

TRIMMING TREES AROUND POWERLINES

LOOK UP

LOOK OUT

**Watch out for
Overhead
Powerlines**



Electrical
Safety
Authority

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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 trimming trees and/or shrubs, and the removal of 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 trim trees.

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

INTRODUCTION

THE “TRIMMING TREES AROUND POWERLINES” GUIDELINE RESPONDS TO THE INCREASED NUMBER OF REPORTS ASSOCIATED WITH CONTACTING ENERGIZED OVERHEAD POWERLINES WHILE TRIMMING OR THE REMOVING OF 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:

- TRIMMING TREES 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 – TREE TRIMMING

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

- **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, trimming or removal, including direct contact by unqualified individuals and contact through tree trimming 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 trimming 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 trimming 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 trimming or removal of trees. This resulted in two fatalities.

MEMBERS OF THE PUBLIC SHOULD NOT TRIM 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) FOR TOOLS, LADDERS AND OTHER EQUIPMENT CAPABLE OF CONDUCTING ELECTRICITY. THESE REQUIREMENTS APPLY TO CLIMBING TREES, TREE TRIMMING, FELLING TREES AND/OR REMOVING BRANCHES OR VINES.

UTILITY ARBORISTS WHO HAVE COMPLETED THE UTILITY ARBORIST APPRENTICESHIP PROGRAM UNDER THE MINISTRY OF TRAINING COLLEGES AND UNIVERSITIES 444B AND ARE AUTHORIZED TO PRUNE, CLEAR VEGETATION, FELL OR REMOVE TREES WITHIN THE ONT. OH&S ACT DEFINED '*LIMITS OF APPROACH*'.

WORK AROUND OVERHEAD POWERLINES SHALL BE PERFORMED IN ACCORDANCE WITH THE "ELECTRICAL UTILITY SAFETY RULES" PUBLISHED BY THE ELECTRICAL AND UTILITIES SAFETY ASSOCIATION OF ONTARIO INCORPORATED AS STATED 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.



OVERGROWN VINES AROUND
ELECTRICAL EQUIPMENT





UTILITY ARBORIST



Tools and equipment used to prune and trim 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.

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 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.

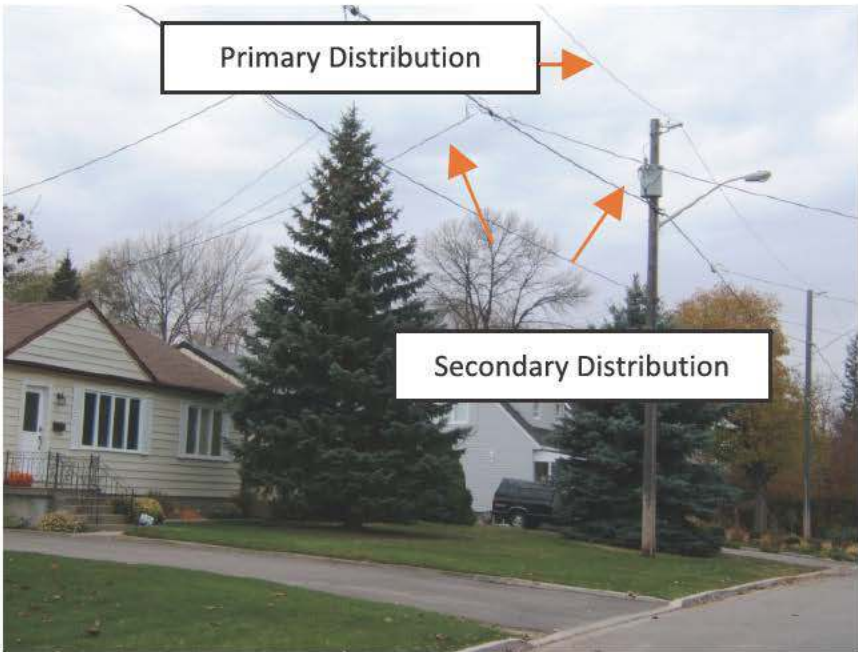
ELECTRICAL VOLTAGE - NOMINAL PHASE TO PHASE VOLTAGE RATING	MINIMUM REQUIRED WORKING DISTANCE
<p>750 or more volts, but no more than 150,000 volts</p> <p>PRIMARY DISTRIBUTION Primary distribution lines carry high voltage power and are installed on poles located in the front of properties along the right 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> 	3 metres
<p>more than 150,000 volts and 250,000 volts</p> <p>TRANSMISSION LINES 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> 	4.5 metres and 6 metres

RESIDENTIAL AND SMALL COMMERCIAL/INDUSTRIAL/INSTITUTIONAL SERVICES

Overhead services to these facilities include primary lines (defined in the preceding 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.



CONTACTING THE LOCAL DISTRIBUTION COMPANY:

- ✔ **LOCAL DISTRIBUTION COMPANY (LDC) OWNED POWERLINES** – the LDC has the legal responsibility to trim trees around their assets. In these cases the first point to arrange to have trees trimmed should be the LDC who uses *Utility Arborists* who have been trained to prune and trim trees around powerlines.

LDC’s currently operate vegetation management programs that identify tree trimming 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 private or 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 excavation to remove roots in areas with underground powerlines should only be done following a request to the LDC to complete a ‘*locate*’ to identify the location of all their underground services. Also, contact other utilities, such as natural gas, water, cable, and telephone, to ensure you are aware of their underground service locations.

NOTE: For *locate* request, call ahead and allow a minimum of 2 weeks to receive all *locates*. All *locates* must be received prior to excavation.

Private underground services are not located by the Utilities. It is the responsibility of the property owner and 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 trimmers 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 - have completed the Utility Arborist Apprenticeship program under the Ministry of Training Colleges and Universities 444B Certificate of Qualification - and are authorized to prune, clear vegetation, fell or remove trees within the Ont. OH&S Act defined '*limits of approach*'.

UTILITY ARBORISTS WHO HAVE COMPLETED THE UTILITY ARBORIST APPRENTICESHIP PROGRAM UNDER THE MINISTRY OF TRAINING COLLEGES AND UNIVERSITIES 444B CERTIFICATE OF QUALIFICATION AND ARE AUTHORIZED TO PRUNE, CLEAR VEGETATION, FELL OR REMOVE TREES WITHIN THE ONT. OH&S ACT DEFINED 'LIMITS OF APPROACH'.
WORK AROUND OVERHEAD POWERLINES SHALL BE PERFORMED IN ACCORDANCE WITH THE "ELECTRICAL UTILITY SAFETY RULES" PUBLISHED BY THE ELECTRICAL AND UTILITIES SAFETY ASSOCIATION OF ONTARIO IN REG. 213/91 SECTION 181(1).

QUICK REFERENCE GUIDE: LANDSCAPE AND 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
- ✔ LOCATE UNDERGROUND POWERLINES PRIOR TO EXCAVATING AND REMOVING TREE TRUNKS

Allow a minimum of 2 weeks to receive all *locates*. All *locates* must be received prior to excavation.

Private underground services are not located by the Utilities. It is the responsibility of the property owner and 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 check with the *LDC* to identify their underground powerlines.