Tree Planting Advice

HydroOttawa

Trees and other plants beautify our communities and contribute to a healthy living environment. They provide shade, improve air quality and even help conserve energy. Careful consideration must be given, however, to balance the need for electrical safety and a reliable supply of electricity with the interest we all share in maintaining and enhancing the urban forest canopy.

Across the city, there are an estimated 180,000 trees in proximity of Hydro Ottawa's more than 3,000 km of overhead lines that require some form of trimming to ensure public safety and adequate clearance from electrical lines. Underground, more than 2,900 km of electrical cables service the city.

Both the type of tree and planting site must be considered to avoid interfering with overhead and underground utility lines. Tall trees near overhead power lines need to be trimmed to provide safe clearance from wires and prevent electricity service interruptions. Trimming is costly, and sometimes disfigures the tree or leaves it susceptible to insects and disease. Underground, the roots of some trees can also create problems when they come into close proximity with buried cables or underground equipment.

The following information is intended to help you make your decision concerning planting "the right tree in the right place" so you may enjoy the tree and its growth for many years to come. All of the guidelines, however, relate to planting or installing items on private property. If your plans include city property, please call the City of Ottawa at 311 or 613 580-2400.

** While this publication refers to trees, the same guidelines apply to shrubs, plants and other landscaping. Structures such as pagodas, gazebos, play structures, fences, sheds, and buildings are addressed in Hydro Ottawa's public standards OLS0002 "Overhead High Voltage Line Clearances to Adjacent Buildings, 2.4/4.16kV – 44kV" and UTS0038 "Clearances from Padmounted Equipment".*

Contact Hydro Ottawa

Telephone
Hydro Ottawa Service Desk (Tree trimming):
- 613 738-6400 option 5
- Monday to Friday from 8:00 a.m. to 3:30 p.m., excluding holidays

Billing and Account Inquiries:
- 613 738-6400
- Monday to Friday from 8 a.m. to 8 p.m., excluding holidays

Power Outage Reporting and Information:
- 613 738-0188
- 24 hours a day, seven days a week

Online
www.hydroottawa.com/feedback

Mail
Hydro Ottawa Limited
PO Box 8700
Ottawa ON, K1G 3S4

Fax
613 738-6403

Step 1 – Stay Safe

Before you begin planting, consider the area as well as the tools and equipment required. Ask yourself:

- Will any tool or piece of equipment such as a ladder come near overhead lines?
- Will anything be used to dig or pierce the ground where electrical cable or infrastructure may be buried?
- Will anyone who climbs the ladder or equipment be within three metres (10 feet) of an overhead electrical distribution line? Only Hydro Ottawa 'Approved' contractors trained in electrical safety are allowed to work within this buffer zone.

Step 2 – Locate Easements

Verify that the site you are considering for your tree or shrub is not an easement. Easements provide Hydro Ottawa with the legal right to access private property to install and maintain the electrical distribution system that supplies your home and neighbourhood. Our equipment must be accessible at all times in order to allow servicing and repairs to be completed safely, easily and in times of emergency, as quickly as possible. A land title search will determine whether or not an easement exists on your property. You may also contact Hydro Ottawa. The property owner is responsible for the permanent removal of any encroachments within an easement.

Step 3 – Look Up

It is very important to consider a tree's size at maturity when planting near overhead power lines. A tree that grows too close to the electrical wires will need to be trimmed to maintain a safe clearance. The following list will help you to select a species of tree and appropriate planting location that is compatible with overhead power lines.

Tall Tree Zone

– Trees that grow greater than 12 metres (+40 feet)

Trees in this zone should be planted well back from the power lines, at least the distance of the height of the tree at maturity. Tall trees are also recommended for streets without overhead restrictions.

Medium Tree Zone

– Trees that grow to a height of 6 to 12 metres (20-40 feet)

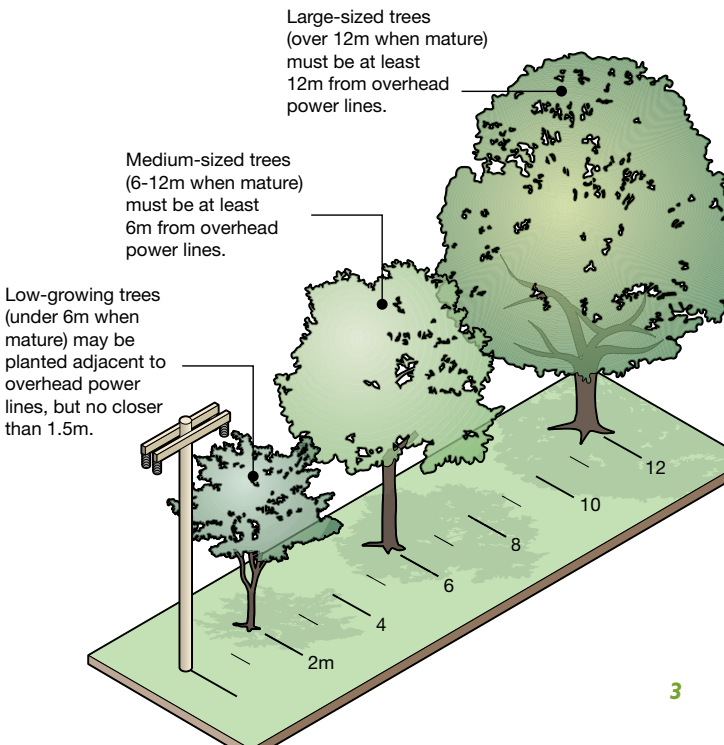
Trees in this zone should be planted back from the overhead power lines the distance of the height of the tree at maturity.

Low Tree Zone

– Trees that grow no taller than 6 metres (20 feet)

This zone extends 4.5 metres (15 feet) from either side of the overhead power lines. The trees that grow in this zone can be planted under or near overhead power lines. However, trees should be planted at least 1.5m (5 feet) from the base of an electrical pole.

For a list of trees prohibited by the City of Ottawa, call 311 or 613 580-2400.



Step 4 – Look Down

It is important to maintain a safe distance between trees and equipment sitting at ground level such as transformers and switches (the green metal boxes known as pad-mounted equipment). Equally important is understanding the location of underground utilities when planning your landscape design. It will also help you stay safe. Before you dig, think about what services might be buried in the ground, because what you can't see, can hurt you. Having your utilities located before you dig is also the law under the *Ontario Occupational Health and Safety Act* (section Construction Projects 228).

If you or your contractor plan to install a pool, fence, plant a tree, dig a garden, landscape, excavate, or add a room to a house, call Ontario One Call at 1-800-400-2255 to locate buried cables. This is a FREE service for excavators and homeowners, 24 hours a day, seven days a week.

ON1CALL
CALL BEFORE YOU DIG

With buried utilities, there should be at least 1.5 metres (5 feet) between underground utilities and the tree's root ball. In cases where 1.5 metres lateral clearance cannot be maintained, a minimum clearance of 0.75 metres (2.5 feet) is acceptable if approved root deflectors are installed between the root ball and the underground utilities.

A root deflector or bio-shield can be made from 6.5 mm (1/4") rigid plastic, fibreglass or a non-degradable material. It should extend vertically to the bottom of the root ball and extend horizontally 1.2 metres (4 feet) from the centre of the root ball in each direction parallel to the underground utility.

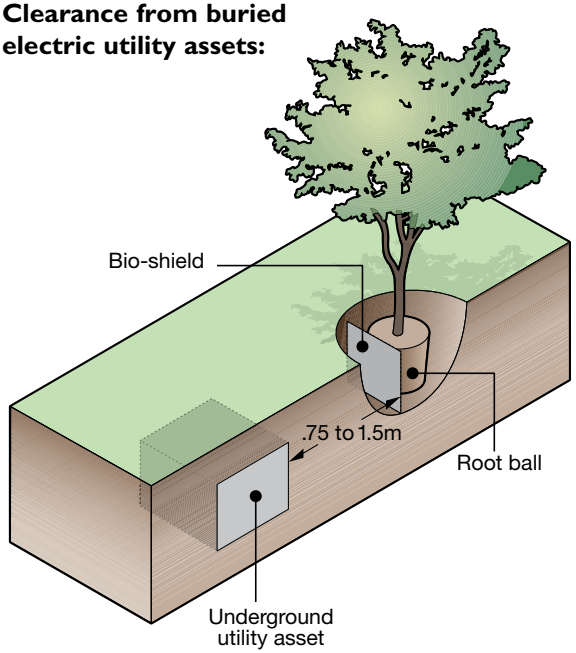
If you are digging within 1.5 metres of underground utilities, remember to dig by hand. Hydro Ottawa's standards UTS0012 "Residential Underground Utility Trench Clearance Detail (3 & 4 party trench)" and UTS0013 "Residential Underground Offset Utility Trench Clearance Detail (3 & 4 party trench)" can provide more details if required.

Homeowners with a pad-mounted transformer or switch on their property must respect clearance requirements. If your landscaping does not follow clearance requirements and planting distances, it could prevent Hydro Ottawa from safely operating or maintaining this equipment. Personal and public safety may also be at risk. Homeowners are responsible if your landscaping is damaged in order to access the equipment.

Three meters (10 feet) of clearance, free of permanent structures and landscaping, must be maintained around pad-mounted equipment. For detailed information about clearances around pad-mounted equipment, refer to Hydro Ottawa Standard UTS0038 "Clearances from Padmounted Equipment". Shrubs with shallow non-aggressive root growth may be planted up to three meters away from padmounted equipment doors, and up to 1.5 meters (5 feet) away from all other sides.

The referenced standards may be found on Hydro Ottawa's website **www.hydroottawa.com**

Clearance from buried electric utility assets:



Vegetation Planting Zone List

Common name	Scientific name
Tall Tree Zone	
Amur Cork Tree	*Phellodendron amurense*
Black Walnut	*Juglans nigra*
Bur Oak	*Quercus macrocarpa*
Colorado Blue Spruce	*Picea pungens* 'Glauca'
Deborah Maple	*Acer platanoides* 'Deborah'
English Oak	*Quercus robur*
Green Ash	*Fraxinus pennsylvanica*
Greenspire Linden	*Tilia cordata* 'Greenspire'
Honey Locust	*Gleditsia triacanthos* 'Skyline'
Horsechestnut	*Aesculus hippocastanum*
Larch	*Larix decidua*
Littleleaf Linden	*Tilia cordata* 'Glenleven'
Maidenhair Tree	*Ginkgo biloba*
Norway Maple	*Acer platanoides (Cultivars)*
Ohio Buckeye	*Acer glabra*
Pyramidal English Oak	*Quercus robur* 'Fastigiata'
Shagback Hickory	*Carya ovata*
Summit Green Ash	*Fraxinus pennsylvancia* 'Summit'
Turkish Filbert	*Corylus colurna*
White Ash	*Fraxinus Americana*
White Fir	*Abies concolor*
White Spruce	*Picea glauca*
Medium Tree Zone	
Chinese Elm	*Ulmus parvifolia*
Columnar Norway Maple	*Acer platanoides* 'Columnare'
Hackberry	*Celtis occidentalis*
Hop Hornbeam	*Ostrya virginiana*
Serviceberry	*Amerlanchier Canadensis*
Crimson King Maple	*Acer platanoides* 'Crimson King'
Low Tree Zone	
Amur Maple	*Acer ginnala*
Flowering Crab	*Malus* (Cultivars)
Japanese Tree Lilac	*Syringa reticulata*
Russian Olive	*Elaeagnus angustifolia*
Shubert Chokecherry	*Prunus virginiana* 'Shubert'

Planting Tips

The best time of the year to plant trees is in the spring. Most trees will also survive fall planting with the exception of some varieties such as the Red Oak and most cherry trees. Check with your local nursery for preferred planting times.

To keep your heating costs down, plant wind breaks around your house. For the best results, plant evergreen trees on the west or north side of the house.

If properly placed, trees can reduce your energy costs by 10 to 50 per cent. Air conditioning costs can be lowered in a tree-shaded home, and heating costs are reduced when a home has a treed windbreak.

For temperature control, plant leafy deciduous trees to the south and west of the house. This will provide shade to cool the house in the summer, and allow the sun to enter the house in the winter.

Trees should be planted a minimum of three metres (10 feet) from building foundations.

Maintain a minimum of 1.5 metres (5 feet) clearance around the base of the tree to provide water and nutrients.

Remember, proper tree selection and placement will enhance your property value, prevent costly maintenance and damage to your home and provide an aesthetic landscape that is compatible with utilities. The following guide is designed to help you select the appropriate tree for your property.

List of Suitable Trees for Planting

Common name	Scientific name	Height (m)	Spread (m)	Plant zone	Stability for urban environment	Salt tolerance		Attracts wildlife	Native species	Seen at Dominion Arboretum	Comments
Amur Cork Tree	*Phellodendron amurense*	18	9	***	***				No	Yes	Tolerates poor soil conditions
Amur Maple	*Acer ginnala*	6	2	*	***	**			No	Yes	Tolerates poor soil conditions, brilliant red foliage in the fall
Black Walnut	*Juglans nigra*	18	7.5 to 9	***		*		Yes	Yes	Yes	Roots release a natural toxin which kills competing vegetation under the crown; soil becomes unsuitable for other plants.
Bur Oak	*Quercus macrocarpa*	15	18	***	***	***		Yes	Yes	Yes	Tolerates poor soil conditions, an excellent tree for city planting as transplants easily, shows little effect from air pollution
Chinese Elm	*Ulmus parvifolia*	15	12	**	***	***			No	Yes	Tolerates a wide range of sites, often neglected in urban planting, Chinese elm is a very resistant tree in the city environment
Colorada Blue Spruce	*Picea pungens 'Glauca'*	30	6	***		***			No	No	A long time favourite for planting on lawns in cities
Columnar Norway Maple	*Acer platanoides 'Columnare'*	8	4	**	***	***			No	Yes	Will tolerate poor soil conditions
Crimson King Maple	*Acer platanoides 'Crimson King'*	13	10	**	**				No	Yes	Tolerates a wide range of soil conditions, except poor drainage, dense crown shades out competition
Deborah Maple	*Acer platanoides 'Deborah'*	20	14	***	***	**			No	No	Tolerates a wide range of soil conditions
English Oak	*Quercus robur*	25	21	***	***			Yes	No	Yes	Tolerates a wide variety of soil conditions, preferred food source of the Gypsy moth
Flowering Crab	*Malus (cultivars)*	5.5	5	*	***	**		Yes	No	Yes	Tolerates many soil types, some cultivars are susceptible to fireblight
Green Ash	*Fraxinus pennsylvanica*	20	17	***	***	**			Yes	Yes	Tolerates a wide variety of site conditions
Greenspire Linden	*Tilia cordata 'Greenspire'*	21	15	***	***	**		Yes	No	Yes	Grows best in deep fertile soils, but will adapt to poorer sites
Hackberry	*Celtis occidentalis*	8	6	**	***	**			Yes	Yes	Will tolerate a wide variety of soil conditions, best to transplant in the spring
Honey Locust	*Gleditsia triacanthos 'Skyline'*	23	20	***	***	***			No	Yes	Adaptable to a wide variety of soil conditions
Hop Hornbeam	*Ostrya virginiana*	7.5	4	**	**	*		Yes	Yes	Yes	Prefers well drained, moist soils
Horsechestnut	*Aesculus hippocastanum*	23	17	***	***	***			No	Yes	Considered reliably hardy in Ottawa, it will suffer damage during severe winters, suffers from leaf scorch in late summer under stressful conditions

* Low ** Medium *** High

The Dominion Arboretum is located on the eastern boundary of the Central Experimental Farm

List of Suitable Trees for Planting

Common name	Scientific name	Height (m)	Spread (m)	Plant zone	Stability for urban environment	Salt tolerance		Attracts wildlife	Native species	Seen at Dominion Arboretum	Comments
Japanese Tree Lilac	*Syringa reticulata*	4.5 to 6	3	*	***	***			No	Yes	Prefers well drained soils, susceptible to powdery mildew, but much less than common lilac
Larch	*Larix decidua*	18	10	***	**	***			No	Yes	Will tolerate a wide variety of site conditions
Littleleaf Linden	*Tilia cordata 'Glenleven'*	21	15	***	**	***		Yes	No	Yes	Prefers deep fertile soils, but broadly adaptable, bees are very fond of its blossoms. The seeds are round and the size of ball bearings, could be a safety concern near sidewalks
Maidenhair Tree	*Ginkgo biloba*	24	24	***	***	**			No	Yes	Tolerates a wide variety of soil conditions, the fruit is messy and smelly, therefore use the male clones. Extremely well suited to the urban environment, leather like leaves make it resistant to insect attacks
Norway Maple	*Acer platanoides (Cultivars)*	20	18	***	***	***			No	No	Dense crown can shade out competing vegetation, ground cover. Surface roots can interfere with lawns; seedlings can become a problem
Ohio Buckeye	*Aesculus glabra*	12 to 15	6	**	**				No	Yes	
Pyramidal English Oak	*Quercus robur 'Fastigiata'*	18	6	***	***	**		Yes	No	Yes	Tolerates wide range of soil conditions, drought and pollution
Russian Olive	*Elaeagnus angustifolia*	6	4	*	**	**			No	Yes	Adaptable to any type of soil, has sharp spikes on its branches, can be a safety concern
Serviceberry	*Amelanchier canadensis*	9	9	**	**	*		Yes	Yes	Yes	Prefers well drained moist sites, susceptible to drought, air pollution
Shagback Hickory	*Carya ovata*	26	10	***	*	*		Yes	Yes	Yes	Noted for its deep tap root, makes it very wind firm but hard to transplant
Shubert Chokecherry	*Prunus virginiana 'Shubert'*	9	6	**	***	**		Yes	Yes	No	Tolerates low fertility soils and dry sites, service life of 10 to 20 years
Summit Green Ash	*Fraxinus pennsylvancia 'Summit'*	18	17	***	***	***			No	No	Tolerates a wide range of soil conditions, abundant seed from the female tree can be a nuisance
Turkish Filbert	*Corylus colurna*	18	10	***	***	***		Yes	No	Yes	Withstands a wide range of conditions, somewhat difficult to transplant, may need a lot of watering the first year or two
White Ash	*Fraxinus americana*	24.5	21.5	***	**	***			Yes	Yes	Sensitive to drought conditions, ash decline and dieback
White Fur	*Abies concolor*	15	5	***	*				No	Yes	Has extremely beautiful habit and colour

* Low ** Medium *** High

The Dominion Arboretum is located on the eastern boundary of the Central Experimental Farm

Glossary of Terms

Some of the common terms you may encounter when selecting trees for your property are defined below:

Assets: refer to "Infrastructure"

Balled and Burlapped: The protective process of wrapping burlap around a ball of soil containing the roots of a tree or shrub. The burlap is usually tied with twine. The burlap and twine must be removed at planting.

Bare Root: A tree or shrub ready for planting that has had the soil removed from around its roots.

Coniferous: Plants that are cone bearing and retain their leaves all year round.

Deciduous: Plants that drop their leaves in the fall season.

Drip Line: (a) The drip-line is three-tenths of a meter (0.3 m) from the trunk of the tree for every 3 centimetres of trunk diameter; and

(b) The trunk diameter is measured at a height of one and two-tenths of a meter (1.2 m) for trees of fifteen centimetres (15 cm) in diameter and greater, and at a height of three-tenths of a meter (0.3 m) for trees of less than fifteen centimetres (15 cm) in diameter.

Easement: The legal right to access another's land.

Hardiness: The degree to which a plant species is usually capable of surviving certain climatic conditions (temperature and rainfall).

Height: The vertical measurement of the tree at maturity.

Genus: A closely related and definable group of plants comprising of one or more species (i.e. acer or maple)

Grade: refers to the ground line as a reference point. What is above grade is termed "overhead; " and what is below grade is termed "underground; " what is on the ground is termed "at-grade."

Infrastructure: refers to elements of an electrical distribution system, for example poles, wires / cables (also referred to as "lines"), pole guys (support wires), at grade mounted transformers and switches, plus underground ducts and cable chambers.

Root Ball: the intact roots critical to a healthy tree and is normally proportional to the drip line in diameter

Species: Particular members of a group of plants distinct from other kinds in marked or essential features and represent a continuing succession of individuals from generation to generation. (i.e. acer saccharum or sugar maple)

Spread: The average reach of the branches of the tree at maturity.

References

- Hydro Ottawa's Conditions of Service (refer to Hydro Ottawa Access to Equipment, Vegetation Management, Property Reinstatement, Residential Minor Upgrade)
- Hydro Ottawa's "Swimming Pools in the Vicinity of Electrical Wires"
- Hydro Ottawa's public standard OLS0002 "Overhead High Voltage Line Clearances to Adjacent Buildings, 2.4/4.16kV – 44kV"
- Hydro Ottawa's public standard UTS0038 "Clearances from Padmounted Equipment"
- Hydro Ottawa's standards UTS0012 "Residential Underground Utility Trench Clearance Detail (3 & 4 party trench)"
- Hydro Ottawa's standard UTS0013 "Residential Underground Offset Utility Trench Clearance Detail (3 & 4 party trench)."
- City of Ottawa's "Recommended Tree Species for the Ottawa Area" available at **www.ottawa.ca**
- Ontario Occupational Health and Safety Act
- Electrical Safety Authority (ESA) – Ontario Electrical Safety Code
- Canadian Standards Association (CSA) – C22.3 Part 1 (overhead systems) and C22.3 Part 7 (underground systems)

All Hydro Ottawa Publications referenced are available at **www.hydroottawa.com**

HydroOttawa

2009 / 2010