

# OPTION 1: RE-BUILD LINES IN BACK LOTS

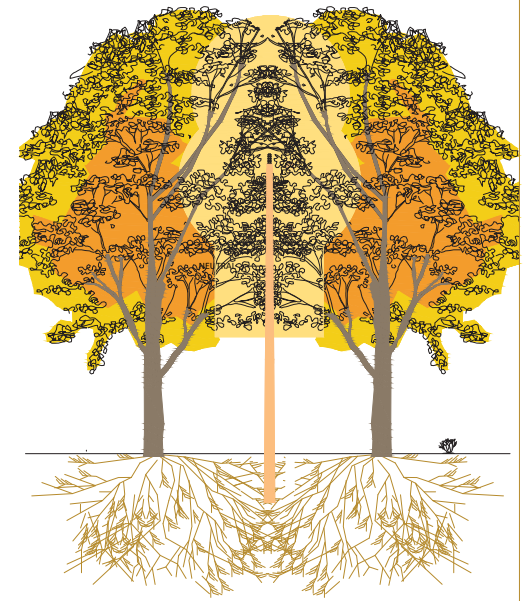
This approach means rebuilding lines in the rear lots (where they are today) to current safety standards. Poles, transformers and high voltage lines would be replaced and remain in rear lots. However, this option does not address the concerns of residents in your neighbourhood.

## Pros

- Your streetscape aesthetics remain unchanged
- The hydro service entrance (connection) to each home remains unchanged

## Cons

- Perpetuates the current problem with access for maintenance and repair and proximity to houses
  - backyard gardens, decks, pools, recreational and other structures
  - access to hydro lines by crews an inconvenience to home owners
- Highest negative impact on trees in backyards
  - tree trimming requirements around high voltage lines are much higher than low voltage
  - 80% of trees in Zone 3 will have to be removed. (See image to right.)
- No provision for alternate supply to the neighborhood
  - resulting in longer outages that affect a large group of residents
- Line Crew Safety
  - use of non standard equipment and manual work methods (pole climbing, digging, lifting) creates a greater risk of injury executing the work or responding to trouble during poor weather or at night



—High voltage lines tree impact

# OPTION 2: FULL UNDERGROUND SERVICE

This approach would only be feasible if all homes already had underground electrical service that can be easily accessed from the front lot. This is not the case for this neighborhood.

This would mean that 97% of home owners supplied by overhead lines would need to convert their service.

## What is required to convert my home to be serviced by underground wiring?

### • Your electrician:

- Installs a new meter base on the exterior wall near the front of your home
- Installs conduit from below the new meter base to the property line (either by digging up and burying under driveway, wrapping conduit around the house, or both)
- Arranges for Electrical Safety Authority (ESA) inspection—any deficiencies identified during inspection must be rectified by an electrician before Waterloo North Hydro proceeds

### • Waterloo North Hydro:

- Installs underground secondary conductors from pad mounted transformers to the new meter bases

## What are the repair and restoration costs associated with overhead to underground service conversion?

### • Excavation, removal and replacement of:

- Asphalt/brick driveway, paving stones, patios, pools, grassed or landscaped areas, etc
- Repairing roof and exterior house finishes or landscaped areas after overhead mast and stack is removed

**Best Case Scenario**—meter base is located within 10 ft. of the front corner of the house in the grass area.

**Most Complicated Case Scenario**—meter base is located at the back of the house in obstructed location (pool, concrete or wooden patio, recreational equipment, etc. is in the way). In this case there are 3 service conversion approaches that are available:

- (1) Relocate meter base to the front corner of the house; route electrical service wire in the conduit strapped to the outside house wall; the electrical panel location and electrical service entrance to the house remains unchanged.
- (2) Relocate meter base to the front corner of the house; route electrical service wire inside the house; install a new disconnect switch; create a new wall penetration for new service entrance; electrical panel location remains unchanged.
- (3) Relocate meter base to the front corner of the house; relocate electrical panel; rewire the inside of the house.

# OPTION 3: HYBRID SERVICE APPROACH

**This approach means combining options 1 and 2 and getting the street ready for full underground.**

**High voltage power lines:** will be converted to front lot underground. Pull vaults will be required as marked on the map.

**Poles and low voltage power lines:** will be replaced and will remain in the rear lot. Home owners will have the option to convert to front lot underground based on their own schedule.

All future customer electrical service upgrades will have to be buried and connected to front lot underground supply. As home electrical upgrades happen, this may allow WNH to remove poles and lines in rear lots no longer required. Pull vault locations will become above grade transformers (green boxes) when the first home conversion happens.

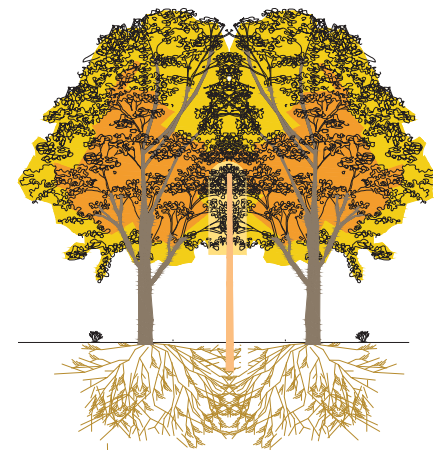
## Pros

- **Improved power reliability**
  - Better access to high voltage distribution equipment and alternate power supply means:
  - Less frequent power interruptions, fewer homes affected during an outage, faster restoration times, and improved ability to maintain equipment
- **Improved safety**
  - No high voltage lines or transformers in private backyards
- **Tree Impact is 60% less than Option 1**  
(See image to right)
  - Minor tree trimming will still need to be performed on an ongoing basis (every 2 years)

- **Changes to streetscape aesthetics are minimized**
- **Hydro service entrance (connection) to each home remains unchanged**
- **Slightly lower cost than rebuilding existing infrastructure in place**

## Cons

- **Access to low voltage hydro lines on private properties in back lots still required**
  - During construction, and regular maintenance / repair
- **Some trees will still need to be removed in difficult access construction areas (see map and poster: More Ways to Save Trees).**



—Low voltage lines tree impact

# MORE WAYS TO SAVE TREES

Here are options to address tree removal requirement for construction purpose. Trees in close proximity to hydro poles create an obstruction during pole replacement.

## Re-space Poles:

Installing a new pole in close proximity to an existing pole location may involve complete removal of adjacent trees. 'Re-space Poles' solution means placing new poles at new locations within the existing alignment in the rear lot.

### Impacts

- this solution provides smaller tree impact and could potentially eliminate complete tree removal
- placing poles at new locations that are free of tree canopy changes backyard aesthetics (poles and wires are more visible)
- could result in few more poles being added

## Transition Poles:

This solution means installing a new pole at a suitable to both parties (WNH and Home Owner) location to provide for a transition from front lot underground supply to your individual overhead home service.

### Impacts

- this solution provides smaller tree impact and could potentially eliminate complete tree removal
- placing poles at new locations that are free of tree canopy changes backyard aesthetics (poles and wires are more visible)

## Transition Poles & Easements:

This solution means providing a side yard easement and installing a new pole at one of the property corners in the rear lot to provide for a transition from front lot underground supply to your individual overhead home service and neighboring homes

### Impacts

- this solution provides smaller tree impact and could potentially eliminate complete tree removal
- placing poles at new locations that are free of tree canopy changes backyard aesthetics (poles and wires are more visible)
- further improves reliability by segregating the low voltage distribution system into smaller subgroups



Waterloo North Hydro Inc.