

**NIAGARA-ON-THE-LAKE HYDRO INC.**

**EB-2018-0056**

**EXTRACTS FROM EB-2013-0155**

**VECC  
SUPPLEMENTARY INTERROGATORIES  
ON ADDITIONAL EVIDENCE**



# Consolidated Distribution System Plan

Developed in accordance with

“Ontario Energy Board - Filing Requirements for Electricity  
Transmission and Distribution Applications

Chapter 5

Consolidated System Plan Filing Requirements

March 28, 2013

Filed with NOTL Hydro’s 2014 COS Application

Case EB-2013-0155

On October 1, 2013

technologies to maintain our optimal customer service levels while reducing the number of customer calls and truck rolls. These new technologies will also include customer tools to assist with managing their consumption. The cost savings of not adding an additional employee can be estimated at \$70,000 - \$90,000 annually.

c) Long-term Direction (2009-2018)

1. Requirement to complete the overhead/underground system renewal within a 5/10 year timeframe
2. Consideration as to the impact of our investment on customer rates - target a reduced annual capital expenditure program around the \$1.25 million level.
3. Replace and upsize one transformer unit at MTS#2 for future growth, reliability and redundant capacity in 2015.
4. Improved customer service and operating efficiencies through the continued addition of system intelligence and advanced technologies.
5. Reinforce and manage our system to ensure we can continue to accept renewable generation and new customer growth.
6. Provide effective customer tools and programs to assist with managing their consumption.

d) Vintage of Information on Investment Drivers

The condition of our two transformer units was professionally assessed in a report received January 2012. A customer feedback survey was conducted in June 2013 with the results considered in developing this consolidated distribution system plan. An asset management (AM) program was developed and completed in 2012. The AM program included a thorough asset condition assessment (ACA) study that was conducted through the first three quarters of 2012 and refreshed by our annual inspection process conducted in the first quarter of 2013 in preparation of our 2014 Capital Expenditure Plan.

e) Asset Management Plan Development

NOTL Hydro was advised by the Ontario Energy Board during our 2009 Rate Application process that a more formal asset management practice would need to be demonstrated for our next rate application. The framework for the plan was finalized and approved by our Board of Directors in April 2012. The functioning AM plan culminated in late 2012 with the input from the ACA and output from a new AM software system referred to as the 'Optimizer'. With the AM Plan updated, NOTL Hydro has plotted a clear direction for future investment and maintenance plans based on a thorough ACA, annual inspections, outage and outage indices analysis and the monitoring of system components and good utility planning and practices. While the details of our process to develop a comprehensive AM Plan are described in later sections, the plan specifics will

## Capital Funding

- Develop formal financing procedures
- Forecast cash flow, OEB rate setting schedule and affects
- Evaluate alternative financing options
- Consider economic environment (interest rates, revenues)

A flowchart of the Asset Management Plan process is provided<sup>4</sup>.

### **5.3.2 Overview of Assets Managed**

- a) Niagara-on-the-Lake Hydro operates within the 133 km<sup>2</sup> of our municipal boundaries bordered by the Niagara River (east), the Welland Canal (west), Lake Ontario (north) and the Niagara Escarpment (south). 119 km<sup>2</sup> of our operating territory is deemed rural and 14 km<sup>2</sup> is considered urban. While our climate is generally tempered by the presence of Lake Ontario and the Niagara Escarpment, NOTL Hydro is susceptible to several severe snow, wind and lightning storms. A legacy 4 kV system is supplied via 'step up' transformers which will eventually be redundant as all new plant is constructed at the 27.6 kV level. We supply over 8200 customers via 235 km of overhead lines and 91 km of underground circuit. NOTL customers are principally located in urban pockets therefore a majority of our feeders extend through several kilometres of rural territory. We are a summer peaking utility with an average of 45 mW or 50 mVA while winter peaks remain around 30 mW. Our largest customers consist of hotel/conference centres, a college campus, winery facilities and theatre complexes. A moderate-sized dairy production facility, small auto parts manufacturer and several fruit processing complexes have maintained a presence in the community for many years. Economic growth in our community has been measured in the last decade primarily due to the decline in U.S. tourists since 9/11 but has been offset by the success of the winery business. Our distribution network is quite extensive and we do not anticipate any significant system expansion, however, we have projected typical residential subdivisions and commercial customer connections to our existing grid in our 5 year plan.
- b) NOTL Hydro is a direct transmission customer as we own and operate two 115/27.6 kV supply stations with 6 - 27.6 kV feeders in total. We distribute via 326 km of circuit of which 235 km are overhead and 91 km are underground. Our two MTS stations each possess three 550 amp 27.6 kV feeders for a total of six. MTS #1 is a single unit constructed in 2003 and is rated at 25/42 mVA. MTS #2 has two 15/25 mVA units and can potentially supply 50 mVA. Our remaining legacy 4 kV station, King DS (5.4 mVA) is scheduled to be removed from service in the fall of 2013 and will be temporarily supplied via pad-mounted step down units until such time as the Old Town area is completely converted to 27.6 kV.
- c) In 2012, a Years of Service study was conducted for the major distribution assets including poles, overhead conductors, underground cables, underground conduit and transformers (see Attachment 19). A vast majority of the oldest

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<sup>4</sup> See Attachment 7.

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Over the historical period 2009 - 2012, NOTL Hydro's Capital Expenditures have averaged 49% for System Renewal, 29% for System Access, 20% for General Plant and 2% for System Service. Capital Expenditures in 2013 are projected to be 63% for System Renewal, 18% for System Access, 9% for General Plant and 10% for System Service.

Capital investments, primarily in System Renewal, continue to improve annual outage indices and reliability. This renewal plan will truly benefit our customers through improved outage indices and lower line losses. With the exception of the major wind storm in 2011 and a more recent severe lightning storm in July 2013, we continue to experience fewer annual truck rolls related to such repair. Despite having a robust system, we are always susceptible to damaging storms that seem to be increasing in frequency. Of the approximately \$1 million NOTL Hydro spends annually on O&M, 54% is related to purchases of material and services (tree trimming, meter reading, Infra-red, dry-ice cleaning, station monitoring, smart meter operation etc.) while 46% is traditionally internal labour and equipment. Of that total, 17% or \$206.7k is internally dedicated to such maintenance-related activities and trouble call response. Our greatest challenge is to control external costs for services and materials that can only be accomplished through effective tendering and procurement processes. Consideration must be given to the fact that in the past decade, NOTL Hydro's customer base has grown by 1350 customers or almost 20% and we have not added any additional staff to our current complement of 18. Optimistically we would suggest that we are able to maintain our internal costs at 0% in 2014 despite labour and fuel costs etc. Our challenge remains the annual inflationary pressure from our contract services representing 54% of our expenses. In order to accomplish our renewal plan, we expect to invest approximately \$900k annually over the next 5 years.

Our primary driver for investment in System Renewal is our commitment to complete our 4 kV conversion and replacement plans as previously described. Completing our 27.6 kV overhead renewal in the next 5-7 years and Old Town 27.6 kV underground conversion in approximately 10 years will ensure, for the most part, that all of our system plant is less than 35 years of age. The Asset Condition Assessment sheets for our proposed projects are provided<sup>19</sup>.

Capital expenditures in the General Plant category through the historic period have included a replacement of all (three) of our large line trucks and investments in CIS/FIS software to meet the needs of TOU billing. Investments in General Plant through the forecast period directly relate to the integration of systems and purchase of software to develop tools to better serve our customers.

System Access investments have and continue to be largely customer driven and somewhat difficult to forecast and budget. Commercial and industrial access is in most cases 100% recoverable from the customer while residential access is recovered through rates. Advance notice for municipally- requested plant relocations is generally one year or less. CCRA-related refunds to land developers have been averaging

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<sup>19</sup> See Attachment 10

## System Renewal Underground System

The Old Town of Niagara-on-the-Lake is the economic driver for the municipality. With roots back to the 1700's and the first capital of Upper Canada, the historic significance of the area to tourism and the need for preservation remains high. A long standing Town by-law requires that new infrastructure in the urban limits of the Old Town be installed underground. NOTL Hydro agrees with the principle of the by-law and has readily complied with the by-law since 1987. The replacement of the aging legacy 4 kV distribution network with 27.6 kV has continued for the past 25 years and is reflected in our 5 year Capex plan. With the completion of the Simcoe 600 amp feeder in 2013 and decommissioning of the last 4 kV sub-station this autumn, the renewal plan for the urban limits has become clear. We estimate that the entire historic Old Town will be converted to 27.6 kV and buried within 15 years. Our 5 year plan presented considers supply sources, safety, outage logs/reliability, asset conditions and coordination with 3<sup>rd</sup> parties in our approach. The goal of the long term plan is driven by our Mission and Vision statements and is endorsed by our customers whom have expressed overwhelming satisfaction with the direction of our reliability and service.

### 2014

Old Town Rebuild Phase 3 (\$330,000) Johnson - Simcoe to Dorchester Street

### 2015

Old Town Rebuild Phase 4 (\$385,000) Johnson - Dorchester to Palatine

### 2016

Old Town Rebuild Phase 5 (\$400,000) Niagara Blvd - Orchard to Lansdowne

### 2017

Old Town Rebuild Phase 6 (\$400,000) Gage - Simcoe to Dorchester and Dorchester - Gage to Centre

### 2018

Old Town Rebuild Phase 7 (\$400,000) Centre - Simcoe to Dorchester

## System Renewal Transformation Capacity

Market rules adopted in the early 2000's confirm that LDCs are responsible for ensuring that there is adequate transformation capacity for their customers. Shortly after incorporation, NOTL Hydro recognized a serious shortage of capacity and immediately constructed a new \$2.8 million 25/42 mVA 115kV-27.6 kV transformer station referred to as York TS or MTS #1. Our other supply station NOTL DS was operated by Hydro One and built by Ontario Hydro in the early 1980s. The 2 X 15/25 mVA unit station was

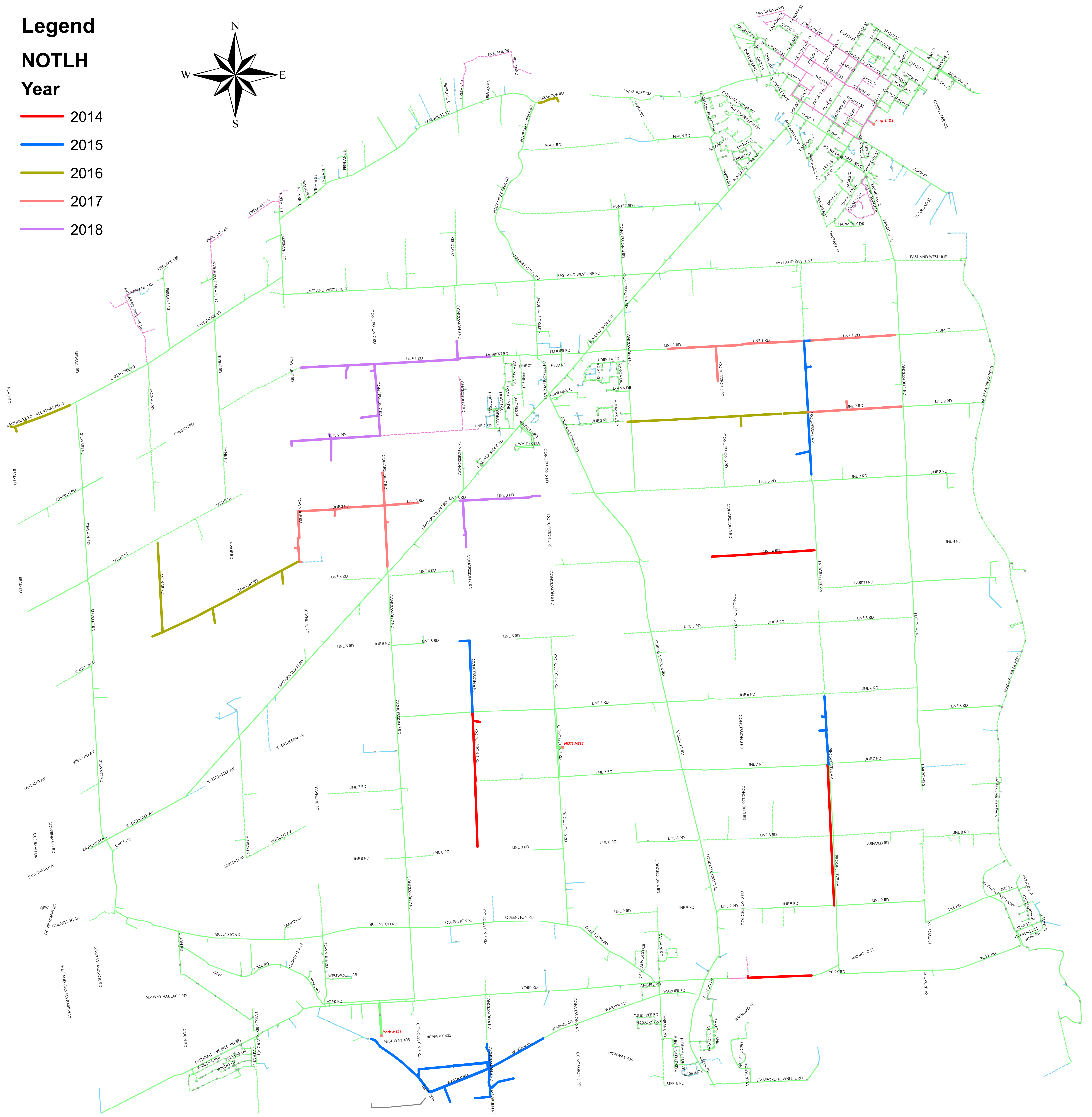
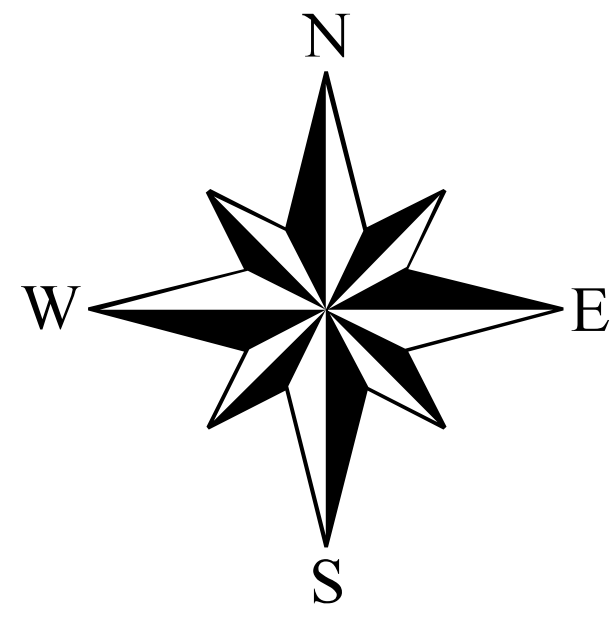
# NOTL Hydro 5 Year Overhead Capital Plan

## Legend

NOTLH

Year

- 2014
- 2015
- 2016
- 2017
- 2018



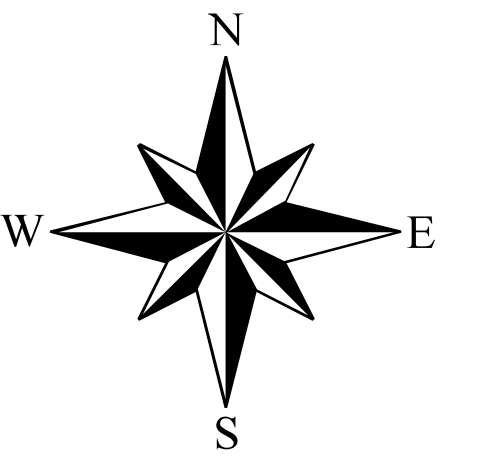
0 0.5 1 2 3 4 Kilometers



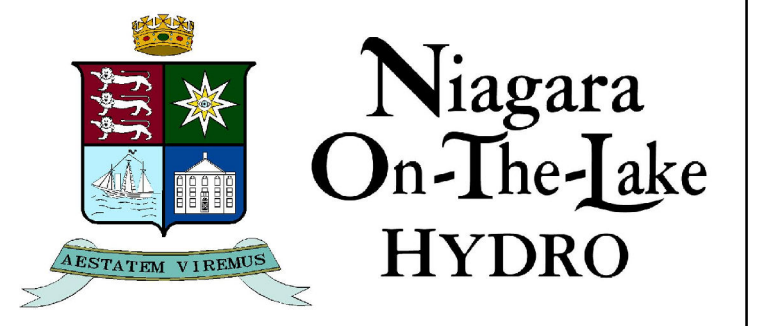
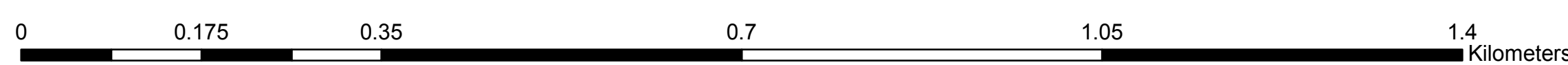
**Niagara  
On-The-Lake  
HYDRO**



# Old Town Underground Conversion Program



- Legend**
- Old Town**
- Year**
- 2013
  - 2014
  - 2015
  - 2016
  - 2017
  - 2018
  - 2019
  - 2020
  - 2021.2026





## 1.1-VECC-2

Reference: Exhibit 1, Tab 1, Schedule 2, pg. 9 / Appendix 2A -  
Distribution Plan, pg. 81-84

- a) Please provide details on the conversion of the Old Town to underground plant, including:
  - i. Total cost of the program and annual expenditures,
  - ii. Year started and year expected to be completed,
  - iii. Description of plant replaced and replacement plan,
  - iv. Capital contribution from the Town for underground service (if no contribution has been received please explain why not and provide the Utility's policy for changes from overhead to underground service.

### **Response to 1.1-VECC-2**

- a)
  - i. In 2012 and 2013, NOTL Hydro completed the installation of a major 600 amp feeder 'loop' through the Old Town area at a cost of approximately \$400k in each of the two years. With this loop in place, we can now branch off with 200 amp distribution networks to complete the conversion of the Town. Our 5 year plan (2014-2018) is documented in the CDSP in this application. NOTL Hydro generally completes our overhead capital projects 'in-house' and we have determined that our crews can reasonably and efficiently complete approximately \$600k/year. The annual amount dedicated to the Old Town conversion project, which is predominantly contracted out, is approximately \$400k.
  - ii. The first Old Town conversion project was completed in 1989 with a new 27.6 kV underground supply to a major hotel addition. As our CDSP indicates, we are confident that the Old Town conversion and burial will be completed by 2022.
  - iii. A 500 MCM (600 amp) ring has recently been constructed in the Old Town that links the F2 and F4 feeders with a series of S&C PMH unit switches. The PMH units generally include 2-200 amp fused sections to allow looped distribution supply off the main feeder. The Old Town replacement plan involves the removal of overhead poles, primary and secondary wires and transformers with 2/0 AL (200 amp) 28 kV primary cable, 3/0 AL secondary cable and pad-mounted transformers. As a majority of Old town customers are already supplied from an underground secondary cable, the conversion project is

simplified. Those customers that are not currently supplied with underground cable are offered secondary cabling to their meter base at no charge, during construction only, providing they convert their meter base to accept the underground supply. This is cost beneficial to both the customer and NOTL Hydro as it avoids the need for the installation of a new service pole at their property line.

- iv. The Town of NOTL has not contributed to the Old Town underground conversion project (except on an individual customer basis). Since 1989, our predecessor, Niagara-on-the-Lake Hydro Commission and NOTL Hydro have been burying facilities in the Old Town because we believe it benefits our entire community and is the right thing to do. The historical significance of the Old Town is a key factor in attracting approximately 1 million tourists annually. Would Williamsburg Virginia continue to preserve the Colonial period and be the successful tourist draw if poles and wires donned its main streets? Niagara-on-the-Lake continues to boast the lowest tax mill rate in the Niagara Region, primarily due to tourism revenues. We are proud of our accomplishments to date as completed sections reflect the early 1800's ambiance without overhead poles and wires.

Our policy for converting existing overhead customers to an underground supply is outlined in our Conditions of Service sections 3.1.2.1 and 3.2.2.1. In summary, new customers or those upgrading their existing service in designated underground areas are required to accept an underground supply and pay for the additional costs over and above the Basic Service provided.

To encourage customers to move to an underground supply during our renewal construction projects in designated areas, we offer to install an underground supply cable to the customer's meter base at no cost (during the construction phase only) providing that the customer convert their meter base to accept an underground supply. We justify this expense as we can avoid re-installing a service pole at the customer's property line to maintain the existing overhead service.