

THIS IS WHAT WE'VE HEARD:

You love how your neighbourhood looks and feels and you want to preserve this.

We know that there are a number of things that are really important to you:

- » Balancing renewal and preservation
- » Your trees
- » The aesthetic of your streets

How did we learn this?

We heard you at our Town Hall meeting on June 21st and are taking your concerns to heart. Since then we've deepened our understanding of your concerns by:

- » Meeting with City of Waterloo staff, Councillor and Mayor to better understand objectives of a successful outcome
- » Receiving email in our dedicated project email box

- » Corresponding with residents about their concerns and questions
- » Conducting focus groups

To begin addressing your concerns we're:

- » Making significant changes to our stakeholder engagement process, which include hosting this Open House to get your feedback on available renewal options
- » Reviewing all alternative renewal options for your neighbourhood
 - Overhead (OH) designs that have less impact on the tree canopy
 - Underground solutions (UG)
 - Strategic combination of both UG and OH
- » Developing alternate design standards that have less impact on the tree canopy

- » Preparing budgetary costing of possible renewal options
- » Studying the impact of renewal options on other stakeholders
- » Conducting power quality investigations

What we're going to do:

- » Use the feedback we receive today and from the focus groups to develop a design to discuss with you
- » **It will take us 12-24 months to develop the design**



Waterloo North Hydro Inc.

WE'VE LEARNED A LOT.

We have learned a lot from our work on Allen Street. We approached this work as we have done in the past; this was not the right approach for this area.

To avoid this type of situation in the future, we have made the following changes to our process:

- » Advance notice is provided via the “Projects Affecting You” area on our website
- » Customers are notified at the beginning of the design cycle and are given more information and an opportunity to participate
- » Our existing tree impact review process with the municipality and affected home-owners has been strengthened, formalized and documented.
- » Design staff continue to meet with home owners to address particular concerns

The development of Area Plans will include:

- Advance notice provided to residents beyond those abutting the construction areas
- Project specific mail box
- Focus groups and stakeholder involvement
- Open house
- Feedback will shape options
- Communication plans for project outcomes



Waterloo North Hydro Inc.

RECENT WNH PROJECTS UNDERTAKEN IN UPTOWN

Our history of successful projects in the uptown area suggested to us that our stakeholder engagement process was satisfactory.

STREET	YEAR	STREET	YEAR
James Street	2012	Somerset Crescent	2009
Park Street	2010 / 2011	Dick Street	2008
Empire Street	2012	Erb Street	2008
Douglas Street	2012	Avondale Avenue	2008
Stanley Drive	2012	Dietz Avenue	2006
Melbourne Crescent	2009	Alexandra Avenue	2006

This was not the right approach for the Allen Street project. To avoid this type of situation in the future, we have made the following changes to our process:

- » Advance notice is provided via the “Projects Affecting You” area on our website
- » Customers are notified at the beginning of the design cycle and are given more information and an opportunity to participate
- » Our existing tree impact review process with the municipality and affected home-owners has been strengthened, formalized and documented
- » Design staff continue to meet with home owners to address particular concerns
- » The development of Area Plans will include:
 - Advance notice provided to residents beyond those abutting the construction areas
 - Project specific mail box
 - Focus groups and stakeholder involvement
 - Open house
 - Feedback will shape options
 - Communication plans for project outcomes

HOW IT WORKS:

There are options for addressing your concerns.

- » As you move around the room, you will find a description of these options
- » Take some time to read the information presented here and ask WNH staff your questions
- » Then, go to the voting board to indicate your preferences



Waterloo North Hydro Inc.

WORK WE WANT TO UNDERTAKE.

Working in your neighbourhood is about better serving your needs today and tomorrow.

The area we're addressing is bounded by Erb Street to the north, John Street to the south, Westmount Road to the west and King Street to the east.

Our work in your neighbourhood:

- » We are renewing your infrastructure by converting 4kV distribution to 13.8 kV distribution



Waterloo North Hydro Inc.

WHAT DOES THIS MEAN TO YOU?

- » Less service interruptions
 - Improved reliability
 - Faster restoration during power outages
 - Retiring old and inefficient stations and circuits
- » Fewer electrical sub-stations to look at
- » Better for our environment
- » Preparing for future energy needs
- » Maintaining safety by replacing old poles and wires
 - Taller poles are required because of changes in standards over the years, not because of the change in voltage
 - Please refer to *Your Trees* area for a discussion of pole heights

Are there any health risks associated with 13.8kV distribution?

- » 13.8kV lines have been in your neighbourhood, the city and in most municipalities since the 1960's.
- » There has been no substantiated link made between power lines and negative health impacts
- » Based on a scientific review of more than 25,000 articles of research that have been published within the last 30 years, the World Health Organization concludes "current evidence does not confirm the existence of any health consequences from exposure to electromagnetic fields (EMFs)."
- » A Health Canada fact sheet updated in 2010, Health Canada states, "At this time, Health Canada does not consider guidelines (on EMF exposure levels) necessary because scientific evidence is not strong enough to conclude that typical exposures cause health problems."



Waterloo North Hydro Inc.

WHY ARE WE DOING THIS?

- » To complete a 20-year long plan to convert all of Waterloo to 13.8 kV Distribution (please see *City of Waterloo Distribution by Voltage Levels* map), Uptown is the last neighbourhood in Waterloo to be converted
- » Kitchener, Cambridge and Guelph completed this conversion over 10 years ago
- » This is not being done in preparation for 27.6kV distribution, to support Light Rail Transit or intensification

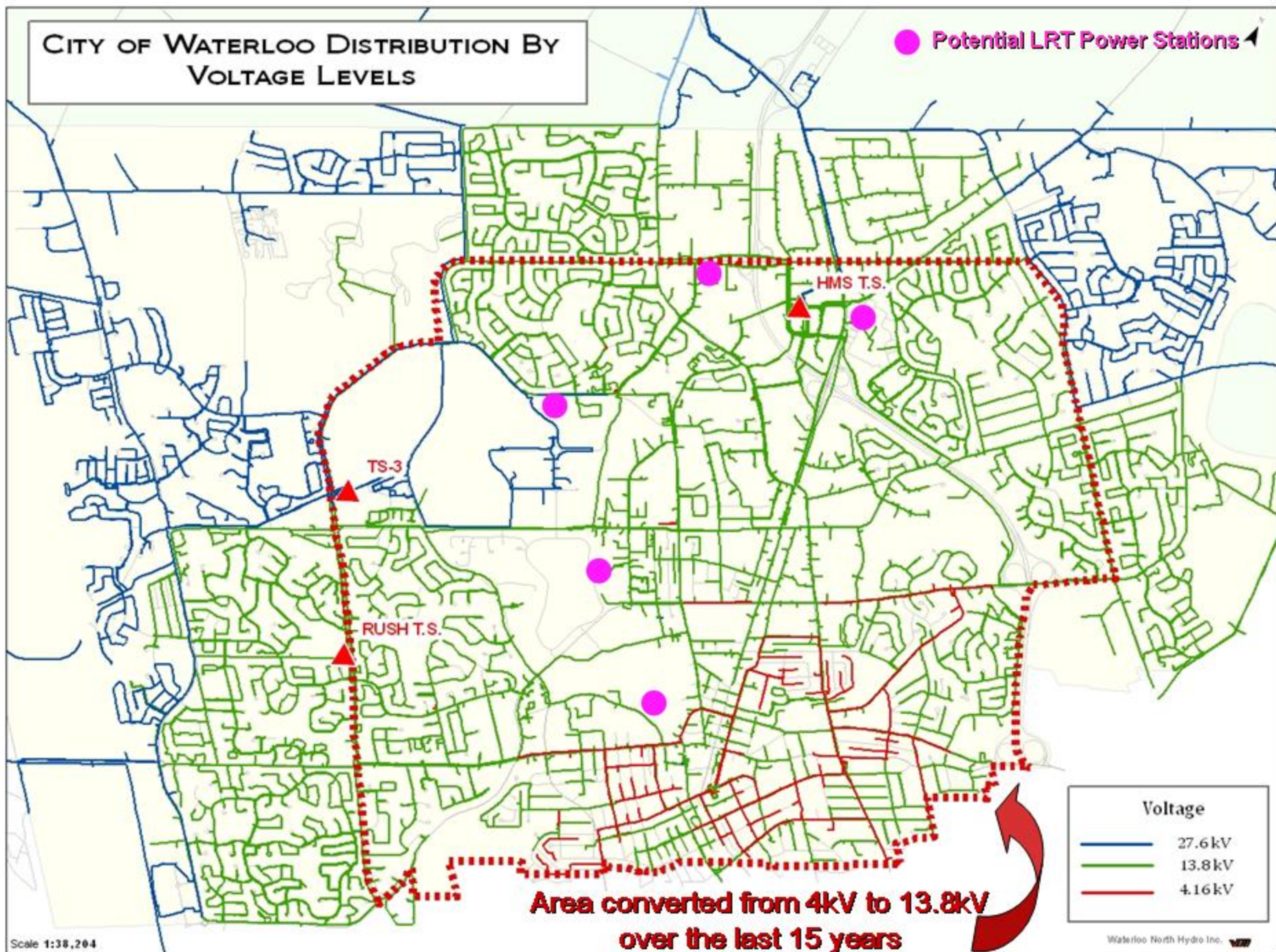
Parts of your neighbourhood have already been completed.

When is future work expected to take place?

- » Some streets will be renewed starting between 2014-18
- » Some streets will be renewed starting in 2019-2024

CITY OF WATERLOO DISTRIBUTION BY VOLTAGE LEVELS

Potential LRT Power Stations



EXPECTED RENEWAL TIMING

Renewal expected to take place
2014 – 2017

Renewal expected to take place
2018 – 2023

Potential pole relocations due
to road projects 2013 – 2017



Waterloo North Hydro Inc.

YOUR TREES ARE IMPORTANT.

We know your trees are extremely important to you.

We understand that many of your trees are nearing the end of their lifecycle and are therefore vulnerable. There are options for reducing the impact of our renewal project on your trees.

WNH considers trees extensively by:

- » Developing alternate design standards that have less impact on the tree canopy
- » Walking the neighbourhood to get a sense of the impact of our proposed projects on trees
- » Designing our lines to reduce or eliminate tree removal

- » Offering a tree replacement program (should a tree need to be removed)
 - Up to \$600 in value
 - Can be planted anywhere on municipal or home-owner's property
 - Tree-size depends on the chosen location

Some context:

- » Some lines and poles in your neighbourhood are nearing end of life and need to be replaced
- » New standards require increase in pole height by 10 ft (3 m) in most cases
- » Several options are available for reducing pole height and consequently their impact on the tree canopy

What we need from you:

- » We need your input to determine which options and attendant consequences are acceptable
- » Several options may need to be combined to reduce impact on the tree canopy



Waterloo North Hydro Inc.

OPTION 1:

MINIMALIST APPROACH

This is achieved by using options such as reducing working space, reducing equipment space and reducing tree trimming clearances.

Reduce Working Space:

- » Currently the distance between wires are sized to fit the bucket from a bucket truck for ease of work crews, this distance can be reduced

Impacts:

- » Having the wires closer together reduces tree trimming clearances
- » It is more difficult for work crews to access the wires, clamps & bolts, resulting in increased time required to address issues such as power outages

Costs:

- » When this working space is reduced, it takes longer for WNH crew to make repairs or new connections
- » The cost of additional time for work crews to address issues in the neighbourhood is passed on to customers through increased rates

Uneven Pole Lines:

- » Currently all lines are attached at the same height on the pole, whether the pole has additional equipment or not. This results in even lines
- » Different size poles can be used depending on the equipment attached to the pole. This means that different poles heights can be used along the same street, resulting in uneven lines

Impacts:

- » When lower poles are used, tree trimming clearances are reduced
- » Some find the uneven lines visually displeasing

Costs:

- » There are no additional costs associated with uneven lines

Reduce Tree Trimming Clearances:

- » Currently we trim trees for safety distance, plus the 3-year growth rate
- » The distance trimmed for growth rate depends on the species of tree
- » We could reduce tree trimming by trimming for the safety distance, plus the 2-year growth rate

Impacts:

- » Reduced impact on trees and the tree canopy
- » More frequent trimming would be required (every 2 years instead of every 3 years)

Costs:

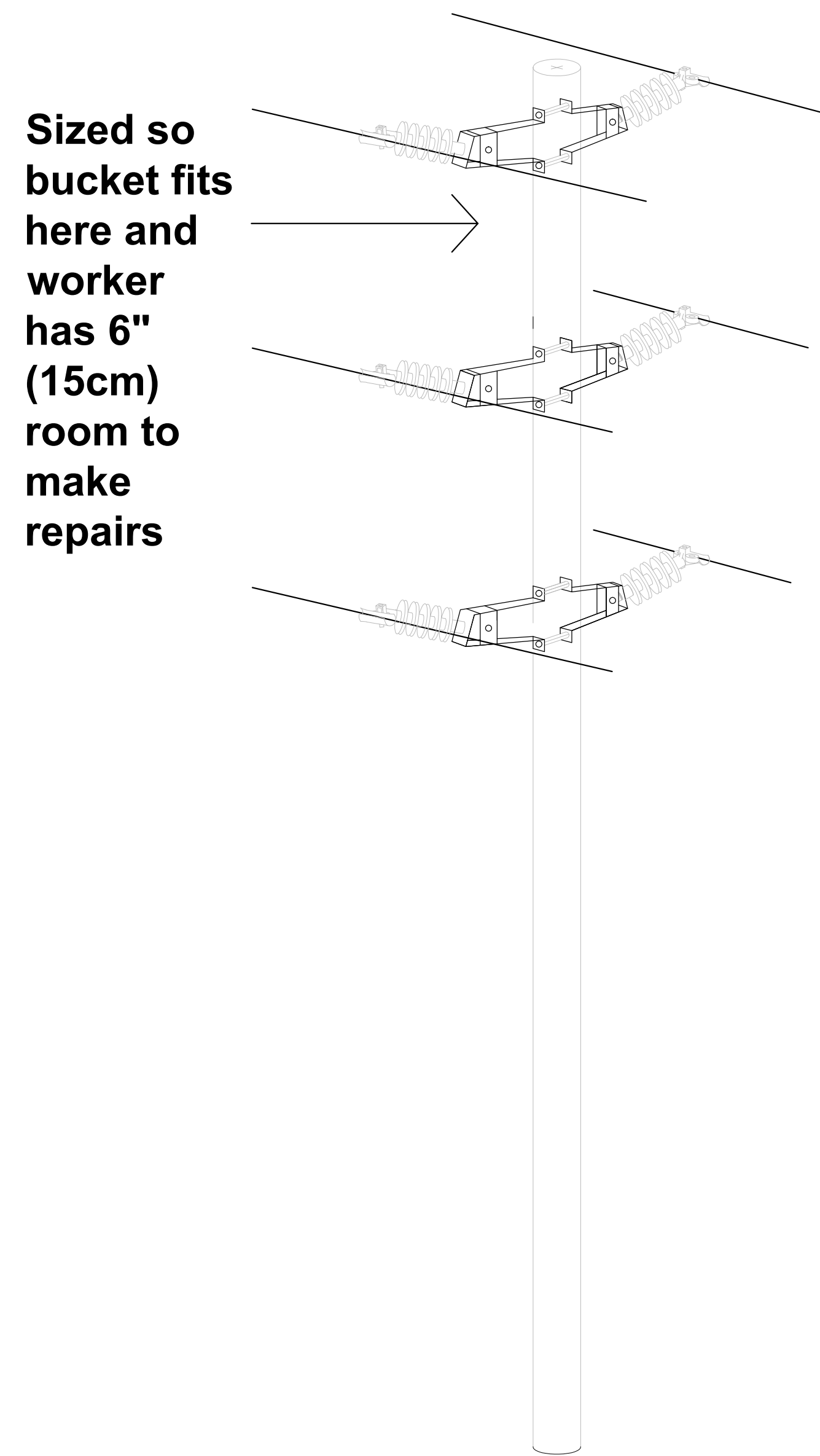
- » There are increased costs associated with more trimming.

OPTION 1:

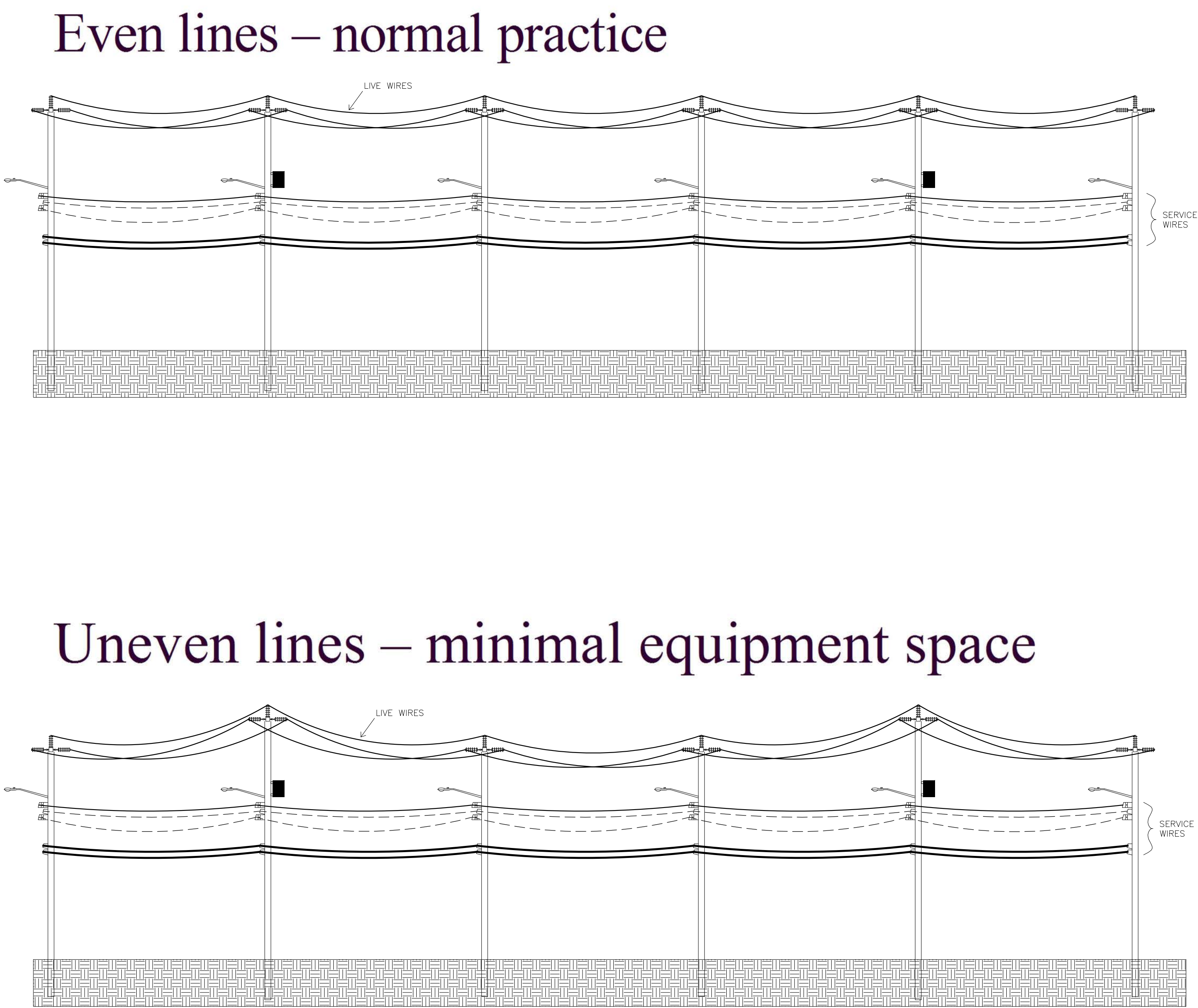
MINIMALIST APPROACH

This is achieved by using options such as reducing working space, reducing equipment space and reducing tree trimming clearances.

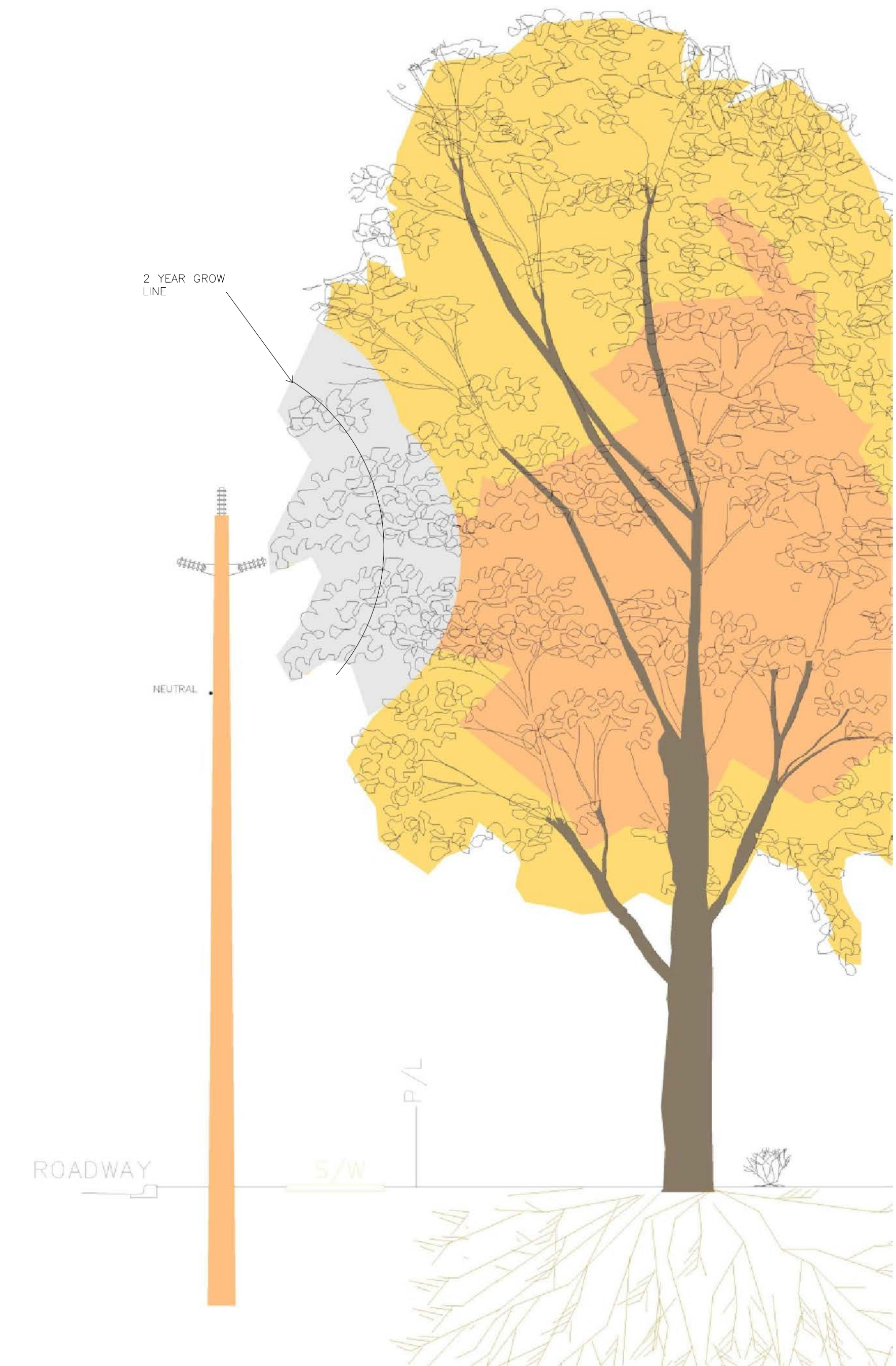
Reduced Working Space:



Reduced Equipment Space:



Reduced Tree Trimming Clearances:



OPTION 2: COMMUNICATION LINE REMOVAL

- » In some areas of your neighbourhood, communication lines run on hydro poles. This increases the height of poles by requiring a certain amount of space on the pole and specific clearances
- » We can ask communication companies to vacate our poles

Impacts:

- » Reduced pole height, reduced tree trimming
- » Communication companies will need to bury their lines in boulevards, driveways and private properties

Costs:

- » There are no costs associated with the removal of communication lines

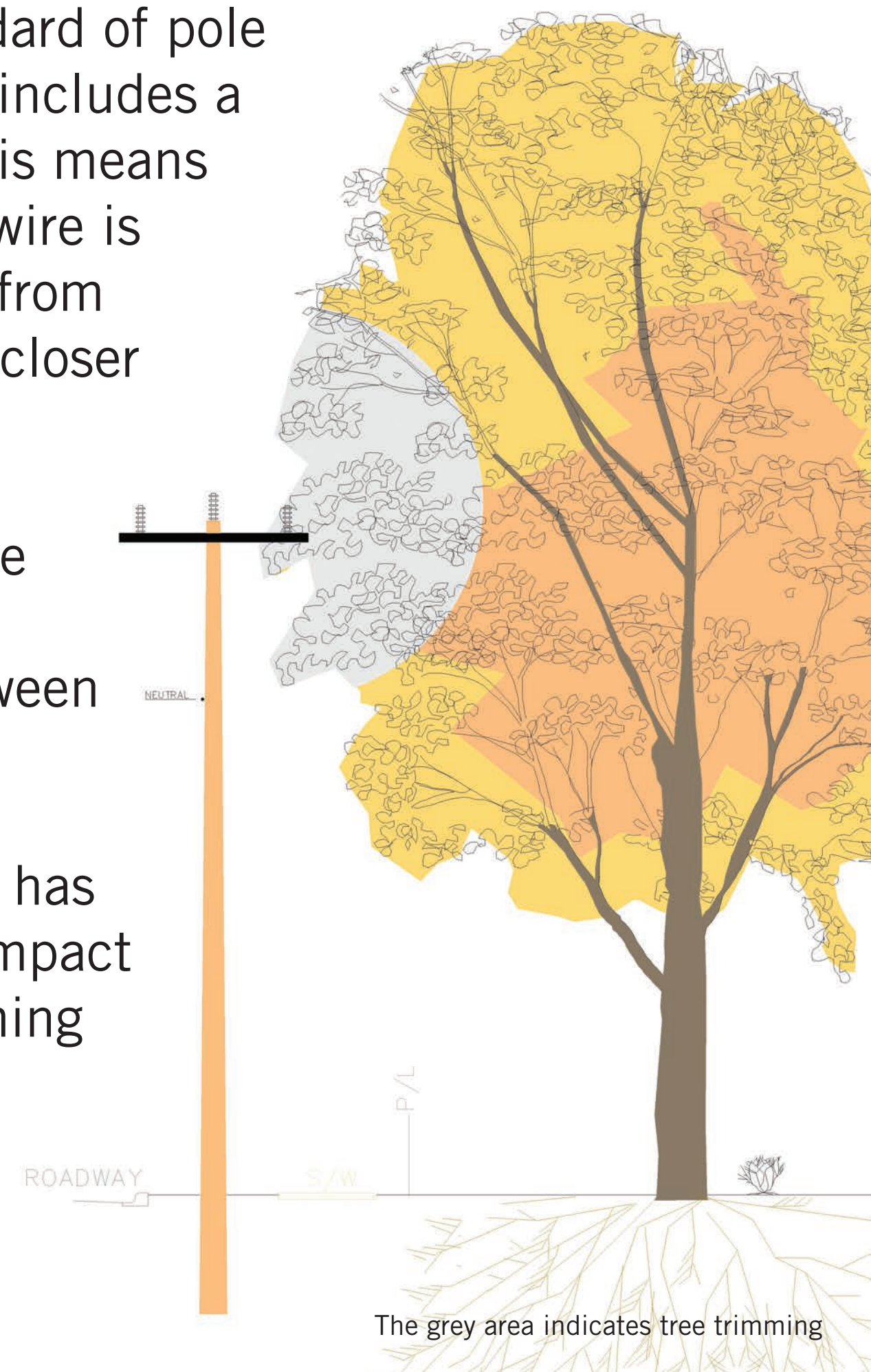


Waterloo North Hydro Inc.

OPTION 3: CHANGE WIRE ARRANGEMENT

A change to the way we arrange the wires on the poles has an impact on tree-trimming requirements. The old standard pole construction has a significant impact on trees, which is part of the reason it is no longer used.

- » The old standard of pole construction includes a cross arm, this means that the live wire is further away from the pole and closer to trees
- » As safety clearances are based on the distance between trees and the live wire, this standard has the highest impact on tree trimming

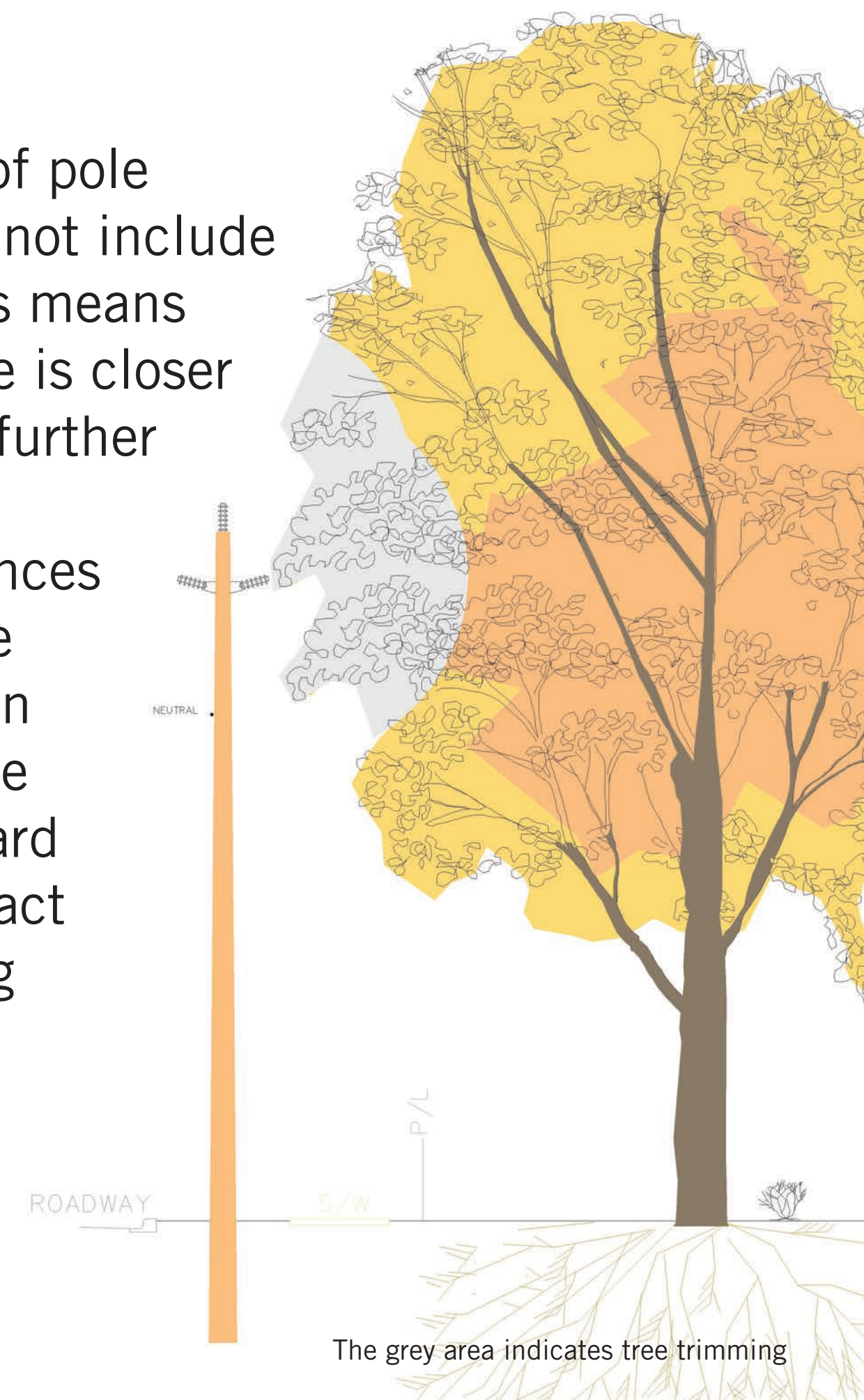


New Standards

New standards reduce the impact to the tree canopy.

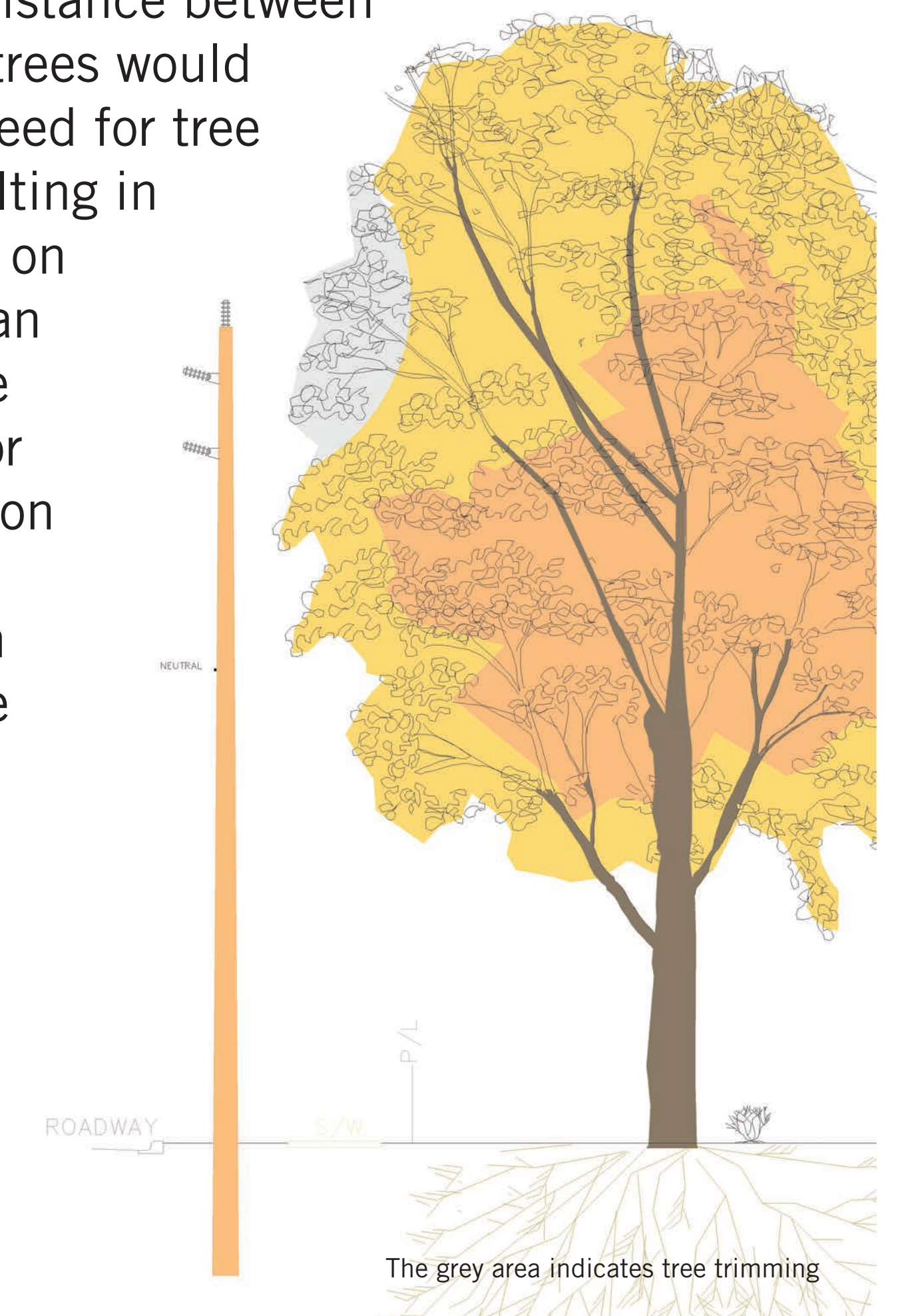
New Standard – Typical wire arrangement

- » New standards of pole construction do not include a cross arm, this means that the live wire is closer to the pole and further away from trees
- » As safety clearances are based on the distance between trees and the live wire, this standard has a lower impact on tree trimming than the cross arm standard



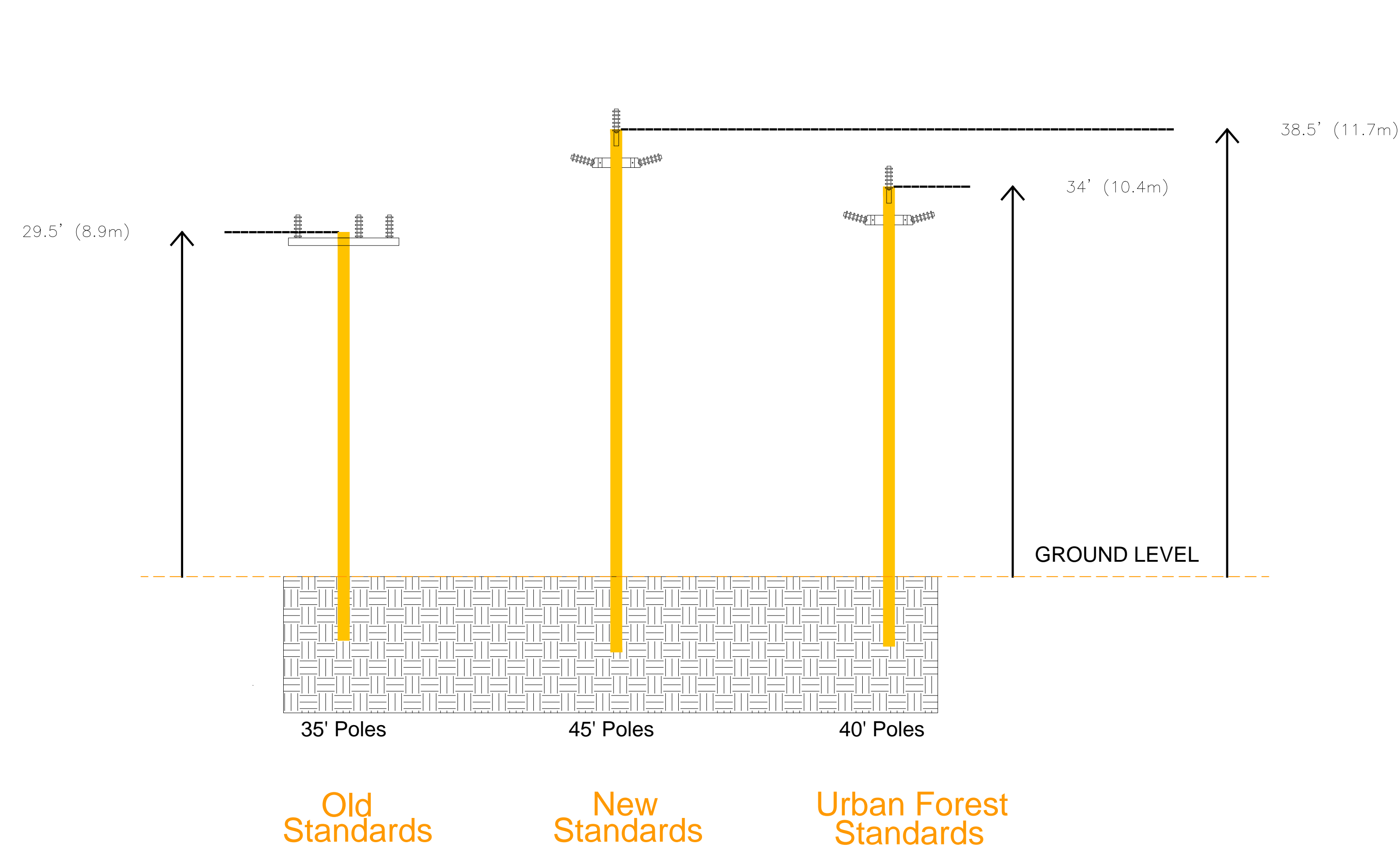
New Standard - Alternate wire arrangement

- » An alternate wire arrangement would include putting all the wires on the road side of the pole to move live wires even further away from trees
- » An increased distance between live wires and trees would decrease the need for tree trimming, resulting in a lower impact on tree canopy than the typical wire arrangement for pole construction
- » This requires a taller pole than the typical wire arrangement

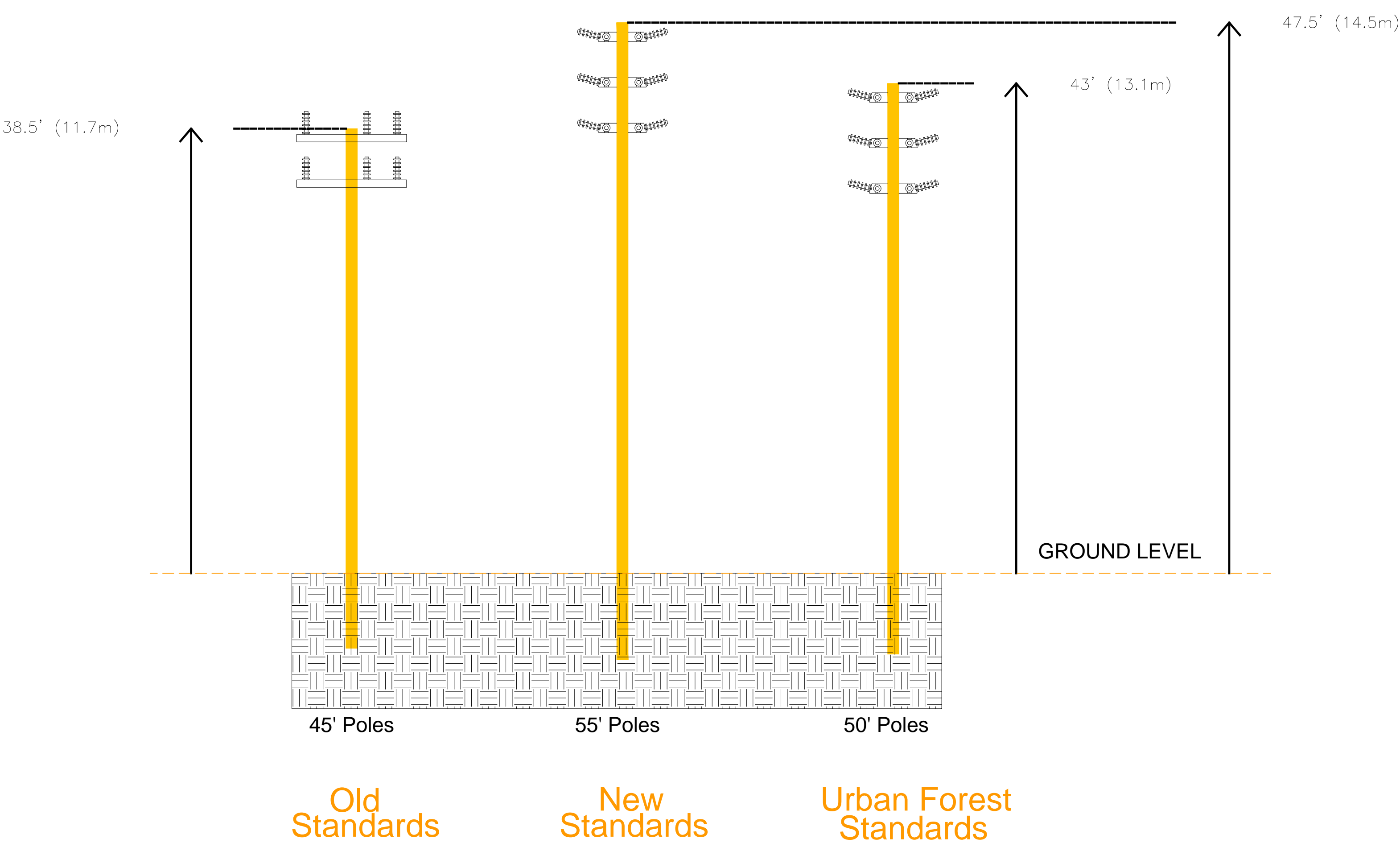


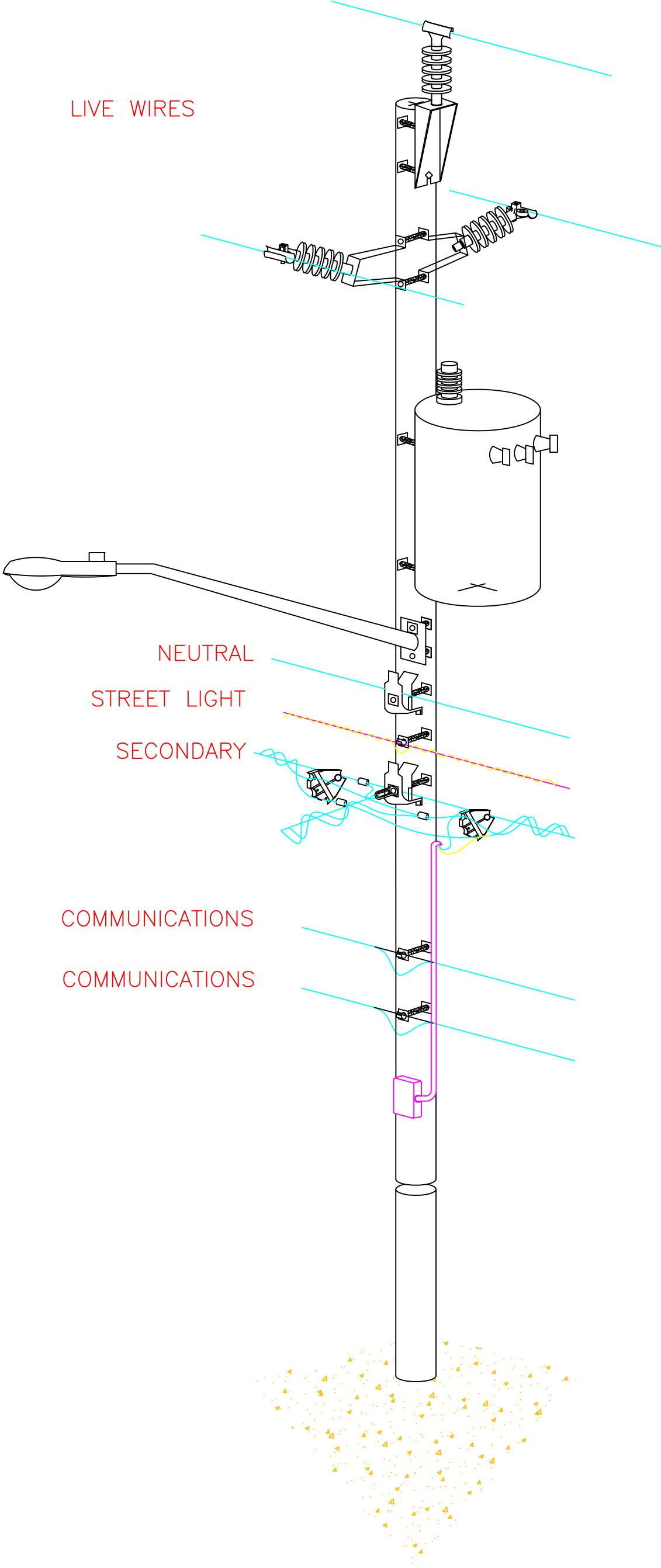
COMPARISON OF POLE STANDARDS

Single Circuit Lines



Double Circuit Lines

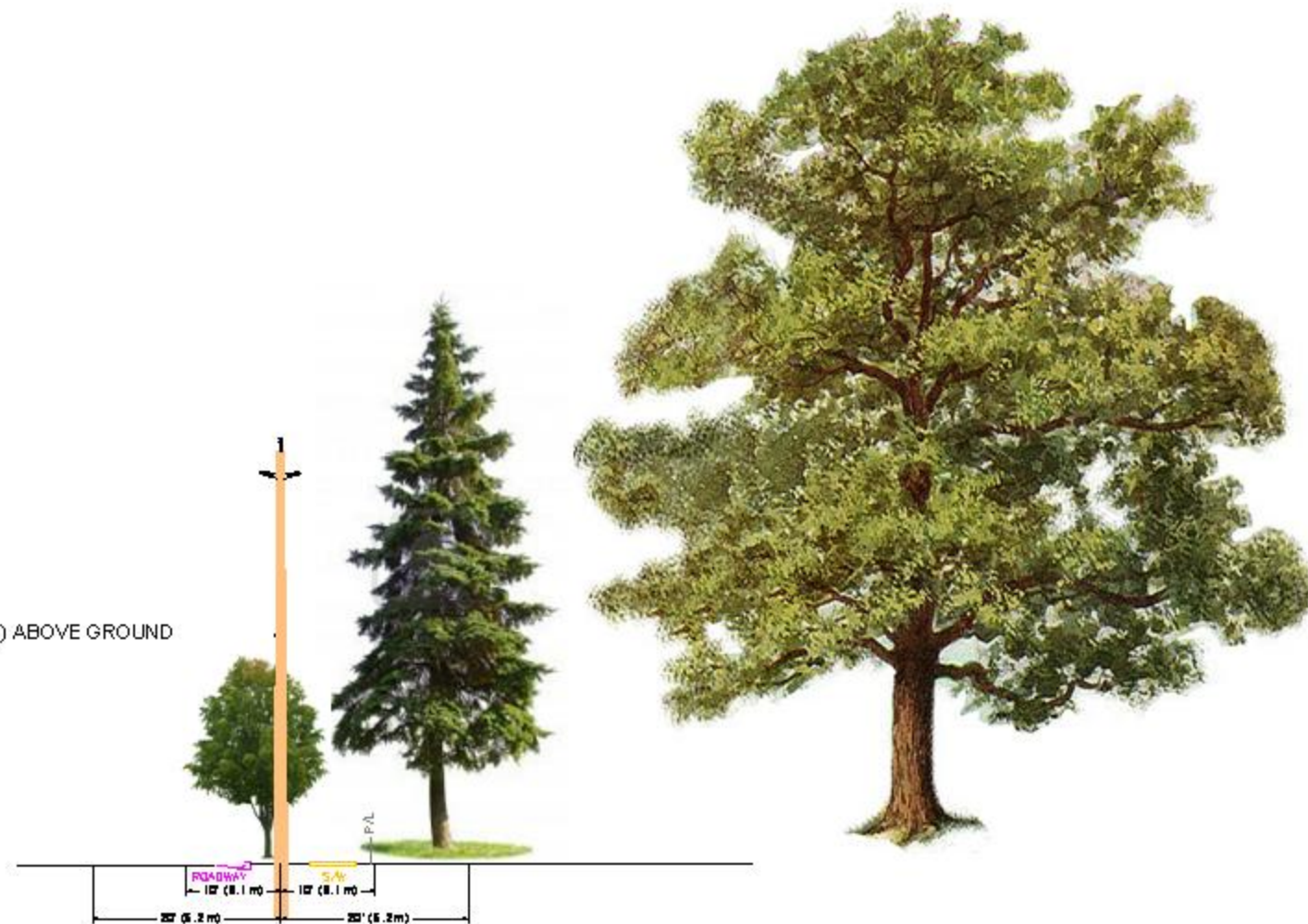




SAMPLE OF WNH ALLOWABLE TREE SPECIES NEAR POWER LINES

NEUTRAL 25FT (7.6m) ABOVE GROUND

GROUND LINE



DIRECTLY UNDER LINES

GLOBE MAPLE*

IVORY SILK

ANY DWARF SPECIES

10'-20' AWAY FROM LINE

PYRAMIDAL OAK

SPRUCE

COLUMNAR MAPLE

>20' AWAY FROM LINE

OAKS, MAPLES

LOCUST

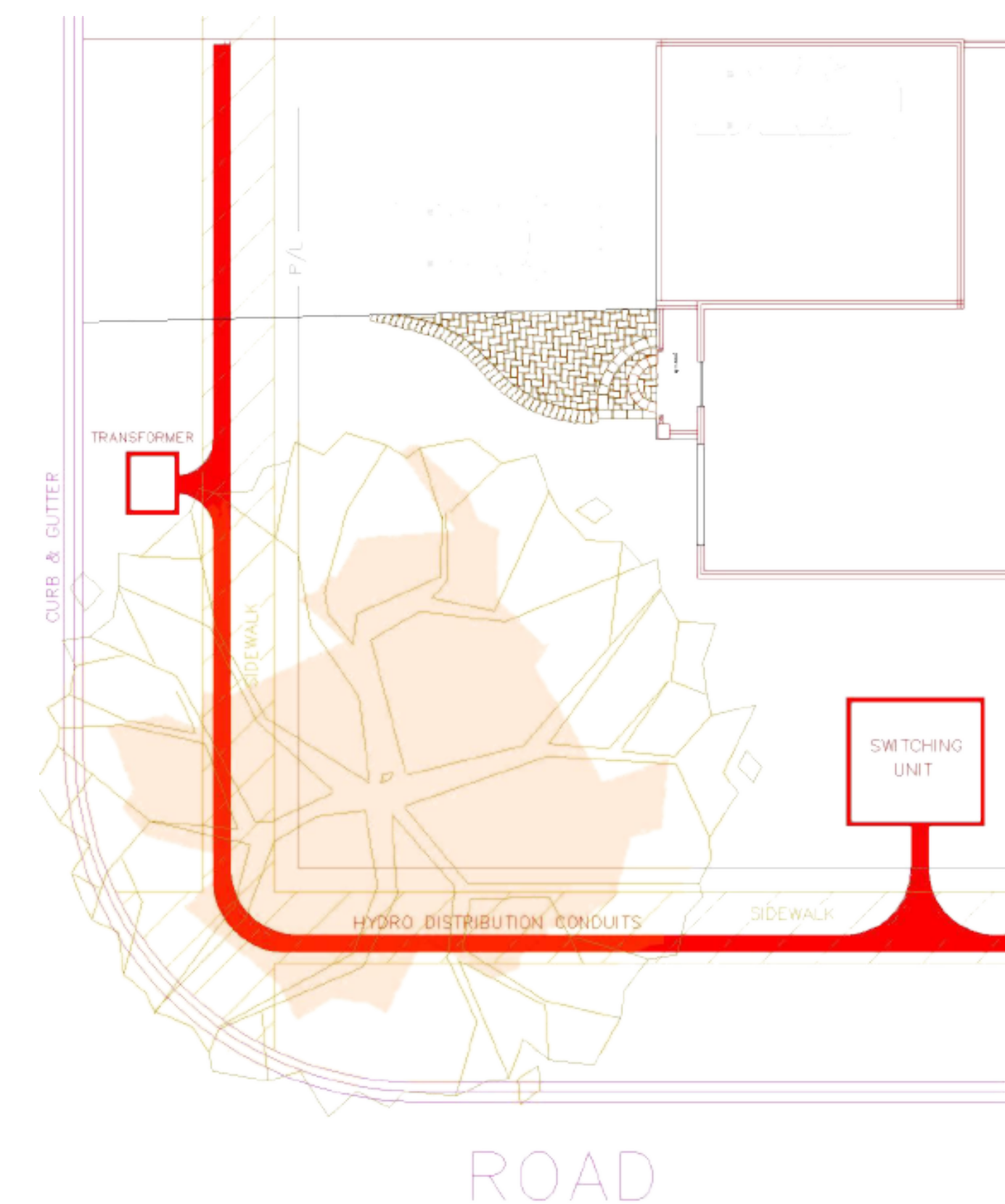
NATIVE VARIETIES

*FOR POLY-ETHYLENE TAPES (P.E.T.) AND 600V
NO TRIP TRIPPING IS EXPECTED.



Waterloo North Hydro Inc.

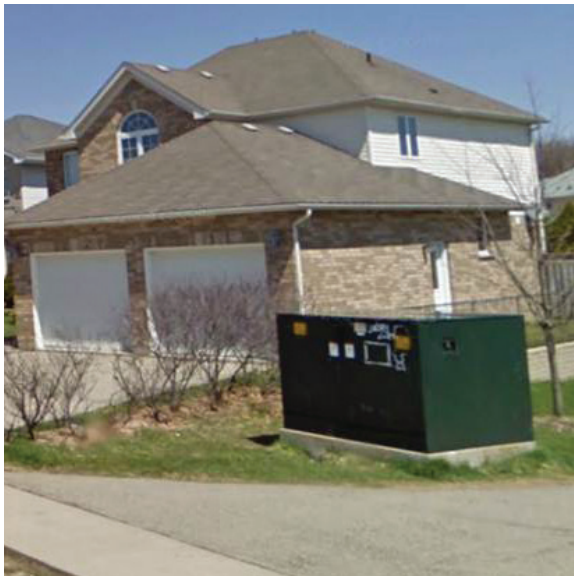
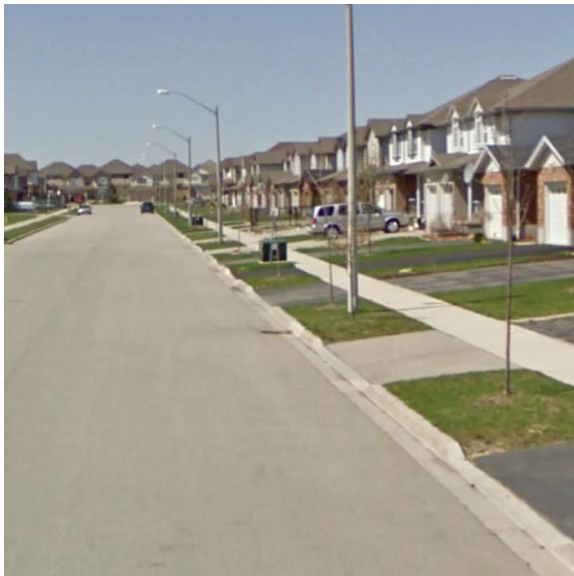
THE AESTHETICS OF YOUR STREET.



Your neighbourhood is beautiful. We want to help keep it that way.

We understand that many of you are interested in Underground solutions. Currently, we replace overhead systems with overhead systems and underground systems with underground systems. But, Underground is an option for your neighbourhood.

	OVERHEAD	UNDERGROUND
Capital Costs (actual estimate) \$/meter	\$236	\$2,231
Life Span	45 to 55 years	25 to 30 years
Financial Impacts	The cost of overhead renewal is included in WNH rates. There is no additional cost to the customer to renew overhead systems.	<div>» The party requesting Overhead distribution to be moved Underground pays the cost to do so</div> <div>New residential or commercial areas:<div>» The developer pays the extra cost up front</div><div>» Developer passes this extra cost to the builder and ultimately the property owner during the property sale</div></div> <div>Existing residential or commercial overhead areas:<div>» The requesting party (municipality, property owners, or a group of property owners) pays the extra cost up front</div></div>
Physical Impacts	<div>» Visible power lines</div> <div>» Poles</div>	<div>Transformers and Switching vaults need to be installed<div>» 1 transformer serves 10 homes</div><div>» Transformers would need to be installed on municipal and/or private property</div></div>
Impact on Trees	<div>» Tree trimming required</div> <div>» Possible tree removal</div>	Duct bank structures can be detrimental to tree root systems (see diagram)



PROJECTED COSTS

Replacing Overhead Service with Underground Service.

- » Underground service costs up to 10x more than Overhead service to install
- » The average cost to convert is approximately \$30,000 / property
- » For example, \$2,000,000 in added capital costs increases WNH Rates to all customers by 1.0%
- » Undergrounding all of Westmount (Erb St to the north, John St to the south, Westmount Road to the west and King St to the east) would increase WNH rates to all customers by approximately 30%
- » Underground systems cost approximately 4x more to maintain than Overhead systems

DISTRIBUTION LINE REBUILD COSTS	OVERHEAD	UNDERGROUND
Average cost / meter	\$236	\$2,231
Roslin - Erb to Norman	\$214,600	\$2,196,750
Euclid - Erb to William	\$177,600	\$1,818,000
Avondale - Norman to Allen	\$48,840	\$499,950

Option 1: Minimalist Approach

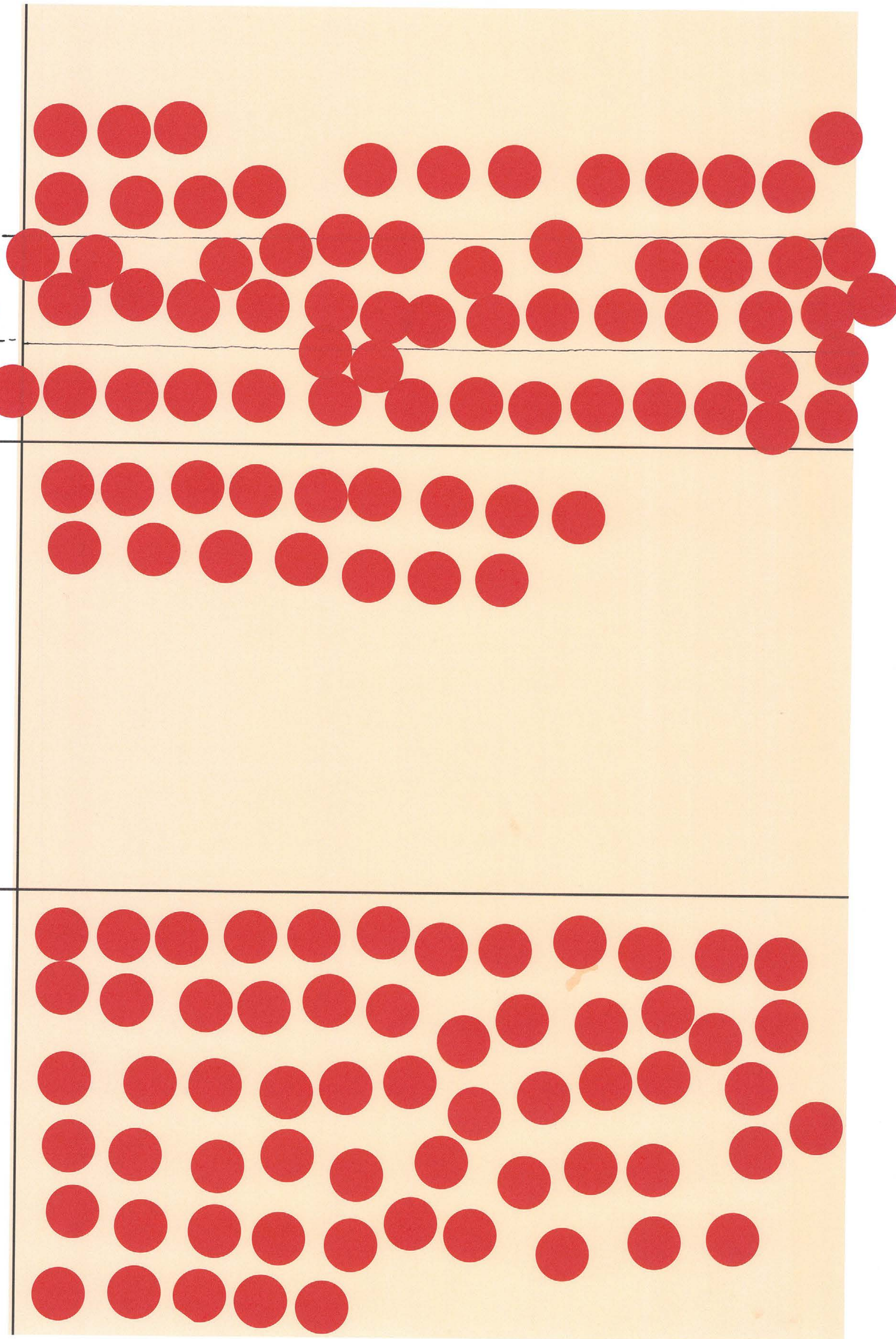
- » Reduced working space
- » Uneven lines
- » Reduced tree-trimming clearances

Option 2: Removal of Communication Lines

- » Communication lines to be buried

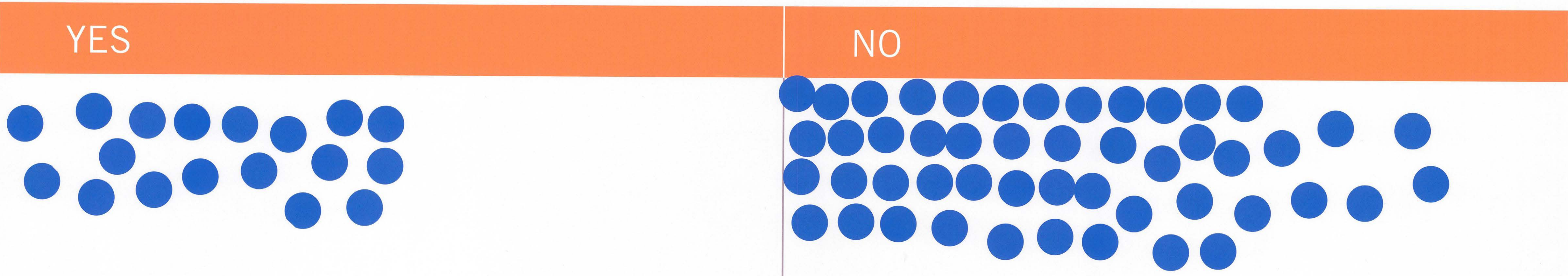
Option 3: Change Wire Arrangement

- » Alternate Standard



Underground Service (Select 1)

Would you like WNH to explore in more detail the feasibility of Underground service in your neighbourhood?



NEXT STEPS:

This process is expected to take 12-24 months.

- » Evaluate feedback
- » Shape options
- » Consult with other stakeholders
- » Communicate outcomes
- » Timeframe for next communication
- » 4 weeks: themes that came out of the Open House



Waterloo North Hydro Inc.

TALK TO US.

Whether you're concerned about our work, or are experiencing interruptions in service, don't hesitate to call us. We want to make it right.

Waterloo North Hydro encourages uptown-west customers with questions or concerns to contact them either at the dedicated email address (uptown04-16@wnhydro.com) or by phone at (519-888-5552).

Herbert Haller, P.Eng.

Vice-President, Engineering & Stations

t: (519) 888-5568

f: (519) 886-7049

e: hhaller@wnhydro.com

Dorothy Moryc, P. Eng.

Manager of Distribution Engineering

t: (519) 888-5583

e: DMoryc@wnhydro.com

Waterloo North Hydro Inc.

526 Country Squire Road

Waterloo, Ontario, N2J 4A3



Waterloo North Hydro Inc.



HERBERT HALLER, P. ENG.
VICE-PRESIDENT, ENGINEERING & STATIONS

WATERLOO NORTH HYDRO INC.

PO Box 640
526 Country Squire Rd
Waterloo ON N2J 4A3
Telephone 519-888-5568
Fax 519-886-7049
E-mail hhaller@wnhydro.com

July 5, 2013

Waterloo North Hydro - Balancing Renewal and Preservation

Waterloo Uptown West Update

Dear Waterloo North Hydro Customer

Last year Waterloo North Hydro (WNH) set out to understand residents' concerns regarding the renewal of the electrical distribution system in Uptown West. This is an area bounded by Erb St, John St, Westmount Rd and King St in Waterloo. This renewal is necessary to maintain safety, improve service and increase efficiency.

To address these concerns in the best way possible, a number of initiatives were taken, some of which included;

- letters to the 1500 area customers providing information and inviting participation in a renewal consultation process
- creation of a project specific email box to focus and improve communications with residents
- creation of a web page to provide advanced notice of larger capital projects to all customers
- development of predesign and revamping of preconstruction customer notifications to provide more information on the impacts of the proposed work and more timely opportunities for customer consultation
- development of alternate design standards to reduce the impact on the tree canopy
- hosting of two focus group meetings to cultivate a better understanding of the issues

On October 29th, 2012, WNH also hosted an Open House, presented a variety of approaches for the renewal work and obtained valuable feedback from residents. We learned from the Open House that the majority of participants expressed an interest for WNH to explore a variety of overhead service options that reduce the impact to the tree canopy. The main elements of this include

- no additional circuits on the poles,
- poles to remain at same height or increase by no more than five(5) feet above existing,
- no planned removal of trees due to hydro upgrades, and
- the least possible tree trimming allowed by safety regulations

Information from the Open House can be found on our website www.wnhydro.com/stayinformed/projectsaffectingyou

Since the Open House, Waterloo North Hydro has been working to develop an Area Plan for Uptown West taking into account the community feedback received. Once the Area Plan is far enough along, WNH will once again consult with Uptown West residents and host a second Open House in approximately 12 months.

In addition, as we communicated at our first Open House, the second power circuit on Allen Street, west of Park Street will be removed and the poles lowered by five (5) feet. This work is scheduled to occur during the summer of this year. Residents on the affected section of Allen Street will be receiving further details about this work shortly.

In the meantime, WNH crews may be in the area but only to perform routine services such as switching operations, maintenance activities, equipment repair, responding to outages and making connection changes.

Waterloo North Hydro encourages Uptown West customers with questions or concerns to contact Waterloo North Hydro either at the dedicated email address (uptown04-16@wnhydro.com) or by phone at (519-888-5552).

Regards,

A handwritten signature in black ink, appearing to read "Herbert Haller". The signature is fluid and cursive, with the first name "Herbert" and last name "Haller" clearly distinguishable.

Herbert Haller P.Eng.

Vice-President, Engineering & Station