidelines

- 1) Any campus tree planting should:
 - Only be undertaken in consultant with the Offices of Planning, Design, and Real Estate and/or Facilities Management, in alignment with the University's Institutional Master Plan.
 - Comply with or exceed applicable ordinances for landscaping and screening, street tree standards, landscaping for parking areas, and steep slope treatment in [City of Pittsburgh Zoning Code](#), Title IX.
 - Coordinate tree and light pole locations to minimize tree canopy interference with street and pedestrian lighting.
 - Consider adjacent buildings, structures, objects and cultural landscapes; views to and from the site; view corridors; site landmarks; off-site connections and pedestrian routes; existing historic/special large shade trees; existing significant tree specimens; natural and created water features (including (note significance and/or special requirements or regulations); utilities; and microclimate considerations (e.g., wind directions, sun exposure, and shade).
 - Strive for a rich, diverse, composition of plants including canopy trees, understory trees, shrubs, and herbaceous plants.
 - Consider native tree species whenever possible (See Table 2 below).
- 2) Where appropriate, plant trees in staggered groups and groves to mimic natural woodland conditions. Honor and complement historical design styles of architecture and landscape architecture as directed by University of Pittsburgh Facilities Management.
- 3) Each planting should include the appropriate number of tree species, as referenced in Table 1:
 - No more than 10% of a single species
 - No more than 20% of a single genus
 - No more than 30% of a single family
 - At least 20% conifers for non-street tree planting project
 - Host species of any current high-pressure insect or diseases are discouraged overall like Asian Longhorned Beetle (ALB) host species.
- 4) Street tree planting guidelines:
 - [The City of Pittsburgh requires 30 square feet of tree planting area](#) within sidewalks alongside streets. within sidewalks alongside streets.
 - Strive to exceed municipal street tree for planting area and number of trees required.
 - City of Pittsburgh and Tree Pittsburgh recommend that a single species should not represent more than 20 to 25% of any single block's plantings. If visual homogeneity is desired alternating groups of 3-6 trees can be used.

Table 1: University of Pittsburgh Street Tree Planting Systematic Diversity

Number of Trees Being Planted	Number of Tree Species Recommended
1 to 5	1 to 2
5 to 15	2 to 3
15 to 25	3 to 5
25 to 50	5 to 7
50 to 100	7 to 10
100+	10+

¹ Diameter at Breast Height (DBH) - Standard method for determining the trunk diameter of a standing tree, typically measured in inches at 4.5 feet off the ground on the uphill side.

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Tree Species Selection Guidelines

Tree species will be selected and planted according to the City of Pittsburgh Municipal Code, including recommended species and tree quality requirements from the City of Pittsburgh’s Department of Forestry, the University’s Sustainable Landscape Guidelines, and Table 2 below.

Table 2: University of Pittsburgh Recommended Native Tree Species for Pittsburgh Campus

Canopy		Evergreen	Understory
<ul style="list-style-type: none"> • Big tooth aspen • Quaking aspen • Basswood * • Gray birch • River birch • Sweet birch • Yellow birch • Ohio buckeye • Yellow buckeye • Black cherry * • Kentucky coffeetree • American elm cultivars • Black gum • Hackberry • Mockernut hickory*** • Pignut hickory*** • Shagbark hickory*** • Honeylocust * 	<ul style="list-style-type: none"> • Black locust • Umbrella magnolia • Hedge maple • Red mulberry • Bur oak • Chestnut oak • Chinkapin oak • Pin oak • Scarlet oak • Swamp white oak • White oak • Persimmon*** • American planetree • Sourwood • Tuliptree • Black walnut*** • Black willow 	<ul style="list-style-type: none"> • Red cedar • Eastern hemlock • American holly • Cucumber magnolia • Sweetbay magnolia • Eastern white pine • Pitch pine • White spruce 	<ul style="list-style-type: none"> • Chokecherry*** • American crabapple • Flowering dogwood • Red twig dogwood • Cockspur hawthorn • Dotted hawthorn • Hazelnut*** • Hornbeam • Hop-hornbeam • Paw paw*** • American plum*** • Eastern redbud • Smooth serviceberry***
* = In Moderation		***= Edible	

The following tree species are discouraged due to their overrepresentation in our current region and/or their potential for supporting pest species within the region. These species should not represent more than 10% of any tree planting on campus.

- Ash (*Fraxinus*)
- Buckeye / horse chestnut (*Aesculus*)
- Birch (*Betula*)
- Elm (*Ulmus*)
- Katsura (*Cercidiphyllum*)
- Maple (*Acer*, with the exception of hedge maple)
- Plane, Sycamore, & Buttonwood (*Platanus*)
- Poplar, Aspen, & Cottonwood (*Populus*)
- Mimosa, Persian silk tree, silk tree, silky acacia (*Albizia julibrissin*)
- Whitebeam, Rowan, & Service (*Sorbus*)

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The following tree species are prohibited due to their tendency to promote disease, provide habitat for pests, or for being considered invasive in the Southwestern Pennsylvania region.

- Ash (*Fraxinus*)
- Black, Common, European, or just alder (*Alnus glutinosa*)
- Callery pear (*Pyrus calleryana*)
- Chestnut (*Castanea*)
- Eastern hemlock (*Tsuga Canadensis*)
- Elm, specific species below:
 - American / water / white elm (*Ulmus Americana*)
 - Frontier elm (*Ulmus Frontier*)
 - Siberian elm (*Ulmus pumila*)
- Empress tree (*Paulownia tomentosa*)
- Japanese angelica tree (*Aralia elata*)
- Littleleaf linden (*Tilia cordata*)
- Norway maple (*Acer platanoides*)
- Red oak family (*Quercus section Lobatae*)
- Sycamore maple (*Acer pseudoplatanus*)
- Tree of heaven (*Ailanthus altissima*)

Tree Planting Service Event Procedures²

Pitt collaborates with local organizations to help increase the number of urban trees within the region. In Appendix 1 you will find a detailed account of tree planting procedures for service events. At each service planting volunteers are educated on the proper procedures.

Tree Pruning

To promote the development of healthy trees on campus Pitt prunes trees on an as needed basis with the minimum pruning practices suggested below:

Pruning Schedule – Pitt’s tree pruning schedule is dictated by tree species, age, function, and location.

- Trees less than 7 years old - Structural pruning on an annual or biennial basis.
- Trees 7 to 20 years old - Structural pruning every 2 to 5 years.
- Trees 20 years old and older – Maintenance pruning every 5 to 7 years to clean dead, diseased, dying, and defective branches from the crown.
- Trees adjacent to roadways, walkways, signs, and streetlights - Annually inspected for safety and clearance issues; maintenance pruned as necessary.

General - Pruning shall only be conducted with clear objective or outcome, with emphasis first on safety, then health, and lastly for aesthetics. When removing branches, the pruning cut shall not damage the branch bark ridge and branch collar. Branch reduction or thinning will be used to achieve pruning objectives rather than making large (>8” diameter) branch removal cuts. Internode (heading) cuts will only be used for storm response and crown restoration procedures.

Cleaning - Thinning shall be performed to remove dead, diseased, dying, and defective branches, which reduces hazards, promotes health, and improves appearance. To minimize the risk of tree injury from falling debris, large branches will be removed with the aid of ropes and rigging equipment.

Canopy Thinning - Thinning shall be performed to reduce the density of branches, increasing light penetration, improving visibility, and decreasing wind load. Trees will be assessed for pruning from the top down. Branches with strong, U- shaped angles of attachment will be favored, while branches with weak, V-

² The tree planting service event procedures were adapted from Tree Pittsburgh, a local nonprofit organization dedicated to enhancing community vitality by restoring and protecting the urban forest.

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shaped angles of attachment and/or included bark will be considered for thinning. Ideally, lateral branches will be evenly spaced on the main stem of young trees. Branches that rub or cross another branch will be removed. To discourage the development of codominant stems, lateral branches will be no more than one-half to three-quarters of the diameter of the main stem. No more than one-quarter of the living crown of a tree will be removed at one time. If it is necessary to remove more, it will be done over successive years.

Tree Canopy Raising - Raising shall be performed to provide vertical clearance from thoroughfares, signs, streetlights, and structures. Live branches will be maintained on at least two-thirds of a tree's total height, as removing too many lower branches will hinder the development of a strong main stem. Basal sprouts and vigorous epicormic sprouts will also be removed.

Tree Crown Reduction – Crown reduction shall be performed to decrease the overall height of a tree or to decrease the length of an individual branch. Reduction pruning will only be used when absolutely necessary. Pruning cuts will be made at a lateral branch that is at least one-third the diameter of the stem to be removed. If it is necessary to remove more than half of the foliage from a branch, the entire branch will be removed.



Tree Preservation

Mulching & Irrigation

- Tree mulching occurs every 2 years for trees up to approximately 6" and every other year around mature trees. All newly planted trees will have a minimum of 3' mulch circle added after installation.
- Shredded hardwood bark mulch is permitted around trees and shrubs only. Old mulch is to be removed before adding new mulch so as to not create mulch volcanoes. New mulch is spread 3" to 4" thick and will not touch bark of tree trunk.
- Dyed mulches and rubber mulches are prohibited.
- During times of excessive heat or drought, a slow, deep supplemental watering will be used every 5 – 7 days for mature established trees.
- Newly planted trees are watered twice weekly with the aid of a tree bag watering system.

Fertilization & Pest Management

- Trees are treated for pest problems if needed.
- There is no regular tree fertilization beyond treatment received as a result of fall lawn fertilization.
- Specimen or high-value trees may receive prescription fertilization when severe nutrient deficiencies are diagnosed.

Tree Removal

Trees may only be removed with the approval of either the Office of Planning, Design, and Real Estate or Facilities Management. In general, live trees should only be removed when required to protect public safety, accommodate necessary development, or as deemed necessary to improve the quality of the landscape.

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habitat (e.g., disease, unhealthy, and/or non-native species). Dead trees (“snags”)³ should be allowed to stand where they do not pose a hazard.

Designated trees will be removed in a controlled manner utilizing one of the following methods:

- Climbing and rigging
- Aerial lift assist
- Crane assisted
- Directional felling

All tree wood and debris will be cleaned up and hauled off campus. If requested from partner or University, hardwood logs from removed trees will be milled for future use. Unless directed otherwise by Facilities Management, all stumps will be ground 6 to 8" below grade. Stump chips will be removed, disposed of offsite, and replaced with screened topsoil and native plantings as specified by Grounds Manager.

Storm Response and Recovery

Storm response and recovery services are generally accomplished by the Grounds Department.

In a crisis, the first priority is to remove tree debris that blocks campus thoroughfares, disrupts campus operations, and/or poses hazards to the campus community. Once these critical needs are addressed, a prioritized recovery plan is implemented, during which unsalvageable trees are systematically removed and salvageable trees are pruned to restore their health and structure.

As the tree planting budget permits, lost trees are strategically replaced to restore the structure and function of the campus urban forest in a reasonable time frame.

During storm response and recovery, trees requiring specialized equipment not available in-house are addressed by the University’s contracted professional tree company.



Protection & Preservation Policies

To the extent possible, all site work shall be planned and conducted in a manner that will minimize damage to trees from environmental changes such as altered site drainage, and land disturbance within or immediately adjacent to the critical root zone of the tree. The University of Pittsburgh’s [Sustainable Landscape Design Guidelines](#) require:

- 1) Protection of trees over 24” DBH and native trees in forest communities or woodlots
- 2) Avoid locating buildings, pavement, construction staging areas, and other general development around high priority trees

³ Snags - In forest ecology, a snag refers to a standing, dead or dying tree, often missing a top or most of the smaller branches. In freshwater ecology it refers to trees, branches, and other pieces of naturally occurring wood found sunken in rivers and streams.

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- 3) Provision of tree protection fencing for the duration of any construction project in proximity to trees' soil protection zone;⁴ fencing should be around existing tree canopy's drip line.

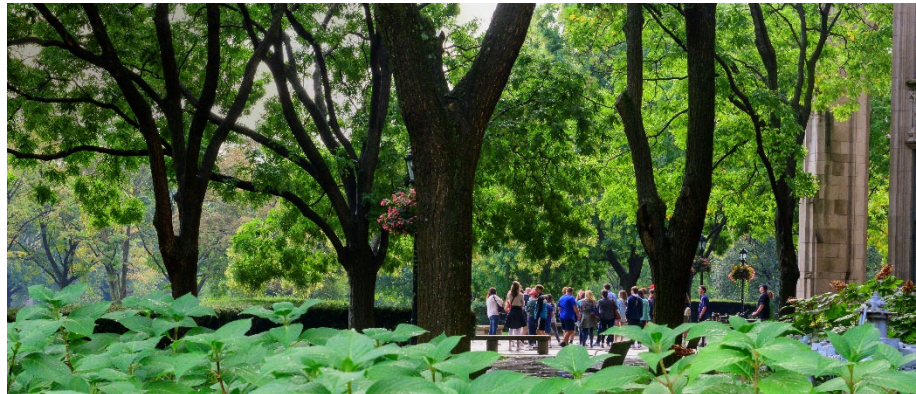
All contractors of the University must provide "Sustainable Planting Design Documentation" for their project that includes:

- 1) **Existing Tree and Vegetation Plan** - Detailing existing trees and vegetation in project area and how they will be protected and/or preserved during construction
- 2) **Existing Tree Salvage and Demolition Plan** - Detailing all trees and vegetation to be relocated and/or removed during construction.
- 3) **Tree Canopy and Root Protection Plan**- Detailing the entire site showing location, trunk size, canopy size and root zone of each existing tree noting whether it is to be protected, relocated, or removed as part of the project. The consultant will participate in a pre-construction walk through with the Project Manager and Grounds Manager to determine and discuss concerns regarding trees in the construction site. For detailed information on the processes included in this plan refer to the Appendix.

Prohibited Practices

The following practices are prohibited relating to the University of Pittsburgh's current and future trees:

- 1) Planting invasive species
- 2) Leaving insufficient distance between tree(s) and building(s)
- 3) Using mulch inappropriately
- 4) Topping trees
- 5) Locking bicycles to trees
- 6) Carving into trees
- 7) Painting tree trunks, limbs, and/or branches
- 8) Excavating within the drip-line of a campus tree without PDRE approval
- 9) Removing or pruning of any campus tree without PDRE or Facilities prior approval



Tree Damage Assessment, Enforcement, Penalties, and Appeals process

- Tree damage assessments are conducted by construction management and Pitt Grounds. Certified Arborists could be consulted in some cases.
- Enforcement of protection measures is performed by project managers and on-site engineers.
- Whenever it is determined that violation of this procedure has occurred, the Facilities representative or designee shall immediately issue written and oral notice to the person or company or department in violation, identifying the nature and location of the violation and specifying that remedial action is necessary to bring the violation into compliance. The person or company or department in violation shall immediately, conditions permitting, commence remedial action and shall have seven (7) working days after the receipt of the notice, or such longer times as may be specified in the notice, to complete the remedial actions required to bring the activity into compliance with this Tree Care Plan.

⁴ Soil Protection Zone – An area protected by a fence or barrier for the purpose of preventing damage to existing healthy soils and/or preventing damage caused by compaction to tree roots.

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- If damage to protected trees happens during construction, contractors will be held liable for a dollar value determined by the University to cover costs for all remedial measures required. All remedial treatments will be accomplished by the University and/or their professional designee. The assessment of damages shall be by change order.

Communications Strategies

Plan Awareness & Availability

This *Campus Tree Care Plan* is publicly accessible as a document that can be read on and/or downloaded from the Pitt Sustainability website. Pitt Facilities Management will also provide this *Campus Tree Care Plan* to contractors performing applicable construction work on campus.

Pitt's tree protection guidelines are communicated to project design and construction managers for inclusion into projects via owners program requirements or specifications. The tree preservation categorizing process is used for building siting and campus master planning.

Education, Engagement, & Awareness

To increase community education about and engagement with trees, the Pitt Sustainability team, Communications, Facilities Management, and Planning & Design collaborate on the following regular and ongoing efforts, events, and campaigns:

- 1) **Educational Information** on Pitt Sustainability website
 - a) Trees' Benefit to You, Campus, & Our Communities [page](#)
 - b) Campus Tree Advisory Committee [page](#),
 - c) Tree incorporation into on-campus projects (Example, [Bigelow Boulevard Transformation](#))
 - d) Create content about the top 10 trees on campus including facts, pictures, and tips for identification of urban trees.
- 2) **Educational Campaigns**
 - a) [City Nature Challenge](#) with Carnegie Museum of Natural History – Encouraging Pitt community members to use iNaturalist app to document local species
 - b) Tree Pittsburgh events, including ones on [Trees and Health](#) (8/27/20)
 - c) Pitt's goal to increase tree canopy and sustainable landscape design guidelines are shared with employees who pursue the Sustainability Professional Development Certificate.
 - d) Pitt is dedicated to ensuring trees benefit all on campus and are dedicated to raising awareness around tree equity issues. Creating healthy urban tree canopies can help address environmental injustices and racial disparities by improving local air quality and reduce urban heat island effects found to disproportionately impact our BIPOC communities. Therefore trees are a vital part of creating a sustainable and equitable future for our campus, neighborhood, and the greater Pittsburgh region.
- 3) **Tree Giveaways** – Raise awareness within Pitt community of Tree Pittsburgh regional free tree giveaways throughout the year and in recognition of Arbor Day
 - a) 2020 Example: <https://www.at.pitt.edu/news/trees-you-free>
 - b) 2020 Rescheduled: <https://www.sustainable.pitt.edu/events/tree-giveaway-oakland-hill-district/>

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5) Arbor Day Educational Content on Pitt Sustainability social media accounts (examples below)



Happy Arbor Day!



6) University campus news coverage

- Pittwire* (10/20/21): [It takes a village to keep trees healthy](#)
- University Times* (2/25/21): [University's Institutional Master Plan predicts 5 to 10 percent growth](#)
- The Pitt News* (11/20/20): [Exploring Pittsburgh's Parks | South Side and Grandview](#)
- The Pitt News* (10/1/20): [The Green Space | Gettin' Twiggy With It](#)
- University Times* (12/4/19): [Faculty sustainability projects win Mascaro Center awards](#)
- Pittwire* (1/11/19): [Duo's Mission: Count Each Tree on Campus](#)

Acknowledgments

Special thanks to past and present members of the University of Pittsburgh Campus Tree Advisory Committee, who supported and helped developed this *Campus Tree Care Plan*:

Fall 2021 Pitt Campus Tree Committee Members

- **CO-Chair: Samantha Chan**, Sustainability Projects Coordinator, Pitt Office of Sustainability
- **CO-CHAIR: Dave Klimchock**, Senior Construction Project Manager, Pitt Facilities Management
- **Dr. Dan Bain**, Associate Professor, Pitt Geology & Environmental Science
- **Brandon Brewster**, Undergraduate Student, Pitt Environmental Science '22
- **Tiffany Betras**, Graduate student, Pitt Biological Sciences
- **Matthew Erb**, Director of Urban Forestry, Tree Pittsburgh
- **Dr. Sara Kuebbing**, Professor, Pitt Biological Sciences
- **Mary Beth McGrew**, Associate Vice Chancellor Planning, Design, and Real Estate, Pitt Facilities Management
- **Andy Moran**, Senior Manager of Grounds, Pitt Facilities Management
- **Erika Ninos**, Sustainability Coordinator, Office of PittServes
- **Georgia Petropoulos**, Executive Director, Oakland Business Improvement District

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- **Dr. Aurora Sharrard**, *Director of Sustainability*, Pitt Office of Sustainability
- **James Williams III**, *Director for Local Government Relations*, Pitt Community & Governmental Relations

Former Pitt Campus Tree Committee Members

- **Rich Heller**, Facilities Management, University of Pittsburgh
- **Kinsey Miller**, Tree Pittsburgh

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Appendix I: Tree Planting Service Event Procedures⁵

Having tree planting and care days helps get the Pitt and Pittsburgh community develop pride in and respect for trees, including how much work goes into taking care of them!

- 1) Choose the proper tree for the specific location.
 - a) If there are electrical or telephone wires above, pick a tree that is under 20 feet tall at full maturity.
 - b) Consider unwanted fruits, smells, and ongoing maintenance of the tree.
 - c) Ensure site conditions are suitable for the tree by adhering to soil conditions and light requirements that promote optimal health for the chosen species.



- 2) Work with Pitt Grounds to ensure trees are provided by a reputable nursery, properly transported, and inspected for health upon arrival.
- 3) Gather volunteers or staff in groups of three or four with shovels, two stakes, a stake pounder, bolt cutters, scissors, and arbor tie.
 - a) Provide instructions for proper tree planting procedures for their specific tree. (i.e., age, whether the tree is in a bucket or basket, young, adolescent, etc.)
 - b) Adolescent trees usually come in a galvanized steel and burlap cage, so instruct the volunteers / staff on how to properly remove these and plant the tree to ensure an optimal chance of survival and health. You can cut the bottom of the galvanized wire cage along the verticals to make it easier to remove later, but it's not crucial.
- 4) Dig the hole.
 - a) Ensure proper sizing by measuring with the wooden stakes or shovel handles from the bottom of the root ball to the trunk flare.
 - b) It's important that the trunk flare remains exposed above the soil as gas exchange occurs here.
- 5) Lift the tree into the hole. It is important for the group to communicate to ensure everyone's safety..

⁵ The tree planting service event procedures were adapted from Tree Pittsburgh, a local nonprofit organization dedicated to enhancing community vitality by restoring and protecting the urban forest.

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- 6) Once in the hole, ensure the tree's branches are not protruding into the sidewalk or anywhere potentially hazardous; this is the position the tree will be in for the rest of its life. Remove the steel cage by cutting the horizontals along one vertical and then the bottom-most vertical wires all around until the cage unfolds off (the most difficult part).
- 7) Once the cage is removed, the tree should be repositioned. Make sure it is level and the trunk flare is still above the soil level. Then, remove the burlap as best as possible; even though it is biodegradable, it wicks moisture away from the tree which harms the tree.



- 8) Bury your tree! Ensure that you stamp down on the outer sections where the loose soil is to close any air pockets which can be detrimental in the winter and cold conditions.
 - a) However, do not step on the tree's root ball itself.
 - b) Once it is buried completely, you may need to recover the root flare. Just dig till you find it, and make a small doughnut around the flare to help trap water. This is especially useful on sloped areas.
- 9) Pound the wooden stakes in just outside the root ball. They should be aesthetically pleasing to the surrounding area and parallel to a sidewalk or road. Once pounded in, tie arbor tie around the tree and back in the front and end on the back of the stake. Ensure a fist's length of space between the two ties to allow for the tree to breathe. Do not tie the tie too tight, as it is important for the tree to sway in the wind to develop a natural taper.
- 10) A tree planting event typically ends in mulch! This is a great way to protect and provide additional nutrients to the tree.
 - a) Shredded hardwood bark mulch is permitted around trees and shrubs only. Mulch volcanos at base of trees are prohibited. Dyed mulches and rubber mulches are prohibited.
 - b) Do not mulch up against the trunk of the tree, as the bacteria that break down the hard/softwood of the mulch cannot distinguish between mulch and tree and will cause harm to the tree's trunk.
 - b) After the tree is mulched and the root flare still clean and exposed, you can add a water bag or drip bucket -- or just ensure that the tree is getting the proper amount of water it needs to survive and regrow its intricate root system. After all, 80% of its roots were likely cut off for transportation.



Appendix II: Tree Canopy and Root Zone Protection, Preservation and Mitigation Procedure

Tree Canopy and Root Zone Protection, Preservation and Mitigation Procedure

I. General

A. Intent:

The University of Pittsburgh places a high value on its trees and recognizes the aesthetic, environmental and educational benefits trees provide to the campus environment. It is the intent of this document to provide standards and procedures for the evaluation and preservation of trees as part of the design and construction process for the University of Pittsburgh.

B. Benefits of Healthy Trees:

1. Enhance the University landscape.
2. Capture and slow rainfall reducing runoff.
3. Create oxygen and reduce smog.
4. Provide shade and lower the air temperature under their canopy.
5. Screen unattractive views and soften the harsh outline of masonry, metal, asphalt, steel and glass.
6. Provide inviting areas for relaxation and recreation.
7. Prevent soil erosion.
8. Reduce crime.
9. Provide a food source for wildlife.
10. Block the wind.
11. Reduce building operating costs.
12. Create outdoor classrooms and living laboratories.
13. Improve people's mental and physical health.

C. Goals:

1. To protect and preserve the tree canopy and root zones of trees within campus construction zones through preservation and mitigation practices.
2. To educate architects, engineers, project managers, general contractors and sub-contractors about the value of trees and how to protect and preserve them during construction.
3. To develop a tree canopy and root zone protection plan in the design phase of all campus outdoor construction projects and interior construction projects requiring outdoor land use.
4. To protect the tree canopy and root zone from the beginning of the construction process through the completion of construction.
5. To establish procedures to ensure communication among all parties in setting forth expectations concerning tree protection.

II. Preservation During Design Phase

The consultant will develop a Tree Canopy and Root Zone Protection Plan as part of the design documents when tree canopies and/or tree root systems are likely to be impacted by construction equipment, cut and fill activities, utility corridors, proposed walks and roads, and potential construction staging areas. This plan shall be of the entire site showing the location, trunk size, canopy size and root zone of each existing tree and note whether it is to be protected, relocated or removed as part of the project. The consultant will participate in a pre-construction site walk through with the Project Manager and Grounds Manager to determine and discuss concerns regarding trees in the construction site. The Professional to incorporate Contractor-specific requirements in this guideline into the construction documents for the project.

A. Tree Protection Categories:

1. Not Salvageable:

- a. All trees that are within the footprint or in close proximity to the footprint of a proposed building or infrastructure improvement. (Note: alternative footprints to save large, valuable trees should be considered, provided that the alternatives maintain the desired features and costs of the proposed project)
- b. Trees of undesirable species or in very poor health. Examples include but are not limited to species that have low landscape or educational value, invasive trees or heavily diseased or damaged trees that have little chance of recovering desirable form and function, even if protected from construction damage.

2. Low Priority for Protection:

- a. Small trees (less than 10 inches diameter at 4 feet in height) that fall outside of the building footprint, but are likely to be impacted by construction activities.
- b. Medium (10 inches to 24 inches diameter at 4 feet in height) to Large (greater than 24 inches at 4 feet in height) trees outside of the building footprint with relatively low landscape value. Examples include but are not limited to, trees with poor form, species of relatively low landscape or educational value, or trees with inadequate space to accommodate current or future growth even if the site is ameliorated.

3. High Priority for Protection:

- a. Small trees (less than 10 inches diameter at 4 feet in height) of desirable species with good form, good health, and room for continued growth.
- b. Medium (10 inches to 24 inches diameter at 4 feet in height) to Large (greater than 24 inches at 4 feet in height) trees of desirable species with good form, good health, and room for continued growth.

B. Planning:

1. Avoid locating the general construction, staging and washout areas around low and high priority trees.
2. Plan all construction activities including new utility corridors, staging areas, new sidewalks and roads outside of the protected root zone.
3. High priority trees should receive more consideration than low priority trees in the design phase.

C. Materials:

1. Protective fencing shall be 6 feet high chain link fence supported by 2 inch diameter galvanized iron posts set to a minimum depth of 2 feet.
2. If the fencing is not within a fenced construction area, it shall be vinyl wrapped per the Fencing Standards
3. Posts shall be spaced a minimum of 10 feet on center.
4. A 3 foot wide gate shall be provided to allow maintenance access to the protection zone.

D. Pre and Post construction root zone care:

The University, when deemed beneficial, will coordinate a pre and post construction protected root zone care plan. All low and high priority trees indicated on the Root Zone Protection Plan will receive one or all of the following services:

1. Pre fertilization – one application of liquid fertilizer injected into the root zone the spring or fall prior to the start of construction activity.
2. Post fertilization – one application of liquid fertilizer injected into the root zone the spring or fall following the completion of construction activity.
3. Aeration – insert an air spade where construction activity occurred within in the protected root zone of any low or high priority tree. Based upon recommendations of the tree care company, compost may be added to the aeration holes.

III. Preservation During Construction Phase

The Contractor will ensure the Tree Canopy and Root Zone Protection Plan is adhered to during the entire construction process as The University of Pittsburgh is committed to tree protection. Tree trunks and branches shall not be damaged by equipment and/or workers and tree root protection zones shall be protected from soil compaction, damage by trenching or excessive grade changes, hazardous materials or waste products.

- A. Prior to any installation of materials, the Contractor shall ensure that all existing utilities within and surrounding the project site have been clearly marked.
- B. Prior to the start of any site work the contractor will erect fencing around trees, as shown in the contract drawings, which are to be preserved and tree root zones which are to be protected within the construction site.

- C. Trees indicated on the plan to remain shall be protected from injury to their branches, trunks, and root zones during the entire construction period. Protection of tree canopy and root zones shall be by the placement of protective fencing as shown in the contract documents.
- D. NO REMOVAL OR ENCROACHMENT INTO TREE PROTECTION ENCLOSURES SHALL BE PERMITTED UNLESS COORDINATED WITH THE UNIVERSITY.
- E. The Contractor shall be responsible for the installation and maintenance of all tree protection fencing. Protective fencing shall remain undisturbed until all construction activities have been completed. The Contractor shall remove fencing upon completion of construction.
- F. If protective fencing is damaged, the Contractor shall immediately execute the necessary repairs to re-establish the protective fencing to original configurations outlined on the Tree Canopy and Root Zone Protection Plan.
- G. At the conclusion of the project, as tree protection fencing is being removed, the Contractor shall continue to identify and enforce tree canopy and root protection zones using temporary measures until final acceptance.
- H. The Contractor shall be held liable for any damages to protected trees and root zones caused by unauthorized intrusions into the protected areas during the construction period.
- I. Any pruning of trees that may be required during the course of construction shall be performed by the University.
- J. Erosion control devices shall be installed as per the contract documents with particular emphasis on preventing silting, erosion, and/or damage within the tree root protection zone.

IV. Compliance

Compliance with this plan shall be field verified by the University.

V. Materials

- A. Fencing:
 - 1. Protective fencing shall be 6 feet high chain link fence supported by 2 inch diameter galvanized iron posts set to a minimum depth of 2 feet.
 - 2. Posts shall be spaced a minimum of 10 feet on center.
 - 3. A 3 foot wide gate shall be provided to allow maintenance access to the protection zone.
- B. Signage:
 - 1. An 8 ½" x 11" sign indicating the area as a "Tree Protection Zone" shall be prominently displayed at a maximum of 20' spacing.

2. Signs shall remain on protection fencing through the duration of the project.
- C. Temporary Protection:
1. Temporary protection measures shall be strictly enforced at the conclusion of the project, up until final acceptance.
 2. These methods may include, but are not limited to the use of signs, post and wire, or other methods approved by the University.

VI. Execution

- A. Scope of Work Within or Around the Tree Canopy Protection Zone:
1. Trees to be removed adjacent to the tree canopy protection zones shall be cut in a manner in which protected trees are not damaged.
 2. Any brush clearing required within or around the tree canopy/tree root protection zone shall be accomplished with hand operated equipment.
 3. The Contractor shall be held liable for damages incurred to any tree branches that extend over protective fencing and to any trees or other plant material located on the site and indicated on the plan to remain. The Contractor shall notify the University when any overhanging branches or other plant material interferes with the construction activity or pose potential risks to workers or bystanders.
 4. If plans and field situations do not match and work must occur closer to any existing tree(s) than planned, the Contractor shall notify the Project Manager to evaluate and to determine future viability of the existing tree(s) located within the area of proposed construction or excavation. Final evaluations shall be coordinated with the Ground's Manager to determine if the tree(s) should remain, be relocated, or be removed.
- B. Scope of Work Within or Around the Tree Root Protection Zone
1. Trees to be removed adjacent to the tree root protection zones shall be cut near ground level and the stump ground out to avoid damaging existing roots by pulling and breaking. Felling shall be directed away from any protection zones to avoid pulling and breaking of roots or branches of protected trees.
 2. Any digging that must occur within the tree root protection zones must be approved by the University and must utilize alternative excavation methods including, but not limited to air spading, hand excavation or other method approved by the University.
 3. Any roots 2 inches in diameter or less that sustain damage during construction shall be exposed to sound tissue and cleanly pruned close to the tree side of the excavation. Clean cuts shall be made at all times using proper pruning tools. The cutting of tree roots greater than 2 inches in diameter must be approved and supervised by the University.

4. For those construction projects requiring temporary access or haul roads through the protection zone, a roadbed shall be installed using road plates, Alturamat, or a PADOT Class IV Geotextile base covered with 6 inches (minimum) of mulch, wood chips or gravel to protect soil and minimize soil compaction. In those cases approval shall be given by the University prior to the start of any construction activities. During the entire construction phase, the roadbed material shall be maintained as necessary to retain its original state.
5. No material shall be stored or piled within the tree root protection zone unless otherwise approved by the University. No gasoline, fuel oil, harmful chemicals, concrete washout or other deleterious materials shall be stored, spilled or deposited on the ground within the tree root protection zone.
6. Portable equipment such as generators, light towers, portable bathrooms, job boxes, or temporary structures are prohibited within the tree root protection zone.
7. There shall be no vehicular traffic or parking permitted within the tree root protection zone.
8. Foot traffic shall be kept to a minimum within the tree root protection zone. If temporary foot traffic must be directed over the tree root protection zone a pathway shall be installed using Alturamat or a PADOT Class IV Geotextile base covered with 3 inches (minimum) of mulch, wood chips or gravel to protect soil and minimize soil compaction. In those cases approval shall be given by the University prior to the start of any construction activities. During the entire construction phase, the pathway material shall be maintained as necessary to retain its original state.
9. Installation of curbs and sidewalks shall be completed in a manner least damaging to trees and tree root systems. PADOT Class IV Geotextile shall be considered a viable alternative to the specified sub-base in sensitive root zones. When unique site conditions not addressed in the contract documents result in the opportunity for an alternative solution or a potential modification to the plan, the Contractor may present a proposal to the University.

VII. Liability

- A. The Contractor shall be held liable for any damage to protected trees. A dollar value shall be determined by the University.
- B. The Contractor shall be held liable for all remedial measures required to treat broken limbs, or damaged trees and roots, or for the unauthorized removal of existing trees or plant material. All remedial treatments will be accomplished by the University and/or their designee.
- C. The assessment of damages shall be by change order.

University of Pittsburgh Campus Tree Care Plan

Last Updated: December 17, 2021



Appendix III: Tree Inventory (Summary from 2021 Institutional Master Plan)

7.2.4 Tree Preservation and Tree Canopy

After an extensive effort, a complete list of trees within the Environmental Study Area was compiled. Almost 4,000 trees over four inches in diameter at breast height were documented within the study area. These trees encompass a diverse range of species and maturity sizes. The data collected include species, approximate diameter at breast height (DBH), tree condition, and approximate canopy size. Refer to the Appendix for the complete tree survey.

It is important to understand that the canopy growth projections are not to be considered final since trees in urban environments are subject to a number of stressors which can impact growth and decrease tree longevity. These factors include, but are not limited to:

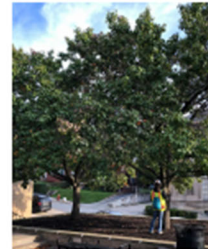
- Soil compaction
- Poor nutrient deficient soils
- Soils with low water storage capacity
- Salting salts, root injuries
- Physical damage to roots, trunks and/or bark
- Extreme temperatures
- Reduced moisture availability due to restricted roots and surrounding impervious pavement
- Lack of adequate sun exposure (due to building shading)
- Inadequate soil volumes
- Limited spacing between trees and limited size of tree opening

For reference see the Arboriculture and Urban Forestry Journal article "Appraisal of Key Abiotic Parameters Affecting Street Tree Growth" and also the lecture "Three Design Issues that Impact Long Term Health of Urban Trees" by James Urban, FASLA. With these parameters and limitations in mind, it is imperative that future trees are sited in streetscapes and urban conditions in a manner that reduces the impact of these stressors on tree health. Street trees will be selected and planted based on the City of Pittsburgh Municipal code and the City of Pittsburgh Department of Forestry recommended species and tree quality requirements. Refer also to the University's Sustainable Landscape Guidelines.

The 2018 University of Pittsburgh Sustainability Plan set a goal to increase the tree canopy across all campuses in the next 10 years. Given its urban context, the University of Pittsburgh Oakland Campus will only be able to achieve a 4% increase in tree canopy. The subsequent map's exhibits and descriptions

provide a contextual overview of the existing and proposed tree canopy within the Oakland campus. Maintaining existing trees and proposing new trees is essential to fostering a significant increase in canopy that will align with the site-wide University goal. In order to encourage advancements towards IMP goals, the University will implement the following tree preservation goals. These goals overlap with and reinforce the Sustainable Landscape Design Principles, outlined in the Sustainable Guidelines of the Pitt Sustainability plan. The IMP Goals are listed below:

- Protect trees identified to remain during new construction, renovations, infill development, and greenfield construction
 - Tree roots, trunks, and canopies should be well outside of the limits of development
 - Tree protection fences should be utilized around the trees predicted root zone extents
 - Construction entrances should be planned to avoid tree stands
- New site designs should consider pervious or permeable pavements to promote extended root systems for trees
- Landscape designs should locate shade trees away from paved surfaces to encourage maturation of tree heights and canopies
- Partner with Oakland community and groups to replant street trees
- Provide tree wells with a minimum area of 30 SF and a minimum width of 3', additional SF to be evaluated based on specific location
- Monitor health of significant trees on campus
 - Utilize GIS data to identify trees susceptible to current and possible diseases, pests, and fungi
 - Proposed treatments for trees that are in poor health
 - Remove trees if diseases are highly contagious
- Plant new shade trees at a spacing that factors in mature canopy size
 - Trees will compete for root and canopy space if planted too close together
- Require designers to maintain a percentage of tree cover within future RFPs
 - RFP should reference the Landscape Sustainability Guidelines and the IMP Environmental Protection section
 - Designers should be required to preserve a minimum percentage of existing canopy and propose a percentage that aligns with the goal of increasing net tree canopy



Tree species were examined in a variety of growing conditions. In order to accurately identify each species, numerous attributes had to be considered including the leaves, bark, fruit, form, and buds.



University of Pittsburgh Campus Tree Care Plan

Last Updated: December 17, 2021



Total Canopy Area: 29.96 Acres
 Total MP Environmental Study Area (Without Public Streets): 177.4 Acres
 Existing Tree Canopy Coverage: 16.9%

Some canopy coverage was calculated using aerial mapping. These trees are noted on all of the tree canopy maps.

- EXISTING TREE CANOPY**
- - - MP Environmental Study Area
 - Existing Tree Canopy
 - Projected 10-Yr Canopy
 - Aerial Located Canopy

University of Pittsburgh Campus Tree Care Plan

Last Updated: December 17, 2021



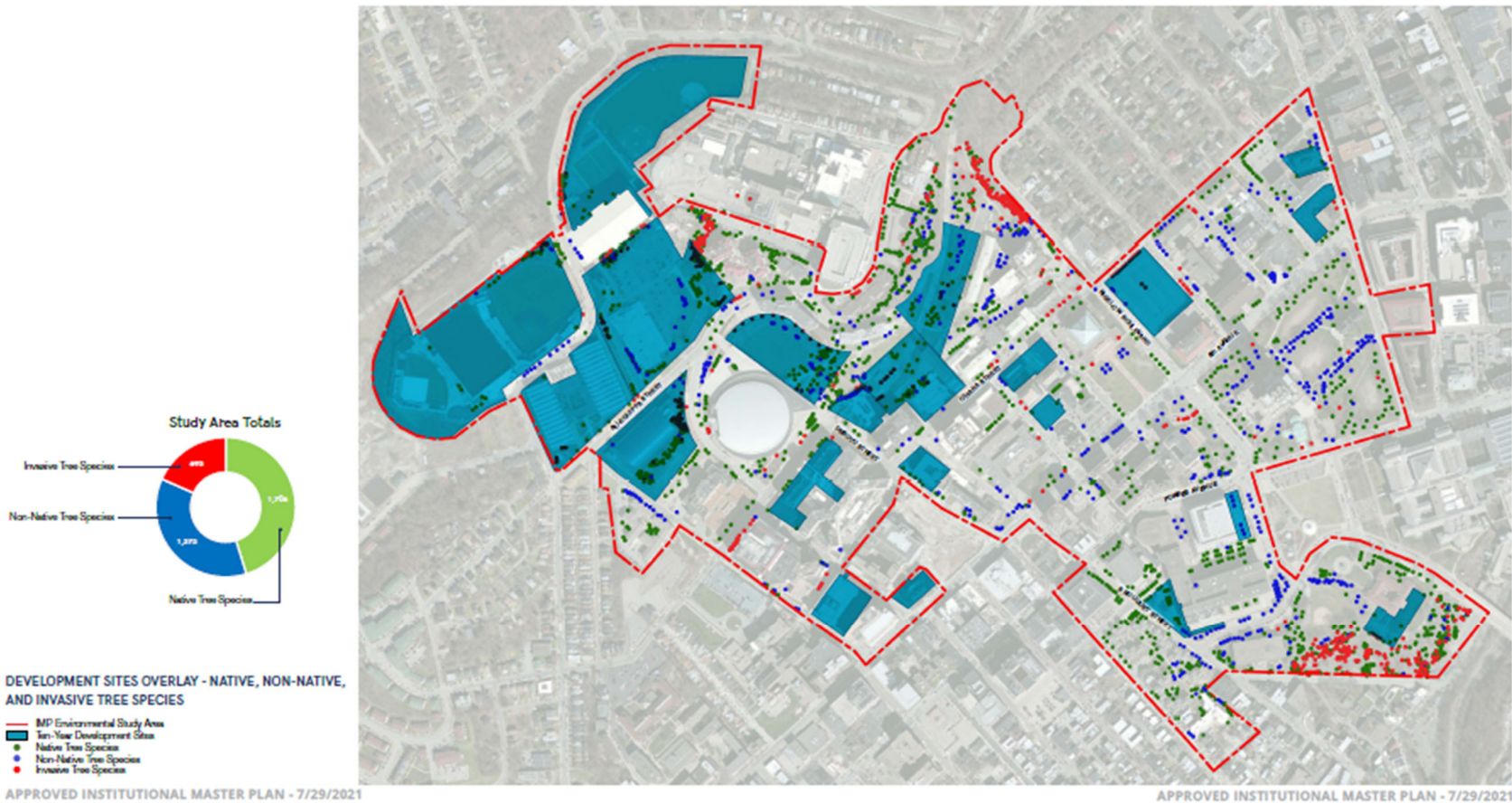
This map is provided to illustrate the overlap of focus areas and existing tree canopy. Development sites will not necessarily impact tree canopy. Future projects within development sites will evaluate the impacts to environmental goals.

DEVELOPMENT SITES OVERLAY - TREE CANOPY

- MP Environmental Study Area
- Ten-Year Development Sites
- Existing Tree Canopy
- Aerial Located Canopy
- Ten-Year Development Sites

University of Pittsburgh Campus Tree Care Plan

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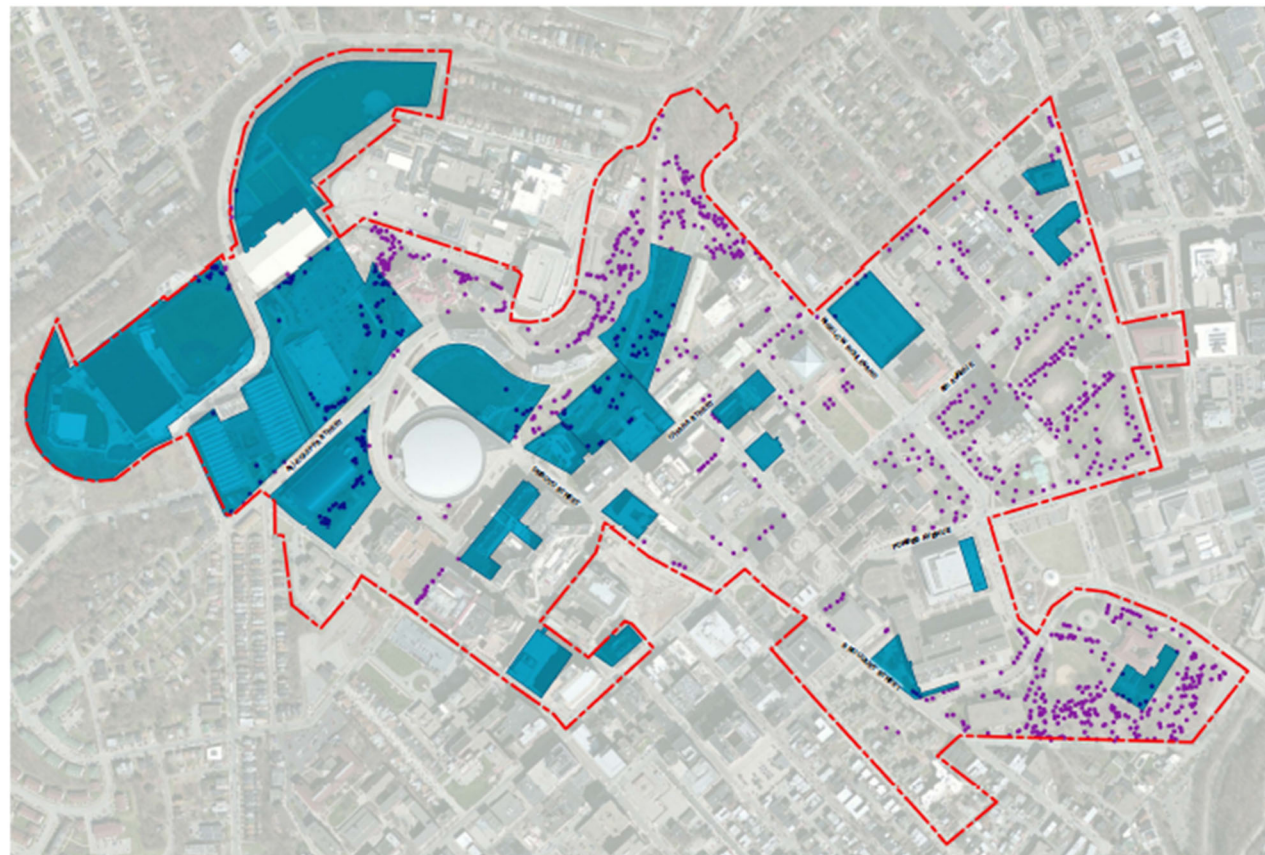
Last Updated: December 17, 2021



Significant trees are defined as trees that exceed 12 inches DBH. City of Pittsburgh Zoning requires that all trees over 12 inches that are removed from a property are replaced inch for inch on the same site.

DEVELOPMENT SITES OVERLAY - TREES OF SIGNIFICANCE

- IMP Environmental Study Area
- Ten-Year Development Sites
- Tree Species with DBH >12 Inches



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Tree Canopy Constraints With In the IMP Environmental Study Area

The majority of the University's campus within the Environmental Study Area is comprised of buildings, streets, and pavement. The likelihood of these impervious surfaces decreasing significantly over the next ten years is low, but there are still possible locations next to pavement where trees can be planted. Development will most likely take place on greenfield or grayfield sites. Grayfield sites include previously developed, outdated and/or underutilized sites. Most existing buildings on campus will not be demolished in the foreseeable future, thus tree canopy will not dramatically increase on previously developed sites. Preserved and proposed tree canopy will mostly be limited to areas that are porous and will feasibly remain porous for the next 10 years. If greenspace continues reducing, the University will consider soil cell systems under impervious surfaces. These systems can encourage extensive root growth which can effectively increase the size of tree canopies.

Tree canopy is not all the same quality. As seen on the map to the right, many areas of coverage are inundated with invasive tree species. The most concerning invasive trees are the species that exist in naturalized areas. Gradual removal of invasive species and replacement of native species should be considered as future projects develop on development sites. Adjacent and off-site remediation should also take place to encourage a healthier canopy.

Total Canopy Area: 25.06 Acres
Total IMP Environmental Study Area: 177.4 Acres
Existing Tree Canopy Coverage: 16.8%

EXISTING TREE CANOPY - AREA CONSTRAINTS

- IMP Environmental Study Area
- Existing Tree Canopy
- Proposed 100% Canopy
- Aerial Located Canopy
- Invasive Tree Species
- Porous Areas
- Impervious Areas



University of Pittsburgh Campus Tree Care Plan

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Tree Canopy Growth Projections within the IMP Environmental Study Area

Despite limited available green space, there is potential for future tree canopy growth. The total surface area of existing canopy is approximately thirty acres. The total proposed potential canopy areas amount to 1.30 acres. The proposed additional canopy area will increase coverage from 16.6% to 17.6%, which represents a 4% increase. Several factors must be considered before assuming that space is available for additional trees.

Shade trees can grow an average of 40-60 feet wide and 60-100 feet tall over their lifetime. When a shade tree is planted, it is usually 8-12 feet wide and 12-14 feet tall. Shade trees provide some of the best functional aspects for a site. They are utilized for their dense and wide branching structure that can obscure UV spectrum light. Their leaves filter the air by intercepting pollutants and particle debris. They can remove large quantities of stormwater from the ground using their extensive root systems while also surviving extended droughts. Their canopy also creates a barrier for precipitation and reduces the heat island effect of urban communities. When used appropriately, shade trees can be a direct economic benefit by reducing heating and cooling costs and increasing property values.

While larger trees provide numerous benefits, they also have drawbacks. They require more maintenance as they age, their large canopies can block views, and they require more space to grow. The yellow dots on the map indicate potential areas for trees to be planted in the future to increase the overall canopy within the Environmental Study Area. The trees are arranged by following certain criteria. The trees are planted with space to account for a variety of species and for the average mature spread of a shade tree. There are many locations throughout the study area that would accommodate narrow formed trees better. This would need to be examined on a case-by-case basis. Existing trees, especially those that are middle-aged, should have exclusive space to expand their canopy. Many proposed trees are staggered to mimic existing woodland conditions and utilize space more efficiently.

Trees are not proposed in areas that are expected to have heavy development. This includes the future athletic complex adjacent to Allequippa Street. Historic and culturally sensitive areas will require additional outreach and coordination, but these are potential areas for significant future canopy growth. These lawns require some of the most intense maintenance. Rooftops that are currently fitted or will be fitted with greenroofs are another potential area to create canopy. Special considerations and planning must accompany potential rooftop tree plantings, but this is a possibility.

Several private and public streets are also envisioned with additional street trees. Tree canopy along streets could be incorporated into future BMPs, enhance views, and provide areas of refuge in warmer months. The Pitt Sustainable Landscape Guidelines outlines Landscape Typologies which provides contextual guidelines for each distinct area within the Oakland Campus. These standards are an important reference to consider for future tree placement. The University has also initiated a Campus Tree Advisory Committee to oversee the long term preservation and expansion of tree canopy.

Any University investment in trees within the public realm, beyond site specific development requirements, will be applied toward the University's tree canopy goal.

Reforestation: Tree Replacement and Slope Revegetation

The University intends to establish a mechanism to allow flexibility in complying with the City Code requirements for tree replacement and slope revegetation. Potential mechanisms include:

- "Equivalent Credit" in lieu of tree caliber as an acceptable alternative compliance approach
- The University will work with the City to identify appropriate areas for tree mitigation, such as areas that are deficient or that can address urban heat island
- Creation of a "Tree Mitigation Bank" as an acceptable alternative to paying into the City's tree fund for on-site tree deficits

Additional information may be found in Appendix A16.D.



University of Pittsburgh Campus Tree Care Plan

Last Updated: December 17, 2021



Total Existing Canopy Area: 29.95 Acres = 16.8%
 Proposed Additional Canopy Area: 1.30 Acres
 Total IMP Environmental Study Area: 177.4 Acres
 Potential Tree Canopy Coverage = 17.6% (29.95+1.30) ÷ (177.4)

- EXISTING TREE CANOPY - POTENTIAL CANOPY INCREASE**
- MP Environmental Study Area
 - Existing Tree Canopy
 - Projected 10-Yr Canopy
 - Aerial Located Canopy
 - Conceptual Tree Placement
 - Impervious Areas
 - Opportunity Tree (Non-Fit Property)

APPROVED INSTITUTIONAL MASTER PLAN - 7/29/2021

APPROVED INSTITUTIONAL MASTER PLAN - 7/29/2021



Appendix IV: Climate Change Projections for Individual Tree Species for Western Allegheny Plateau



CLIMATE CHANGE PROJECTIONS FOR INDIVIDUAL TREE SPECIES

WESTERN ALLEGHENY PLATEAU (SUBREGION 1)



The region's forests will be affected by a changing climate during this century. A team of forest managers and researchers created an assessment that describes the vulnerability of forests in the Mid-Atlantic region (Butler-Leopold et al. in review). This report includes information on the current landscape, observed climate trends, and a range of projected future climates. It also describes many potential climate change impacts to forests and summarizes key vulnerabilities for major forest types. This handout is summarized from the full assessment.

TREE SPECIES INFORMATION:

This assessment uses two climate scenarios to "bracket" a range of possible futures. These future climate projections were used with two forest impact models (Tree Atlas and LANDIS) to provide information about how individual tree species may respond to a changing climate. More information on the climate and forest impact models can be found in the assessment. Results for "low" and "high" climate scenarios can be compared on page 2 of this handout.

Remember that models are just tools, and they're not perfect. Model projections don't account for some factors that could be modified by climate change, like droughts, wildfire activity, and invasive species. If a species is rare or confined to a small area, Tree Atlas results may be less reliable. These factors, and others, could cause a particular species to perform better or worse than a model projects. Human choices will also continue to influence forest distribution, especially for tree species that are projected to increase. Planting programs may assist the movement of future-adapted species, but this will depend on management decisions.

Despite these limits, models provide useful information about future expectations. It's perhaps best to think of these projections as indicators of possibility and potential change. The model results presented here were combined with information from published reports and local management expertise to draw conclusions about potential risk and change in the region's forests.

SPECIES ADDITIONAL CONSIDERATIONS - 30 MOST COMMON SPECIES LIKELY TO DECREASE

American elm	Grows on a variety of sites, susceptible to Dutch elm disease
Bigtooth aspen	Early-successional colonizer, susceptible to drought
Chokecherry	Shade intolerant, sensitive to browsing and competition
Quaking aspen	Early-successional colonizer, susceptible to heat and drought
Yellow birch	Good disperser, susceptible to fire, insects, and disease

MAY DECREASE

American beech	Susceptible to beech bark disease, very shade tolerant
American Hornbeam	Tolerates shade, susceptible to fire and drought
Black cherry	Susceptible to insects and fire, somewhat drought-tolerant
Eastern hemlock	Hemlock woolly adelgid causes widespread mortality
Eastern hophornbeam	Grows across a variety of sites, tolerates shade
Eastern white pine	Good disperser, but susceptible to drought and insects
Sugar maple	Grows across a variety of sites, tolerates shade

NO CHANGE

American basswood	Tolerates shade, susceptible to fire
Serviceberry	Competitive colonizer, susceptible to drought
Sweet birch	Susceptible to drought, fire topkill, and insects

SPECIES ADDITIONAL CONSIDERATIONS - 30 MOST COMMON SPECIES MIXED MODEL RESULTS

Red maple	Competitive colonizer in many sites, disturbance-tolerant
Black oak	Drought tolerant, susceptible to insect pests and diseases
Chestnut oak	Establishes from seed or sprout, adapted to fire
Northern red oak	Susceptible to insect pests
Scarlet oak	Establishes from seed or sprout, susceptible to fire and disease
White ash	Emerald ash borer causes widespread mortality

MAY INCREASE

Black locust	Early colonizer, but susceptible to locust borer & heart rot
Pignut hickory	Susceptible to bark beetles and drought
Slippery elm	Shade-tolerant, susceptible to Dutch elm disease & fire
Tulip tree	Competitive colonizer tolerant of diverse sites
White oak	Fire-adapted, grows on a variety of sites

LIKELY TO INCREASE

Sassafras	Early-successional colonizer, susceptible to fire topkill
Blackgum	Shade tolerant, fire adapted
Cucumber tree	Susceptible to fire topkill
Flowering dogwood	Shade tolerant



FUTURE PROJECTIONS

Data for the end of the century are summarized for two forest impact models under two climate change scenarios. The Climate Change Tree Atlas (www.fs.fed.us/nrs/atlas) models future suitable habitat, while LANDIS models changes in forest growth over time (future tree density presented in this table; additional data are available in the assessment).

- ▲ **INCREASE**
Projected increase of >20% by 2100
- **NO CHANGE**
Little change (<20%) projected by 2100
- ▼ **DECREASE**
Projected decrease of >20% by 2100
- ★ **NEW HABITAT**
Tree Atlas projects new habitat for species not currently present

ADAPTABILITY

Factors not included in the Tree Atlas model, such as the ability to respond favorably to disturbance, may make a species more or less able to adapt to future stressors (see reverse page for considerations for the 30 most common species).

- + high
Species may perform better than modeled
- medium
- low
Species may perform worse than modeled

SPECIES	LOW CLIMATE CHANGE (PCM B1)		HIGH CLIMATE CHANGE (GFDL A1FI)		ADAPT
	TREE ATLAS	LANDIS	TREE ATLAS	LANDIS	
American basswood	●		●		·
American beech	▼	●	▼	▼	·
American chestnut	●		▼		·
American elm	▼		▼		·
American Hornbeam	●		▼		·
Bear oak:scrub oak	●		●		·
Bigtooth aspen	▼		▼		·
Bitternut hickory	●		▲		+
Black ash	▼		▼		-
Black cherry	●	●	▼	●	-
Black hickory	N/A		★		·
Black locust	●		▲		·
Black oak	▲	●	▲	▼	·
Black walnut	▲		▲		·
Black willow	▼		▼		-
Blackgum	▲		▲		+
Blackjack oak	★		★		+
Boxelder	●		▼		+
Bur oak	▼		●		+
Butternut	●		▼		-
Cedar elm	N/A		★		·
Chestnut oak	●	●	▲	▼	+
Chinkapin oak	▲		▲		·
Chokecherry	▼		▼		·
Cucumbertree	▲		▲		·
Eastern cottonwood	●		▲		·
Eastern hemlock	▼	●	▼	▼	-
Eastern hophornbeam	●		▼		+
Eastern redbud	▲		▲		·
Eastern redcedar	★		★		·
Eastern white pine	▼	●	▼	▼	·
Flowering dogwood	▲		▲		·
Gray birch	▼		▼		·
Green ash	▲		▲		·
Hackberry	▲		▲		+
Honeylocust	●		▲		+
Loblolly pine	N/A	▲	★	▲	·
Mockernut hickory	▲		▲		+
Northern red oak	●	▲	▼	▲	+
Ohio buckeye	★		★		·

SOURCE: Butler-Leopold et al. (in review). Mid-Atlantic forest ecosystem vulnerability assessment and synthesis: a report from the Mid-Atlantic Climate Change Response Framework, Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. www.forestadaptation.org/mid-atlantic/vulnerability-assessment

SPECIES	LOW CLIMATE CHANGE (PCM B1)		HIGH CLIMATE CHANGE (GFDL A1FI)		ADAPT
	TREE ATLAS	LANDIS	TREE ATLAS	LANDIS	
Osage-orange	●		●		+
Paper birch	▼		▼		·
Pawpaw	▲		▲		·
Persimmon	▲		▲		+
Pignut hickory	▲	●	▲	●	·
Pin cherry	▼		▼		·
Pin oak	●		▲		-
Pitch pine	●		▲		·
Post oak	★		★		+
Quaking aspen	▼		▼		·
Red maple	●	●	▼	▲	+
Red mulberry	N/A		★		·
Red pine	▼		▼		·
Red spruce	▼	●	▼	●	-
Rock elm	▼		●		-
Sassafras	▲		▲		·
Scarlet oak	▲	●	▲	▼	·
Serviceberry	●		●		·
Shagbark hickory	▲		▲		·
Shingle oak	▲		▲		·
Shortleaf pine	★		★		·
Shumard oak	N/A		★		+
Silver maple	▼		▼		+
Slippery elm	●		▲		·
Sourwood	▲		▼		+
Southern red oak	N/A		★		+
Striped maple	▼		▼		·
Sugar maple	●	●	▼	▼	+
Sugarberry	N/A		★		·
Swamp white oak	●		●		·
Sweet birch	●		●		-
Sweetgum	N/A		★		·
Sycamore	▲		▲		·
Tulip tree	▲	●	▲	●	+
Virginia pine	▲		▲		·
White ash	●	●	▼	▲	-
White oak	●	▲	▲	▲	+
White spruce	●		▼		·
Yellow birch	▼		▼		·
Yellow buckeye	●		●		-





Appendix V: Tree Pittsburgh Tree Species Recommendations (Community Partner)

TREE SPECIES FOR PARKS & OPEN SPACES IN ALLEGHENY COUNTY

CONIFEROUS TREES - Plant NO MORE than 30% of any plant family, NO MORE than 20% of any plant genus, and NO MORE than 10% of any plant species and plant 20% conifers.



Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Fir, Balsam	<i>Abies balsamea</i>	Sparingly	
Fir, Concolor	<i>Abies concolor</i>	Sparingly	
Fir, Fraser	<i>Abies fraseri</i>	Sparingly	
Fir, Korean	<i>Abies koreana</i>	Sparingly	
Incense-cedar, California	<i>Calodcedrus decurrens</i>	Sparingly	
Cedar, 'Karl Fuchs' Himalayan	<i>Cedrus deodora</i> 'Karl Fuchs	Sparingly	
Cedar of Lebanon, Hardy	<i>Cedrus libani</i> sp. <i>Stenocoma</i>	Sparingly	
Cypress, Lawson	<i>Chamaecyparis lawsoniana</i>	Sparingly	
Cypress, Hinoki	<i>Chamaecyparis obtusa</i>	Sparingly	
Cypress, Sawara	<i>Chamaecyparis pisifera</i>	Moderately	
Cedar, Atlantic White	<i>Chamaecyparis thyoides</i>	Sparingly	Yes
Cedar, Japanese	<i>Cryptomeria japonica</i>	Sparingly	
Cedar, Alaskan	<i>Cupressus nootkatensis</i>	Frequently	
Ginkgo	<i>Ginkgo biloba</i>	Frequently	
Juniper, Chinese	<i>Juniperus chinensis</i>	Sparingly	
Redcedar, Eastern	<i>Juniperus virginiana</i>	Sparingly	Yes
Larch, European	<i>Larix decidua</i>	Moderately	
Larch, Japanese	<i>Larix kaempferi</i>	Frequently	
Larch, Amerian	<i>Larix laricina</i>	Sparingly	
Larch, Siberian	<i>Larix sibirica</i>	Moderately	
Redwood, Dawn	<i>Metasequoia gyptostroboides</i>	Frequently	Yes
Pine, Jack	<i>Pinus banksiana</i>	Sparingly	
Pine, Lacebark	<i>Pinus bungeana</i>	Sparingly	
Pine, Swiss Stone	<i>Pinus cembra</i>	Sparingly	

CONIFEROUS TREES

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Pine, Shortleaf	<i>Pinus echinata</i>	Sparingly	
Pine, Limber	<i>Pinus flexilis</i>	Sparingly	
Pine, Korean	<i>Pinus koraiensis</i>	Sparingly	
Pine, Swiss Mountain	<i>Pinus mugo</i>	Sparingly	
Pine, Japanese White	<i>Pinus parviflora</i>	Sparingly	
Pine, Balkan	<i>Pinus peuce</i>	Sparingly	
Pine, Table Mountain	<i>Pinus pungens</i>	Sparingly	
Pine, Pitch	<i>Pinus rigida</i>	Sparingly	
Pine, Eastern White	<i>Pinus strobus</i>	Sparingly	
Pine, Scotch	<i>Pinus sylvestris</i>	Sparingly	
Pine, Loblolly	<i>Pinus taeda</i>	Sparingly	
Pine, Japanese Black	<i>Pinus thunbergii</i>	Sparingly	
Pine, Virginia	<i>Pinus virginiana</i>	Sparingly	
Pine, Himalayan White	<i>Pinus wallichiana</i>	Sparingly	
Larch, Golden	<i>Psuedolarix amabilis</i>	Sparingly	
Pine, Umbrella	<i>Sciadopitys verticillata</i>	Sparingly	
Baldcypress, Pond	<i>Taxodium ascendens</i>	Moderately	Yes
Baldcypress, Common	<i>Taxodium distichum</i>	Frequently	Yes
Yew	<i>Taxus spp.</i>	Sparingly	
Arborvitae, Eastern	<i>Thuja occidentalis</i>	Sparingly	
Arborvitae, Giant Western	<i>Thuja plicata</i>	Moderately	

DECIDUOUS TREES - Plant NO MORE than 30% of any plant family, NO MORE than 20% of any plant genus, and NO MORE than 10% of any plant species.

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Maple, Hedge	<i>Acer campestre</i>	Sparingly	
Maple, Paperbark	<i>Acer griseum</i>	Sparingly	
Maple, Full Moon	<i>Acer japonicum</i>	Sparingly	
Maple, Miyabe	<i>Acer miyabei</i>	Sparingly	
Boxelder	<i>Acer negundo</i>	Sparingly	Yes
Maple, Black	<i>Acer nigrum</i>	Sparingly	
Maple, Japanese	<i>Acer palmatum</i>	Sparingly	
Maple, Red	<i>Acer rubrum</i>	Sparingly	Yes
Maple, Silver	<i>Acer saccharinum</i>	Sparingly	Yes
Maple, Sugar	<i>Acer saccharum</i>	Sparingly	
Maple, Mountain	<i>Acer spicatum</i>	Sparingly	
Maple, Three-Flowered	<i>Acer triflorum</i>	Sparingly	
Maple, Freeman	<i>Acer x freemanii</i>	Sparingly	Yes
Buckeye, Yellow	<i>Aesculus flava</i>	Moderately	
Buckeye, Ohio	<i>Aesculus glabra</i>	Sparingly	
Horsechestnut	<i>Aesculus hippocastanum</i>	Sparingly	
Buckeye, Red	<i>Aesculus pavia</i>	Moderately	
Horsechestnut, Red	<i>Aesculus x carnea</i>	Sparingly	
Alder, Speckled	<i>Alnus incana ssp. Rugosa</i>	Frequently	Yes
Alder, Hazel	<i>Alnus serrulata</i>	Frequently	Yes
Alder, Mountain	<i>Alnus viridis ssp. Crispa</i>	Frequently	Yes
Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	Moderately	
Serviceberry, Downy	<i>Amelanchier arborea</i>	Moderately	
Serviceberry, Shadblow	<i>Amelanchier canadensis</i>	Moderately	
Serviceberry, Allegheny	<i>Amelanchier laevis</i>	Moderately	

DECIDUOUS TREES

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Devils-Walkingstick	<i>Aralia spinosa</i>	Sparingly	
Pawpaw	<i>Asimina triloba</i>	Moderately	
Birch, Yellow	<i>Betula alleghaniensis</i>	Sparingly	
Birch, Black	<i>Betula lenta</i>	Frequently	
Birch, River	<i>Betula nigra</i>	Sparingly	Yes
Birch, Paper	<i>Betula papyrifera</i>	Sparingly	
Birch, Silver	<i>Betula pendula</i>	Sparingly	
Birch, Gray	<i>Betula populifolia</i>	Sparingly	
Hornbeam, European	<i>Carpinus betulus</i>	Moderately	
Hornbeam, American	<i>Carpinus caroliniana</i>	Sparingly	
Hickory, Bitternut	<i>Carya cordiformis</i>	Moderately	
Hickory, Pignut	<i>Carya glabra</i>	Moderately	
Hickory, Pecan	<i>Carya illinoensis</i>	Sparingly	
Hickory, Shellbark	<i>Carya laciniata</i>	Moderately	Yes
Hickory, Shagbark	<i>Carya ovata</i>	Moderately	
Hickory, Mockernut	<i>Carya tomentosa</i>	Moderately	
Catalpa, Chinese	<i>Catalpa ovata</i>	Sparingly	
Catalpa, Northern	<i>Catalpa speciosa</i>	Moderately	Yes
Hackberry, Common	<i>Celtis occidentalis</i>	Moderately	Yes
Hackberry, Dwarf	<i>Celtis tenuifolia</i>	Sparingly	
Katsura	<i>Cercidiphyllum japonicum</i>	Sparingly	
Redbud	<i>Cercis canadensis</i>	Moderately	
Fringetree, Chinese	<i>Chionanthus retusus</i>	Sparingly	
Fringetree, White	<i>Chionanthus virginicus</i>	Sparingly	
Yellowwood	<i>Cladrastis kentuckea</i>	Sparingly	
Dogwood, Pagoda	<i>Cornus alternifolia</i>	Sparingly	

DECIDUOUS TREES

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Dogwood, Roughleaf	<i>Cornus drummondii</i>	Sparingly	
Dogwood, Kousa	<i>Cornus kousa</i>	Frequently	
Dogwood, Cornelian Cherry	<i>Cornus mas</i>	Frequently	
Dogwood, Roundleaf	<i>Cornus rugosa</i>	Sparingly	
Smoketree, Common	<i>Cotinus coggygria</i>	Sparingly	
Smoketree, American	<i>Cotinus obovatus</i>	Sparingly	
Hawthorn, Brainerd's	<i>Crataegus brainerddi</i>	Sparingly	
Hawthorn, Pear (Late)	<i>Crataegus calpodendron</i>	Sparingly	
Hawthorn, Scarlet	<i>Crataegus coccinea</i>	Sparingly	
Hawthorn, Cockspur	<i>Crataegus crus-galli</i>	Sparingly	
Hawthorn, Broadleaf	<i>Crataegus dilatata</i>	Sparingly	
Hawthorn, Copenhagen	<i>Crataegus intricata</i>	Sparingly	
Hawthorn, Downy	<i>Crataegus mollis</i>	Sparingly	
Hawthorn, Waxyfruit	<i>Crataegus pruinosa</i>	Sparingly	
Hawthorn, Round-Leaf	<i>Crataegus rotundifolia</i>	Sparingly	
Hawthorn, Fleshy	<i>Crataegus succulenta</i>	Sparingly	
Hawthorn, Green	<i>Crataegus viridis</i>	Sparingly	
Hawthorn, Washington	<i>Crataegus phaenopyrum</i>	Sparingly	
Hawthorn, Thicket	<i>Crataegus punctata</i>	Sparingly	
Persimmon, American	<i>Diospyros virginiana</i>	Frequently	
Hardy Rubber	<i>Eucommia ulmoides</i>	Sparingly	
Franklinia	<i>Franklinia alatmaha</i>	Sparingly	
Honeylocust	<i>Gleditsia triacanthos</i>	Sparingly	Yes
Kentucky Coffee	<i>Gymnocladus dioicus</i>	Frequently	
Silverbell, Carolina	<i>Halesia tetraptera</i>	Moderately	
Holly, American	<i>Ilex opaca</i>	Frequently	Yes

DECIDUOUS TREES

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Walnut, Black	<i>Juglans nigra</i>	Sparingly	
Walnut, English	<i>Juglans regia</i>	Sparingly	
Golden Rain Tree	<i>Koelreuteria paniculata</i>	Sparingly	
Golden Chain Tree	<i>Laburnum x watereri</i>	Sparingly	
Sweetgum	<i>Liquidambar styraciflua</i>	Frequently	Yes
Tulip Poplar (Tuliptree)	<i>Liriodendron tulipifera</i>	Frequently	
Maackia, Amur	<i>Maackia amurensis</i>	Sparingly	
Osage Orange	<i>Maclura pomifera</i>	Sparingly	
Magnolia, Cucumber	<i>Magnolia acuminata</i>	Frequently	
Magnolia, Southern	<i>Magnolia grandiflora</i>	Sparingly	
Magnolia, Bigleaf	<i>Magnolia macrophylla</i>	Sparingly	
Magnolia, Star	<i>Magnolia stellata</i>	Sparingly	
Magnolia, Umbrella	<i>Magnolia tripetala</i>	Moderately	
Magnolia, Sweetbay	<i>Magnolia virginiana</i>	Frequently	Yes
Magnolia, Saucer	<i>Magnolia x soulangiana</i>	Sparingly	
Crabapple, Common	<i>Malus communis</i>	Sparingly	
Crabapple, Sweet	<i>Malus coronaria</i>	Sparingly	
Apple, Common	<i>Malus pumila</i>	Sparingly	
Crabapple Cultivars	<i>Malus spp.</i>	Sparingly	
Mulberry, Red	<i>Morus rubra</i>	Sparingly	Yes
Black Gum	<i>Nyssa sylvatica</i>	Frequently	Yes
Hophornbeam, American	<i>Ostrya virginiana</i>	Moderately	
Sourwood	<i>Oxydendron arboreum</i>	Sparingly	
Parrotia, Persian	<i>Parrotia persica</i>	Frequently	
Sycamore, American	<i>Platanus occidentalis</i>	Frequently	Yes
London Plane	<i>Platanus x acerifolia</i>	Moderately	Yes

DECIDUOUS TREES

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Hardy-Orange	Poncirus trifoliata	Sparingly	
Poplar, White	Populus alba	Sparingly	Yes
Poplar, Balsam	Populus balsamifera	Sparingly	Yes
Poplar, Eastern (Cottonwood)	Populus deltoides	Sparingly	Yes
Aspen, Bigtooth	Populus grandidentata	Sparingly	
Poplar, Black	Populus nigra	Sparingly	Yes
Aspen, Quaking	Populus tremuloides	Sparingly	
Cherry, 'Accolade' Flowering	Prunus 'Accolade'	Sparingly	
Plum, American	Prunus americana	Sparingly	
Cherry, Higan 'Autumnalis'	Prunus 'Autumnalis'	Sparingly	
Cherry, Sweet	Prunus avium	Sparingly	
Plum, Cherry	Prunus cerasifera	Sparingly	
Plum, Canada	Prunus nigra	Sparingly	
Cherry, Fire (Pin)	Prunus pensylvanica	Sparingly	
Peach, Common	Prunus persica	Sparingly	
Cherry, Sargent	Prunus sargentii	Sparingly	
Cherry, Black	Prunus serotina	Sparingly	
Cherry, Japanese Flowering	Prunus serrulata	Sparingly	
Cherry, 'Snow Goose'	Prunus 'Snow Goose'	Sparingly	
Cherry, Flowering	Prunus spp.	Sparingly	
Cherry, Higan	Prunus subhirtella	Sparingly	
Cherry, Chokecherry	Prunus virginiana	Sparingly	
Cherry, Yoshino	Prunus x yedoensis	Sparingly	
Quince, Chinese	Psuedocyonia sinensis	Sparingly	
Hoptree (Wafer Ash)	Ptelea trifoliata	Sparingly	
Pear, Common	Pyrus communis	Sparingly	

DECIDUOUS TREES

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Oak, Sawtooth	Quercus acutissima	Sparingly	
Oak, White	Quercus alba	Moderately	
Oak, Swamp White	Quercus bicolor	Frequently	Yes
Oak, Turkey	Quercus cerris	Sparingly	
Oak, Scarlet	Quercus coccinea	Individual	
Oak, Southern Red	Quercus falcata	Individual	
Oak, Shingle	Quercus imbricaria	Individual	
Oak, Overcup	Quercus lyrata	Sparingly	Yes
Oak, Bur	Quercus macrocarpa	Moderately	
Oak, Blackjack	Quercus marilandica	Sparingly	
Oak, Chestnut	Quercus montana	Sparingly	
Oak, Chinkapin	Quercus muehlenbergii	Frequently	
Oak, Water	Quercus nigra	Individual	Yes
Oak, Pin	Quercus palustris	Individual	Yes
Oak, 'Regal Prince'	Quercus 'Regal Prince'	Frequently	Yes
Oak, English	Quercus robur	Sparingly	
Oak, Red	Quercus rubra	Individual	
Oak, Shumard	Quercus shumardii	Individual	
Oak, Post	Quercus stellata	Sparingly	
Oak, Black	Quercus velutina	Individual	
Sumac, Smooth	Rhus glabra	Sparingly	
Sumac, Staghorn	Rhus typhina	Sparingly	
Locust, Black	Robinia psuedoacacia	Sparingly	
Locust, Clammy	Robinia viscosa	Sparingly	
Willow, Peachleaf	Salix amygdaloides	Sparingly	Yes
Willow, Babylon Weeping	Salix babylonica	Sparingly	Yes










DECIDUOUS TREES

Common Name	Latin Name	Frequency of Use	Stormwater Tolerant
Willow, Bebb's (Long-Beaked)	<i>Salix bebbiana</i>	Sparingly	Yes
Willow, Plain	<i>Salix caroliniana</i>	Sparingly	yes
Willow, Pussy	<i>Salix discolor</i>	Sparingly	Yes
Willow, Sandbar	<i>Salix exigua</i> spp. interior	Sparingly	Yes
Willow, Pacific (Shining)	<i>Salix lucida</i> spp. lucida	Sparingly	Yes
Willow, Chinese	<i>Salix matsudana</i>	Sparingly	Yes
Willow, Black	<i>Salix nigra</i>	Sparingly	Yes
Sassafras	<i>Sassafras albidum</i>	Sparingly	
Pagodatree, Japanese	<i>Styphnolobium japonica</i>	Sparingly	
Stewartia, Japanese	<i>Stewartia psueducamellia</i>	Sparingly	
Snowbell, American	<i>Styrax americanus</i>	Sparingly	
Snowbell, Japanese	<i>Styrax japonicus</i>	Sparingly	
Snowbell, Fragrant	<i>Styrax obassia</i>	Sparingly	
Lilac Tree	<i>Syringa reticulata</i>	Sparingly	
Linden, American	<i>Tilia americana</i>	Frequently	Yes
Linden, Littleleaf	<i>Tilia cordata</i>	Sparingly	
Linden, Silver	<i>Tilia tomentosa</i>	Moderately	
Toon, Chinese	<i>Toona sinensis</i>	Sparingly	
Elm Hybrids	<i>Ulmus</i> x	Sparingly	
Viburnum, Nannyberry	<i>Viburnum lentago</i>	Sparingly	Yes
Viburnum, Blackhaw	<i>Viburnum prunifolium</i>	Sparingly	Yes
Prickly-ash	<i>Zanthoxylum americanum</i>	Sparingly	
Prickly-ash, Chinese	<i>Zanthoxylum simulans</i>	Sparingly	
Zelkova, Japanese	<i>Zelkova serrata</i>	Sparingly	











TREE SPECIES FOR STREETS IN ALLEGHENY COUNTY













LARGE SHADE TREES - Trees in the Shade Tree category should be planted where no overhead electrical distribution lines exist. Wires on the adjacent side of the street should be checked for conflicts. Shade trees are the most desirable size of tree for planting, and should be used at all times in the absence of overhead electrical distribution utilities.

Common Name	Latin Name	Preferred Cultivars	Growth Habit	Frequency of Use	Stormwater Tolerant	Notes
Maple, Miyabe	<i>Acer miyabei</i>			Sparingly		Susceptible to verticillium wilt
Hackberry	<i>Celtis occidentalis</i>	Chicagoland' 'Prairie Pride'		Moderately	Yes	
Hardy Rubber	<i>Eucommia ulmoides</i>			Sparingly		
Ginkgo	<i>Ginkgo biloba</i>	'Magyar'		Frequently		Use of 'Magyar' cultivar only, inspect graft union before planting to ensure male var.
Honeylocust	<i>Gleditsia triacanthos</i>	Thornless and fruitless only		Sparingly	Yes	
Kentucky Coffee	<i>Gymnocladus dioicus</i>	Fruitless cultivars only		Moderately		
Sweetgum	<i>Liquidambar styraciflua</i>	'Slender Silhouette'		Sparingly		Use of this cultivar only. Other cultivars may not be hardy, cause hardscape damage
Black gum	<i>Nyssa sylvatica</i>	Many cultivars are NOT hardy		Frequently	Yes	Spring plant only
London Plane	<i>Platanus x acerifolia</i>	'Exclamation' 'Columbia' NOT 'Bloodgood'		Frequently	Yes	









LARGE SHADE TREES

Common Name	Latin Name	Preferred Cultivars	Growth Habit	Frequency of Use	Stormwater Tolerant	Notes
Oak, Sawtooth	<i>Quercus acutissima</i>			Sparingly		
Oak, White	<i>Quercus alba</i>			Sparingly		
Oak, Swamp White	<i>Quercus bicolor</i>	Regal Prince		Frequently	Yes	
Oak, Overcup	<i>Quercus lyrata</i>			Sparingly	Yes	
Oak, Bur	<i>Quercus macrocarpa</i>			Sparingly		Spring plant only
Oak, Chinkapin	<i>Quercus muehlenbergii</i>	'Green Vase'		Frequently		
Oak, Hybrid	<i>Quercus Hybrids</i>	NOT 'Village Green'		Frequently		
Bald Cypress	<i>Taxodium distichum</i>			Moderately	Yes	Highly susceptible to bagworms
Linden, Silver	<i>Tilia tomentosa</i>			Sparingly		
Zelkova	<i>Zelkova serrata</i>			Moderately		Early, heavy and frequent pruning required

MEDIUM TREES - Do NOT plant under electrical distribution lines.

Common Name	Latin Name	Preferred Cultivars	Growth Habit	Frequency of Use	Stormwater Tolerant	Notes
Maple, Hedge	<i>Acer campestre</i>	Do NOT use cultivars, straight species only		Moderately		Susceptible to verticillium wilt
Maple, Three Flower	<i>Acer triflorum</i>			Sparingly		Susceptible to verticillium wilt
Serviceberry, Downy	<i>Amelanchier arborea</i>	'Cumulus'		Sparingly		Rose family, do not plant with cherries, crabapples, hawthorns, pears, or juniper
Serviceberry, Apple	<i>Amelanchier x grandiflora</i>	'Autumn Brilliance'		Sparingly		Rose family, do not plant with cherries, crabapples, hawthorns, pears, or juniper
Hornbeam, European	<i>Carpinus betulus</i>	'Fastigiata' 'Frans Fontaine'		Moderately		
Hornbeam, American	<i>Carpinus caroliniana</i>			Sparingly	Yes	
Fringe tree, Chinese	<i>Chionanthus retusus</i>			Sparingly		
Maackia, Amur	<i>Maackia amurensis</i>			Moderately		
Magnolia, Sweetbay	<i>Magnolia virginiana</i>			Sparingly	Yes	
Hophornbeam	<i>Ostrya virginiana</i>			Frequently		

SMALL TREES - Use only under electrical distribution lines. These trees will likely be utility pruned, however it will not be severe.

Common Name	Latin Name	Preferred Cultivars	Growth Habit	Frequency of Use	Stormwater Tolerant	Notes
Redbud	<i>Cercis canadensis</i>			Sparingly		Susceptible to verticillium wilt and canker. Broad habit, plant where pruning will be minimal
Dogwood, Cornelian Cherry	<i>Cornus mas</i>	'Golden Glory'		Frequently		
Smoketree, Common	<i>Cotinus coggygria</i>			Sparingly		
Smoketree, American	<i>Cotinus obovatus</i>			Sparingly		
Silverbell, Carolina	<i>Halesia tetraptera</i>			Moderately		
Crabapple	<i>Malus spp.</i>	'Red Jewel', 'Spring Snow' NOT 'Red Barron'		Frequently		Rose family, do not plant with cherries, hawthorns, pears, serviceberry or juniper
Cherry, Flowering	<i>Prunus spp.</i>	'Accolade', 'Autumnalis', 'Snow Goose' NOT 'Okame'		Frequently		Rose family, do not plant with crabapples, hawthorns, pears, serviceberry or juniper
Lilac tree	<i>Syringa reticulata</i>	'Ivory Silk'		Sparingly		Highly susceptible to verticillium wilt

RESTRICTED TREE SPECIES FOR ALLEGHENY COUNTY

The tree species below are currently experiencing pest/disease pressures or are causing ecological harm and should not be considered for planting.



Common Name	Latin Name	Notes
Maple, Trident	<i>Acer buergerianum</i>	Hardiness, poor performance
Maple, Amur	<i>Acer ginnala</i>	DCNR Invasive Species List
Maple, Striped	<i>Acer pensylvanicum</i>	Poor performance
Maple, Norway	<i>Acer platanoides</i>	DCNR Invasive Species List
Maple, Sycamore	<i>Acer pseudoplatanus</i>	DCNR Invasive Species List
Maple, Tatarian	<i>Acer tataricum</i>	Relation to <i>A. ginnala</i> , invasive, poor performance
Tree of Heaven	<i>Ailanthus altissima</i>	DCNR Invasive Species List
Mimosa	<i>Albizia julibrissin</i>	DCNR Invasive Species List
Alder, European Black	<i>Alnus glutinosa</i>	DCNR Invasive Species List
Angelica, Japanese	<i>Aralia elata</i>	DCNR Invasive Species List
Mulberry, Paper	<i>Broussonetia papyrifera</i>	DCNR Invasive Species List
Chestnut, American	<i>Castanea dentata</i>	Oak wilt, chestnut blight
Chestnut, Chinese	<i>Castanea mollissima</i>	Oak wilt, chestnut blight
Chinkapin, Allegheny	<i>Castanea pumila</i>	Oak wilt, chestnut blight
Dogwood, Flowering	<i>Cornus florida</i>	Pests and disease, poor performance
Filbert, Turkish	<i>Corylus colurna</i>	Eastern Filbert Blight (EFB)
Cypress, Leyland	<i>Cupressus x leylandii</i>	Hardiness, poor performance
Beech, American	<i>Fagus grandifolia</i>	Beech leaf disease, beech bark disease
Beech, European	<i>Fagus sylvatica</i>	Beech leaf disease, beech bark disease
Ash, White	<i>Fraxinus americana</i>	Emerald Ash Borer (EAB)
Ash, Black	<i>Fraxinus nigra</i>	Emerald Ash Borer (EAB)
Ash, Green	<i>Fraxinus pennsylvanica</i>	Emerald Ash Borer (EAB)
Ash, Pumpkin	<i>Fraxinus profunda</i>	Emerald Ash Borer (EAB)
Butternut	<i>Juglans cinerea</i>	Canker

RESTRICTED TREES

Common Name	Latin Name	Frequency of Use
Crabapple, Red Barron	Malus spp. 'Red Barron'	Poor performance
Mulberry, White	Morus alba	DCNR Invasive Species List
Royal Princess Tree	Paulownia tomentosa	DCNR Invasive Species List
Corktree, Amur	Phellodendron amurense	DCNR Invasive Species List
Corktree, Japanese	Phellodendron japonicum	DCNR Invasive Species List
Corktree, Lavalley	Phellodendron lavalleyi	DCNR Invasive Species List
Spruce, Norway	Picea abies	Spruce decline
Spruce, Engelman	Picea engelmannii	Spruce decline
Spruce, White	Picea glauca	Spruce decline
Spruce, Dwarf Alberta	Picea glauca var. albertiana	Spruce decline
Spruce, Black	Picea mariana	Spruce decline
Spruce, Serbian	Picea omorika	Spruce decline
Spruce, Blue	Picea pungens	Spruce decline
Spruce, Red	Picea rubens	Spruce decline
Pine, Austrian Black	Pinus nigra	Population crash due to disease
Pine, Red	Pinus resinosa	Population crash due to disease
Cherry, Okame	Prunus 'Okame'	Poor performance
Fir, Douglas	Pseudotsuga menziesii	Population crash due to disease
Pear, Callery	Pyrus calleryana	DCNR Invasive Species List
Oak, Willow	Quercus phellos	Poor performance
Mountain Ash, American	Sorbus americana	Population crash due to disease
Mountain Ash, European	Sorbus aucuparia	Population crash due to disease
Mountain Ash, Showy	Sorbus decora	Population crash due to disease
Bee Bee Tree	Tetradium daniellii	DCNR Invasive Species List
Sumac, Poison	Toxicodendron vernix	Poisonous
Hemlock, Eastern	Tsuga canadensis	Hemlock Woolly Adelgid, Hemlock Elongate Scale

RESTRICTED TREES

Common Name	Latin Name	Frequency of Use
Hemlock, Carolina	<i>Tsuga caroliniana</i>	Hemlock Woolly Adelgid, Hemlock Elongate Scale
Elm, American	<i>Ulmus americana</i>	Poor performance, Dutch Elm Disease (DED)
Elm, Chinese	<i>Ulmus parvifolia</i>	Poor performance
Elm, Siberian	<i>Ulmus pumila</i>	DCNR Invasive Species List
Elm, Slippery	<i>Ulmus rubra</i>	Dutch Elm Disease (DED)