WATERLOO NORTH HYDRO INC.



DOROTHY MORYC MANAGER OF DISTRIBUTION ENGINEERING 526 Country Squire Rd Waterloo ON N2J 4G8 Telephone 519-888-5583 Fax 519-886-7049 E-mail <u>dmoryc@wnhydro.com</u>

June 20, 2017

DROP-IN OPEN HOUSE INVITATION

ELMIRA BIRDLAND WEST NEIGHBOURHOOD ELECTRICAL DISTRIBUTION AREA PLAN DEVELOPMENT

DATE: TUESDAY JUNE 27, 2017

TIME: BETWEEN THE HOURS OF 4:00 P.M. TO 8:00 P.M.

LOCATION: ST. TERESA OF AVILA CATHOLIC ELEMENTARY SCHOOL, GYMNASIUM 69 FIRST STREET WEST, ELMIRA ON N3B 1G5

Dear Resident of Elmira,

We would like to invite you to attend an open house related to work that Waterloo North Hydro (WNH) plans to undertake in the area of Elmira Birdland West bounded by First Street West to the south, Brookmead Street to the north, Barnswallow Drive to the west and Snyder Avenue South to the east. Please see the area map on the reverse side.

The purpose of this Open House is to communicate to the residents how the input received from the neighbourhood has been incorporated into the overall plan, provide additional information on the plan, and solicit feedback to help us finalize it.

We sincerely appreciate the feedback received since February 2014 and thank all who provided it. We have heard the residents being concerned about a) Reliability and Power Quality such as power interruptions and long restoration times; b) Safety concerns such as high voltage lines that run in the back lot creating a greater risk of an injury during severe weather conditions; c) Construction related concerns such as disturbances to backyard gardens and driveways.

A number of WNH staff will be available at this Open House to answer any questions and we welcome feedback regarding the area distribution plan.

Your participation is very important to us and all residents of Elmira Birdland West are invited to attend.

Dorothy Moryc. P. Eng, Manger of Distribution Engineering Waterloo North Hydro Inc.



ELMIRA BIRDLAND WEST SUBDIVISION FYDRO RENEWAL PROJECT

THE PURPOSE OF THIS OPEN HOUSE:

- in the area and challenges
- 2. To provide summary of feedback received to date
- of electrical servicing in the area
- 4. To solicit further input regarding the preferred option

WATERLOO NORTH HYDRO INC. 526 COUNTRY SQUIRE RD. RR1, WATERLOO, ON, N2J 4G8 **TELEPHONE**: 519-888-5552 **FAX**: 519-886-7049 **EMAIL**: ELMIRA04-39@WNHYDRO.COM

1. To present information about existing hydro infrastructure

3. To present three (3) design approaches for improvement



HOW IT WORKS

There are options for addressing your concerns.

- of these options
- ask WNH staff your questions



> As you move around the room, you will find a description

> Take some time to read the information presented here and

> Then, go to the voting board to indicate your preferences



HOW WE WORK WITH YOU.

Our consultation process for Area Plan Development and street-by-street distribution renewal projects:

This stage: Area Plan Development

- > Advance notice provided to residents
- > Project specific mail box created
- > Open house to share information and obtain your input
- > Feedback will shape options

Next stage: Street by street distribution renewal

- > Advance notice will be provided via the "Projects Affecting You" area on our website
- > Customers are notified at the beginning of the design cycle, given more information and an opportunity to participate
- > Design staff continue to meet with home owners to address particular concerns
- > Customers have an opportunity to provide feedback on preliminary design if it varies significantly from today's conditions
- > As always, customers are notified of the start and expected duration of the construction phase of our project
- > Advanced notice will be given for scheduled power outages



THE WORK WE WANT TO UNDERTAKE:

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

Waterloo North Hydro is currently examining renewal options for the electrical distribution system in an area of Elmira Birdland bounded by First Street West to the south, Brookmead Street to the north, Barnswallow Drive to west and Snyder Avenue South to the east.

Our work in your neighbourhood:

> We are renewing your infrastructure by converting old distribution to new distribution

When is future work expected to take place?

- > We plan to proceed to detailed design on a street by street basis as soon as the Area Plan is finalized
- > Streets at the south part of our study area will be renewed first and could begin construction by fall of 2017
- > We anticipate approximately 2 years of construction would be required to complete rebuilding of the project area

What does this mean for you?

- > Maintaining safety by replacing old poles and wires
- > Less service interruptions
- > Improved reliability
- > Faster restoration during power outages
- > Retiring old and efficient stations and circuits
- > Better for our environment
- > Preparing for future energy needs



YOUR NEIGHBOURHOOD AND ELECTRICAL DISTRIBUTION NETWORK

- > There are 78 hydro poles, 22 transformers and over 2km of distribution lines that deliver power to 300 homes in the area operating at outdated voltage (4.16kV)
- > 53% of all home electrical services are overhead
- > 77% of home have meters in difficult to access back of the house locations
- > 80% of distribution lines are over head and they are almost all located in rear lot
- > Almost all the poles in the entire area are over 50 years old and need to be replaced
- > Many poles are difficult to access due to fences, trees, gardens and pools
- > There are many large trees located in close proximity to distribution lines in all the zones
- > The last neighbourhood in our service territory with trunk lines located in private backyards





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:

Reliability and Power Quality

- > Frequency of interruptions of power supply, and
- > Long restoration times for power outages are a concern

Safety

- > Concerned about high voltage lines in back lots creating a risk of injury during severe weather conditions
- > Overhead distribution equipment (ex. transformers) located in close proximity to buildings
- > Overgrown trees very close to overhead pole lines and wires supplying electricity to homes

Construction Related Concerns

- > Customers are concerned about disturbances to backyard gardens and driveways
- > Some customers asked us to investigate ways to minimize impacts to trees
- > Some customers have experienced repeated failures of the service conductors between their home and WNH transformers, resulting in multiple outages to their homes

How did we hear this?

> From the responses we heard from our Area Plan Development commencement letter sent Spring 2014



YOUR TREES ARE IMPORTANT.

We know your trees are extremely important to you.

There are options for reducing the impact of our renewal project on your trees.

WNH considers trees extensively by:

- > Developing alternate designs 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:

- > In the 1950's and 1960's delivering electrical service from the rear lot was widely accepted alterative to front lot underground distribution
- > This method reduced cost while improving streetscape aesthetics
- > At the time of construction rear lots could be easily accessed for operation and maintenance
- > As rear lot hydro infrastructure aged and the landscape of private property evolved, access became limited
- > Building additions, fences, sheds, retaining walls, pools and overgrown trees became an obstruction creating maintenance and reconstruction issues

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 trees



WHY HYDRO RENEWAL IS NEEDED NOW:

creating safety and maintenance issues.

Design Options

Waterloo North Hydro shares the concerns of our customers and have examined two new servicing approaches as alternatives for existing servicing approach for renewing hydro infrastructure in Elmira Birdland West Subdivision.

Re-build Lines in Back Lots to Today's Standards

Full Underground Servicing Approach

The majority of electrical distribution equipment located in the rear lot is past its life expectancy and is in very poor condition. If no action is taken today the equipment will start failing at an increasing rate potentially

Hybrid Servicing Approach



RE-BUILD LINES IN BACK LOTS TO TODAY'S STANDARDS

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
 - 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
- > No provision for alternate supply to a substantial part of the neighbourhood
 - Resulting in longer outages that affect a large group of residents



High voltage lines tree impact

FULL UNDERGROUND SERVICING APPROACH

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 neighbourhood. This would mean that a large percentage of home owners supplied by overhead lines would need to convert their service.

What is required to convert my home to What are the repair and restoration 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

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. 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.

**FOR OH TO UG ELECTRICAL SERVICE CONVERSION STEPS & CHALLENGES ASSOCIATED WITH THIS PROCESS: SEE "OH TO UG SERVICES CONVERSION" POWERPOINT PRESENTATION

HYBRID SERVICING APPROACH

This approach means getting the street ready for full underground, but keeping home connections the same.

High voltage power lines: will be converted to front lot underground. Pull vaults and transformers 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 significantly reduced (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 connection to each home remains unchanged
- > 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



Low voltage lines tree impact

MORE WAYS TO SAVE TREES

In order to install new poles at the exact same location as exisiting, some trees will need to undergo major trimming.

1. 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

2. 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)

3. 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 neighbouring 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)



YOUR INPUT IS NEEDED

PLEASE DOT VOTE IF YOU WOULD BE SUPPORTIVE OF

overhead home service?

Granting an access easement for a new pole and anchor to provide for a transition from front lot underground supply to your overhead home service and neighbouring homes?

Please note, if you are supportive of any of these options please fill out a contact form before you leave.

Placing a new pole to provide for a transition from front lot underground supply to your individual



YOUR INPUT IS NEEDED

PLEASE DOT VOTE YOUR PREFERENCE

When would you be interested in converting your home service from overhead to underground?

A) BEFORE OR AT THE TIME OF CONSTRUCTION

B) DURING HOME RENOVATION PROJECTS AT A FUTURE DATE

C) NEVER



HYDRO RENEWAL PROJECT NEXT STEPS:

- 2. Develop detailed design for each street while soliciting feedback from the affected residents through: > PRE-DESIGN NOTIFICATION > PRELIMINARY DESIGN NOTIFICATION
- residents informed about our construction timelines: > PRE-CONSTRUCTION NOTIFICATION

1. Finalize electrical servicing area plan based on feedback received at this Open House and communicate outcomes to the residents

3. Construct our new distribution network in stages while keeping



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 Elmira customers with questions or concerns to contact them either at the dedicated email address (elmira04-39@wnhydro.com) or by phone.

Dmitriy Lisovskiy, P. Eng

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Waterloo North Hydro Inc.

O/H to U/G Conversion Presentation

Overhead Engineering & Services

June 27, 2017



✤ TYPICAL RESIDENTIAL OVERHEAD SERVICE

✤ TYPICAL RESIDENTIAL UNDERGROUND SERVICE

CONVERSION PROCESS

CHALLENGES



RESIDENTIAL OVERHEAD SERVICE



Wednesday, October 17, 2012

OH Engineering & OH Services

Page 3 of 11

RESIDENTIAL OVERHEAD SERVICE









RESIDENTIAL UNDERGROUND SERVICE



- PAD MOUNTED TRANSFORMER IN
 BOULEVARD
- APROXIMATELY 1 TRANSFORMER FOR EVERY 10 HOMES





- WNH COMPLETES A DESIGN AND OBTAIN ALL REQUIRED APPROVALS AND CONSTRUCTION PERMITS
- WNH EXCAVATES AND INSTALLS UNDERGROUND CONDUCTORS, CONCRETE BOX PADS AND PAD MOUNTED TRANSFORMERS IN THE BOULEVARD
- ✤ CUSTOMER/ELECTRICIAN INSTALLS A NEW METER BASE ON THE EXTERIOR WALL OF THE RESIDENCE
- ✤ CUSTOMER ELECTRICIAN EXCAVATES AND INSTALLS CONDUIT FROM BELOW THE NEW METER BASE TO PROPERTY LINE
- WNH INSTALLS UNDERGROUND SECONDARY CONDUCTORS FROM THE PAD MOUNTED TRANSFORMERS TO THE NEW METER BASES

INSTALLATION OF CONDUIT AND CONDUCTORS



 DIRECTIONAL DRILL NEW CONDUITS – FOR PRIMARY AND SECONDARY CONDUCTORS IN BOULEVARD



 OPEN TRENCH FOR DIRECTIONAL DRILL ENTRY PITS AND THE INSTALLATION OF CONCRETE BOX PADS



INSTALLATION OF CONCRETE BOX PADS





Wednesday, October 17, 2012

OH Engineering & OH Services

INSTALLATION OF PAD MOUNT TRANSFORMERS

\$



INSTALL PAD MOUNTED TRANSFORMERS ON CONCRETE BOX PADS AND TERMINATE CONDUCTORS 74757 3

INSTALLATION OF NEW METER BASE AND SECONDARY CONDUCTORS



- ✤ INSTALL NEW METER BASE ON EXTERIOR WALL OF RESIDENCE
- INSTALL SECONDARY CONDUCTORS AND CONDUIT FROM THE PAD MOUNTED TRANSFORMER TO THE NEW METER BASE





- WNH DISCONNECTS THE OVERHEAD CONDUCTORS AND REMOVES THE ELECTRICAL METER
- ✤ CUSTOMER/ELECTRICIAN REMOVES THE OLD SERVICE MAST AND STACK
- CUSTOMER/ELECTRICIAN INSTALLS NEW LOAD SIDE CONDUCTORS FROM THE NEW METER BASE TO THE ELECTRICAL DISTRIBUTION PANEL
- ✤ CUSTOMER/ELECTRICIAN ARRANGES FOR ELECTRICAL INSPECTION WITH ELECTRICAL SAFETY AUTHORITY
- ELECTRICAL SAFETY AUTHIRITY INSPECTS THE INSTALLATION AND SENDS WNH AN AUTHORIZATION TO CONNECT THE NEW UNDERGROUND SERVICE
- ✤ WNH ENERGIZES THE NEW UNDERGROUND CONDUCTORS AND REINSTALLS THE ELECTRICAL METER

DISCONNECT OVERHEAD SECONDARY CONDUCTORS



 DISCONNECT AND REMOVE OVERHEAD SECONDARY CONDUCTORS

✤ REMOVE OVERHEAD SERVICE MAST AND STACK



TERMINATE UNDERGROUND SECONDARY CONDUCTORS



INF SIDF

LOAD SIDE

- INSTALL NEW SECONDARY CONDUCTORS FROM DISTRIBUTION PANEL TO LOAD SIDE OF NEW METER
- ✤ OBTAIN ELECTRICAL SAFETY AUTHORITY INSPECTION
- TERMINATE NEW SECONDARY CONDUCTORS FROM PAD MOUNTED TRANSFORMER TO LINE SIDE OF NEW METER BASE
- ✤ REINSTALL ELECTRICAL METER









ELECTRICAL SAFETY AUTHIRITY (ESA) INSPECTION

- ESA INSPECTION IS REQUIRED FOR ANY CHANGE TO THE ORIGINAL WIRING INCLUDING REPAIR AND REPLACEMENT OF ELECTRICAL DEVICES
- ESA INSPECTION IS BASED ON CURRENT ONTARIO ELECTRICAL SAFETY CODE REQUIREMENTS – 2012 25TH EDITION
- CUSTOMER MAY NEED TO UPGRADE ELECTRICAL SERVICE AND/OR CORRECT EXISTING DEFICIENCES PRIOR TO CONNECTING THE NEW UNDERGROUND SERVICE
- * FIND A LICENSED ELECTRICAL CONTRACTOR NEAR YOU: ESA Website Link

PHYSICAL SITE CONSTRAINTS

- ✤ SITE ACCESS TO COMPLETE WORK
- EXCAVATION AND REMOVALE OF SOD, ASPHALT DRIVE WAY, PAVING STONES, CONCRETE PATIO ETC.
- REPARING ROOF AND EXTERIOR HOUSE FINISHES AFTER OVERHEAD MAST AND STACK IS REMOVED



* WNH will waive utility fees associated with OH to UG service conversion during our construction window from August 2017 to December 2019



Waterloo North Hydro Inc.

If you have any questions, please contact WNH Engineering Department at (519) 888-5552



WATERLOO NORTH HYDRO INC.



526 Country Squire Rd Waterloo ON N2J 4G8 Telephone 519-888-5552 Fax 519-886-7049 Email : elmira04-39@wnhdyro.com

July 12, 2017

Dear Waterloo North Hydro Customer,

In 2014, Waterloo North Hydro (WNH) commenced the development of an electrical servicing area plan for your neighbourhood and invited you to tell us about any issues or concerns you may be having with the electrical infrastructure in place today.

On June 27th, 2017, WNH hosted an Open House at St. Teresa Of Avila Catholic Elementary School in Elmira presenting a variety of approaches for renewal work that were developed to address concerns of the residents. During this event we obtained valuable input from the attendees. The information from the Open House can be found on our website by following the link below for Birdland North Area Plan Development:

www.wnhydro.com/stayinformed/projectsaffectingyou

Based on the feedback received from residents, we have determined the best approach for renewal of the electrical distribution system in your neighbourhood is the **Hybrid Service Approach**. In this approach, WNH plans to put all high voltage cabling underground within the municipal right-of-way and rebuild existing pole lines to accommodate low voltage wires only, except for a new high voltage pole line on the south side of First Street West between Snyder Avenue South and Meadowlark Road.

This option allows WNH to upgrade the outdated infrastructure, implement main and alternate supply points for each street and provides a migration path to front lot underground service. The **Hybrid Service Approach** option allows each home service to remain unchanged until a service upgrade is requested. For more information about this option, please see online poster titled **HYBRID SERVICE APPROACH** and the corresponding **HYBRID SERVICE PLAN** by following the link above.

Our next stage will be to proceed to detailed design on a street-by-street basis. Detailed information will be communicated to the area residents by:

- Delivering pre-design letters to inform you when WNH will be starting design for your street
- providing WNH design contact information specific to the project
- working closely with residents on the particular street
- proceed to construction in mid summer of 2017

The web site materials posted also include general information about home service conversion to the new front underground system in poster titled **FULL UNDERGROUND APPROACH** and the **OVERHEAD to UNDERGROUND CONVERSION PRESENTATION.** Any resident of this neighbourhood wishing to explore the option further is encouraged to contact us for more details at <u>elmira04-39@wnhydro.com</u>. For the duration of our construction in this area (approximately till December 2019), WNH is offering an incentive by waiving WNH fees for service conversion. For an average home, this is approximately \$1,000 savings.

Waterloo North Hydro encourages the customers with questions or concerns to contact us either at the dedicated email address <u>elmira04-39@wnhydro.com</u> or by phone at 519-888-5552.

We look forward to working with you on this very important project for your community.

Regards,

Mouje

Dorothy Moryc. P. Eng, Manager of Distribution Engineering

