

GUIDELINES FOR

# Vegetation Management Around Powerlines



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## **LEGAL DISCLAIMER**

This document contains AWARENESS ONLY material to assist members of the Public and Industry Professionals to avoid conflicts with the overhead and/or underground powerlines while pruning trees and the removing trees, stumps and roots.

This document does not have the force of the law. Where there is a conflict between this document and any Municipal, Regional and/or Township by-laws, legislation or regulation which may apply, the relevant law prevails.

Contact the local Municipality, Regional and/or Township offices to determine if permits are required to plant trees.

Contact your Local Distribution Company (LDC) to determine their requirements to prune or remove trees around powerlines and electrical equipment. This will also include removal of tree stumps and roots.

# Introduction

The “Vegetation Management around Powerlines” Guideline responds to the increased number of reports associated with contacting energized overhead powerlines while pruning or removing trees.

This is one of two guidelines produced by the Electrical Safety Authority with the support of Ontario’s *Local Distribution Companies (LDC)* to reduce electrical contact incidents and other electrical hazards when:

- Performing Vegetation management Around Powerlines
- Planting Under or Around Powerlines and Electrical Equipment

These guidelines provide information and insights to support landscape and arborist trades workers, maintenance worker, and homeowners. These Guidelines share important information on potential electrical risks, how to avoid these risks, provincial standards, and best practices that, if followed, can decrease electrical incidents.

This guideline includes sections on:

- Electrical Issues and Hazards
- Identifying and Avoiding Potential Hazards
- Requirements for contacting the LDC

A companion guideline has been created that focuses on avoiding electrical issues and hazards when planting trees and/or shrubs under or around overhead and underground powerlines and electrical equipment.

# Electrical Issues and Hazards – Pruning Trees

Proper maintenance of trees and plant material growing around overhead powerlines is required to avoid potential electrical hazards and power interruptions. Overgrown trees that cover powerlines can create a number of electrical hazards, including:

## ➔ **Potential Hazard or Electrocutation from:**

- **direct contact** – when playing in or working around trees where powerlines are hidden by foliage.
- **energized objects** – branches and limbs caught in the powerlines may unexpectedly become conductive.
- **contact with powerlines** – during tree maintenance, pruning or removal, including direct contact by unqualified individuals and contact through tree pruning tools.
- **downed powerlines** – when energized powerlines are pulled down to the ground by broken branches and limbs.

➔ **Injuries or Fires** – branches, ladders, pole top pruners and other pruning equipment can create an electrical arc when in close proximity to powerlines resulting in potential injury or fire.

➔ **Power interruptions** – resulting when branches and limbs that break damaging powerlines during storms or from disease.

Reported incidents of overhead powerline contact during tree pruning and tree removal increased from 2001 to 2011. These contacts and near misses involved Arborists, Landscapers and members of the Public who were directly or indirectly **working too close to energized powerlines**. During this period, the Ministry of Labour and Electrical Safety Authority have reported 176 contacts with energized electrical powerlines associated with the pruning or removal of trees. This resulted in two fatalities.

Members of the public should not prune or remove trees and other plant material around overhead powerlines and electrical equipment – they should contact the LDC for assistance.

Arborists and Landscapers are not qualified to work in the vicinity of energized powerlines and must follow the **'limits of approach'** defined by the Ontario Occupational Health and Safety Act (Ont. OH&S Act) Ont Reg 213/91 Section 188(2) for tools, ladders and other equipment capable of conducting electricity. These requirements apply to climbing trees, tree pruning, felling trees and/or removing branches or vines.

Utility Arborists who 444B Certified are authorized to prune, clear vegetation, fell or remove trees within the Ont. OH&S Act defined **'limits of approach'**.

Electrical Work performed on or near electrical transmission or distribution systems shall be performed in accordance with the current document entitled "Electrical Utility Safety Rules" published by the Infrastructure Health and Safety Association in Ont. OH&S Act Ont. Reg. 213/91 Section 181(1).

# Identifying and Avoiding Potential Electrical Hazards

Proper maintenance of trees and plant material growing around overhead powerlines is required to avoid potential electrical hazards and to power interruptions. Overgrown trees that cover powerlines can create a number of electrical hazards.

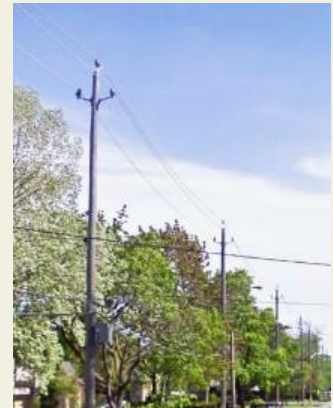
Tools and equipment used to prune trees around powerlines can conduct electricity resulting in electrocution, shock or fire. This equipment does not need to touch a powerline to conduct electricity. Electricity can arc to conductive tools and equipment that come in close proximity to them.



Overgrown vines around electrical equipment





Utility Arborist



## Working Around Powerlines – Required Limits of Approach

Ont. OH&S Act, Ont. Reg. 213/91 Section 188(2), 'limits of approach' specifies no object shall be brought closer to an energized overhead electrical conductor with a nominal phase-to-phase voltage rating set. The LDC should be contacted to define the voltage rating for overhead powerlines where work is being done.

| Electrical Voltage – Nominal phase to phase voltage rating  | Minimum required working distance |
|---|-----------------------------------|
| <p><b>750 or more volts, but no more than 150,000 volts</b></p> <p><b>PRIMARY DISTRIBUTION</b><br/>           Primary distribution lines carry high voltage power and are installed on poles located in the front of properties along the right of way or at the back of properties. Primary distribution lines maybe owned and maintained by the LDC or the customer and are typically bare conductors.</p>  | <p>3 metres</p>                   |
| <p><b>more than 150,000 volts and 250,000 volts</b></p> <p><b>TRANSMISSION LINES</b><br/>           Transmission lines carry higher voltage and are installed on transmission structures which are typically located in the utility corridor and are also bare conductors.</p>    | <p>4.5 metres and 6 metres</p>    |



## Residential and Small Commercial/Industrial/Institutional Services

Overhead services to these facilities include primary lines (defined above in the chart) and secondary distribution lines that can be on the same pole.

### Secondary Distribution

Secondary distribution lines carry lower voltages and are typically insulated. These lines are installed on poles located along the right-of-way in the front or back of properties. These lines run from the supply transformer at the pole to a point of attachment on a building. Caution: insulation on these lines and conductors can deteriorate exposing energized components creating a shock hazard.

It is recommended a clearance of 3.0m (10 FT.) should be maintained at all times from tools and secondary lines.





# Contacting the Local Distribution Company:

- *Local Distribution Company (LDC) owned Powerlines* – the *LDC* has the legal responsibility to prune trees around their assets. In these cases the first point to arrange to have trees pruned should be the *LDC who uses Utility Arborists* who have been trained to prune trees around powerlines.

*LDC's* currently operate vegetation management programs that identify tree pruning cycles that range from 2 to 8 years. Tree growth rate ranges for different species and will require different pruning cycles to maintain a 1.0m (3 FT.) clearance between branches and secondary powerlines, and a 3.0m (10 FT.) clearance from branches and primary powerlines.

- *Privately owned Powerlines* – where trees have overgrown on customer-owned powerlines, and a *Utility Arborist* is not being used, the *LDC* should be contacted in order to disconnect the powerlines at the incoming feed into the property.

Note: Most *LDC's* require advanced notice to schedule crews to attend the site. Contact the *LDC* in the area for more information.

- *Removing Trees around Powerlines* – climbing trees and using chainsaws, large equipment and chippers associated with tree removal should only be operated in line with the Ont. OH&S Act '**limits of approach**' to protect workers and the public.

*Removing Tree Stumps & Roots* - large equipment should only be operated in line with the Ont. OH&S Act defined '**limits of approach**' to protect workers and the public. In addition any excavation requires a locate to be done to identify underground services such as electrical, gas, water, etc.

Contact Ontario One Call to request a locate.

- Note: **All locates must be received prior to excavation.**  
Utilities will only locate utility owned underground services. It is the responsibility of the property owner or excavator/landscaper to locate non utility owned services.

# Definitions

**Arborist** – or (less commonly) arboriculturist, is a professional in the practice of arboriculture, which is the cultivation, management, and study of individual trees, shrubs, vines, and other perennial woody plants. Arborists are not trained to work near powerlines and must follow the Ont. OH&S Act '**limits of approach**'. Additional training is required for arborist to work near powerlines, or they need to be Certified Line Clearance maintainers or Utility Arborists.

**Landscaper** – is a professional in the practice of horticulture, which is the cultivation, management and study of plants. Landscape Trades are not trained to work near powerlines and must follow the Ont. OH&S Act '**limits of approach**'.

**Limits of Approach** – specifies the required distance between workers and equipment to energized overhead electrical lines and conductors with a nominal phase-to-phase voltage rating set. The LDC should be contacted to define the voltage rating for overhead powerlines where work is being done.

**Local Distribution Company (LDC)** – A Distributor who is licensed under the Ontario Energy Board (OEB) responsible for transmitting electricity to municipal infrastructure including general public and public areas.

**Locates** – Requesting information from a facility owner identifying all their underground facilities by the use of surface markings such as coloured spray paint or flag identifiers, maps or drawings.

**Utility Arborist** – Arborists who are 444B Certified that are authorized to prune, clear vegetation, fell or remove trees within the Ont. OH&S Act defined '**limits of approach**'.

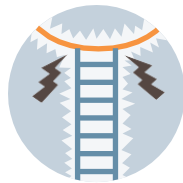
# Quick Reference Guide: Landscape & Arborist Trades

## 'Look Up! Look Out!' to avoid potential electrical hazards

- Locate overhead powerlines and follow the Ontario Health and Safety Act safe limits of approach to maintain a safe distance to protect workers from electrical shock and arc flash hazards
- Locate underground powerlines prior to excavating and removing tree trunks

### Contact Ontario One Call to obtain all underground locates

Utilities will only locate underground services which they own. It is the responsibility of the property owner or excavator/landscaper to locate non utility owned services.



**Look Up!** – always be aware of overhead powerlines when using ladders. Ladders should always be carried horizontally when moving them from point A to point B.



**Look Up!** – identify overhead powerlines that run through trees. Ensure that tools are kept the required distance from powerlines following the 'limits of approach' defined in the Ont. OH&S Act.



**Look Up!** – check for overhead powerlines and ensure clearance when operating aerial lift equipment and bucket trucks. Always follow the 'limits of approach' defined in the Ont. OH&S Act.



**Look Up!** – check for overhead powerlines when operating back hoes and other equipment. Always follow the 'limits of approach' defined in the Ont. OH&S Act when operating equipment.

**Look Out!** – when excavating and removing tree roots always obtain all underground locates by contacting Ontario One Call.

**Utility Arborists who are 444B Certified are authorized** to prune, clear vegetation, fell or remove trees within the Ont. OH&S Act defined '**limits of approach**'.

Electrical Work performed on or near electrical transmission or distribution systems shall be performed in accordance with the current document entitled "Electrical Utility Safety Rules" published by the Infrastructure Health and Safety Association in Ont. OH&S Act Ont. Reg. 213/91 Section 181(1).

# Quick Guide & Contact Information: Homeowners

## 'Look Up! Look Out!' to avoid potential electrical hazards

- Locate overhead powerlines before pruning trees
- Always maintain a minimum of 3.0m (10 FT.) from all overhead wires
- Contact your LDC to remove, prune trees and trim shrubs around overhead powerlines.
  - ➔ Your LDC has the legal responsibility to prune trees around their assets and uses *Utility Arborists* who have been trained to prune trees and trim shrubs around powerlines.
- Look Up! when doing tree and property maintenance
- Look Out! stay clear of overhead powerlines



**Look Up!** – always be aware of overhead powerlines when using ladders. Ladders should always be carried horizontally when moving them from point A to point B.



**Look Up!** – identify overhead powerlines near trees and ensure you keep tools and equipment a minimum of 3.0m (10ft.) from powerlines.

- Locate underground powerlines prior to excavating and removing tree trunks and/or roots

### **Contact Ontario One Call to obtain all underground locates**

Utilities will only locate underground services which they own. It is the responsibility of the property owner or excavator/landscaper to locate non utility owned services.