Niagara On-The-Lake HYDRO

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

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Attachments

[1] Section numbers correspond to the sections in the Chapter 5 filing requirements

5.2 Distribution Systems Plans

5.2.1 Distribution System Plan overview

a) Niagara-on-the-Lake Hydro Inc. operates within the 133 km² of our municipal boundaries, bordered by Lake Ontario to the north, the Niagara River on the east, Niagara Falls to the south and St. Catharines to the west. The population of Niagara-on-the-Lake is approximately 15,500 with the primary economic activity shared between an agricultural base and tourism. In recent years the tender fruit business has given way to a vast expansion of vineyards and wineries while the Shaw Festival Theatre continues to be the principal draw for seasonal tourists. With the recent rise in strength of the Canadian dollar, it is apparent that there are fewer U.S. visitors resulting in a leveling off of tourism-related activities in the past few years. Customer growth has been at an average level of approximately 2 % per year over the past decade. We project customer growth to continue to increase annually at the 2% level however, energy and demand growth remains relatively flat, possibly due to the success of the CDM program. The QEW corridor, better known as the 'Glendale' area continues to attract new commercial development. Construction of a new 'Outlet Mall' complex has commenced and is expected to open later in 2014. The feeder network in the Glendale area is robust and no significant reinforcement or expansion is planned at this time.

Historically, NOTL Hydro acquired 95% of our current operating territory from Ontario Hydro in 1983. The Ontario Hydro network consisted of two primarily sub-transmission 27.6 kV feeders that supplied a few larger customers directly and 5 substations. The substations therefore, supplied a vast majority of customers at the 4 kV level. A bulk of the Ontario Hydro infrastructure was installed pre-1970 and the 5 substations were all 1950's vintage. Since 1983, the Niagara-on-the-Lake Hydro-Electric Commission and the successor company NOTL Hydro Inc. has embarked on an aggressive capital re-investment program to entirely replace the original infrastructure and distribute only at the 27.6 kV level. Over the past decade, NOTL Hydro has invested an average of $2 million annually into the capital program primarily to address transformation supply issues and to replace aging 4 kV infrastructure.

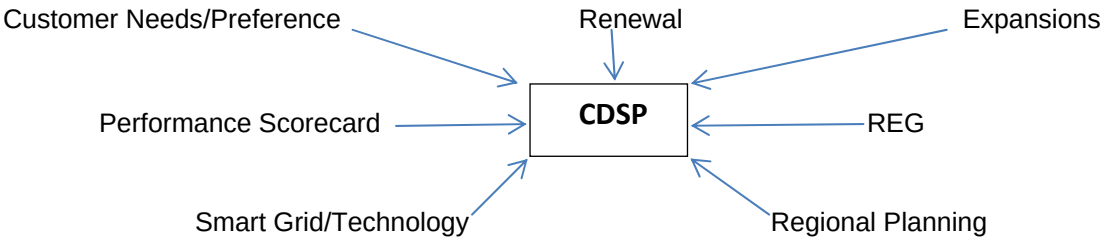
At this juncture, we can assess the progress to date, reflect on the impact of these distribution system improvements and plot our future course.

- The 27.6 kV overhead distribution system renewal is approximately 85% complete
- The last of five original distribution transformer stations will be decommissioned later this year.

- The distribution network in the historic hamlet of Queenston was completely buried in 2008 and we expect the Old Town burial to optimistically be completed by 2022 (10 year Plan).
- NOTL Hydro constructed a 42 mVA 115-27.6 kV Transformer Station (MTS#1) in 2003 to address a shortage of transformation capacity. In 2005, we purchased MTS#2 Transformer Station from Hydro One providing us with the ability to invest in P&C improvements and optimally balance station loads without specific Hydro One load commitments on MTS#2.
- Our outage indices continue to improve year over year with the upgraded infrastructure.
- Distribution system losses, once over 8%, are now approaching 3%.

Planning Objectives

This five year Integrated Distribution System Plan must reflect good distribution planning, consider customer needs and preferences, continuously improve operational effectiveness while maintaining financial viability and driving operational and customer savings. At the high level, this plan will demonstrate that we have addressed the need to replace aging assets and connect future REG projects, participated in Regional Planning discussions, considered future growth and expansion, customer needs and preferences and potential smart grid applications while continuing to monitor and tweak our performance. This Plan addresses the period of 2009-2018.



We are firmly committed to completing the system renewal plan. The improved line losses and outage indices as well as the need to replace aging assets, fully warrant the completion of this plan.

The current 27.6 kV network is quite far-reaching and extensive and we do not envision any significant expansion to service new customers. Growth in Niagara-on-the-Lake will primarily be contained along the QEW corridor, better known as the 'Glendale' area. The current 27.6 kV plant in Glendale is well positioned to supply the new load without any significant expansion or reinforcement.
A recent consultant's study suggests that the two transformer units at MTS#2 will approach the end of their useful life in the next 5-10 years and

replacement/refurbishment should be addressed in our distribution system plans. This Distribution Plan includes a replacement of one unit at MTS#2 with a larger capacity to ensure adequate and redundant transformation capacity is available for the future.

Uptake on the provincial FIT tariff has been quite high in NOTL. Currently two SOP generators (hydro-electric, biogas) combine for 2350 kW of capacity while 93 microFIT and 5 FIT customers will soon combine for a rated capacity of 1420 kW. At this time we have 34 active and pending microFIT applications. A few areas are becoming constrained but generally our system remains available to accept additional distributed generation with no identified reinforcements or expansion at this time.

NOTL Hydro migrated to a new CIS and FIS in 2010 as a response to the need to adopt Time of Use billing. A Harris Northstar CIS system (Utility Collaborative Services) shared with 8 other LDCs was selected along with a Microsoft Dynamics GP ('Great Plains') FIS system. NOTL Hydro is very pleased with our selections. With the software and associated support, we appear well positioned for the future.

In late 2012, NOTL Hydro received delivery of a new 'bucket' truck replacing the oldest unit in our fleet. We do not expect to replace any large vehicles in the next 5 years.

With the installation of our AMI system recently completed, we continue to see an excellent opportunity to use the data and new related technologies to develop an outage management system and tools that customers will find useful to manage their consumption.

b) Expected Cost Savings

System conversion from 4 kV to 27.6 kV combined with the purchase of low loss transformers has proven effective in reducing system line losses and the line loss factor applied to customer bills. The success of our capital program can be measured by the fact that in 2002, the adjusted loss factor applied to customers' bills was 6.62%. Our TLF is currently at 4.63% and we are proposing to reduce the factor to 3.79% with this application. Completion of our long-term plan is expected to reduce the factor to the 3.5% level. Every 1% decrease in the loss factor equates to an annual customer savings of $18 in today's rate. Our over 8,300 customers would collectively save approximately $150,000 on an annual basis. NOTL Hydro is also contributing to the provincial conservation efforts as a 1% reduction in wholesale energy equates to approximately 2 million kWh.

Despite our somewhat modest growth over the last decade, NOTL Hydro has not added any additional staff (CDM staff excepted). In order to avoid adding employees in the foreseeable future, it is our intention to implement new

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

continue to evolve and influence capital expenditures with future inspection results, ACA studies, public policy changes and customer driven expansions etc.

f) Contingencies

NOTL Hydro is currently involved in a process to replace/upgrade a transformer unit at our MTS#2 Transformer Station. There is a 2+ year process to complete the project and involves receiving approval from our transmitter and the IESO as well as a long (12 months) procurement period prior to installation tentatively expected in 2015. Our DS Plan presented is based on the assumption that we will be successful in the approval process and have adequately scheduled the delivery and installation process. It would be our intention that once firm project costs are known, NOTL Hydro would come forward with an ICM application to address cost recovery prior to the next rate rebasing application.

5.2.2 Coordinated Planning With Third Parties

The recent Ontario Energy Board RRFE Regional Planning Working Committee has determined that the Niagara Region is in the last (Group 3) on the Group Priority List[2]. As such, we are not required to participate in a Regional Planning process at this time[3].

A recent condition assessment of the two MTS#2 units was conducted in 2012 and estimated the useful lives to be in the range of 5-10 years. This information coupled with our inability to reliably supply customers during the peak summer period in the event of a catastrophic transformer failure, NOTL Hydro has been actively pursuing a solution. After evaluating the various options, it was determined that the most cost effective plan would involve the replacement of one unit at MTS#2 with a larger unit (up to 50 mVA) if possible. We have held discussions with the IESO and our transmitter, Hydro One, of which both must approve this project targeted for 2015.

NOTL Hydro recently conducted a survey of our customers with the intent of gaining valuable insight as to their future needs and expectations. Customers were also asked to assess of our current operation and customer service levels for adequacy. The survey and results are attached in Appendix 1B of Exhibit 1 of the 2014 rate application, in Attachment 6 and described in the Customer Feedback section 5.2.3.

The comment letters provided by the OPA and Hydro One in relation to REG investments are provided in Attachment 17.

[2] See Attachment 1
[3] See Attachment 18

5.2.3 Performance Measurement for Continuous Improvement

a) Methods of Measurement

As a rate regulated company, NOTL Hydro is required to measure, record and submit a number of measures (metrics) related to our performance to the Ontario Energy Board. This information is also utilized in our distribution system planning process to evaluate the effectiveness of our capital expenditures and to monitor and maintain optimal customer service levels. The latter is primarily monitored via the April RRR filings in which the effectiveness of our delivery of a number of customer service-focused activities are recorded and submitted. The April RRR filing also includes a compilation of our annual outage indices, an important series of metrics to assess the current distribution system reliability levels. It is the goal of NOTL Hydro to develop a trend of continuously improving indices as this is generally a sign of effective levels of inspection, maintenance and capital reinvestment. The outage indices are further analyzed on a feeder by feeder basis with the goal of identifying and improving the worst performing feeders. Our annual line loss calculations are also assessed as a means of ensuring that our capital investments are effective. In the event that we do not meet any of the OEB established service levels, NOTL Hydro would modify our plans and activities or relocate our resources to ensure we meet the criteria in the next year.

It remains an ongoing goal of NOTL Hydro to ensure that our rates remain competitive and affordable for our customers. We regularly compare our rates to our neighbours and the industry as a whole.

Throughout the course of the year, NOTL Hydro also continuously observes our Capex and Opex budgets to ensure our activities remain as planned. Our annual financials are also scrutinized to ensure that we remain economically viable and proficient. Valid customer feedback is also accepted and considered in continuously improving our levels of service and for offering new value-added services.

b) Summary of Performance and Performance Trends

See Attachment 2 for Service Reliability Indicators

See Attachment 3 for Feeder Reliability Analysis

See Attachment 4 for Historic System Losses

See Attachment 5 for Financial Indicators

See Attachment 6 for Customer Survey and Results

Outage Indices - Storms and inclement weather have an adverse impact on outage indices and the frequency of storms can vary year to year. Therefore, complex interpretation of annual results is required. In April 2011, a tornado like windstorm swept through Niagara causing serious damage to our system. Meanwhile 2010 was referred to as the 'quiet year' when we experienced relatively few weather related outages. With information suggesting that our MTS#2 transformer units would be approaching the end of their useful life in the next 5-10 years, we moved a significant amount of load off MTS#2 over to the newer MTS#1 station. The MTS#1 M2 Feeder picked up the lion's share of the MTS#2 load and in doing so, doubled the length (and exposure) of this rural feeder. We accept the higher outage indices on the M2 as temporary until 2015 when the new MTS#2 transformer unit is placed on line and the M2 can be restored to a normal configuration. In general, our indices remain lower than industry averages and we are satisfied that our current level of inspection and maintenance programs are adequate to sustain these positive results. Our recent customer survey results have revealed that customers are overwhelmingly satisfied with the current level of reliability.

Prior to 2012, NOTL Hydro engaged the services of a contractor to complete an annual infra-red scan of a majority of our distribution system as an early warning to failing components and poor connections. In 2011, the inspection revealed only a few 'minor' concerns. Since the cost of the inspection perhaps exceeded the cost of the potential outages, it was decided to shift the inspection to every second year. NOTL Hydro will be analyzing the cost effectiveness of this direction after the next scheduled infra-red inspection period in August 2013.

Feeder Analysis - NOTL Hydro annually reviews the outage frequency on the various distribution feeders. The results are studied primarily for inclusion in the capital expenditure program if deemed to be nearing the end of useful life. The root cause of specific outages can also trigger the requirement for improved tree trimming or repair/replacement of specific equipment. The 2012 feeder outage results reinforce our general direction to rebuild older 4 kV systems with new 27.6 kV facilities as the King station and 4 kV systems experience a higher frequency of outages. As a means of extending the useful life of the MTS#2 transformer units, we offloaded a majority of the F1 feeder on to the MTS#1 M2 feeder in early 2012. The M2 temporarily has twice the exposure (and number of customers) due to extended distance accounting for the higher than average outage count. As we fully expect to upgrade one MTS#2 unit in 2015, the normal M2/F1 configuration will be restored.

Line Loss Evaluation – Our calculated distribution system line losses for 2012 was 3.16%. With the Supply Facilities Loss factor (SPLF) added, NOTL Hydro is proposing a reduction in our applied loss factor to 3.79% from the current 4.63% level. This positive result further underpins our direction of replacing the aging 4 kV system with a more efficient 27.6 kV network.

Customer Feedback – Through a recent survey, our customers expressed an overwhelming satisfaction with our system reliability and quality of service delivered (see Appendix 1B of Exhibit 1 of the 2014 rate application and Attachment 6). Our planned replacement/upgrade of a MTS#2 unit will increase overall reliability through the additional redundant capacity and replacement of the aging unit prior to critical failure. NOTL Hydro's ongoing capital replacement program combined with our inspection and maintenance programs appear to be effective and we plan to continue on this path. Maintenance programs will be analyzed on an annual basis and adjusted to ensure optimal levels are achieved.

Customer Survey Summary (from Appendix 1B, see attachment 6)

- 90.4% of our customers are very satisfied or satisfied with our reliability
- 91.3% are very satisfied or satisfied with our quality of service
- 88.26% responded that they agreed that we provide accurate and timely bills
- 84.7% of respondents are very satisfied or satisfied with NOTL Hydro in general

Financial Results – The ongoing maintenance cost of major assets such as our transformer stations, office facility and fleet are individually analyzed annually in conjunction with our annual budget preparations. Rising maintenance costs or excessive fuel use on a vehicle for example, may trigger replacement with a more fuel efficient unit pending a cost/benefit analysis.

In order to best serve our customers, NOTL Hydro must remain financially strong and viable long-term. Our annual financial statements are scrutinized and we continuously seek means of maintaining or improving our service levels while holding down cost increases. A strong financial return is also crucial to ensuring that we have adequate funds to invest in our capital renewal program. NOTL Hydro also compares our current customer rates to that of the industry on a regular basis with a goal of remaining below the average of our peers. Our 5 Year plan reflects a slight reduction in our annual capital spending to approximately $1.25 million (MTS#2 transformer upgrade project excluded). The replacement of our large and expensive line trucks was recently completed and we do not expect to purchase any units in our 5 Year forecast. Our company is therefore, confident that we can complete the objectives of our 5 year plan reinvesting at the $1.25 million level without compromising service or reliability.

c) Effect on the Distribution Plan

NOTL Hydro's integrated approach to developing our CDSP ensures that we are continuously tweaking the plan to ensure that our assets and system are optimally performing. Our favourable outage indices, positive customer feedback comments and continuously improving line loss factor reinforce the general direction that our asset management and capital renewal plan remain effective.

- The unfavourable results received from a condition assessment of the two MTS#2 transformer units is driving our plans to replace/upgrade one of the units in 2015.
- Our recent system inspection results coupled with our new asset management software has been instrumental in prioritizing our capital expenditure projects listed in our 5 Year Plan.
- Our Customer Feedback Survey results have been analyzed and we are proposing to invest in a Customer Communication system referred to as TeleWorks. This system will allow us to communicate to large numbers of customers, using their preferred method, in an automated format. This system will be particularly useful prior to planned outages or during unplanned outages.
- Input from performance measurements is regularly analyzed and the results utilized in the process to reinforce or continuously improve our current plans and programs.
- A cost to benefit analysis of our annual infra-red inspection prompted us to move the inspection to a two year plan.

5.3 Asset Management Process

In late 2011 and in preparation for our 2014 rate application, Niagara-on-the-Lake Hydro embarked on the development of a robust plan and updated practices in support of an effective Asset Management Process and long-term Capital Expenditure Plan. Our plans were recently reviewed to ensure that we can effectively demonstrate that we have achieved the objectives outlined in the Board's March 28, 2013 Chapter 5 document 'Filing Requirements for Electricity Transmission and Distribution Applications. We are confident that our DS Plans demonstrate the Board's five objectives of Good Distributor Planning, Customer Focus, Operational Effectiveness, Public Policy Responsiveness and Financial Performance. The efficiencies recognized by implementing the plan and processes will ensure that we ultimately deliver value to our customers.

In developing the Asset Management component for this Consolidated Distribution System Plan, we reviewed a number of prior LDC submissions to the Board in an attempt to derive industry best practices. The primary sources of reference in our process development include; Review of Asset Management Practices in the Ontario Electricity Distribution Sector, KPMG (for the Ontario Energy Board), March 10, 2009, An Anatomy of Asset Management (PAS 55), Institute of Asset Management, December 2011 and Optimizing Utility Asset Management Using Geographic Information Systems, ESRI Canada, November 2011.

Our development team realized that to be most effective, an AM Plan should be constructed in advance of our 2013 Capital Expenditure Plan to provide a more effective contribution. A framework for the process was developed in early 2012 and included identification of objectives, core processes and most importantly, the goals. As a

progressive company, we chose to accomplish the goals categorized in the 2009 KPMG document as industry '***Leading***'.

The framework and proposed schedule of our AM Plan was presented to and approved by our Board of Directors at our regular April, 2012 meeting. In conjunction with the annual system inspection process outlined in Appendix C of the Distribution System Code, an extensive Asset Condition Assessment was conducted on our entire distribution system and on every major asset. Recording forms were prepared to capture all relevant field information and will form the basis for ongoing benchmarking and assessment of asset conditions and maintenance programs.

Asset Management Process Development Overview

(Presented and approved by NOTL Hydro Board of Directors April 2012)

Definition

"The systematic process to optimize performance, costs and risks relevant to service delivery".

Objective

"A key characteristic of a successful Asset Management Plan is consistently making sound decisions and good compromises and carry out the appropriate tasks at the right time and at the optimum level of expenditure"

Core Processes

1. Inspection and maintenance process
2. Capital process
3. Capital financing process
4. Information management process

Inspection and Maintenance

Inspection - Codified Inspection cycles are categorized by the following major distribution facilities as listed in the Distribution System Code Appendix C:

a) Distribution Transformers
b) Stations
c) Switching and Protective Devices
d) Regulators
e) Capacitors

f) Conductors and Cables
g) Vegetation
h) Poles/Supports
I) Civil Infrastructure

Descriptions and sample inspections are available in the DSC. It is recommended that the inspection records be integrated with the GIS system and the inspection 'process' audited periodically for compliance.

Maintenance – LDCs should make conscious and informed decisions about the level and frequency of maintenance. The benefit of a particular maintenance program should be evaluated regularly. The level of maintenance can be scaled back if the 'yield' is deemed to be lower than the deemed benefit (infra-red inspection). A joint inspection and maintenance process can result in optimal benefit (vine removal).
Recommend – link capital program to inspection/maintenance program.

Key Practices

- Outage recording procedure that lists causes and identifies corrective actions that is utilized as an input to future maintenance procedures
- Written maintenance procedures to ensure consistency
- Electronically available maintenance logs
- Periodic checks on the maintenance to ensure quality standards are upheld

Capital Process

Selection Process

1) Health and Safety
2) Customer Growth
3) Public Policy Delivery i.e. generator connection
4) Replacing aging assets
5) Improved reliability and distribution performance and line loss improvement

Funding Priority Considerations

1) Imminent danger
2) Addressing health, safety
3) Regulatory concerns(reliability-CAIDI/SAIDI/SAIFI)
4) Request by municipality etc. to relocate
5) Failed assets (storms, vehicle accidents)
6) To meet growth including transformation capacity

Balance IT spending – necessary to take advantage of new technology and tools but can detract from spending on hard distribution assets

5 year capital forecast horizon is adequate. Perhaps 10-15 to include fleet and building, transformer stations etc. would be more appropriate. GIS system database to provide spatial information and automated work order system to track costs are recommended.

Setting the Funding Level

Top down approach (NOTL Hydro Board of Directors approved ceiling) versus Bottom up (expected system needs). **Should be a balance between the two. Suggest that the operational list be prepared annually with additional projects so that a selection process is necessary. If operational and financial benefits are derived by exceeding or by reduced targeted budget amount, consideration should be given. Age or book value of an asset should not necessarily drive replacement scheduling.

Key Practices

- Set up a structured approach for determining capital projects
- Set up a rigid Asset Condition Assessment (ACA) module (defensible, not just age dependent).
- Develop a long-term financing plan (D/E, dividends, economic forecast) and review annually
- Use a balanced approach to activity level between top down- bottom up
- Document business cases, assumptions and reasons for decisions
- Track projects for efficiency (budget and timing).

Information Systems

Asset data should be readily available by all personnel. GIS is recommended as the Asset Register. Eliminate paper-based information systems. Management should be well versed in AM activities and outcomes to drive continual improvement.

5.3.1 Asset Management Process Overview

a) From the outset, our AM plan development was based on achieving the objective previously stated. “A key characteristic of a successful Asset Management Plan is consistently making sound decisions and good compromises and carry out the appropriate tasks at the right time and at the optimum level of expenditure”. This objective aligns with our corporate mission statement ‘Providing the highest standard of safety, service and reliability’ and ‘protecting and enhancing the value of our assets’ (Attachment 20).

   With the purchase of the AM ‘Optimizer’ software in 2012, NOTL Hydro was able to not only incorporate our corporate asset management objectives but also place weightings on their importance (see Attachment 12b). Specifically, public and employee safety, service quality/reliability, environmental concerns, financial objectives (investment priorities, risk aversion) and budget allocations factors, customer feedback, public policy obligations and legal implications, and can be

weighted. System renewal projects and other potential capex investments are prioritized and presented on a 'Risk Horizon' thus removing potential subjectivity from the process (see Attachment 12a).

b) The components (inputs/outputs) of our Asset Management Plan are visually described in the attached flowchart (Attachment 7). Managed assets or the list of specific assets is provided in Attachment 8. A separate and detailed data base exists for all major assets including transformers and transformer station units, vehicles and our operations building etc. Further, our ACA study completed in 2012 provided additional details as to the condition of the specific distribution assets more focused on our Renewal program. This information is stored in our Optimizer program and is also being added to our GIS database for a more accessible review. When fully complete, our GIS database will be our centralized asset register. In the mid-1990s, we conducted an inventory of transformers and tested for PCB content. To the best of our knowledge, all transformers that exceeded or were close to containing Ministry designated PCB levels were replaced. A number of old 4 kV transformers with safe levels or no PCBs remain on our system but have illegible nameplates. As previously indicated, it is NOTL Hydro's intention to entirely replace the legacy 4 kV overhead system in the next 5-7 years and the Old Town 4 kV system in the next 10-15 years. With the exception of the original 27.6 kV sub-transmission lines (currently being replaced) the 27.6 kV system is less than 30 years old and we possess a thorough data base on this equipment. A process is currently underway to complete the entry of the 27.6 kV database on our GIS system.

   An asset condition assessment process was completed on a majority of our distribution system and a majority of our major assets in 2012. The process and details are described in section 5.3.3.

   The NOTL Hydro 27.6 kV network is robust and reliable. With the assistance of a software program, DESS, we are able to emulate load flow and optimize our network, however, the main feeders primarily consist of 556 AL (rated at over 600 amps) and are not subject to normal constraints. We are aware of a constraint on our transformer stations capacity that is described in more detail in this document. On a more micro level, we are currently in the development stage of a transformer loading program that utilizes actual smart meter readings to calculate peak transformer loading. This will be an effective tool for 'right' sizing distribution transformers. We have also developed a vehicle and equipment replacement program that generally replaces line vehicle after 10 years and service vehicle after 7 years of service. These intervals may change depending on the physical condition, reliability and potential trade in values. Trailer and other major tools are individually assessed after annual inspections. Computer hardware and software is continually assessed for potentially life extending upgrades and more powerful versions that can improve our efficiency. Desktop units are generally replaced after 3 years of service.

Historical data on customer interruptions caused by equipment failure is continually assessed through our outage logging system. The cause of each outage is recorded throughout the year and when known, the specific failed piece of equipment is documented. The logs are summarized and assessed annually for trends prior to the budget process (see Attachment 11). The multiple failures, for example, of a specific lightning arrester would prompt NOTL Hydro to potentially replace all units in the field in addition to reporting such failures to our industry, ESA and CSA as warranted.

On an ongoing basis, each individual outage is recorded and includes time, duration, location/feeder, cause and the need for follow-up (see Attachment 11). This information is summarized by month and year and provides data for our reliability indices as well as our worst performing feeder analysis (Attachment 3). This information is particularly scrutinized during budget time and factors in to the need to make the necessary improvements to the worst performing feeders. This process is described in more detail under 'Feeder Analysis' on page 9.

The NOTL Hydro distribution system is designed with full redundancy that increases reliability and flexibility of operation. At our peak load condition of approximately 1200 amps @ 27.6 kV, we have 6 - 550 amp feeders available, 3 at each transformer station. We have mitigated risk at our last remaining 4 kV station (King DS) by maintaining a spare unit on-site ready for connection in the event of a major failure of the primary unit. In a matter of a few months, this station will be decommissioned in favour of a new pad-mounted unit as we complete conversion in the Old town. We are currently in the process of mitigating risk at our 2 Transformer Stations. MTS #1, constructed in 2003, is rated at 42 mVA (single unit) while MTS #2 (constructed in 1984) contains 2 - 25 mVA units. We therefore, currently have the ability to meet our peak load should there be a catastrophic failure of any one of the units. We are however, constrained from performing routine maintenance on MTS #2 during peak (50 mVA) periods. A recent thorough examination of the MTS #2 units has indicated that they have a much shorter life expectancy than previously thought. The report concludes that the units have a high probability of failure within the next 5-10 years. Accordingly, NOTL Hydro has commenced a process to replace the first unit with a 50 mVA unit has made application to the IESO and our transmitter with a target in-service date of 2015. The second unit is in slightly better condition and will continue to be monitored but is targeted for replacement or rebuild within 10 years. A recent ACA of our rear building flat roof has also concluded that the roof should be replaced 'soon'. Typical flat roofs have a life expectancy of 25 years and our roof is currently 27 years old. In our assessment, we have determined that the condition still appears to be good and there are no leaks. The garage floor is concrete and well drained and a minor leak would not be result in any significant damage. Accordingly, we have scheduled the roof replacement in 2017. Experience has dictated that line trucks should be optimally replaced after about 10 years of service. While regular inspections of the units ensure employee and public safety, we have found that

this life expectancy results in the lowest lifetime maintenance costs, delivers full reliability and has an optimal trade in value on the market. On a more micro level, engineering and construction standards have been adopted that follow good utility practice and are expected to deliver reliability. Conductors, service wires and transformers are sized to efficiently deliver supply for their full life expectancy. Transformers are periodically changed out for higher capacity units as new customers are added in an effort not to exceed load ratings. Our ACA records are in effect a risk/consequence of failure analysis of our distribution system components. Each line section and associated equipment is colour-coded with a risk rating (see Attachment 10). This study was conducted in 2012 and will undergo frequent reviews and inspections, updated with time. Attachment 7 provides a flowchart of our Asset Management process.

Inspection

- Consider OEB guidelines, codes and good utility practice and adjust inspection program based on experience, data and cost/benefit
- Reliable and readily available information on condition of all major assets (Asset Register)
- Leading edge inspection process (dry ice, infra-red)

Maintenance

- Maintenance activities linked to inspection results and review of Outage Logs
- Maintenance levels adjusted and timed based on past experience and/or cost/benefit analysis
- Adjust levels of maintenance for subsets of assets based on their condition, location (i.e. near skyway – salt), loading
- Consider new maintenance practices such as dry ice cleaning

Capital Planning – Project Selection

- A long-term, minimum 5 years is necessitated
- Develop defensible and rigorous procedure for selecting projects to be undertaken
- Create a formal procedure or business case if possible
- Each project should have a clearly defined rationale or deliverable with respect to performance improvement or net benefit
- Consider customer outage cost and reliability targets in project evaluation
- Review Outage Logs for potential replacement of failing assets
- Should be linked to company Strategic Plan

Capital Delivery

- Need a good understanding of relative costs of alternative delivery methods. Optimize the use of various methods
- Annual review of projects from the long term plan may result in changes that no longer produce the same cost/benefit ratio.

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[4].

5.3.2 Overview of Assets Managed

a) Niagara-on-the-Lake Hydro operates within the 133 km² of our municipal boundaries bordered by the Niagara River (east), the Welland Canal (west), Lake Ontario (north) and the Niagara Escarpment (south). 119 km² of our operating territory is deemed rural and 14 km² 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

[4] See Attachment 7.

distribution assets are found in our legacy 4 kV system inherited from Ontario Hydro. Our Capex plan describes in detail how we plan to replace these assets over the next decade. Additionally, as part of our AM process, a thorough Asset Condition Assessment was completed on most line sections. The age and condition of those earmarked for renewal in the next 5 years are included in Attachment 10. The age and condition of our two Transformer Stations are discussed in detail in this CDSP. MTS #1 was constructed in 2003 and MTS #2, purchased from Hydro One in 2005 was originally constructed in 1984. NOTL Hydro operates with two bucket trucks and one digger/derrick. These 3 units were replaced over the previous 4 years and replacement is not projected in this 5 year CDSP. Our fleet of four service vehicles include one pick-up truck recently replaced (2013) and the second eight year old unit targeted for replacement in 2014. Replacement of the other two service vehicles are not expected in the 5 year CDSP presented. NOTL Hydro operations are consolidated in a centrally located facility at 8 Henegan Road in Virgil. The building was constructed in 1986 and is in very good condition. We are in the process of transferring all the individual files of these major assets to an accessible, central location on our GIS system. Major assets managed include land, building and fixtures, leased equipment, high voltage transformer station equipment, distribution station equipment, poles and fixtures, overhead conductor and devices, underground conduit, underground conductor and devices, line transformers, services, meters, office furniture and equipment, computer equipment and hardware, computer software, transportation equipment, stores equipment, tools, communication equipment and system supervisory equipment.[5]

d) We previously stated that our objective of an effective AM plan is consistently making sound decisions and good compromises and carry out the appropriate tasks at the right time and at the optimum level of expenditure. This aligns with our corporate mission and values statement goal of providing the highest standard of safety, service and reliability. Our CDSP document outlines our technique of determining replacement of assets at the optimal time, normally at the end of their useful life just before safety and reliability become an issue. The proposed full replacement of our legacy 4 kV overhead system in the next 5-7 years will result in our remaining 27.6 kV system aged at less than 35 years, an extremely well-positioned situation. Having said that, all of our major assets are assessed individually before replacement. We have determined for example that with 4 Line Maintainers and two bucket trucks, we cannot afford to drive these units to the end of their useful life, but balance safety, reliability, long delivery lead times with trade in value before deciding to replace a unit.

5.3.3 Asset lifecycle optimization policies and practices

a) The following is a description of NOTL Hydro's asset lifecycle optimization policies and practices.

[5] See Attachment 8. Please also refer to Appendix 2-BB of the NOTL Hydro 2014 COS rate application.

Inspection Process

NOTL Hydro conducts a regular annual distribution system inspection that not only meets, but exceeds the requirements outlined in Appendix C of the Distribution System Code. Major assets are subject to a regularly scheduled inspection to ensure safe and reliable operation and a long, useful life. Consideration of the public and employee safety is the primary concern during system inspections. We continually evaluate leading edge inspection technologies as a means of early detection and failure prevention. Infra-red scanning for example, continues to be an effective inspection tool.

Our fleet of specialized line vehicles, service vehicles, yard maintenance and a lift truck undergo regular 'circle' checks before each usage as well as manufacturer recommended mechanical, acoustic and electrical inspections[6].

NOTL Hydro's two Transformer Stations are inspected monthly based on a check list developed with the assistance of a professional service company and long-time LDC TS owners (good utility practice)[7].

NOTL Hydro's operations and storage facilities are consolidated at a single location on Henegan Road in Virgil, a hamlet within Niagara-on-the-Lake. Our building and storage yard undergo a monthly inspection as part of our corporate health and safety program[8].

Asset Condition Assessment

During the development of our Asset Management Plan in 2012, it became evident that a more thorough inspection process was required to intelligently contribute to the Annual Capital Plan while providing a benchmark for future asset conditions. An extensive Asset Condition Assessment (ACA) process was developed and completed throughout the spring and summer of 2012. Overhead and underground distribution line sections of similar structure or common age were assessed as 'sections' or 'units'. Major assets such as vehicles and our transformer stations were similarly inspected and assessed. The assessment forms are currently being filed in chronological order on our GIS database for future reference and tracking[9].

Our ACA process did not involve the recording of specific data such as transformer name plate data and age. This direction was intentional as a means of completing the process more quickly and with the knowledge that the oldest assets (4 kV system and previous Ontario Hydro assets) would be replaced in the next 5-7 years leaving our entire system with assets less than 35 years old.

[6] See Attachment 9
[7] See Attachment 10
[8] See Attachment 10
[9] See Attachment 10

Equipment Failure Analysis (Historical Period)

The NOTL Hydro AM process includes an annual analysis of data related to customer interruptions caused by equipment failure. This data allows us to consider adjusting maintenance programs, asset lifecycles, capital programs or adding system components to protect against such failures (i.e. lightning arresters, reclosers)[10].

Analysis on Feeder Performance (Four Year)

An annual analysis of logged outages is performed and the 'worst performing' feeders are flagged. Further analysis is completed to determine if trends exist or the outcomes are related to specific events such as the 2011 wind storm that primarily affected the northeast quadrant of our operating territory. A trend of annually increasing outages on a specific feeder(s) may be attributed to equipment failures that provide an early warning that major feeder components may be approaching the end of their useful life. This information[11] will feed into the asset management "Optimizer' software and ultimately be adjusted as to the queued position within the Capital Expenditure Plan.

Asset Management Tool (Risk Analysis)

In the summer of 2012, it became apparent that a software program would be required to assist us with developing our Asset Management Plan. The software would need to integrate the ACA data to assist with the compilation of our 2013 Capital Expenditure Plan and ultimately, our long-term Capital Expenditure Plan. After a selection process, NOTL Hydro purchased 'Optimizer', a Microsoft based software program of which has proven has proven to be invaluable tool. This tool allows NOTL Hydro to factor in public and employee safety, service quality, community/corporate goals, legal implications, regulatory, environmental concerns and financial objectives (investment priorities, risk aversion) and budget allocations. See Attachments 12a and 12b.

Geographical Information System (GIS) Database

NOTL Hydro has chosen to utilize our ESRI GIS system as the central database for the Asset Management system. This decision was made after consulting with neighbouring LDCs and reviewing the document Optimizing Utility Asset Management Using Geographic Information Systems. The GIS system is accessible to all key staff and when complete, a point and click approach will yield all historical and pertinent ACA data on significant assets such as poles, conductor, transformers, switches and vehicles. A GIS professional has been contracted and tasked with upgrading our GIS system to accommodate the Asset management database as well as to provide continuity for load flow optimization.

[10] See Attachment 11
[11] See Attachment 3

Maintenance Program

An effective maintenance plan is an essential component of the Asset Management Plan. Properly maintained assets are proven to have longer useful lives, and add more reliability to our operation.

In accordance with the goals and objectives of our AM plan, our maintenance program is tightly integrated to our inspection and ACA results. Early detection of leaks, improper operation or wear and tear on equipment or plant generally lead to an adjustment of the regular maintenance schedules. Preparation of our annual maintenance budget involves a thorough analysis of the effectiveness of the current levels of activity. Experience has dictated that annual late winter dry ice cleaning of our distribution assets in close proximity to Highway 405 and the QEW corridor is an effective means of preventing outages related to contamination tracking. Maintenance costs are tracked on specific larger assets such as vehicles and major transformer units. This information is utilized to conduct cost to benefit analyses to determine when increasing maintenance costs and declining trade-in values factor in the optimal time to replace or refurbish assets.

Scheduled routine maintenance programs include;

Line, Service Vehicles and Major Equipment

- scheduled regular servicing[12]

Overhead Distribution System

As Required

- correct deficiencies identified by infra-red inspections
- replace/repair equipment damages by storms, vehicles and animal intrusions
- Straighten poles, resag conductors, replace guy guards, tighten guy wires, trim vines off poles, replace connectors and wood crossarms and pins.

Annually

- dry-ice cleaning of insulators and arresters is conducted annually in the vicinity of major highway corridors. Includes annual pad-mounted (PMH) gear cleaning.

Three Year Cycle

- tree trimming is conducted on a three year rotational basis[13]

Five to Ten Year Cycle

- mechanical switches are lubricated and exercised on a rotating basis approximately every 5-10 years.

[12] See Attachment 13

[13] See Attachment 14

Underground Distribution System

As Required

- replace/repair equipment damages by storms, vehicles and animal intrusions
- repair faults due to foreign intervention such as dig-ins
- paint equipment due to aging or graffiti
- dry-ice cleaning inside switchgear - normally an annual program
- re-level equipment foundations due to frost heaving or vehicle contacts

Three to Five Year Cycle

- test remote automated switchgear operation

Ten Year Cycle

- clean transformer and switchgear foundations, lubricate and exercise elbow connections, tighten connections and grounds

Transformer Stations

As Required

- Snow removal, lawn cutting, weed control

Four to Eight Year Cycle

- Protection and Control system testing

Seven to Ten Year Cycle

- Replace voltage tap changer unit (MTS#2) every 140,000 operations or 7-10 years

Asset Lifecycle Optimization Practices

In preparation for the adaptation of IFRS to comply with International Accounting Standards, NOTL Hydro developed an IFRS Policy which reflects the estimated useful life of major assets. The policy is found in Exhibit 1 of NOTL Hydro's 2014 COS application.

In addition to rigorous inspection and maintenance programs previously described, NOTL Hydro also employs various life extending or lifecycle optimizing programs while continuously examining new and potentially beneficial technologies. For example, in 2012, we utilized a new technology of 'cable injection' in our oldest underground subdivision (Garrison Village) that is approximately 45 years of age. The process involves injecting a resin into the cable to fill voids and improve the insulation value. The procedure, while relatively new in Canada, has been successfully deployed in the United States for several years with proven success. The contracted firm has extended a 40 year warranty on the process.

A maintenance program, established a number of years ago, involves the thorough maintenance of subdivisions and underground line sections at or around the 20 year age. Transformer foundations are re-leveled, cleaned, elbow and bushing connectors are lubricated and replaced as necessary and cables are retrained before placing back in service.

NOTL Hydro also employs contractors to electrostatically paint rolling stock (trailers) as well as pad mounted transformers and switchgear showing early signs of corrosion in an effort to extend the assets' lifecycle.

Computer hardware and software is continually assessed for potentially life extending upgrades and more powerful versions that can improve our efficiency. Desktop units are generally replaced after 3 years of service.

b) As previously described, NOTL Hydro's AM plan relies on the inspection, planned maintenance, regular asset condition assessment which lead to the final risk analysis (see Attachment 7). An effective maintenance plan can add years of life to an asset. Once an asset or grouped assets are deemed to be approaching higher risk, an upgrade or partial replacement is widely considered. This is quite common in hardware for our servers and more recently with the cable fill injections to extend the underground cable life in Garrison Village. When it becomes apparent that renewal is required, our priorities are safety, reliability, environmental, financial, customer feedback and regulatory requirements. Our new Optimizer program assists us with determining the specific priorities based on the asset condition assessments.

5.4 Capital Expenditure Plan (2014-2018)

5.4.1 Summary

Feedback from our regular inspections, maintenance programs and ACA has forged our current Asset Management Plan. An integrated approach utilizing the AM Plan along with customer feedback (expectations), careful study of known or expected customer expansions and municipal infrastructure development, public policy initiatives, customer services focus and future load growth all shape our final proposed Capital Expenditure Plan.

Our 5 year Capital Expenditure Plan is based on achieving the four primary outcomes (Customer Focus, Operational Effectiveness, Public Policy Responsiveness and Financial Performance) identified in the Ontario Energy Board's Chapter 5 Filing Requirements document. Our priorities for such investments are safety, reliability, environmental, financial, customer feedback and regulatory requirements. Our new Optimizer program assists us with determining the specific priorities based on the asset condition assessments and our stated priorities.

a) The NOTL Hydro network is quite extensive and it is expected that only minor extensions will be required in the next 5 years. This Capital Expenditure Plan allots $35,000 annually for the connection of new customers and approximately $55,000 for expansions and property development. A total of $10,000 is allotted for each of the next 5 years to accommodate miscellaneous line extensions and minor system upgrades.

b) See Appendix 2-AB of NOTL Hydro's 2014 COS application.

c) System access is generally customer driven and is rather consistent year over year. Our 5 year forecast projects an annual Capex expenditure of $100k per year for new meters, new customer connections and property developments.

System renewal investment plans of approximately $1 million annually, is primarily driven by our capital investment plan to replace our remaining aging legacy 4 kV system. The asset management plan (and software) is instrumental in prioritizing the specific projects. A significant investment in a replacement/upgraded transformer unit at MTS#2 in 2015 ($3 million) is driven by both the need to replace the aging asset and to add additional capacity for future growth and reliable, redundant capacity.

An annual allotment of $5000 is allocated to minor line extensions and upgrades in the system service category. With the recent implementation of smart meters, NOTL Hydro has realized the potential of the information the system is providing. In order to fully utilize this information and improve our service levels through automation, we are committing between $50,000 and $90,000 annually to integrate our software systems. The goal is to develop an outage management system and a more intelligent and automated distribution system to better serve our customers.

Proposed general plant addition includes two replacement service vehicles (2014 and 2018). To maintain business operating efficiency, we have budgeted $40k - 65k annually to upgrade our primary software systems (CIS, FIS, GIS, SCADA). Stores equipment, office computers and equipment are generally replaced as per our asset management plan and good utility practice. We have been informed that our garage roof is nearing the end of its useful life and is scheduled for replacement in 2017 ($90,000).

d) Capital Plan 2014-2018 (5.1.1)[14] and Capital Plan maps[15] are provided in the Attachments.

e) See section 5.2.2 Regional Planning. Our scheduled upgrade of a transformer unit at MTS#2 in 2015 ($3,000,000) is currently being coordinated with our transmitter and the IESO but all indications are that there are no Regional implications.

[14] See Attachment 15

[15] See Attachment 16

f) As previously indicated in Section 5.2.3, NOTL Hydro recently conducted a survey of our customers with the intent of gaining valuable insight as to their future needs and expectations[16]. Customers were also asked to assess of our current operation and customer service levels for adequacy and to indicate if they believe that we could offer them any additional tools or service provisions. Customers overwhelmingly expressed a satisfaction with current service and reliability provisions but did note that tools to assist them with managing their consumption as well as status updates during unplanned outages would be useful. Based on this feedback, we propose to continue along our presented inspection, maintenance and Capex plans. Additionally, we have budgeted to accommodate the addition of a system that will automatically provide status updates to customers affected by an outage (Teleworks). Please see h) below.

g) Despite our rather large operating area, the 27.6 kV distribution system is quite extensive, far-reaching and has more than adequate distribution capacity. Accordingly, we are not expecting the need for any significant line extensions or expansions to accommodate customer growth or forecasted renewable energy generation connections in the next 5 years. Our smart grid self-healing switching system installed in the Old Town has performed well since placed in operation in 2012. At this time, the installation of a second system elsewhere is not warranted and we do not recommend such an installation. With the installation of our AMI system recently completed, we continue to see an excellent opportunity to integrate data systems and new related technologies to develop an outage management system and other related tools. Our 'Data Integration' project is proposed to continue in 2014 ($95,000).

h) Customer preferences

Our customers have indicated that they would be very interested in receiving status updates during an unplanned outage but very few indicated that they would make use of instantaneous load information or 'behind the meter' technologies. NOTL Hydro is currently participating in the provincial PeakSaver programme (OPA funded) and interested customers will have the opportunity to obtain such readings through partaking in the CDM initiative. NOTL Hydro has budgeted $11,800 in our 2014 OM&A budget for set-up, annual subscription and per usage fees to implement a customer power outage status update system (TeleWorks).

Technology-Based Opportunities

NOTL Hydro is currently in the process of integrating our various software systems (GIS, CIS, AMI and ODS) with the purpose of developing an outage management system to better serve our customers ($95,000 in 2014 Capex budget). Further development of system automation is proposed in the years 2015-2018 with an annual budget of $55,000 targeted at GIS and SCADA automation. NOTL Hydro has maintained the same complement of employees (18) for the past decade despite modest customer growth over that period. We

[16] See Attachment 6 and Exhibit 1, Appendix 1B of NOTL Hydro's 2014 COS application

have relied heavily on automation to achieve that status quo. Our IT integration (outage management) project and purchase of software to automate customer messaging are expected to improve our operational efficiency and help stave off the need to hire additional staff.

Study/Innovation Projects

NOTL Hydro is currently involved with technology partners to develop an intelligent electric vehicle charger. The charger will benefit LDCs by protecting our distribution assets from overload while the customer may benefit from an optimally charged vehicle at the least cost. While still at the conceptual stage, we will only proceed with developing the product pending success in raising adequate funds through the Ontario Smart Grid Fund or alike.

5.4.2 Capital Expenditure Planning Process Overview

a) Feedback from our regular inspections, maintenance programs and ACA has forged our current Asset Management Plan. The AM Plan along with customer feedback (expectations), careful study of known or expected customer expansions and municipal infrastructure development, public policy initiatives, customer services focus and future load growth all shape our final proposed Capital Expenditure Plan. Prior to replacing an aging asset or purchasing a new asset, careful study is conducted to determine if an age extending process is available and effective or if there are better alternatives to purchasing a new asset. The AM Optimizer software has been instrumental in assisting us with prioritizing our proposed projects. The Risk Horizon provided is also helpful in preparing our long term capex budget through a visual approach. Regulatory (REG connections) and Customer obligations are obviously an annual priority in the process. Our 5 year Capital Expenditure Plan is based on achieving the four primary outcomes (Customer Focus, Operational Effectiveness, Public Policy Responsiveness and Financial Performance) identified in the Ontario Energy Board's Chapter 5 Filing Requirements document. Our major assumptions include our expectation that we will continue to experience modest customer growth at the 2% level and that renewable generation connections will continue at current levels over the forecast period.

Customer Focus

A recently conducted survey has provided us with important customer feedback that has helped shape our capital expenditure plans and operational activities to address our customers' needs and expectations[17].

Customers have clearly communicated that they;

[17] See Attachment 6 and Exhibit 1, Appendix 1B of NOTL Hydro's 2014 COS application

1. Are satisfied with the current level of service and reliability
2. Expect us to maintain low rates
3. Continue our conservation program support and provide additional tools to assist them with managing their consumption
4. Maintain our current high level of customer support
5. Request that we develop tools and technology that will provide customers with up to date and timely outage information

In response, NOTL Hydro plan to continue with the development of a system health and outage management system through the integration of our AMI, GIS, SCADA, CIS, ODS and FIS systems. Our goals are to significantly lower outage restoration time, improve customer communication before and during an outage, proactively maintain system components and deliver power more optimally. Our AMI system has the capability to flag outages and system disturbances in near real-time. With the ongoing development of our GIS database, key distribution system information and ACA data will be stored and accessed on demand. Software will utilize load flow information from our SCADA and AMI systems to determine optimal system configurations to reduce line losses. Integration of CIS information on to our GIS system is ongoing and will provide timely information to field staff.

Based on the results of our recent customer survey, two thirds of respondents indicated that they felt it was important or very important for NOTL Hydro to assist them with managing their electrical consumption. NOTL Hydro is participating in the provincial PeakSaver program and will continue to explore innovative CDM programs to assist our customers in the future.

Operational Effectiveness

Our long-term capital expenditure plans continue to focus on the replacement of aging 4 kV infrastructure with new 27.6 kV facilities. The evidence of lower line losses and improved outage indices warrant continuation of this program. A thorough asset condition analysis (ACA) was completed in 2012 and a prioritization list completed with the assistance of Asset Management software. The 'Optimizer' software allowed NOTL Hydro to place a weighted emphasis on factors described in section 5.4.1 and Attachment 12b.

Our 5 year capital expenditure plan is primarily focused on replacing the most critical remaining sections of the aging overhead systems in the rural and Old Town area, all at the 27.6 kV level.

A recent professional analysis of the two 15/25 mVA units at our MTS#2 Transformer Station has revealed that the units will be approaching the end of their useful life in an estimated 5-10 years. Our newer MTS#1 station consists of a single 25/42 mVA unit. Historically and with modest load growth, our system load continues to approach 50 mVA during critical summer tourism peak and air conditioning load periods. A catastrophic failure of our MTS #1 unit during a peak load period, would result in the

ageing MTS #2 units supplying load at or beyond their rated capacity. Accordingly, NOTL Hydro is in the process of applying for the purchase and installation of a larger unit (i.e. 25/42 mVA) to replace the most critical 15/25 mVA unit at MTS#2. The capacity configuration with a larger unit will not only provide longer-term supply capacity but will also allow for the removal of any unit for servicing without compromising supply capacity. The approval and procurement process for this unit requires 1-2 years and we are currently targeting 2015 for completion. The second unit at MTS#2 is deemed to be in a slightly better condition and we are targeting its replacement on or around 2022. In discussions with our transmitter and neighbouring LDCs, this project is not deemed to have any Regional Planning implications.

NOTL Hydro continues to utilize the information provided by our SCADA, software tools and AMI system to develop an outage management system, utilize 'flags' to respond to potential system anomalies and to optimally manage power flow.

Public Policy Responsiveness

NOTL Hydro completed our AMI system installation and subsequent migration to the provincial MDM/R in 2011. We have also recognized the importance of accommodating components of the government's GEGEA legislation. NOTL Hydro has aggressively prepared our system to accommodate SOP and FIT renewable generation facilities. Currently two SOP generators (hydro-electric and biogas) combine for just under 3 mW of capacity. There are currently 93 microFIT and 5 approved FIT customers that combine for a rated generating capacity of 1.42 mW. The number of renewable generation units connected to our system will continue to grow as we currently have 34 active microFIT applications. Our distribution network is quite robust and complete and we have not been required to expand our system to date to enable DG, nor do we anticipate expansion with our current applications. (See Attachment 17- OPA letter)

Our current 5 year capital expenditure program includes provision for the continued development of an outage management system and various smart grid-related technological components.

Achieving our O.E.B. assigned targets for Conservation and Demand Management remains a top priority for NOTL Hydro. We recognize the importance of CDM to both the province and our customers. Two full-time employees are tasked with delivering provincial CDM programs and actively engaging our customers to participate. A 'behind-the-meter' residential load control pilot project, sanctioned and partially funded by the OPA, was conducted in 2010. The pilot provided valuable insight into equipment capabilities and customer expectations that was shared with the province through a Navigant Consulting report released in 2011.

Financial Performance

As the non-distribution components of the electricity bill continue to rise, NOTL Hydro has become increasingly cognizant of our impact on customer bills. Our aggressive

capital expenditure program over the last decade has resulted in continued reliability improvements (lower outage indices) and a drastic lowering of system losses to the benefit of our customers. In response to the GEGEA, we also implemented an AMI system and elements of a smart grid. These system improvements were all completed while NOTL Hydro rates remained amongst the lowest in the province.

Our 5 year capital expenditure plan proposes a lower level of annual spending while still achieving the goal of completing the rebuild of our system. With the exception of replacing one unit of our MTS#2 transformer station in 2015, we plan to cap our annual capital expenditure program at approximately $1.25 million. At this level, we expect a rather neutral effect to customer bills.

Our financial position will be improved with the final repayment of two major loans. The $2.8 million loan to build our MTS#1 will be paid off in 2018 and the $2.5 million loan to acquire MTS#2 will be retired in 2020. At 2012 year end our debt to capital ratio was a healthy 41%[18]. Our low debt situation will translate in to lower rates for our customers.

b) Prior to constructing our own Transformer Station in 2003, NOTL Hydro consulted with our neighbouring LDCs, Horizon and Niagara Peninsula Energy as to whether a joint investment could be made to our mutual benefit. Both LDCs operate at 13.8 kV and NOTL Hydro at 27.6 kV. NPEI was also interested in adding transformation capacity but required the addition in their southern-most territory, more than 15 km from our boundary. Horizon had recently lost several industrial customers and did not foresee any capacity requirement for the long term. NOTL Hydro would certainly consider a joint venture should a similar situation arise. We plan to participate in the upcoming Regional Infrastructure Planning Process although Niagara has been selected as a lower priority. NOTL Hydro also has been proactively accepting REG and now receives approximately 10% of our supply from local units.
c) Periodically, O.E.B. or Ministry directives are given with a strict adherence timeline and NOTL Hydro is forced to shift our capex priorities to accommodate. Generally, system renewal projects earmarked for a specific year are positioned after discussions with the operations department. A majority of our capital rebuild is completed internally by our operations department. Job sequencing and scheduling is arranged in advance to accommodate crew availability, vacation schedules, the completion of engineering designs and availability of construction materials. Weather is also a consideration as such construction is not conducive to frozen winter conditions. Capex investments in large fleet vehicles and transformer station upgrades are generally multi-year and must be scheduled well in advance to ensure schedules are met. Software upgrades require adequate staff resources for implementation, training and testing and the precise schedule is determined by our Billing Department. We also must be cognizant of the fact that we share a CIS system with 8 other LDCs and at times, must be 'queued' to accommodate all parties. The annual 5 Year Budget is reviewed and refreshed based on new additions and changes in priorities

[18] As reported to Infrastructure Ontario. See Attachment 5.

mentioned above. A new or revised slate of projects that balance need with the financial capability of the company is developed. The NOTL Hydro Board of Directors approve our Capital budget (specific projects and expenditures) in early autumn at which point staff meet to develop the execution of the projects.

d) A Customer Engagement Survey was conducted in June 2013 (Attachment 6). The results provided invaluable information on customer needs, expectation and levels of satisfaction by rate class and were incorporated into the 2014 capital expenditures proposed in this document. A thorough analysis of the survey and related capex plans are discussed in sections 5.2.3 b) and 5.4.1 e). Customer calls, emails and written comments are recorded and analyzed on a regular basis and are also considered in our final capital expenditure plans.

e) NOTL Hydro's investments to accommodate REG are discussed in section 5.1.4.2. We do not anticipate the need for investment in this CDSP but should the need arise would receive full attention and consideration.

5.4.3 System Capability Assessment for Renewable Energy Generation

(See Attachment 17 - OPA letter)

a) As of July 15, 2013, NOTL Hydro had 33 applications from <10 kW renewable generators in our service territory.

b) NOTL Hydro expects to continue at the current connection rate of approximately 25-30 microFIT customers per year over the forecast period. With the publically listed constraints in the entire Niagara Region, we do expect to connect two more FIT customers (tentatively approved) over the forecast period.

c) Our available capacity to connect renewable generation is as follows;

- MTS#2 (NOTL TS) approximately1.80 mW.
- MTS#1 (York TS) approximately 0.95 mW

d) We understand that there are constraints related to the connection of renewable generation at Allanburg TS (our transmitter's station located outside our service territory) due to a short circuit issue. Our distribution system constraints are listed above in c) and are related to preventing reverse current flow back in to the Transmitter's system.

e) NOTL Hydro does not supply an embedded distributor and therefore does not have any applicable related constraints.

5.4.4 Capital Expenditure Summary

The following Table, as provided in NOTL Hydro's 2014 COS application (Appendix 2-AB) provides a summary of capital expenditures from 2009 to 2018:

CATEGORY	Historical Period (previous plan[1] & actual)															Forecast Period (planned)				
	2009			2010			2011			2012			2013			2014	2015	2016	2017	2018
	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual[2]	Var					
	$ '000		%	$ '000		%	$ '000		%	$ '000		%	$ '000		%	$ '000				
System Access		44	--		334	--		246	--		1,850	--		37	--	100	100	100	100	100
System Renewal		1,339	--		721	--		397	--		1,745	--		516	--	970	4,030	1,030	935	1,030
System Service		15	--		23	--		19	--		96	--		238	--	95	55	55	55	55
General Plant		407	--		449	--		397	--		491	--		85	--	120	65	65	160	65
TOTAL EXPENDITURE	-	1,805	--	-	1,527	--	-	1,059	--	-	4,182	--	-	876	--	1,285	4,250	1,250	1,250	1,250
System O&M		$ 839	--		$ 745	--		$ 817	--		$ 949	--		$ 522	--	$ 964	$ 979	$ 995	$1,011	$ 1,027
Checksum 2-BA1		-$ 0			-$ 0			$ 0			$ 0			7 months						

System Access

System Access spending can be quite unpredictable as it is driven primarily by new customer expansion plans. The 2012 total includes the full capitalization of our smart meter system. On a go-forward basis, we expect that our forecasted $100k per year is adequate.

System Renewal

The average annual Renewal expense between 2009 and 2012 was approximately $1050k/year. Several large projects over this period spanned in to a subsequent year (CWIP) causing the expenses to appear 'lumpy'. Our forecast expenditure in Renewal is in-line with the 2009-2012 average and is based on a solid Capex plan as presented.

System Service

System Service spending ramped up in 2012 and 2013 with the Outage Management System currently under development. Our proposed Capex Plan describes the continued development of system automation during the forecast period as a means of improving efficiency.

General Plant

Our General Plant expenditures were ramped up between 2009 and 2012 as we replaced all 3 large Line Vehicles. In preparation for Smart Meters, we also replaced our FIS system. We are well positioned for the future and have reflected a much lower Capex spending in GP over the forecast period. A slight increase in 2017 is required as part of a roof replacement program.

5.4.5 Justifying Capital Expenditures

5.4.5.1 Overall Plan

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[19].

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

[19] See Attachment 10

$55,000 per year and we generally have been connecting 200 residential customers annually requiring a smart meter investment of $10,000. Our proposed budget has been set at $100k annually.

System Service investments averaged about $19k/year between 2009 and 2011but was 'ramped up' in 2012 as the development of an Outage Management System commenced and that is expected to be complete and functioning in 2014. Future investments in System Service are related to the completion of the outage management system and SCADA/smart grid system upgrades and development aimed at better serving our customers.

NOTL Hydro is well positioned to accommodate future REG connections (see 3.4.3).

5.4.5.2 Material Investments

The materiality threshold for NOTL Hydro is calculated to be $50,000.

Between the period of 2014 and 2018, a majority of the proposed System Renewal projects all exceed the threshold. As previously described, a majority of the projects involve the replacement of aging 4 kV plant with 27.6 kV in an effort to completely renew the distribution network. Our 5 Year Capex plans are illustrated in 5.4.4 above.

Feedback from our customers has indicated that they wish to be provided with status notices during an outage. We researched and compared software products that will perform this function via phone, email or text. It is our intention to purchase and implement this software in our 2014 OM&A and Capex Budgets.

The balance of our 5 Year Capital Expenditures Plan involves more obligatory investments such as line extensions, new meters and customer connections (System Access).

A summary of the capital plan for 2014 to 2018 and maps showing the schedule of capital activity are provided[20].

A. General Information on Projects/Activities

<u>2014 Projects</u>

System Renewal

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

This project is part of a long-term multi-year plan to replace the aging (1950-1960's) legacy 4 kV overhead system with buried 27.6 kV facilities. The project will connect to the recently installed 27.6 kV system on Simcoe Street (Phase 2) and extend north-east

[20] See Attachments 15 and 16

to Dorchester Street. An additional section proposed on Centre Street between Simcoe and Gate Street will allow for the partial removal of 15 poles on Gate Street that were originally installed in the 1950's. It is our intention to utilize a contractor for this project, expected to commence in early spring with full completion by late in 2014. Approximately 50 customers will be connected to the new underground system and approximately 250 kVA will be offloaded from the 4 kV system on to the more efficient 27.6 kV system. Public and employee safety concerns related to the 50-60 year old plant is the primary motivation behind this project. We do not expect any risks to the completion of this project. This project cost estimate is based on the same per metre costs experienced from the first two phases of this project. Funding for this project may require a loan or use of our line of credit.

Rural Overhead Project #1 (Capex $200,000 – Concession 2, Line 7 to Line 9)

Approximately 45 1950's vintage 3 phase wood poles and 1.3 km of conductor will be replaced with completion of this project. These poles were part of the original Ontario Hydro supply into Niagara-on-the-Lake and we are now concerned that the general age and deteriorating condition of the assets will create a safety issue. There is no 4 kV conversion involved as this line currently distributes at 27.6 kV. Once this pole line and conductors are replaced, the route will serve as a viable back-up link between the NOTL F4 and York M1 feeders. The total estimated cost of approximately $4500/pole is based on similar rural projects such as the Line 7 pole replacement project completed in 2012. We do not believe that there are any risks to not completing this project which is expected to commence in January 2014 with and be in service by May 2014. Funding for this project will be from general revenues.

Rural Overhead Project #2 (Capex $155,000 – Concession 6, Line 6 to Line 8)

This legacy 1 phase 4 kV pole line is currently supplied by a pole mounted 16 kV-2400 volt step-down transformer unit. This project involves replacing approximately 43 poles (generally 50+ years old) with new 45 foot wood poles and supplying the 19 existing customers directly off of the 27.6 kV system. The $3600/pole cost estimate is based on similar single phase rural conversion projects. Maintaining the safety of the public and employees was the primary impetus identified by our Asset Condition Assessment and asset management software results. We do not believe that there are any risks to not completing this project which is expected to commence construction in April 2014 with in service by August 2014. Funding for this project will be from general revenues.

Rural Overhead Project #3 (Capex $140,000 – York Road, Concession 2 to Concession 3)

This project will complete the 3 phase loop between adjacent 27.6 feeders and form a valuable backup link to the hamlet of Queenston and the International bridge area. Approximately 25 aging 4 kV wood poles will be replaced during this project along with several service poles. The cost per pole at $5600 is higher based on experience as the road is located on the St David's 'bench' and will require additional expertise in the area

of traffic control and vegetation management. A contractor will be deployed to complete this project. 25 customers will be resupplied off the 27.6 kV system allowing for the removal of a 167 kVA step down transformer. In addition to replacing aging assets, this project is partially driven by a new development that will require the 27.6 kV supply off this line in mid-2014. Funding for this project will be from general revenues. We expect to commence this project in May 2014 with completion in August 2014. The only risk of not completing this project would be our inability to secure a contractor at a reasonable cost. In such a case, our own staff would be asked to complete the project.

Rural Overhead Project #4 (Capex $110,000 – Line 4, Concession 2 to Concession 3)

This 2400 volt pole line supplying 16 customers on Line 4 is supplied via a step down transformer and was identified during the asset condition assessment and asset management process as requiring replacement primarily due to safety concerns. Approximately 22 aging primary wood poles, several service poles and all new secondary bus are targeted for replacement and will offload a 167 kVA step down transformer. The estimated cost of this project is identical to that estimated for Rural Project #2 listed above. Funding for this project will be from general revenues. Construction will commence in September 2014 with completion by December, 2014. Late year weather will pose a slight risk of inhibiting completion. NOTL Hydro will attempt to start this project earlier in the fall to mitigate such risk.

Replacement Revenue Meters (Capex $30,000)

NOTL Hydro possesses approximately 80 customers in the General Service >50 kW group that still require on-site meter reading. Our largest customers are equipped with expensive interval meters and all our Residential and General Service <50 kW customers have smart meters installed. We have determined that since all 80 meters are due for reverification over the next few years, it is economical to replace these aging meters over a 4 year period with AMI capability that will utilize our current smart meter communication system. A number of these installations require rewiring and/or additional instrument transformers to utilize the new 3 element metering standards we have adopted. Funding for this project will be from general revenues. An external contractor will be necessitated to complete this project. Not finding an appropriate contractor may increase the risk of completion. NOTL Hydro will attempt to secure contract services early in the year to mitigate such risk of completing by year end 2014.

System Access

Property Development/Expansions (Capex $55,000)

Over the past few years, we have refunded residential subdivision developers an average of $55,000 per year in accordance with required capital cost recovery agreements (CCRA). We continue to forecast similar residential growth over the next 5 years and have therefore proposed this amount throughout the forecast period. Funding for this project will be from general revenues.

System Service

System Integration GIS/FIS/CIS/ODS (Capex $95,000)

Not long after implementing our AMI network, we realized the vast potential of the system. Integrated data from our AMI, ODS, CIS, FIS and GIS systems can be utilized to develop an outage management system and various other tools to improve our efficiency and customer service. Integration of these systems commenced in 2012 and is proposed to be largely complete in 2014. Utilizing the GIS as a central data base, customer information from the CIS, asset information from the AM system and FIS as well as AMI load information from our ODS system will be integrated. An outage management system is our final outcome and is currently well under development. Our GIS system is being reconfigured with electrical continuity (power flow) and will globally position major assets, customer information and meter data and alarms. The Outage Management System will provide key information that will allow our staff to proactively respond to outages, resulting in improved customer service. Engineering design staff will have up to date information such as transformer loading and asset age and condition thus potentially reducing the number of field visits. As with any technological based project, there is a risk of not achieving the expected outcome. We are confident based on development to date, that the desired project will be completed. Our 2013 forecasted Capex expense is $100,000 but we have budgeted $95,000 in 2014 with the expectation that the project will be completely functional before year end. Funding for this project will be from general revenues.

General Plant

Software Upgrades (CIS, FIS etc.) (Capex $65,000, Opex $25,500)

NOTL Hydro is a member of Utility Collaborative Services (UCS), a group of 9 LDCs that jointly share a Harris Northstar CIS system. The group is migrating to the latest Northstar version 6.4.0 and has been quoted $30,000 for our scheduled 1st quarter 2014 conversion process. The latest version will accommodate FIT payments and has additional tools to improve efficiency and customer service. We have also budgeted $10,000 in 2014 for annual upgrades to our FIS system (Microsoft Dynamics GP) that will maintain our system with the latest tools. Risk associated with not completing this project would involve logistical problems by the vendor. There is little that NOTL Hydro could do to mitigate such risk in this case. A further $25,000 is required in 2014 to move to a data file management system File Nexus that will assist our company with saving and retrieving data more effectively. An annual operating fee of $13,700 is required for File Nexus. In response to our recent Customer Survey, NOTL Hydro proposes to implement a customer messaging system ‘Teleworks’ through our CIS system that will provide outage notices and updates via phone, email or text. NOTL Hydro has budgeted $11,800 in our 2014 OM&A budget for set-up, annual subscription and per usage fees to implement Teleworks. The Teleworks annual cost in 2015 and

going forward is estimated at $9,600 per year. Funding for this project will be from general revenues.

2015 Projects

System Renewal

Replace Unit at MTS#2 (Capex $3,000,000)

Our prominent capital expenditure in 2015 is the replacement and upsizing of a unit of our MTS#2 station tentatively scheduled for 2015 and is forecasted to cost $3,000,000. As previously described, the two 15/25 mVA units are reaching the end of their useful life in the next 5-10 years according to expert advice received. With our peak summer load at the 50 mVA level and the rating of MTS#1 at 42 mVA, the loss of either transmission supply or transformer station during this period would be critical. Our proposal to replace and upsize one of the units at MTS#2 in 2015 will provide long-term transformation capacity and the flexibility to perform unencumbered station maintenance. We are currently seeking approval from our transmitter and the IESO to increase the unit capacity. Pending successful approvals, NOTL Hydro expect to purchase, install and commission the new unit by year end 2015.

Old Town Rebuild Phase 4 (Capex $385,000 – Johnson, Dorchester to Palatine)

This 4th phase of the Town Rebuild project involves the replacement of aging 4 kV poles along 6 Town blocks and will result in the conversion of 36 customers and 6 transformers to underground 27.6 kV facilities. Safety and reliability improvements are the primary drivers as determined by the ACA and asset management software.

Rural O/H Project #1 (Capex $270,000 - Concession 6/Warner Road area)

A step down transformer currently supplies 4 kV to the Concession 6/Warner Road area in the south end of our operating territory. The ACA and asset management software has identified and prioritized this area for replacement and conversion to single phase 27.6 kV in 2015 primarily due to the age and condition of the existing plant and related safety and reliability concerns. Approximately 50 poles and 18 transformers will be replaced that currently supply 22 customers in this very rural area.

Rural O/H Project #2 (Capex $150,000 – Concession 2, Line 1 to Line 3)

With poles and transformers exceeding 50 years of age, our ACA and asset management program have identified this area of Concession 2 as in need of renewal to address safety and reliability issues. Our budgetary figure is based on the conversion of this 4 kV area to single phase 27.6 kV and involves the replacement of 24 poles and 8 transformers currently serving 19 customers.

Rural O/H Project #3 (Capex $105,000 - Concession 2, Line 6 to Line 7)

An 800 metre stretch of aging overhead 4 kV plant has been similarly prioritized for replacement in 2015. Approximately 20 poles and 5 transformers serving 23 customers will be replaced and resupplied at single phase 27.6 kV. Improved safety and reliability are the expected outcomes from this project.

Rural O/H Project #4 (Capex $90,000 - Concession 6, Line 5 to Line 6)

As per the above project, this 700 metre section of 4 kV poles has approached the useful end of life and is proposed for replacement in 2015. A total of 19 poles and 3 transformers supplying 7 customers will be replaced by new 45 foot wood poles and 16 kV transformers upon completion.

System Access

Property Development/Expansions (Capex $55,000)

As indicated in the 2014 budgetary figures, we have refunded residential subdivision developers an average of $55,000 per year in accordance with required capital cost recovery agreements (CCRA). We continue to forecast similar residential growth over the next 5 years and have therefore proposed this amount throughout the forecast period.

System Service

SCADA/GIS Upgrades, Automation (Capex $55,000)

With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

General Plant

Software Upgrades (CIS, FIS etc.) (Capex $40,000, Opex $23,300/year – Teleworks/File Nexus)

In order to take full advantage of technology and customer service-related tools, NOTL Hydro is budgeting $40,000 in 2015 for the purchase and upgrade of the latest FIS and

CIS software modules and versions. With no plans to add staff in our 5 year outlook, it is imperative that we take full advantage of technology to better serve our customers.

2016 Projects

System Renewal

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

Phase 5 of the Old Town rebuild involves the conversion of 53 customers to the 27.6 kV underground system and removal of 26 poles and 6 transformers supplying the aging 4 kV overhead system. Safety and reliability are the predominant drivers of this project.

Rural O/H Project #1 (Capex $190,000 - Line 2, Concession 2 to Concession 4)

The ACA and Asset Management software has queued this 4 kV to 27.6 kV renewal and conversion project based primarily on safety and reliability concerns. A total of 33 poles and 13 transformers will be replaced that currently serve 23 customers.

Rural O/H Project #2 (Capex $180,000 – Carlton Street, McNab to Townline Rd)

The aging 4 kV overhead system in this rural area is scheduled to be replaced and converted to 27.6 kV in 2016. Safety and reliability improvements along with reduced line losses are the goals of the project that involves the replacement of over 50 poles and 8 transformers that currently supply 19 customers.

Rural O/H Project #3 (Capex $120,000 – Lakeshore Rd, Stewart to Read Road)

This 27.6 kV pole line was originally installed by Ontario Hydro in the 1950's to supply a ship building facility in St. Catharines. It currently only supplies 4 customers but requires replacement to ensure ongoing safety and reliability. Fourteen poles and new secondary bus will be installed with this project.

Rural O/H Project #4 ($105,000 McNab Road, Carlton to Scott St)

As per project #2 above, this 600 metre section of 4 kV poles has approached the useful end of life and is proposed for replacement in 2016. A total of 19 poles and 3 transformers supplying 7 customers will be replaced by new 45 foot wood poles and 16 kV transformers upon completion. The ACA and Asset Management software has positions as a priority in 2016.

System Access

Property Development/Expansions (Capex $55,000)

As indicated in the 2014 and 2015 budgetary figures, we have refunded residential subdivision developers an average of $55,000 per year in accordance with required

capital cost recovery agreements (CCRA). We continue to forecast similar residential growth over the next 5 years and have therefore proposed this amount throughout the forecast period.

System Service

SCADA/GIS Upgrades, Automation (Capex $55,000)

With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

General Plant

Software Upgrades (CIS, FIS etc.) (Capex $40,000, Opex $23,300 per year – File Nexus/Teleworks)

In order to take full advantage of technology and customer service-related tools, NOTL Hydro is budgeting $40,000 in 2016 for the purchase and upgrade of the latest FIS and CIS software modules and versions. With no plans to add staff in our 5 year outlook, it is imperative that we take full advantage of technology to better serve our customers. Software efficiency tools purchased in 2014 will add annual maintenance cost to the operating budget.

<u>2017 Projects</u>

System Renewal

Old Town Rebuild Phase 6 (Capex $400,000 – Gage, Simcoe to Dorchester, Dorchester, Gage to Centre)

This project will replace an aging 4 kV overhead system with new 27.6 kV buried facilities. Five Town blocks will be resupplied resulting in the conversion of 42 customers and 5 transformers and the removal of approximately 30 poles. Improved safety and reliability are the primary drivers for this project. An estimated 150 kW of 4 kV load will be moved to the more efficient 27.6 kV system upon completion and is expected to further reduce line losses.

Rural O/H Project #1 (Capex - $265,000 – Line 1, Concession 1 to Concession 4)

The aging 4 kV overhead system in this rural area is scheduled to be replaced and converted to 27.6 kV in 2017 based on ACA and AM software queuing. Safety and reliability improvements along with reduced line losses are the goals of the project that involves the replacement of approximately 32 poles and 10 transformers that currently supply 38 customers.

Rural O/H Project #2 (Capex $120,000 – Concession 7, Line 3 and Townline Road)

Approximately 2.3 km of 1950's vintage 4 kV pole line is proposed to be replaced with single phase 27.6 kV plant with this project. Over 50 poles, 18 transformers will be replaced while 33 customers will be resupplied from the 27.6 kV system upon completion of this project. Safety and reliability improved are the primary drivers of this project, while lower system line losses can also be expected.

Rural O/H Project #3 (Capex $105,000 - Line 2, Concession 1 to Concession 2)

The ACA and AM plan have identified and queued this aging 4 kV line for replacement in 2017. A total of 17 poles and 6 transformers will be replaced with new 45 foot wood poles and 16 kV units to supply 11 existing customers. Safety and reliability improved are the primary drivers of this project, while lower system line losses can also be expected.

Rural O/H Project #4 (Capex $40,000 – Lakeshore Road east of Four Mile Creek Road)

A large step down transformer currently supplies 4 kV to this rural area. This project proposes to replace the old poles and transformers and connect the supply to the more efficient 27.6 kV system. Approximately 8 poles and 3 transformers will be replaced to supply the existing 8 customers. The ACA and AM software positioned this project in 2017 due to its deteriorating condition and related safety and reliability issues.

System Access

Property Development/Expansions (Capex $55,000)

As previously indicated, NOTL Hydro has refunded residential subdivision developers an average of $55,000 per year in accordance with required capital cost recovery agreements (CCRA). We continue to forecast similar residential growth and have therefore proposed this amount throughout the forecast period.

System Service

SCADA/GIS Upgrades, Automation (Capex $55,000)

With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015 and continue the installation in 2017.

General Plant

Software Upgrades (CIS, FIS etc.) (Capex $40,000, Opex $23,300/year – File Nexus - Teleworks)

In order to take full advantage of technology and customer service-related tools, NOTL Hydro is budgeting $40,000 in 2017 for the purchase and upgrade of the latest FIS and CIS software modules and versions. With no plans to add staff in our 5 year outlook, it is imperative that we take full advantage of technology to better serve our customers. Software efficiency tools purchased in 2014 will add annual maintenance cost to the operating budget.

Stores and Building Equipment (Capex $95,000)

A roofing expert has recently advised us that a new flat garage roof will be required within 5 years. Based on this advice and cost estimates provided, we have budgeted $90,000 in 2017. An additional $5,000 is budgeted annually for miscellaneous stores and building equipment.

<u>2018 Projects</u>

System Renewal

Old Town Rebuild Phase 7 (Capex $400,000 – Centre Street, Simcoe to Dorchester)

This project will replace an aging 4 kV overhead system with new 27.6 kV buried facilities. Six Town blocks will be resupplied resulting in the conversion of 43 customers and 6 transformers and the removal of approximately 25 poles. Improved safety and reliability are the primary drivers for this project. An estimated 150 kW of 4 kV load will be moved to the more efficient 27.6 kV system upon completion and is expected to further reduce line losses.

Rural O/H Project #1 (Capex - $205,000 – Line 2 and Concession 7 area)

The aging 4 kV overhead system in this rural area is scheduled to be replaced and converted to 27.6 kV in 2018 based on ACA and AM software queuing. Safety and reliability improvements along with reduced line losses are the goals of the project that involves the replacement of approximately 48 poles and 15 transformers that currently supply 29 customers.

Rural O/H Project #2 (Capex - $195,000 – Line 1, Townline to Concession 6)

Approximately 2.1 km of 1950's vintage 4 kV pole line is proposed to be replaced with single phase 27.6 kV plant with this project. Over 43 poles, 12 transformers will be replaced while 36 customers will be resupplied from the 27.6 kV system upon completion of this project. Safety and reliability improved are the primary drivers of this project, while lower system line losses can also be expected.

Rural O/H Project #3 (Capex $165,000 – Line 3 and Concession 6 area)

The ACA and AM plan have identified and queued this aging 4 kV line for replacement in 2017. A total of 29 poles and 5 transformers will be replaced with new 45 foot wood poles and 16 kV units to supply 9 existing customers. Safety and reliability improved are the primary drivers of this project, while lower system line losses can also be expected.

System Access

Property Development/Expansions (Capex $55,000)

As indicated in the 2014 budgetary figures, we have refunded residential subdivision developers an average of $55,000 per year in accordance with required capital cost recovery agreements (CCRA). We continue to forecast similar residential growth over the next 5 years and have therefore proposed this amount throughout the forecast period.

System Service

SCADA/GIS Upgrades, Automation (Capex $55,000)

With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our

existing AMI communication system, we are proposing to select the specific equipment in 2015 and continue to expand the intelligence network at least up to 2018.

General Plant

Software Upgrades (CIS, FIS etc.) (Capex $40,000, Opex $23,300/year – File Nexus/Teleworks)

In order to take full advantage of technology and customer service-related tools, NOTL Hydro is budgeting $40,000 in 2018 for the purchase and upgrade of the latest FIS and CIS software modules and versions. With no plans to add staff in our 5 year outlook, it is imperative that we take full advantage of technology to better serve our customers. Software efficiency tools purchased in 2014 will add annual maintenance cost to the operating budget.

B. Evaluation criteria and information requirements for each project/activity

Asset Condition Assessment inspection sheets are provided[21].

2014

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

1. *Efficiency, Customer Value, Reliability*

a) The historic Old Town of Niagara-on-the-Lake, founded in the late 1700's, attracts over 1 million visitors annually. Development since the 1980's has prompted NOTL Hydro to install a 27.6 kV system backbone to supply the larger loads but the aging (50+ year) 4 kV equipment is in need of replacement. The proposed 4 kV replacement with new 27.6 kV plant commenced in 2012 with the 1st phase of a 500 MCM, 600 amp feeder along Simcoe Street that provides a 'loop' through the Town. The legacy 4 kV system is currently fed from a 5 .4 mVA substation in service since the early 1950's. With all the major commercial customers supplied off the 27.6 kV system, NOTL Hydro will decommission the King DS station in October 2013 and temporarily supply the area with a 1500 kVA pad-mounted unit for the next 10-15 years until the entire system is converted to 27.6 kV. Upon examining our feeder reliability performance logs Feeder Performance analysis (see Attachment 3), King DS experiences a higher than average frequency of outages and this is compounded by the fact that it is also affected by the F4 upstream feeder that supplies the station.

b) With the completion of the main Simcoe Street 600 amp supply later this year, Johnson Street was selected as the primary egress point due to the position of an existing junction point and to coordinate with the Town of Niagara-on-the-Lake's planned Johnson Street road reconstruction. The Old Town conversion project has been identified as a priority through the asset management process and has been prioritized by both logistics and condition of the assets.

[21] See Attachment 10

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). A Town bi-law prohibits the installation of new overhead plant as a means of preserving the original ambiance of the historic town and we have accepted that burial of facilities is in the best interest of the community. The design and project management of the project will be handled by our Engineering Department while construction will be completed by contracted services during the calendar year of 2014

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Johnson Street project will replace 50+ year old 4 kV facilities with new 27.6 kV buried equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability*

   The Johnson Street project was selected in part to coordinate with the Town's proposed road reconstruction with the aim of avoiding multi-year construction in an area to the benefit of customers.

5. *Economic Benefits*

   This project will be completed using Ontario employees and contractors.

6. *Environmental Benefits*

   The burial of facilities on Johnson Street will eliminate the requirement to trim the trees in this area currently completed on a rotational 3 year cycle.

<u>Rural Overhead Project #1 (Capex $200,000 – Concession 2, Line 7 to Line 9)</u>

1. *Efficiency, Customer Value, Reliability*

a) While this line has been reliable to date, we are concerned with safety and long term reliability due to its age. The asset management process has determined that this project should be deemed 'high priority'. Secondarily, the new pole line (F4 feeder) will serve as a reliable back-up to the M1 feeder which supplies the hamlet of Queenston and the international bridge area upon completion. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-

G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' the Concession 2 project as first priority. Our ACA inspection has determined that this line was constructed around 1950 (63 years old) and was once the original Ontario Hydro supply to the Old Town. The conductor was also determined to be pitted and in need of replacement along with the old poles and porcelain insulators.
c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project management and construction of the project will be handled entirely by NOTL Hydro employees. A local contractor has been assigned the design function. Construction will be completed during the calendar year of 2014.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Concession 2 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability*

   The reconstructed Concession 2 pole line (F4 feeder) will serve as a reliable back-up to the M1 feeder which supplies the hamlet of Queenston and the international bridge area upon completion.

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

<u>Rural Overhead Project #2 (Capex $155,000 – Concession 6, Line 6 to Line 8)</u>

1. *Efficiency, Customer Value, Reliability*

a) While this line has been reliable to date, we are concerned with safety and long term reliability due to its age (up to 62 years old). The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV

distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' the Concession 6 project as first priority. Our ACA inspection has determined that this line was constructed around 1951 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our reliability indices and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2014.

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Concession 6 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. Cyber-security, Privacy (not applicable)

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits

This project will be completed using Ontario employees (NOTL Hydro).

6. Environmental Benefits (not applicable)

<u>Rural Overhead Project #3 (Capex $140,000 – York Road, Concession 2 to 3)</u>

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety. Secondarily, completion of this line section will provide a more direct supply to the international Queenston-Lewiston bridge area. Finally, a subdivision development expected to commence in early 2014 will be utilizing the new 27.6 supply provided by this line section.

b) Our asset condition assessment (ACA) and asset management software has 'queued' the York Road project as first priority. Our ACA inspection has determined that this line was constructed around 1955 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2014.

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The York Road project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. Cyber-security, Privacy (not applicable)

4. Co-ordination, Interoperability

A nearby residential development expected to commence in early 2014 will be utilizing the new 27.6 supply provided by this line section.

5. Economic Benefits

This project will be completed using Ontario employees/contractors.

6. Environmental Benefits (not applicable)

<u>Rural Overhead Project #4 (Capex $110,000 – Line 4, Concession 2 to Concession 3)</u>

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has "queued" the Line 4 project as first priority. Our ACA inspection has determined

that this line was constructed around 1950 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2014.

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Line 4 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits

This project will be completed using Ontario employees (NOTL Hydro).

6. Environmental Benefits (not applicable)

<u>Replacement Revenue Meters (Capex $30,000)</u>

1. Efficiency, Customer Value, Reliability

a) NOTL Hydro possesses approximately 80 customers in the General Service >50 kW group that still require on-site meter reading. Our largest customers are equipped with expensive interval meters and all our Residential and General Service <50 kW customers have smart meters installed. We have determined that since all 80 meters are due for reverification over the next few years, it is economical to replace these aging meters with AMI capability that will utilize our current smart meter communication system over a 4 year period. A number of these installations are old mechanical meters (non-electronic) and require rewiring and/or additional instrument transformers to utilize the new 3 element metering standards we have adopted.

b) A number of these meters are due for reverification in accordance with Measurement Canada requirements. It is our intention to replace those meters due for reverification with new meters that can be remotely read utilizing our existing AMI system. As this is a four year project, our manual meter reading

costs will be slowly reduced to nil in 2018. Automated reading is efficient and reliable and will provide customer value when reduced costs are realized.

c) With only 80 of our current 8300 meters still requiring manual reading, it is logical to automate our entire process. Our manual meter reading expense is currently $5400/year and combined with the need to replace a number of aging mechanical meters and comply with our legal requirement to re-verify the meters, we feel that this project is justified.

2. Safety

This meter replacement program will generally improve the safety of the installations. All installations will be checked and new equipment installed to current metering standards. In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. Cyber-security, Privacy

Our Sensus AMI system is currently undergoing the final phase of a security audit to ensure adequate measures are in place to remain cyber secure and ensure customer privacy.

4. Co-ordination, Interoperability

The new meters will assist with automating a manual process. The availability of hourly customer data and other benefits of the AMI system will improve our technological functionality.

5. Economic Benefits

This project will be completed utilizing Ontario employees/contractors.

6. Environmental Benefits (not applicable)

<u>Property Development/Expansions (Capex $55,000)</u>

1. Efficiency, Customer Value, Reliability

a) This project is entirely driven by our obligation to comply with 3rd party development requirements (System Access).
b) Our priority is based on meeting our regulatory requirements
c) Not applicable

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits (not applicable)*

6. *Environmental Benefits (not applicable)*

<u>System Integration GIS/FIS/CIS/ODS (Capex $95,000)</u>

1. *Efficiency, Customer Value, Reliability*

a) With the recognized value of the data provided by the AMI system, we immediately initiated plans in 2012 to integrate the various software systems to derive maximum benefit. Our recent customer survey also confirmed that customers wish to have more timely relevant information during an outage. Flags from individual meters related to voltage fluctuations or meter tampering will also be relayed to our operating staff for immediate attention.

b) This project is the final phase of integration that will result in an efficient, functioning outage management system in 2014. Customers will benefit from our faster response times to outages based on the information that the system will provide our operating staff. The GIS system will house the integrated data and provide an additional benefit of providing valuable asset information. We are aware that the provincial government is promoting the development of smart grid-related systems and this certainly weighed in on our decision to proceed.

c) Upon implementation of the outage management system, we will be better positioned to provide quantitative data on improved response times. Our current situation relies on gathering customer calls or receiving notice from our station operators that customers are out of power. The new system will pictorially illustrate the specific areas out of power and through deductive reasoning, our staff will direct crew to the most likely source of the problem. Our outage management system development was jointly designed for fellow Niagara Erie Power Alliance (NEPA) members by Util-Assist and Savage Data Systems. A GIS specialist has been assisting us with preparing the data to develop electrical system continuity, vital to load flow functionality.

2. *Safety*

   In all likelihood, improved response to outages could improve the prospects of safety. In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. *Cyber-security, Privacy*

   As with our entire customer data base of information, privacy and cyber-security are maintained based on good utility practices.

4. *Co-ordination, Interoperability*

   The development of our outage management system has been jointly managed by Util-Assist for a number of Ontario LDCs including those members of NEPA. The standards applied are based on recently developed, successful outage management systems in the Ontario market. It is our intention to continue to develop a smarter grid in subsequent years through further management of data. Additional automation and system intelligence (load monitoring) is proposed.

5. *Economic Benefits*

   This outage management system and related GIS functionality is under development in Ontario.

6. *Environmental Benefits (not applicable)*

<u>Software Upgrades (CIS, FIS etc.) (Capex $65,000, Opex $25,500)</u>

1. *Efficiency, Customer Value, Reliability*

a) It is imperative that we maintain business operating efficiency by taking advantage of the latest software releases. The latest CIS version 6.4.0 provides a platform to pay FIT customers. With the number of FIT/microFIT customers approaching 100, the current manual system is time consuming and tedious. We have also budgeted in 2014 for annual upgrades to our FIS system, Microsoft Dynamics GP (“Great Plains”) that will provide us with the latest tools. A data file management system, File Nexus, will assist our company with saving and retrieving data more effectively. In response to our recent Customer Survey, NOTL Hydro proposes to implement a customer messaging system ‘TeleWorks’ through our CIS system that will provide outage notices and updates via phone, email or text.

b) The scheduling of the CIS upgrade is partially driven by the fact that we share our system with 9 other LDCs (Utility Collaborative Services). We are slotted for the upgrade in the 1st quarter. The Cognos bill print software is necessitated by the need to utilize flexible efficient software to print bills.

c) The quantification of benefits from new or upgraded software is a difficult task. Over the past decade, LDCs have been assigned additional tasks such as Retail activity, FIT payment and settlement and LEAP administration. Hiring an additional employee can be expected to add perhaps $60,000-$90,000 to our operating expense. In order for NOTL Hydro to maintain our current level of staff, we must continuously automate processes and utilize more powerful software.

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. Cyber-security, Privacy

As with our entire customer data base of information, privacy and cyber-security are maintained based on good utility practices.

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits (not applicable)

6. Environmental Benefits (not applicable)

2015

Replace/Upgrade Unit at MTS#2 ($3,000,000)

1. Efficiency, Customer Value, Reliability

a) The primary driver of this project is the assurance that our customers have a secure, reliable long-term supply of transformation. The timing of this project is based on a recent consultant's report that predicts the useful life of the two existing 15/25 mVA units to be 5 -10 years.

b) Loss of one of the MTS#2 units will impact our ability to adequately take MTS#1 off-line for routine maintenance. Upon receiving the consultant's report in 2012, NOTL Hydro has been active in moving this project forward and has initiated the approvals process with the transmitter and IESO. Our application has proposed a larger size unit (up to 50 mVA) to adequately meet our customers' future

transformation requirements and to provide a suitable back up to MTS#1 in the event of its failure or off-line maintenance requirements.

c) The installation of a new and larger sized transformer unit at MTS#2 will vastly increase the long-term reliability of transformation supply to our community. Additionally, NOTL Hydro will be able to conduct routine station maintenance throughout the year with the new unit in place as opposed to specific seasonal low consumption periods. For example, removing the 42 mVA MTS#1 unit from service relies on the two aging 15/25 mVA units of MTS#2 to pick up all system load. The 4 summer months are avoided unless the required outage is an emergency. The installation of a 50 mVA unit at MTS#2 will allow safe and reliable back up to MTS #1 at any time during the year. With NOTL Hydro's peak load at approximately 50 mVA current station maintenance is limited to the spring and fall months.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The replacement of the MTS#2 transformer unit is expected to increase the relative safety of the operation at the station.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability*

   NOTL Hydro has commenced the application process which will involve review by Hydro One, OPA and the IESO. The new unit will be equipped with the latest technology that will improve the flow of information as we develop our smart grid.

5. *Economic Benefits*

   This project will be completed utilizing Ontario contractors and employees.

6. *Environmental Benefits*

   To accommodate the new and larger proposed transformer unit, a higher capacity oil containment area will be constructed, negating the possibility of adverse environmental issues related to an oil spill. The new transformer unit will also be equipped with additional technology to provide an early warning to potential equipment failure.

<u>Old Town Rebuild Phase 4 (Capex $385,000 - Johnson Street, Dorchester to Palatine)</u>

1. *Efficiency, Customer Value, Reliability*

a) The historic Old Town of Niagara-on-the-Lake, founded in the late 1700's, attracts over 1 million visitors annually. Development since the 1980's has prompted NOTL Hydro to install a 27.6 kV system backbone to supply the larger loads but the aging (50+ year) 4 kV equipment is in need of replacement. The proposed 4 kV replacement with new 27.6 kV plant commenced in 2012 with the 1st phase of a 500 MCM, 600 amp feeder along Simcoe Street that provides a 'loop' through the Town. The legacy 4 kV system is currently fed from a 5 .4 mVA substation in service since the early 1950's. With all the major commercial customers supplied off the 27.6 kV system, NOTL Hydro will decommission the King DS station in October 2013 and temporarily supply the area with a 1500 kVA pad-mounted unit for the next 10-15 years until the entire system is converted to 27.6 kV. Upon examining our feeder reliability logs Feeder Performance analysis[22] King DS experiences a higher than average frequency of outages and this is compounded by the fact that it is also affected by the F4 upstream feeder that supplies the station.
b) With the completion of Phase 3 (Johnson, Simcoe to Dorchester) this phase extends northwest to the end of Johnson Street. The timing (priority) of this project is selected to coordinate with the Town of Niagara-on-the-Lake's planned Johnson Street road reconstruction. The Old Town conversion project has been identified as a priority through the asset management process and has been prioritized by both logistics and condition of the assets.
c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). A Town bi-law prohibits the installation of new overhead plant as a means of preserving the original ambiance of the historic town and we have accepted that burial of facilities is in the best interest of the community. The design and project management of the project will be handled by our Engineering Department while construction will be completed by contracted services during the calendar year of 2015.

2. *Safety*

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Johnson Street project will replace 50+ year old 4 kV facilities with new 27.6 kV buried equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability*

[22] See Attachment 3

The Johnson Street project was selected in part to coordinate with the Town's proposed road reconstruction with the aim of avoiding multi-year construction in an area to the benefit of customers.

5. *Economic Benefits*

   This project will be completed using Ontario employees and contractors.

6. *Environmental Benefits*

   The burial of facilities on Johnson Street will eliminate the requirement to trim the trees in this area currently completed on a rotational 3 year cycle.

<u>Rural Overhead Project #1 (Capex $270,000 – Concession 6, Warner Road area</u>

1. *Efficiency, Customer Value, Reliability*

a) We are concerned with safety and long term reliability of this line section due to its age and condition. The asset management process has determined that this project should be deemed 'high priority' and slotted the project in 2015. The number of outages in this area is showing signs of increasing in frequency. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' the Warner Road area project as a top priority. Our ACA inspection has determined that this line was constructed around 1963 and is well beyond its expected useful life.

c) Two outages in this area in 2012 were related to age related failure of equipment. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project management and construction of the project will be handled entirely by NOTL Hydro employees. Construction will be completed during the calendar year of 2015.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Warner Road project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Rural Overhead Project #2 (Capex $150,000 – Concession 2, Line 1 to Line 3)

1. *Efficiency, Customer Value, Reliability*

   a) We are concerned with safety and long term reliability due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

   b) Our asset condition assessment (ACA) and asset management software has 'queued up' the Concession 6 project as first priority. Our ACA inspection has determined that this line was constructed around 1953 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

   c) Our crews have had to respond to outages in this area in the past few years and we are concerned that the frequency will increase due to the age of the infrastructure. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2015.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Concession 2 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Rural Overhead Project #3 (Capex $105,000 – Concession 2, Line 6 to Line 7)

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued' this section of Concession 2 as a first priority. Our ACA inspection has determined that this line was constructed around 1950 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2015.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Concession 2 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Rural Overhead Project #4 (Capex $90,000 – Concession 6, Line 5 to Line 6)

1. *Efficiency, Customer Value, Reliability*

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' the Concession 6 project as high priority and it was slotted in 2015. Our ACA inspection has determined that this line was constructed around 1951 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2015.

2. *Safety*

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Line 4 project will replace 60+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable*)

5. *Economic Benefits*

This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Property Development/Expansions (Capex $55,000)

1. *Efficiency, Customer Value, Reliability*

a) This project is entirely driven by our obligation to comply with 3rd party development requirements (System Access).

b) Our priority is based on meeting our regulatory requirements
c) Not applicable

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. Cyber-security, Privacy (not applicable)

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits (not applicable)

6. Environmental Benefits (not applicable)

SCADA/GIS upgrades, automation ($55,000)

1. Efficiency, Customer Value, Reliability

a) With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

b) We are aware that the provincial government is promoting the development of smart grid-related systems and this certainly weighed in on our decision to proceed. Our recent customer survey also confirmed that customers wish to have more timely relevant information during an outage. Flags from individual meters related to voltage fluctuations or meter tampering will also be relayed to our operating staff for immediate attention.

c) The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially

utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

2. *Safety*

   We expect that the additional intelligence from load flow will improve response time for outages and therefore, the prospects of increased public safety. In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. *Cyber-security, Privacy*

   As with our entire customer data base of information, privacy and cyber-security is maintained based on good utility practices.

4. *Co-ordination, Interoperability*

   The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system.

5. *Economic Benefits*

   This outage management system and related GIS functionality is under development in Ontario.

6. *Environmental Benefits (not applicable)*

<u>2016</u>

<u>Old Town Rebuild Phase 5 (Capex $400,000 – Niagara Blvd, Orchard to Lansdowne)</u>

1. *Efficiency, Customer Value, Reliability*

a) The historic Old Town of Niagara-on-the-Lake, founded in the late 1700's, attracts over 1 million visitors annually. Development since the 1980's has prompted NOTL Hydro to install a 27.6 kV system backbone to supply the larger loads but the aging (50+ years) 4 kV equipment is in need of replacement. The proposed 4 kV replacement with new 27.6 kV plant commenced in 2012 with the 1st phase of a 500 MCM, 600 amp feeder along Simcoe Street that provides a 'loop' through the Town. The legacy 4 kV system is currently fed from a 5 .4 mVA substation in service since the early 1950's. With all the major commercial customers supplied off the 27.6 kV system, NOTL Hydro will decommission the

King DS station in October 2013 and temporarily supply the area with a 1500 kVA pad-mounted unit for the next 10-15 years until the entire system is converted to 27.6 kV. Upon examining our feeder reliability logs Feeder Performance analysis[23], King DS experiences a higher than average frequency of outages and this is compounded by the fact that it is also affected by the F4 upstream feeder that supplies the station.

b) With the completion of Phase 4 (Johnson, Dorchester to Palatine) this phase completes the northwest segment of the Old Town project. This area is currently supplied by a 4 kV radial feed. Completion of this phase will improve the reliability of the system as a looped feed arrangement will be installed. The Old Town conversion project has been identified as a priority through the asset management process and has been prioritized by both logistics and condition of the assets.

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). A Town bi-law prohibits the installation of new overhead plant as a means of preserving the original ambiance of the historic town and we have accepted that burial of facilities is in the best interest of the community. The design and project management of the project will be handled by our Engineering Department while construction will be completed by contracted services during the calendar year of 2016.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. This project will replace 50+ year old 4 kV facilities with new 27.6 kV buried equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability*

   Our construction in this area will be coordinated with the Town of NOTL and CATV, gas and phone companies to potentially coordinate future joint construction and initiate shared construction expenses.

5. *Economic Benefits*

   This project will be completed using Ontario employees and contractors.

6. *Environmental Benefits*

[23] See Attachment 3

The burial of facilities with this project will eliminate the requirement to trim the trees in this area currently completed on a rotational 3 year cycle.

Rural Overhead Project #1 (Capex $190,000 – Line 2, Concession 2 to Concession 4

1. *Efficiency, Customer Value, Reliability*

a) We are concerned with safety and long term reliability of this line section due to its age and condition. The asset management process has determined that this project should be deemed 'high priority' and slotted the project in 2016. The number of outages in this area is showing signs of increasing in frequency. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued' this section of Line 2 as a top priority. Our ACA inspection has determined that this line was constructed around 1953 and is well beyond its expected useful life.

c) Recent outages in this area in 2012 were related to age related failure of equipment. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project management and construction of the project will be handled entirely by NOTL Hydro employees. Construction will be completed during the calendar year of 2016.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. This project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Rural Overhead Project #2 (Capex $180,000 – Carlton, Townline to McNab

1. *Efficiency, Customer Value, Reliability*

    a) We are concerned with safety and long term reliability due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

    b) Our asset condition assessment (ACA) and asset management software has 'queued up' the Carlton project as high priority. Our ACA inspection has determined that this line was constructed around 1958 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

    c) Our crews have had to respond to multiple outages in this area in the past few years and we are concerned that the frequency will increase due to the age of the infrastructure. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2016.

2. *Safety*

    In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Carlton project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

    This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Rural Overhead Project #3 (Capex $120,000 – Lakeshore, Stewart to Read Road)

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority'. Public and employee safety are our primary concern with this areas current state.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' this section of Lakeshore Road as a first priority. Our ACA inspection has determined that this line was constructed around 1973 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) This project promises to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) as new polymer insulators will replace the older porcelain units. The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2016.

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Lakeshore project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. Cyber-security, Privacy (not applicable)

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits

This project will be completed using Ontario employees (NOTL Hydro).

6. Environmental Benefits (not applicable)

<u>Rural Overhead Project #4 (Capex $105,000 – McNab, Carlton to Scott Street)</u>

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority' and replaced in 2016. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' the McNab project as high priority and it was slotted in 2016. Our ACA inspection has determined that this line was constructed around 1958 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2016.

3. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Line 4 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3*. Cyber-security, Privacy (not applicable)*

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits

This project will be completed using Ontario employees (NOTL Hydro).

6. Environmental Benefits (not applicable)

Property Development/Expansions (Capex $55,000)

1. Efficiency, Customer Value, Reliability

a) This project is entirely driven by our obligation to comply with 3rd party development requirements (System Access).

b) Our priority is based on meeting our regulatory requirements
c) Not applicable

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. Cyber-security, Privacy (not applicable)

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits (not applicable)

6. Environmental Benefits (not applicable)

SCADA/GIS upgrades, automation ($55,000)

1. Efficiency, Customer Value, Reliability

a) With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

b) We are aware that the provincial government is promoting the development of smart grid-related systems and this certainly weighed in on our decision to proceed. Our recent customer survey also confirmed that customers wish to have more timely relevant information during an outage. Flags from individual meters related to voltage fluctuations or meter tampering will also be relayed to our operating staff for immediate attention.

c) The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

2. Safety

We expect that the additional intelligence from load flow will improve response time for outages and therefore, the prospects of increased public safety. In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. Cyber-security, Privacy

As with our entire customer data base of information, privacy and cyber-security is maintained based on good utility practices.

4. *Co-ordination, Interoperability*

The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system.

5. *Economic Benefits*

This outage management system and related GIS functionality is under development in Ontario.

6. *Environmental Benefits (not applicable)*

2017

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

1. *Efficiency, Customer Value, Reliability*

a) The historic Old Town of Niagara-on-the-Lake, founded in the late 1700's, attracts over 1 million visitors annually. Development since the 1980's has prompted NOTL Hydro to install a 27.6 kV system backbone to supply the larger loads but the aging (50+ year) 4 kV equipment is in need of replacement. The proposed 4 kV replacement with new 27.6 kV plant commenced in 2012 with the 1st phase of a 500 MCM, 600 amp feeder along Simcoe Street that provides a 'loop' through the Town. The legacy 4 kV system is currently fed from a 5 .4 mVA substation in service since the early 1950's. With all the major commercial customers supplied off the 27.6 kV system, NOTL Hydro will decommission the King DS station in October 2013 and temporarily supply the area with a 1500 kVA pad-mounted unit for the next 10-15 years until the entire system is converted to 27.6 kV. Upon examining our outage logs Feeder Performance analysis[24], King DS experiences a higher than average frequency of outages and this is compounded by the fact that it is also affected by the F4 upstream feeder that supplies the station.
b) This project continues with to convert the Old Town and emanates off the main Simcoe Street supply. This area is currently supplied by a 4 kV radial feed. Completion of this phase will improve the reliability of the system as a looped feed arrangement will be installed. The Old Town conversion project has been identified as a priority through the asset management process and has been prioritized by both logistics and condition of the assets.

[24] See Attachment 3

d) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). A Town bi-law prohibits the installation of new overhead plant as a means of preserving the original ambiance of the historic town and we have accepted that burial of facilities is in the best interest of the community. The design and project management of the project will be handled by our Engineering Department while construction will be completed by contracted services during the calendar year of 2017.

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. This project will replace 50+ year old 4 kV facilities with new 27.6 kV buried equipment, vastly improving safety.

3. Cyber-security, Privacy (not applicable)

4. Co-ordination, Interoperability

Our construction in this area will be coordinated with the Town of NOTL and CATV, gas and phone companies to potentially coordinate future joint construction and initiate shared construction expenses.

5. Economic Benefits

This project will be completed using Ontario employees and contractors.

6. Environmental Benefits

The burial of facilities with this project will eliminate the requirement to trim the trees in this area currently completed on a rotational 3 year cycle.

<u>Rural Overhead Project #1 (Capex $265,000 – Line 1, Concession 1 to Concession 4)</u>

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability of this line section due to its age and condition. The asset management process has determined that this project should be deemed 'high priority' and slotted the project in 2017. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' this section of Line 1 as a top priority. Our ACA inspection has determined that this line was constructed around 1963 and is well beyond its expected useful life.

c) Recent outages in this area in 2012 were related to age related failure of equipment. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project management and construction of the project will be handled entirely by NOTL Hydro employees. Construction will be completed during the calendar year of 2017.

2. Safety

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. This project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. Cyber-security, Privacy (not applicable)

4. Co-ordination, Interoperability (not applicable)

5. Economic Benefits

This project will be completed using Ontario employees (NOTL Hydro).

6. Environmental Benefits (not applicable)

<u>Rural Overhead Project #2 (Capex $120,000 – Concession 7, Line 3 to Townline Rd</u>

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' this project as high priority and recommended replacement in 2017.

Our ACA inspection has determined that this line was constructed around 1963 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) Our crews have had to respond to multiple outages in this area in the past few years and we are concerned that the frequency will increase due to the age of the infrastructure. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2017.

2. *Safety*

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Carlton project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

<u>Rural Overhead Project #3 (Capex $105,000 – Line 2, Concession 1 to Concession 2)</u>

1. Efficiency, Customer Value, Reliability

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority'. Public and employee safety are our primary concern with this areas current state.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' this section of Line 2 as a first priority and recommended replacement in 2017. Our ACA inspection has determined that this line was constructed around 1953 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) There have been outage calls in this area related to the age of the plant. This project promises to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) as new polymer insulators will replace the older porcelain units. The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2017.

3. *Safety*

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Line 2 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

4. *Cyber-security, Privacy (not applicable)*

5. *Co-ordination, Interoperability (not applicable)*

4. *Economic Benefits*

This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

<u>Property Development/Expansions (Capex $55,000)</u>

1. *Efficiency, Customer Value, Reliability*

a) This project is entirely driven by our obligation to comply with 3rd party development requirements (System Access).

b) Our priority is based on meeting our regulatory requirements

c) Not applicable

2. *Safety*

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits (not applicable)*

6. Environmental Benefits (not applicable)

SCADA/GIS upgrades, automation ($55,000)

1. Efficiency, Customer Value, Reliability

a) With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

b) We are aware that the provincial government is promoting the development of smart grid-related systems and this certainly weighed in on our decision to proceed. Our recent customer survey also confirmed that customers wish to have more timely relevant information during an outage. Flags from individual meters related to voltage fluctuations or meter tampering will also be relayed to our operating staff for immediate attention.

c) The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

2. Safety

We expect that the additional intelligence from load flow will improve response time for outages and therefore, the prospects of increased public safety. In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. Cyber-security, Privacy

As with our entire customer data base of information, privacy and cyber-security is maintained based on good utility practices.

4. Co-ordination, Interoperability

The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system.

5. *Economic Benefits*

   This outage management system and related GIS functionality is under development in Ontario.

6. *Environmental Benefits (not applicable)*

Stores and Building equipment ($95,000)

1. *Efficiency, Customer Value, Reliability*

a) A roofing expert has recently advised us that a new flat garage roof will be required within 5 years. Based on this advice and cost estimates provided, we have budgeted $90,000 in 2017. An additional $5,000 is budgeted annually for miscellaneous stores and building equipment.

b) This construction is not an immediate concern but has been slotted within the 5 year maximum recommendation provided by the roofing contractor. Failure to replace the roof in a timely fashion could result in expensive water damage.

c) The replacement roof will avoid the prospect of water damage and best serve the long term integrity of the building.

2. *Safety*

   Safety could be an issue if the roof's integrity is weakened by water damage. NOTL Hydro will closely monitor the condition of the roof between now and the actual installation date scheduled for 2017. In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be conducted by Ontario contract firms.

7. *Environmental Benefits (not applicable)*

2018

Old Town Rebuild Phase 7 (Capex $400,000 – Centre Street, Simcoe to Dorchester)

1 *Efficiency, Customer Value, Reliability*

a) The historic Old Town of Niagara-on-the-Lake, founded in the late 1700's, attracts over 1 million visitors annually. Development since the 1980's has prompted NOTL Hydro to install a 27.6 kV system backbone to supply the larger loads but the aging (50+ year) 4 kV equipment is in need of replacement. The proposed 4 kV replacement with new 27.6 kV plant commenced in 2012 with the 1st phase of a 500 MCM, 600 amp feeder along Simcoe Street that provides a 'loop' through the Town. The legacy 4 kV system is currently fed from a 5 .4 mVA substation in service since the early 1950's. With all the major commercial customers supplied off the 27.6 kV system, NOTL Hydro will decommission the King DS station in October 2013 and temporarily supply the area with a 1500 kVA pad-mounted unit for the next 10-15 years until the entire system is converted to 27.6 kV. Upon examining our feeder reliability logs Feeder Performance analysis[25], King DS experiences a higher than average frequency of outages and this is compounded by the fact that it is also affected by the F4 upstream feeder that supplies the station.
b) This project continues with to convert the Old Town and emanates off the main Simcoe Street supply. This area is currently supplied by a 4 kV radial feed. Completion of this phase will improve the reliability of the system as a looped feed arrangement will be installed. The Old Town conversion project has been identified as a priority through the asset management process and has been prioritized by both logistics and condition of the assets.

d) NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). A Town bi-law prohibits the installation of new overhead plant as a means of preserving the original ambiance of the historic town and we have accepted that burial of facilities is in the best interest of the community. The design and project management of the project will be handled by our Engineering Department while construction will be completed by contracted services during the calendar year of 2018.

2. *Safety*

[25] See attachment 3

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. This project will replace 50+ year old 4 kV facilities with new 27.6 kV buried equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability*

   Our construction in this area will be coordinated with the Town of NOTL and CATV, gas and phone companies to potentially coordinate future joint construction and initiate shared construction expenses.

5. *Economic Benefits*

   This project will be completed using Ontario employees and contractors.

6. *Environmental Benefits*

   The burial of facilities with this project will eliminate the requirement to trim the trees in this area currently completed on a rotational 3 year cycle.

<u>Rural Overhead Project #1 (Capex $205,000 – Line 2 Concession 7 area)</u>

1. *Efficiency, Customer Value, Reliability*

a) We are concerned with safety and long term reliability of this line section due to its age and condition. The asset management process has determined that this project should be deemed 'high priority' and slotted the project in 2018. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' this section of Line 1 as a top priority. Our ACA inspection has determined that this line was constructed around 1949 and is well beyond its expected useful life.

c) Recent outages in this area in 2012 were related to age related failure of equipment. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project management and construction of the project will be handled entirely by NOTL Hydro employees. Construction will be completed during the calendar year of 2018.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. This project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

<u>Rural Overhead Project #2 (Capex $195,000 – Line 1, Townline to Concession 6)</u>

1. *Efficiency, Customer Value, Reliability*

a) We are concerned with safety and long term reliability due to its age. The asset management process has determined that this project should be deemed 'high priority'. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) while ensuring public and employee safety.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' this project as high priority and recommended replacement in 2018. Our ACA inspection has determined that this line was constructed around 1968 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) Our crews have had to respond to multiple outages in this area in the past few years and we are concerned that the frequency will increase due to the age of the infrastructure. NOTL Hydro's long standing plan to replace all aging 4 kV distribution with 27.6 kV (see 5.2.1 c) continues to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b). The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2018.

2. *Safety*

In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Line 1 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Rural Overhead Project #3 (Capex $165,000 – Line 3 at Concession 6 area)

1. *Efficiency, Customer Value, Reliability*

a) We are concerned with safety and long term reliability of this line section due to its age. The asset management process has determined that this project should be deemed 'high priority'. Public and employee safety are our primary concern with this areas current state.

b) Our asset condition assessment (ACA) and asset management software has 'queued up' this section of Line 3 as a first priority and recommended replacement in 2018. Our ACA inspection has determined that this line was constructed around 1951 and should be replaced as soon as possible. The project will entail the installation of new 45 foot wood poles and efficient new 16 kV transformers.

c) There have been outage calls in this area related to the age of the plant. This project promises to improve our historic service reliability indices (Appendix 2-G) and reduce our line losses as described in 5.2.1 b) as new polymer insulators will replace the older porcelain units. The project design and construction will be completed entirely by NOTL Hydro employees during the calendar year of 2018.

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority. The Line 3 project will replace 50+ year old poles, wires and insulators with new 27.6 kV equipment, vastly improving safety.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits*

   This project will be completed using Ontario employees (NOTL Hydro).

6. *Environmental Benefits (not applicable)*

Property Development/Expansions (Capex $55,000)

1. *Efficiency, Customer Value, Reliability*

a) This project is entirely driven by our obligation to comply with 3rd party development requirements (System Access).

b) Our priority is based on meeting our regulatory requirements

c) Not applicable

2. *Safety*

   In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. *Cyber-security, Privacy (not applicable)*

4. *Co-ordination, Interoperability (not applicable)*

5. *Economic Benefits (not applicable)*

6. *Environmental Benefits (not applicable)*

SCADA/GIS upgrades, automation ($55,000)

1. *Efficiency, Customer Value, Reliability*

a) With the Outage Management system completed and functioning in 2014, it is our intention to continue to build a smart grid through the ongoing addition of system intelligence. The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed

additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

b) We are aware that the provincial government is promoting the development of smart grid-related systems and this certainly weighed in on our decision to proceed. Our recent customer survey also confirmed that customers wish to have more timely relevant information during an outage. Flags from individual meters related to voltage fluctuations or meter tampering will also be relayed to our operating staff for immediate attention.

c) The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system. With recent advancements in technology and proposed additions that can potentially utilize our existing AMI communication system, we are proposing to select the specific equipment in 2015.

2. Safety

We expect that the additional intelligence from load flow will improve response time for outages and therefore, the prospects of increased public safety. In 2012, NOTL Hydro became the first LDC in Ontario to receive the IHSA Platinum award for safety performance. Safety will continue to be our first priority.

3. Cyber-security, Privacy

As with our entire customer data base of information, privacy and cyber-security is maintained based on good utility practices.

4. Co-ordination, Interoperability

The placement of automated system monitoring points tied to our SCADA system will provide additional load flow information and fault detection points that will build on the ability of the outage management system. In effect, this smart grid project will also allow us to monitor the flow of REG through our system.

5. Economic Benefits

This outage management system and related GIS functionality is under development in Ontario.

6. Environmental Benefits (not applicable)

C. Category-specific requirements for each project/activity

System Access

Property Development/Expansions ($55,000 – 2014, 2015, 2016, 2017, 2018)

In accordance with section 3.2.4 of the Distribution System Code, NOTL Hydro utilizes a discounted cash flow methodology to calculate the capital contribution required by developers for property development and expansions. Over the past several years, NOTL Hydro's share of the capital cost has averaged $55,000 per year. Accordingly, we have budgeted that amount over the forecasted period with the assumption that growth will remain at current levels.

At this time, we are unaware of any REG projects that will require a capital contribution from NOTL Hydro.

System Renewal

Overhead System

NOTL Hydro' large operating territory of 133 km² was primarily acquired from Ontario Hydro in 1983. With the exception of the historic old town and hamlet of Queenston, Ontario Hydro had constructed a vast majority of the infrastructure in post-World War 2 period. Similarly, the Niagara Hydro-Electric Commission, with roots back to 1892, expanded the vast majority of the electrical distribution system in the 1950's and 1960's. In the late 1980's, Niagara-on-the-Lake became a location of choice for tourists attracted to the history and culture as well as the success of the Shaw Festival Theatre. The construction of several large hotels during this period prompted the extension of an underground 27.6 kV underground network in to the Old Town to relieve the strained legacy 4 kV system. NOTL Hydro recognized in the early 1990's that the post war assets (now more than 40 years old) would need to be replaced to maintain a safe and reliable distribution system and the Commission committed approximately $1 million annually to the capital rebuild programme. In response to the Electricity Act 1998, the incorporation of Niagara-on-the-Lake Hydro Inc. was completed in the year 2000. Our Mission and Values statement[26] reiterates our motivation to develop a safe, reliable, efficient and modern distribution network. NOTL Hydro realized in the early 2000's that an increased level of system renewal was required to complete our plan and meet our objectives stated in our Mission and Values statements. Throughout the last decade, NOTL Hydro invested an average of $1.5 million annually in to system renewal. The results are extremely encouraging as reflected in our vastly improved outage indices. Our recent customer feedback survey revealed an overwhelming satisfaction with our service and reliability. Our renewal plans are not complete however as we have identified another approximately 5 years of overhead system renewal to completely replace the post-war era distribution equipment. Our asset management process has prioritized the remaining projects based on the results of the asset condition assessment and in consideration of safety, outage logs, feeder performance and construction logistics. The following is our prioritized list of projects for the next 5 years.

[26] See Attachment 20

In conjunction with the reliability and improved safety of our renewal program, all new plant is constructed at the more efficient 27.6 kV level replacing the legacy 4 kV system. As a result, our distribution loss factor (DLF) continues to decline to the financial benefit of our customers. Our current application proposes to reduce the DLF to 3.79% which is less than half of the 1990's level.

With the exception of more frequent and powerful storms, our system reliability and related O&M costs continue to decline but are offset by increasing fuel and labour costs as well as for contracted services. Our routine maintenance costs for power washing and tree trimming for example are contracted out. Despite competitive bidding processes, costs in this area are also rising due to inflationary pressures. Finally, our distribution network continues to expand and we are adding approximately 200 new customers a year also contributing to the modest increases in O&M costs. NOTL Hydro has not added any additional staff (CDM excepted) during the past decade.

2014
Rural O/H Project #1 ($200,000) Concession 2, Line 7-9, 27.6 kV
Rural O/H Project #2 ($155,000) Concession 6, Line 6-8 16 kV
Rural O/H Project #3 ($140,000) York Rd, Concession 2-3 27.6kV
Rural O/H Project #4 ($110,000) Line 4, Concession 2-3 16 kV

2015
Rural O/H Project #1 ($270,000) Concession 6 - Warner Rd area 16 kV
Rural O/H Project #2 ($150,000) Concession 2 - Line 1-3 16 kV
Rural O/H Project #3 ($105,000) Concession 2 - Line 6-7 16 kV
Rural O/H Project #4 ($90,000) Concession 6 - Line 5-6 16 kV

2016
Rural O/H Project #1 ($190,000) Line 2 - Concession 2-4 16 kV
Rural O/H Project #2 ($180,000) Carlton Road - Townline to McNab 16 kV
Rural O/H Project #3 ($120,000) Lakeshore - Stewart to Read 27.6 kV
Rural O/H Project #4 ($105,000) McNab - Carlton to Scott 16 kV

2017
Rural O/H Project #1 ($265,000) Line 1 - Concession 1-4 16 kV
Rural O/H Project #2 ($120,000) Concession 7 - Line 3 to Townline 16 kV
Rural O/H Project #3 ($105,000) Line 2 - Concession 1-2 16 kV
Rural O/H Project #4 ($40,000) Lakeshore at 4 Mile Creek Road 16 kV

2018
Rural O/H Project #1 ($205,000) Line 2 and Concession 7 area 16 kV
Rural O/H Project #2 ($195,000) Line 1 - Townline to Concession 6 16 kV
Rural O/H Project #3 ($165,000) Line 3 and Concession 6 16 kV

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 3rd 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

originally constructed to rural standards and there was no evidence of planned upgrades or new technology injections by the current owners. With reliability of the supply in decline, Hydro One agreed to sell the station to NOTL Hydro in 2005 for $2.5 million. Since the purchase, NOTL Hydro has made significant investments in MTS#2, the most notable being the replacement of single 115 kV fuses with modern 3 phase circuit switchers. The reliability of MTS#2 has improved as a result.

In 2012, in conjunction with routine inspections and testing, it was detected that the units are aging faster than expected with an estimated remaining life of between 5 and 10 years. Over the past year, we contemplated a number of options including rebuilding the existing units, twinning the MTS#1 unit and replacing the existing units at MTS#2. Also weighing in to the decision is the fact that NOTL Hydro is currently constrained from routine (or emergency) station maintenance by seasonal loading and our overall load continues to moderately increase despite the addition of REG in our community. After careful consideration and technical support by an industry expert, we have made application for the replacement of one unit of MTS#2 with a larger capacity up to 50 mVA. The larger unit will provide additional capacity for the next 10-15 years, allow full redundancy for system maintenance and the additional capacity costs do not significantly impact overall costs versus a like-for-like replacement. The second MTS #2 unit is targeted for replacement in approximately 10 years. The project, estimated at $3 million, is planned for 2015 and the necessary applications have been prepared and are awaiting approval by Hydro One and the IESO.

2015
Replace Unit at MTS#2 ($3,000,000 – ICM application expected)

System Service

With the availability of AMI data in our operational data storage (ODS) exciting new engineering tools can be developed that will ultimately better serve our customers. Throughout 2013, we have been reconfiguring our GIS system with electrical connectivity that will tie graphical information to customer data and asset details. This information combined with development by our ODS vendor will produce a powerful outage management system culminating in 2014. The outage management system promises to provide the ability to proactively manage outages rather than the current reactive requirement. During business hours, trucks will be rolled or breakers reset in advance of receiving customer calls and formulating the source of the outage, significantly reducing outage duration. After normal business hours, our ‘On Call’ personnel and TS operators will be provided valuable advance outage information that will allow them to better assess the situation, arrange for suitable crew and equipment resources in advance and direct the repairs more efficiently. The value of the outage management system is at this time difficult to assess. This is truly new technology and we are aware of a few Ontario LDCs that have recently developed outage management systems. While they enthusiastically proclaim substantial time saving and improved customer service as a result, the quantifiable results have not been published and we have no precise estimates to provide at this time.

With the rollout of the outage management system in 2014, we propose to continue to develop a smarter grid through the addition of system intelligence in the years 2015-2018. The benefits of smart grid related projects are difficult to quantify but will have qualitative benefits. The installation of additional system monitoring points will add a further level of load flow and fault detection detail for our operating staff. This information is also important as REG continues to be added to our system and for the more efficient delivery of power and line loss reduction. We have not selected the technology to be implemented as this project would not commence for up to two years and the technology is rapidly improving. We do believe the additional intelligence points may be a combination of both fault and load monitoring equipment.

2014
System Integration GIS/FIS/CIS/ODS ($95,000)

2015
SCADA/GIS upgrades, automation ($55,000) outage management system development

2016
SCADA/GIS upgrades, automation ($55,000) smart grid development

2017
SCADA/GIS upgrades, automation ($55,000) smart grid development

2018
SCADA/GIS upgrades, automation ($55,000) smart grid development

General Plant
In this dynamic industry, our software tools must be adaptive and effective to assist us with meeting the requirements of our business. NOTL Hydro is a member of the Utility Collaborative Services group (UCS) and shares a CIS system with 9 other LDCs. This cost effective business relation jointly decides when to upgrade the CIS platform to the latest operating version. The UCS group has decided to migrate to Harris Northstar version 6.4.0 in early 2014 as a means of maintaining business operations efficiency. Similarly, our proposed Microsoft Dynamics GP (Great Plains) financial system upgrades will allow us to complete our routine business transactions more effectively and adopt new market challenges such as IFRS more efficiently. Despite our modest customer growth, NOTL Hydro does not plan to add any additional employees to our current complement of 18.

We have proposed a $90,000 general plant expense in 2017 to install a new roof on our garage facility. The additional $5,000 relates to annual expenditures in stores and building. A roofing expert has advised that this investment should be completed in the next few years to avoid potential water damage.

2014

Software Upgrades (CIS, FIS etc.) ($65,000) Northstar, Microsoft Dynamics GP, etc. upgrades

2017
Stores and Building equipment ($95,000) new garage roof

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

Attachment Number	Contents
1	Group Priority List - 21 Planning Regions.
2	Service Reliability Indicators
3	Feeder Reliability Analysis
4	Historic Loss Factors
5	Financial Indicators
6	Customer Engagement Survey
7	AM Plan Process
8	Managed Assets
9	Inspection Samples
10	Asset Condition Assessments
11	Equipment Failure Analysis
12a	Asset Management Risk Matrix
12b	Strategic Objectives
13	Truck Servicing Schedule
14	Tree trimming Schedule
15	Capital Plan 2014-18
16	Capital Plan Maps
17	OPA letter
18	Hydro One letter
19	Asset Ages
20	Mission and Values

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 1 – Group Priority List - 21 Planning Regions

Group Priority List - *21 Planning Regions*

Group 1	Group 2	Group 3
Burlington to Nanticoke	East Lake Superior	Chatham/Lambton/Sarnia
Greater Ottawa	GTA East	Greater Bruce/Huron
GTA North	London area	Niagara
GTA West	Peterborough to Kingston	North of Moosonee
KWCG	South Georgian Bay/Muskoka	North/East of Sudbury
Metro Toronto	Sudbury/Algoma	Renfrew
Northwest Ontario		St. Lawrence
Windsor-Essex		

Please Reference Appendix 4 for a complete listing

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 2 - Service Reliability Indicators

Service Reliability Indicators
2008 - 2012

Index	Includes outages caused by loss of supply					Excludes outages caused by loss of supply				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
SAIDI	4.080	0.330	0.060	15.390	1.540	1.410	0.210	0.060	15.390	0.940
SAIFI	2.740	0.280	0.030	4.360	0.950	1.010	0.130	0.030	4.360	0.950

5 Year Historical Average

SAIDI		4.280		3.602
SAIFI		1.672		1.296

SAIDI = System Average Interruption Duration Index

SAIFI = System Average Interruption Frequency Index

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 3 - Feeder Reliability Analysis

FEEDER RELIABILITY ANALYSIS

Feeder/Device	2009			2010			2011			2012		
	Frequency	Customers	Avg Duration (Hours	Frequency	Customers	Avg Duration (Hours	Frequency	Customers	Avg Duration (Hours	Frequency	Customers	Avg Duration (Hours
NOTL F1	1	6	0.20	0	0	0.00	0	0	0.00	0	0	0.00
NOTL F2	7	398	0.27	4	34	0.02	5	467	0.55	2	4	0.00
NOTL F4	3	476	0.23	1	1	0.00	3	5	0.01	1	1	0.00
YORK M1	3	130	0.16	3	820	0.33	11	2576	1.83	2	256	0.17
YORK M2	4	51	0.07	6	127	0.13	18	4859	5.06	17	2675	3.40
YORK M3	6	50	0.11	0	0	0.00	2	866	1.50	1	1	0.00
KING Station	0	0	0.02	0	0	0.00	3	160	0.70	2	55	0.59
Stepdown Units	3	204	0.57	5	163	0.48	7	114	0.22	10	150	0.32

Assumptions

1) includes unplanned and non loss of supply outages only
2) feeder outages based on current map configuration
3) An estimated 800 customers were fed off stepdown units (2009-2010) and 700 (2011-2012)
4) King Station supplied 472 customers 2009-2011, 400 in 2012

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 4 - Historic Loss Factors

Loss Factors

		Historical Years					5-Year Average
		2008	2009	2010	2011	2012	
	Losses Within Distributor's System						
A(1)	"Wholesale" kWh delivered to distributor (higher value)	182,813,235	178,335,382	186,321,136	188,636,352	189,168,671	185,054,955
A(2)	"Wholesale" kWh delivered to distributor (lower value)	181,994,261	177,558,146	185,554,619	187,860,015	188,384,631	184,270,334
B	Portion of "Wholesale" kWh delivered to distributor for its Large Use Customer(s)						0
C	Net "Wholesale" kWh delivered to distributor = **A(2) - B**	181,994,261	177,558,146	185,554,619	187,860,015	188,384,631	184,270,334
D	"Retail" kWh delivered by distributor	173,899,398	172,882,904	177,644,371	183,889,036	183,371,442	178,337,430
E	Portion of "Retail" kWh delivered by distributor to its Large Use Customer(s)						0
F	Net "Retail" kWh delivered by distributor = **D - E**	173,899,398	172,882,904	177,644,371	183,889,036	183,371,442	178,337,430
G	Loss Factor in Distributor's system = **C / F**	1.0465	1.0270	1.0445	1.0216	1.0273	1.0333
	Losses Upstream of Distributor's System						
H	Supply Facilities Loss Factor	1.0045	1.0045	1.0045	1.0045	1.0045	1.0045
	Total Losses						
I	Total Loss Factor = **G x H**	1.0513	1.0317	1.0492	1.0262	1.0320	1.0379
						Proposed Total Loss Factor	**1.0379**

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 5 - Financial Indicators

NIAGARA-ON-THE-LAKE HYDRO INC. FINANCIAL INDICATORS - 2009 TO 2012

Current Ratio

Formula Current Assets/current liabilities
"where current assets shall exclude all accounts receivables due from affiliated entities or Persons that have no fixed terms of repayment, and current liabilities means the current portion of the borrower's two demand loans with CIBC"

Requirement 1.1:1 or higher

Calculation		2009	2010	2011	2012
Current assets	A	$ 4,918,921	$ 5,331,416	$ 4,984,683	$ 4,316,232
Due from affiliates	B	$ 810,797	$ 568,813	$ 591,079	$ 32,628
Allowance for doubtful accounts	C	$ (20,000)	$ (43,429)	$ (30,000)	$ (30,000)
Net current assets	D=A-B-C	$ 4,128,124	$ 4,806,032	$ 4,423,604	$ 4,313,604
Demand instalment loans from F/S	E	$ 3,949,959	$ 3,838,687	$ 3,601,885	$ 3,139,566
Current ratio	F=D/E	1.05	1.25	1.23	1.37

Debt Service Coverage Ratio

Formula EBITDA excluding extraordinary items/sum(principal and interest on all interest-bearing loans + 75% of unfinanced net capex plus dividends paid
where "unfinanced net capex" = capex less proceeds less capex financed by shareholder or others less principal portion of term debt and cap lease debt

Requirement 1:1 or higher

Excluding one-time debit to revenue of $441,715.90 for OEB approved disposition of PILs variance account 1562 relating to the years 2002 to 2006.

Calculation		2009	2010	2011	2012
Net income	A	$ 702,188	$ 808,244	$ 1,066,241	$ 943,165
Income taxes	B	$ 325,967	$ 247,347	$ 180,130	$ 156,350
Amortization	C	$ 1,299,342	$ 1,386,007	$ 1,428,183	$ 1,782,092
Financial expenses	D	$ 566,253	$ 677,459	$ 760,671	$ 492,022
EBITDA	E=A+B+C+D	$ 2,893,750	$ 3,119,057	$ 3,435,225	$ 3,373,629
Capex - gross	F	$ 1,678,043.00	$ 1,527,248	$ 2,206,446	$ 2,107,695
Cap contributions	G	$ 211,043.00	$ 300,170	$ 445,666	$ 382,455
Unfinanced net capex	H=F-G	$ 1,467,000	$ 1,227,078	$ 1,760,780	$ 1,725,240
75%	I=0.75xH	$ 1,100,250	$ 920,309	$ 1,320,585	$ 1,293,930
Dividends	J	$ -	$ -	$ -	$ -
Principal and interest					
Demand instalment loans - principal		$ 293,431	$ 309,437	$ 326,316	$ 344,118
Demand instalment loans - interest		$ 224,094	$ 206,768	$ 188,800	$ 169,228
Town note - principal		$ 269,619	$ 549,876	$ 600,316	$ 648,491
Town note - interest		$ 473,475	$ 450,470	$ 400,031	$ 351,855
Smart meter loan - principal		$ -	$ -	$ 83,333	$ 100,000
Smart meter loan - interest		$ -	$ 12,068	$ 57,002	$ 59,011
Total principal and interest	K	$ 1,260,619	$ 1,528,619	$ 1,655,799	$ 1,672,703
Debt Service Coverage Ratio	L=E/(I+J+K)	1.23	1.27	1.15	1.14

Debt to Capital Ratio

Formula Debt/total capital
where "Debt" means all short-term and long-term interest bearing loans
and "capital" means Debt plus shares plus retained earnings minus
advances and investments minus intangibles

Requirement 60% or less

Calculation		2009	2010	2011	2012
Demand instalment loans	A	$ 3,949,959	$ 3,838,687	$ 3,601,885	$ 3,139,566
Town note	B	$ 6,296,714	$ 5,746,838	$ 5,146,521	$ 4,498,030
Smart meter loan	C	$ -	$ 1,350,462	$ 1,416,667	$ 1,316,667
Debt	D=A+B+C	$ 10,246,673	$ 10,935,987	$ 10,165,073	$ 8,954,263
Debt	E=D	$ 10,246,673	$ 10,935,987	$ 10,165,073	$ 8,954,263
Share capital	F	$ 2,632,307	$ 2,632,307	$ 2,632,307	$ 2,632,307
Paid-up capital	G	$ 4,269,026	$ 4,269,026	$ 4,269,026	$ 4,269,026
Retained earnings	H	$ 4,694,552	$ 4,649,459	$ 5,715,700	$ 6,217,149
Subtotal		$ 21,842,558	$ 22,486,779	$ 22,782,106	$ 22,072,745
Advances to affiliates	I	$ 810,797	$ 568,813	$ 591,079	$ 36,628
Investments	J	$ 9,358	$ 12,395	$ 10,194	$ 10,194
Capital	K=E+F+G+H-I-J	$ 21,022,403	$ 21,905,571	$ 22,180,833	$ 22,025,923
Debt to Capital Ratio	L=D/K	49%	50%	46%	41%

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 6 - Customer Engagement Survey

Niagara-on-the-Lake Hydro | **Customer Engagement Survey**

Created on July 15, 2013

As part of Niagara-on-the-Lake Hydro's (NOTL Hydro) upcoming distribution rate application, we have created a "Customer Engagement Survey" to capture the needs and expectations of the community while also getting feedback on our service offering.

The survey was made available to our full customer base:

- Every outgoing printed bill from June 4th to July 4th also contained a printed copy of the survey. The printed survey contained instructions as well as a notification that the survey was available online at www.NOTLhydro.com. The link to the survey was placed in the top row of relevant links on our home page.

- Every eBilling customer was sent an email notification. In total 1,321 emails were sent. 818 emails were opened (some more than once as there were 2,077 opens). Of those 818 emails that were opened, 403 readers clicked on the message to take the survey (not all completed the survey). A total of 15 emails bounced and 1 person unsubscribed to further emails from NOTL Hydro. The Government industry average is 19.5% so we regard a 62.8% open rate a success.

The survey was administered online using the services of SURVEYMONKEY.com. This is a well respected survey provider. NOTL Hydro has a free account, but in order to properly construct and analyze this survey, we upgraded to a pay membership for 2 months.

A total of 550 surveys were completed; 200 were completed with the paper version and 350 were completed online. Survey Monkey has built-in analytics so the 200 paper entries were manually entered into the online portal. While most questions required an answer on the online survey, we are unable to force an answer for paper entries. As such, not all questions had an answer. The results of the survey bring a 95% confidence rating with an average of 4.16 interval and a 99% confidence rating with an average 5.48 interval level.

- The **confidence interval** (also called margin of error) is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4 and 47% percent of your sample picks an answer you can be "sure" that if you had asked the question of the entire relevant population between 43% (47-4) and 51% (47+4) would have picked that answer.
- Each answer had a different confidence level. These are outlined in APPENDIX A – Survey Interval Levels
- There is a much higher level of residential feedback than business. Some can be attributed to the confusion of farm/home accounts. Others may be attributed to the bill reaching the person for payments, not necessarily the key decision maker for the company.

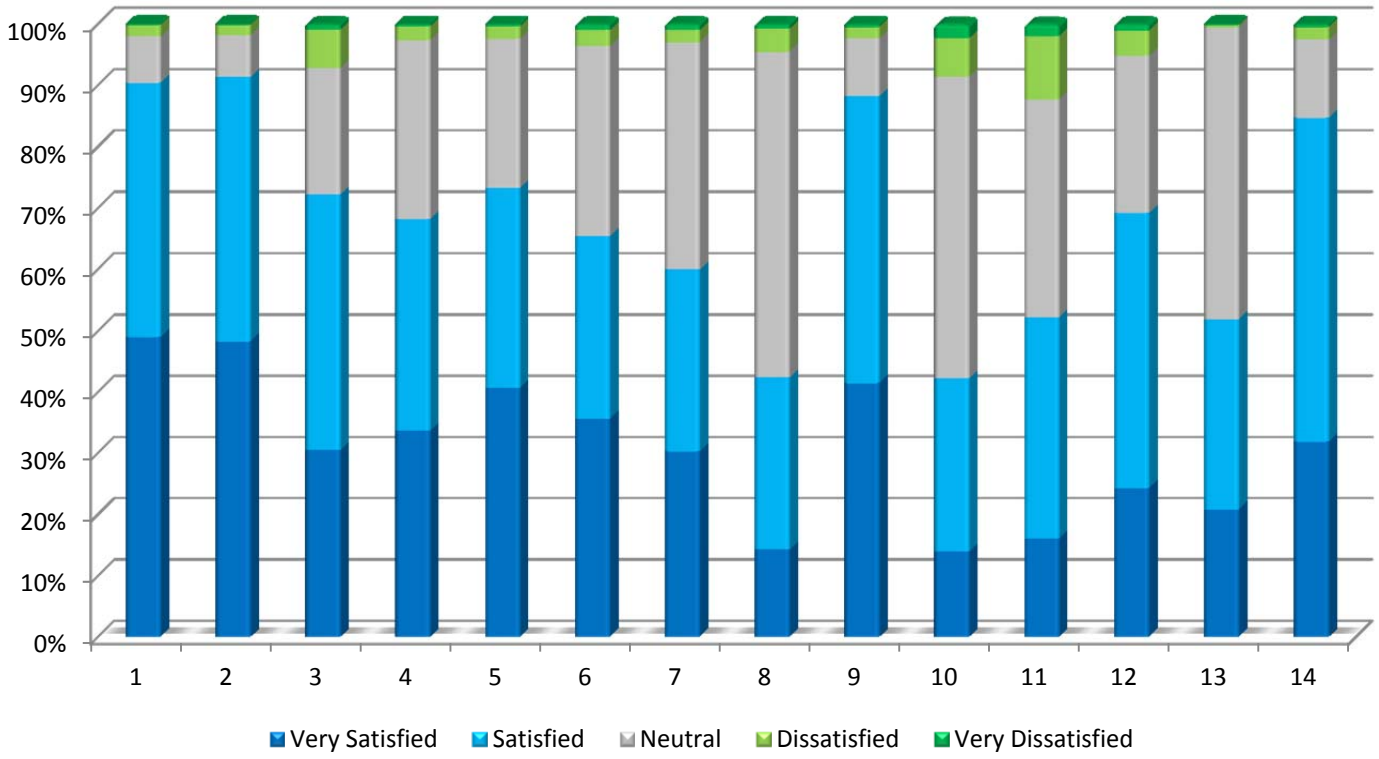
Survey Results

Please rate your **EXPERIENCE** with NOTL Hydro's Performances on the following services:

Answer Options	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied	Rating Average
Reliability of service from NOTL Hydro	**266**	**225**	**41**	**10**	**1**	**4.37**
Quality of service from NOTL Hydro	**262**	**234**	**37**	**9**	**1**	**4.38**
Value of service from NOTL Hydro	166	227	112	34	5	3.95
Staff ability to answer questions	180	184	156	12	2	3.99
Staff courtesy and helpfulness	219	176	131	11	2	4.11
Online access to your account	177	148	154	13	5	3.96
Online access to your electric consumption	150	147	183	10	5	3.86
Access to conservation programs	**72**	**142**	**268**	**19**	**4**	**3.51**
Providing timely and accurate customer bills	**226**	**255**	**51**	**10**	**3**	**4.27**
Communication of planned power outages	**73**	**148**	**257**	**33**	**12**	**3.45**
Unplanned power outages - frequency	**86**	**193**	**190**	**55**	**11**	**3.54**
Unplanned power outages - restoring power in a timely manner	131	242	138	22	6	3.87
Level of involvement in the community (Christmas parade, food drive, etc)	111	166	254	2	1	3.72
Overall satisfaction with NOTL Hydro's service	175	290	70	11	3	4.13

Answer Options	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Reliability of service from NOTL Hydro	48.99%	41.44%	7.55%	1.84%	0.18%
Quality of service from NOTL Hydro	48.25%	43.09%	6.81%	1.66%	0.18%
Value of service from NOTL Hydro	30.51%	41.73%	20.59%	6.25%	0.92%
Staff ability to answer questions	33.71%	34.46%	29.21%	2.25%	0.37%
Staff courtesy and helpfulness	40.63%	32.65%	24.30%	2.04%	0.37%
Online access to your account	35.61%	29.78%	30.99%	2.62%	1.01%
Online access to your electric consumption	30.30%	29.70%	36.97%	2.02%	1.01%
Access to conservation programs	14.26%	28.12%	53.07%	3.76%	0.79%
Providing timely and accurate customer bills	41.47%	46.79%	9.36%	1.83%	0.55%
Communication of planned power outages	13.96%	28.30%	49.14%	6.31%	2.29%
Unplanned power outages - frequency	16.07%	36.07%	35.51%	10.28%	2.06%
Unplanned power outages - restoring power in a timely manner	24.30%	44.90%	25.60%	4.08%	1.11%
Level of involvement in the community (Christmas parade, food drive, etc)	20.79%	31.09%	47.57%	0.37%	0.19%
Overall satisfaction with NOTL Hydro's service	31.88%	52.82%	12.75%	2.00%	0.55%

Chart for *Please rate your **EXPERIENCE** with NOTL Hydro's Performances on the following services:*

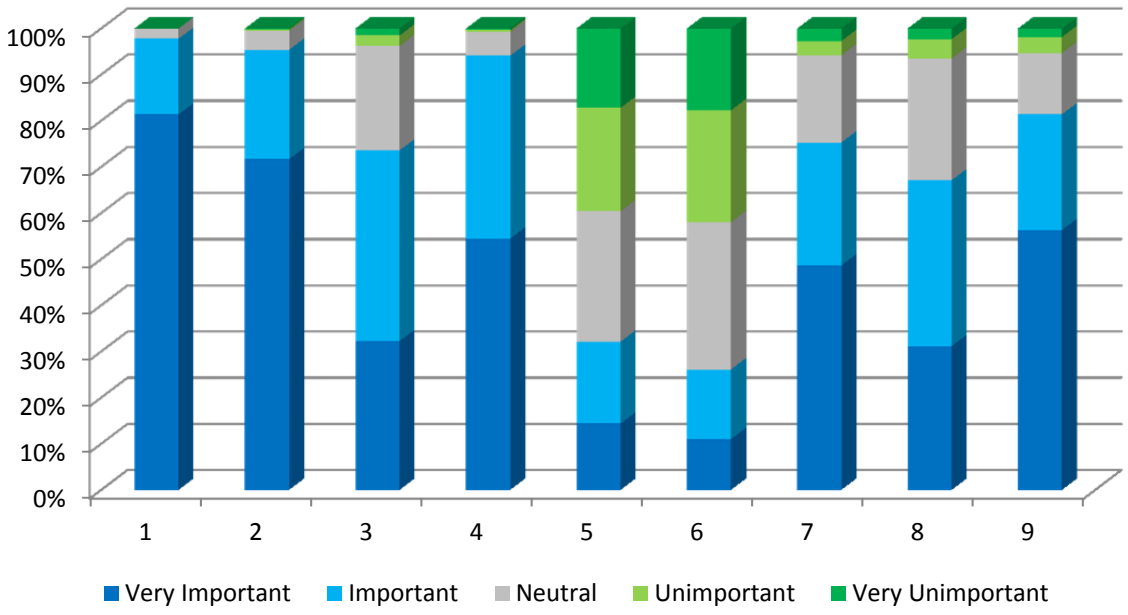

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Very Satisfied
Satisfied
Neutral
Dissatisfied
Very Dissatisfied

Please rate the **IMPORTANCE** of the following services to you:

Answer Options	Very Important	Important	Neutral	Unimportant	Very Unimportant	Rating Average
Reliability of service	**441**	**89**	**12**	**0**	**0**	**4.79**
Lowest "delivery" rates possible	**387**	**128**	**22**	**2**	**1**	**4.66**
Conservation program availability	171	219	120	12	8	4.01
Customer service	294	214	28	2	2	4.47
Availability of local counter service to pay bills	**77**	**95**	**151**	**120**	**92**	**2.90**
Availability of local drop box to pay bills	**59**	**81**	**171**	**130**	**95**	**2.77**
Online access to your account	250	137	97	16	14	4.15
Technology to assist you with managing your electrical consumption	163	188	138	22	12	3.89
Having a locally owned & operated electric utility	306	136	72	19	10	4.31

Answer Options	Very Important	Important	Neutral	Unimportant	Very Unimportant
Reliability of service	81.37%	16.42%	2.21%	0.00%	0.00%
Lowest "delivery" rates possible	71.67%	23.70%	4.07%	0.37%	0.19%
Conservation program availability	32.26%	41.32%	22.64%	2.26%	1.51%
Customer service	54.44%	39.63%	5.19%	0.37%	0.37%
Availability of local counter service to pay bills	14.39%	17.76%	28.22%	22.43%	17.20%
Availability of local drop box to pay bills	11.01%	15.11%	31.90%	24.25%	17.72%
Online access to your account	48.64%	26.65%	18.87%	3.11%	2.72%
Technology to assist you with managing your electrical consumption	31.17%	35.95%	26.39%	4.21%	2.29%
Having a locally owned & operated electric utility	56.35%	25.05%	13.26%	3.50%	1.84%

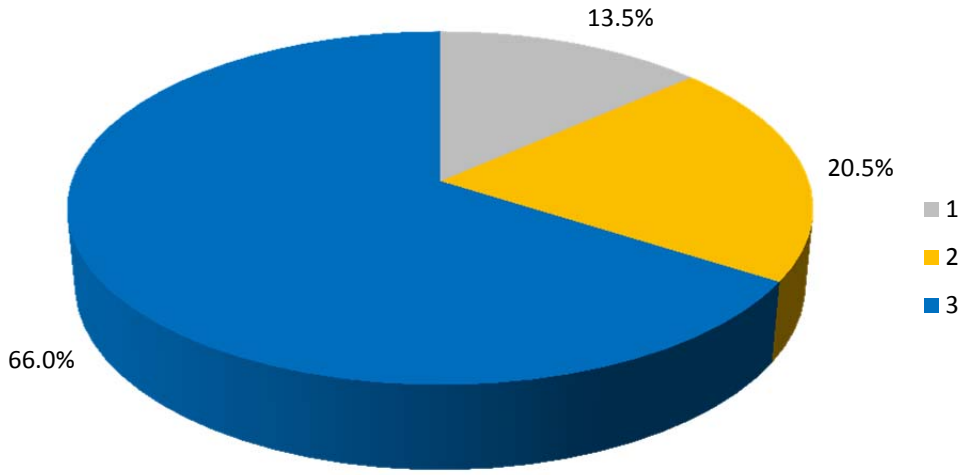
Chart for *Please rate the **IMPORTANCE** of the following services to you:*



Please select the following scenario that is most satisfactory to you concerning **unplanned** power outages:

1. I am satisfied with potentially decreasing the chances of outages if rates are slightly higher
2. I am satisfied with potentially increasing the chances of outages if rates are slightly lower
3. I am satisfied with the current investment and reliability of service

Answer Options	Response Percent	Response Count
1	13.5%	71
2	20.5%	108
3	66.0%	347



Would you like status updates from NOTL Hydro if an unplanned power outage occurs at your home or business in

Answer Options	Response Percent	Response Count
Yes	83.1%	438
No	16.9%	89

If yes, how would you like to be notified? Check all that apply:

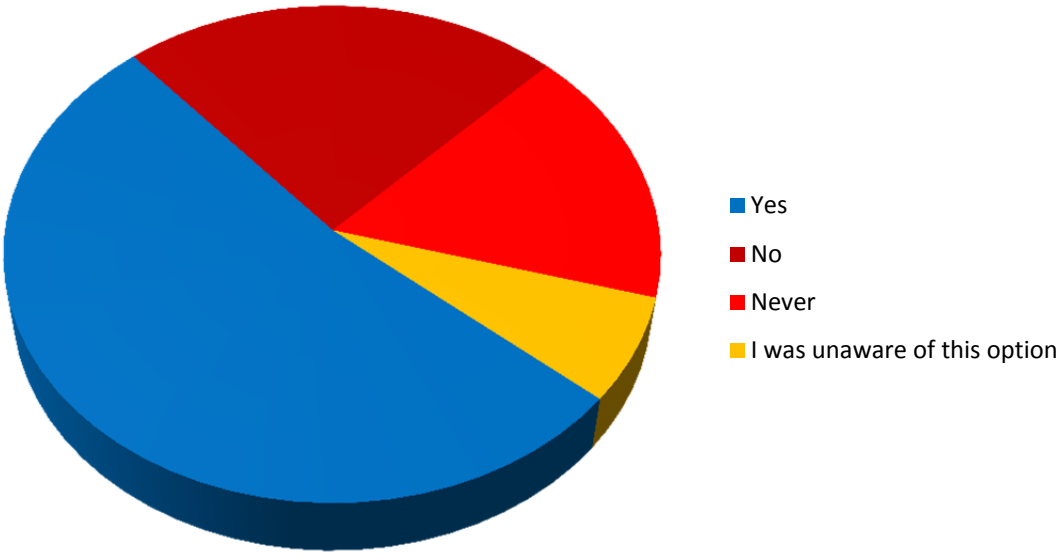
Answer Options	Response Percent	Response Count
Automated Phone Call	**49.4%**	**215**
Text Message	16.1%	70
Email	**56.3%**	**245**
Twitter/Social Media	2.5%	11
Other (please specify)	3.7%	16

OTHER ANSWERS

- St Catharines radio station
- Canada Post
- Note on Door
- Phone or note on mailbox
- Phone
- On next bill
- Website
- Auto Attendent when calling in
- Status posted on NOTL Hydro website
- Mailed in monthly bill package
- Automated phone call to cell phone
- collinrayment@me.com
- If there is a power outage how is it possible to update Nyone since these devices rely on power?!
- NO PHONE CALLS PLEASE
- Ques.#3 is inappropriate as none of these choices meet my needs
- NOTL Hydro website, on main page.

Do you regularly access your NOTL Hydro account online?

Answer Options	Response Percent	Response Count
Yes	52.5%	279
No	23.7%	126
Never	16.9%	90
I was unaware of this option	6.8%	36



If yes, have you used the Customer Connect feature allowing you to see hourly electric consumption?

Answer Options	Response Percent	Response Count
Yes	20.1%	56
No	39.4%	110
I was unaware of this option	47.7%	133

***NOTE** – Several manual submissions had answers to #3B when #3 had not been answered.*

Do you currently have any green generation (solar panel, wind turbine, etc) installed on your property?

Answer Options	Response Percent	Response Count
Yes	2.6%	14
No	97.4%	522

Do you plan on installing green generation (solar panel, wind turbine, etc) on your property?

Answer Options	Response Percent	Response Count
Yes, within 1 year	0.6%	3
Yes, within 5 years	5.2%	27
Yes, more than 5 years	1.7%	9
No	67.6%	353
Unsure	24.9%	130

Do you currently own a plug-in electric vehicle?

Answer Options	Response Percent	Response Count
Yes	1.3%	7
No	98.7%	531

Do you plan on purchasing a plug-in electric vehicle in the future?

Answer Options	Response Percent	Response Count
Yes, within 1 year	0.2%	1
Yes, within 5 years	6.0%	32
Yes, more than 5 years	3.4%	18
No	66.0%	349
Unsure	24.4%	129

Niagara-on-the-Lake Hydro offers conservation & efficiency incentives through the new “saveONenergy” programs. Are you aware of any of these programs? *(example: Fridge & Freezer Pick-up, Retrofit Program, Small Business Lighting Initiative, etc.)*

Answer Options	Response Percent	Response Count
Yes	56.8%	299
No	43.2%	227

IMPORTANT PLANNING INFORMATION

Your Account Type:

Answer Options	Response Percent	Response Count
Home	**97.4%**	**518**
Business	2.6%	14

***NOTE** – an issue with this question is when a FARM comes into play. The resident will be both a home and a business account. It is unknown how many farmer answered this question.*

Your Community of Residence/Business

Answer Options	Response Percent	Response Count
Garrison Village / Olde Town	**40.6%**	**217**
St. Davids	9.7%	52
Queenston	4.1%	22
Virgil	**26.0%**	**139**
Glendale	2.6%	14
Rural	**16.9%**	**90**

APPENDIX A – Survey Interval Levels

Question	Number of Responses	95% Confidence Interval	99% Confidence Interval
EXPERENCE Matrix Row 1	543	4.07	5.36
EXPERENCE Matrix Row 2	543	4.07	5.36
EXPERENCE Matrix Row 3	544	4.07	5.35
EXPERENCE Matrix Row 4	534	4.11	5.41
EXPERENCE Matrix Row 5	539	4.09	5.38
EXPERENCE Matrix Row 6	497	4.27	5.62
EXPERENCE Matrix Row 7	495	4.28	5.63
EXPERENCE Matrix Row 8	505	4.23	5.57
EXPERENCE Matrix Row 9	545	4.06	5.35
EXPERENCE Matrix Row 10	523	4.15	5.47
EXPERENCE Matrix Row 11	535	4.1	5.4
EXPERENCE Matrix Row 12	539	4.09	5.38
EXPERENCE Matrix Row 13	534	4.11	5.41
EXPERENCE Matrix Row 14	549	4.05	5.33
IMPORTANCE Matrix Row 1	542	4.07	5.36
IMPORTANCE Matrix Row 2	540	4.08	5.37
IMPORTANCE Matrix Row 3	530	4.12	5.43
IMPORTANCE Matrix Row 4	540	4.08	5.37
IMPORTANCE Matrix Row 5	535	4.1	5.4
IMPORTANCE Matrix Row 6	536	4.1	5.4
IMPORTANCE Matrix Row 7	514	4.19	5.52
IMPORTANCE Matrix Row 8	523	4.16	5.47
IMPORTANCE Matrix Row 9	543	4.07	5.36
Back Page Question 1	526	4.14	5.45
Back Page Question 2	527	4.14	5.44
Back Page Question 2B	435	4.58	6.03
Back Page Question 3	531	4.12	5.42
Back Page Question 3B*	279	5.21	6.86
Back Page Question 4	536	4.1	5.4
Back Page Question 4B	522	4.16	5.47
Back Page Question 5	538	4.09	5.38
Back Page Question 5B	529	4.13	5.43
Back Page Question 6	526	4.14	5.45

Based on 8566 Total NOTL Hydro Accounts

**based on total of 1321 eBilling Customers as of June 1, 2013*

APPENDIX B – Marketing Materials

HOME PAGE LINKS TO THE SURVEY:

The home page is regularly updated and has a row at the top that is set aside for important issues that are currently relevant. It is typically set up in thirds and during slower time periods, the most important item may take up 2/3s of the space. These are the 2 images that were used, a 1/3 version and the 2/3 version.

EBLAST COPY

CUSTOMER SURVEY FOR RATE APPLICATION

TAKE THE SURVEY
CLICK HERE

As part of Niagara-on-the-Lake Hydro's upcoming distribution rate application, we want your feedback to help plan our future capital investment focus and customer support levels for the years ahead. The results of this survey will help identify the needs and expectations of our community. This survey will take 5 minutes of your time and will influence the next 5+ years of your service in NOTL.

Our mailing address is:

Niagara-on-the-Lake Hydro

PO Box 460 8 Henegan Road

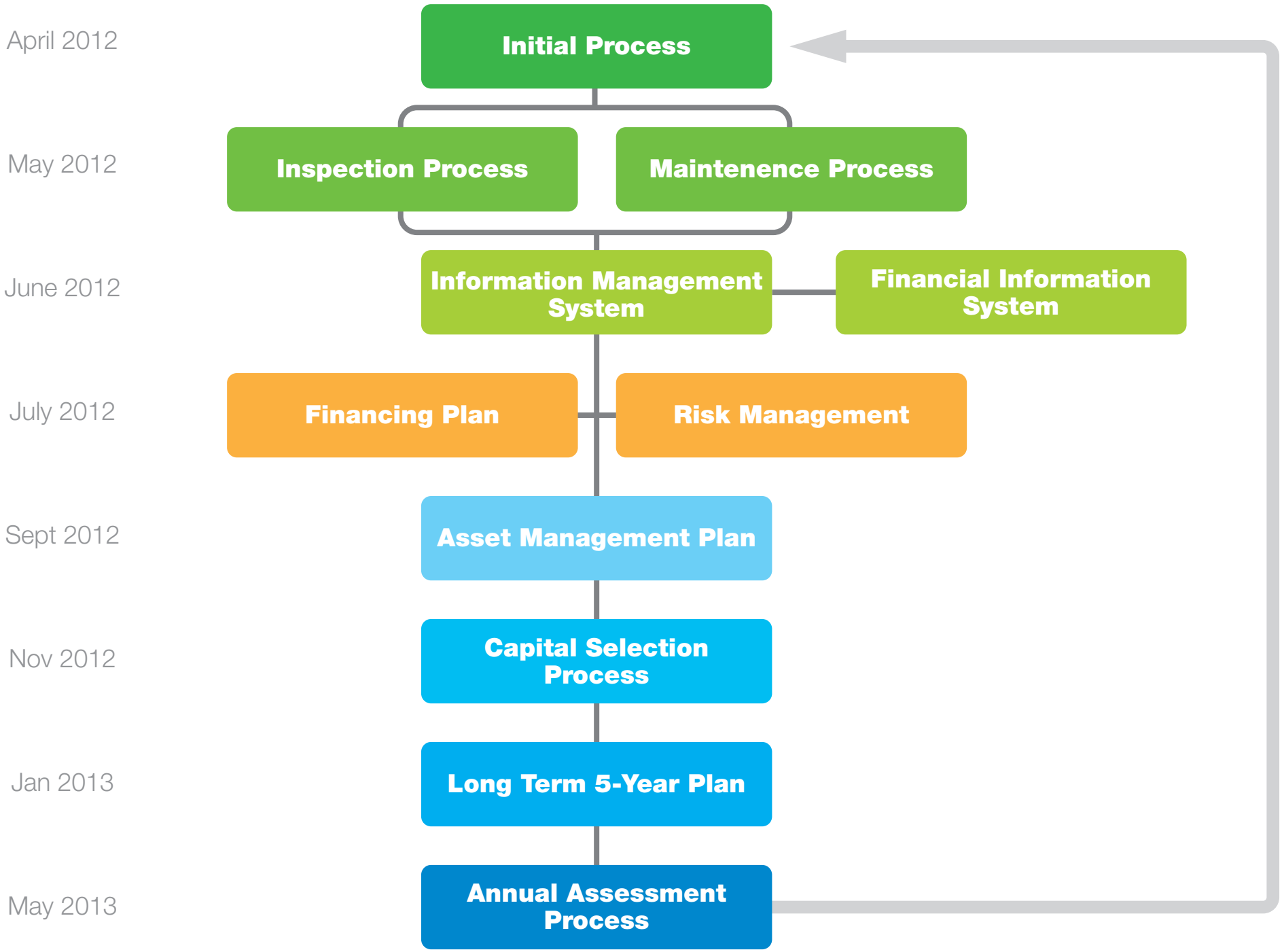
Virgil, ON L0S 1T0

Canada

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 7 - AM Plan Process

Asset Management | **Capital Selection Process**



DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 8 - Managed Assets

Managed Assets		
USoA Account Number	**USoA Account Description**	**Asset Lives (years)**
1815	TS Equipment >50 kV - Transformer	45
1815	TS Equipment >50 kV - Other	55
1830	Poles, Towers & Fixtures	45
1835	Overhead Conductors & Devices	60
1840	Underground Conduit	65
1845	Underground Conductors & Devices	45
1850	Line Transformers	45
1855	Overhead Services	60
1855	Underground Services	45
1860	Meters (not CTs/PTs)	25
1860	Meters CTs/PTs	40
1860	Meters (smart meters)	15
1908	Buildings & Fixtures - HQ building	60
1908	Buildings & Fixtures - PCB shed	30
1915	Office Furniture & Equipment	10
1920	Computer Equipment - Hardware	3
1925	Computer Software	3
1925	Computer Software - upgrade for TOU	5
1930	Transportation Equipment < 3 tons	5
1930	Transportation Equipment > 3 tons	10
1930	Transportation Equipment - Trailers	15
1935	Stores Equipment	10
1940	Tools, Shop & Garage Equipment	8
1955	Communications Equipment	10
1980	System Supervisor Equipment	10

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 9 - Inspection Samples

Niagara On-The-Lake HYDRO

JOINT HEALTH AND SAFETY COMMITTEE INSPECTION FORM

AREA: _FRONT OFFICE & BASEMENT_

Finding(s)	Category	Corrective Action(s)	Responsible Person	Date Addressed
FILE CABINETS OUTSIDE DAVID'S OFFICE. DOCUMENTS NEED TO BE IN A FIRE SAFE PLACE	A ☐ B ☐ C ☐	NEED TO RE-ARRANGE FILING SYSTEM IN THE SAFE		
PC REMOVAL BESIDE MARILYN'S DESK AS WELL AS SERVER ROOM	A ☐ B ☐ C ☐	DISPOSE, SELL, OR RAFFEL OFF TO GET RID OF PCS		
3 LIGHT IN FRONT CHANDELEER	A ☐ B ☐ C ☐	BULB REPLACEMENT		
WOMANS WASHROOM CEILING FAN NEED TO BE RE-ATTACHED	A ☐ B ☐ C ☐			
FASCIA NEED TO BE REPAIRED AT FRONT DOOR – MESH HAS RIPPED	A ☐ B ☐ C ☐			
WASTE REMOVAL OF OLD PAPERS IN BASEMENT HALL	A ☐ B ☐ C ☐			
WIRES IN ELECTRICAL ROOM (RIGHT SIDE OF DOOR) NEED TO BE SECURED OR CAPPED	A ☐ B ☐ C ☐			
BUSHES IN FRONT OF BUILDING NEED TO BE TRIMMED AND/OR REMOVED	A ☐ B ☐ C ☐			
	A ☐ B ☐ C ☐			

Risk Level: A – Major – High risk (immediately dangerous to life and health) B – Moderate – Medium risk (medium term potential for non-life threatening injury) C – Minor – Low risk (long term potential for slight injury or illness)

Timeframe for Corrective Action(s): A – Immediately B – As soon as possible (within 48 hours) C – Timeframe TBD by management in consultation with JHSC

JHSC INSPECTOR (S): _JENNIFER_____ **Area Supervisor: _VICTORIA_____** **DATE: _MAY 31/2013____**

NOTL DS – MONTHLY INSPECTION

DATE _____ BY _____

HV FUSES ☐ HV SWITCHES CLOSED ? T1 ☐ T2 ☐

TRANSFORMER T1

OIL TEMP _____ DEG C WINDING TEMP _____ DEG C FINS OK? ☐

TRANSFORMER OIL LEVEL ☐ TAPCHANGER OIL LEVEL ☐

HV BUSHING OIL LEVEL ☐ ☐ ☐ FANS - ON ☐ OFF ☐

120V BREAKERS CLOSED ☐ HEATER - ON ☐ OFF ☐

TAPCHANGER COUNT _____ MIN _____ MAX _____ RESET ☐

SUMP LEVEL ☐ PUMPOUT REQ'D? ☐

TRANSFORMER T2

OIL TEMP _____ DEG F WINDING TEMP _____ DEG F

TRANSFORMER OIL LEVEL ☐ TAPCHANGER OIL LEVEL ☐

HV BUSHING OIL LEVEL ☐ ☐ ☐ FANS - ON ☐ OFF ☐

120V BREAKERS CLOSED ☐ HEATER - ON ☐ OFF ☐

TAPCHANGER COUNT _____ MIN _____ MAX _____ RESET ☐

CONTROL BUILDING

HEATER - ON ☐ OFF ☐ EXHAUST FAN - ON ☐ OFF ☐

AC POWER ☐ AC BREAKERS CLOSED ? ☐ DC VOLTAGE? ☐

RECLOSURES **F1** COUNT _____ HEATER ☐

F2 COUNT _____

F3 COUNT _____ HEATER ☐

FENCES / GATES ☐ LOCKS ☐ VEGETATION ☐ WARNING SIGNS ☐

FENCE GROUNDS ☐ EQUIPMENT GROUNDS ☐ CLEARANCES ☐

INSULATORS ☐

COMMENTS

YORK TS – MONTHLY INSPECTION

DATE _____ BY _____

CIRCUIT SWITCHER SF6 TARGETS ☐ AC BRKR CLOSED ☐

TRANSFORMER T1

OIL TEMP _____ DEG C WINDING TEMP _____ DEG C

CONSERVATOR OIL LEVEL ☐ TAPCHANGER OIL LEVEL ☐

HV BUSHING OIL LEVEL ☐ ☐ ☐ FANS - ON ☐ OFF ☐

120V BREAKERS CLOSED ☐ HEATER - ON ☐ OFF ☐

TAPCHANGER COUNT _____ MIN _____ MAX _____ RESET ☐

TRANSFORMER FINS ☐ SUMP LEVEL ☐ PUMPOUT REQ'D? ☐

AIR DRYER SILICA OKAY ? Y ☐ N ☐ SILICA CHANGED? ☐

MAIN AC PANEL

BREAKERS CLOSED ☐ HEATER - ON ☐ OFF ☐

CONTROL BUILDING

HEATER - ON ☐ OFF ☐ EXHAUST FAN - ON ☐ OFF ☐

AC POWER ☐ AC BREAKERS CLOSED ? ☐ DC VOLTAGE? ☐

RECLOSURES

M1 COUNT _____ AC ☐ REMOTE ☐ RECLOSE ☐ GROUND ☐ HEATER ☐

M2 COUNT _____ AC ☐ REMOTE ☐ RECLOSE ☐ GROUND ☐ HEATER ☐

M3 COUNT _____ AC ☐ REMOTE ☐ RECLOSE ☐ GROUND ☐ HEATER ☐

STATION YARD

FENCES / GATES ☐ LOCKS ☐ VEGETATION ☐ WARNING SIGNS ☐

FENCE GROUNDS ☐ EQUIPMENT GROUNDS ☐ CLEARANCES ☐

COMMENTS

Niagara on the Lake Hydro

Vehicle Inspection Report

8 Henegan
NOTL, Ontario
L0S 1T0

UNIT #	LICENCE PLATE	PROV	ODOMETER	✓ NO DEFECTS PRE-TRIP	TIME PRE-TRIP	AM/ PM	DATE PRE-TRIP	PRE-TRIP LOCATION CITY OR TOWN
				☐				
				☐				
				☐				

Record below all defects discovered during pre-trip inspection, monitor and report defects that become apparent during your tour of duty.

UNIT #	SCHEDULE 1 CODE	STATUS REPAIRED	REPORTED	PERSON WHOM CONDUCTED REPAIRS	DATE
		☐	☐	Signature	
		☐	☐	Signature	
		☐	☐	Signature	

I DECLARE THAT EACH VEHICLE SHOWN ON THIS REPORT HAS BEEN INSPECTED IN ACCORDANCE WITH THE APPLICABLE SCHEDULE 1

FULL NAME OF PERSON WHO CONDUCTED INSPECTION

SIGNATURE OF PERSON WHO CONDUCTED INSPECTION

DRIVER'S SIGNATURE

REMARKS UNIT #

_____

REMARKS UNIT #

_____

OCCUPATIONAL HEALTH AND SAFETY ACT (EQUIPMENT PRE-OPERATIONAL / OPERATIONAL INSPECTION) **CHECK ONLY IF DEFECTIVE.** SPECIFY IN COMMENTS SECTION

Reservoir – oil level, breather cap filter ☐

P.T.O indicator light, noise, leaks ☐

Outriggers - pad condition ☐
- indicator marks ☐
- holding valve check ☐

Welds and crack inspection - turret ☐
- boom ☐

Lower Controls – Leaks / operation ☐

Fibreglass – clean, cracks, gauges ☐

Boom - leaks ☐

Cylinders - holding valve check ☐
- all cylinders extension & retract ☐

Winch rope ☐

Hoses – leaks, worn ☐

Upper controls – leaks / operation ☐

Boom rests – cracks, worn, boom straps ☐

Boom owner's manual ☐

Wheel chocks / pads ☐

RBD

Auger – slow rope / teeth & welds ☐

Pole claws – position and welds ☐

AERIAL DEVICE

Buckets/Liners – levelling system/clean ☐

Jib – operation / clean ☐

Bucket rescue & escape equipment ☐

Lanyard attachment point ☐

Valid dielectric decal ☐

Current leakage ( ) reading ☐

COMMENTS:

_____

_____

_____

☐ **CHECK BOX IF NO DEFECTS FOUND.**

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 10 - Asset Condition Assessments

35 poles
12 Txs
$150K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section -- Risk Assessment

ID: 1048

Location CON 2 AND LINE 2 AREA

References 4 KV SYSTEM FED BY RABBIT 99014

Age (Range) 30 YEARS TO 60 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☑ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☑ Broken/Rotten
- ☐ Leaning
- ☑ Crossarms
- ☐ Insulators
- ☑ Sleeves
- ☑ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☐ Pole Condition
- ☑ Untreated

Anchors

- ☑ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator
- ☑ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☑ Sag
- ☐ Clearance
- ☐ Undersized (<#6)
- ☑ Other
- ☐ Broken Strands
- ☐ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☑ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☑ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☑ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 3	3
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	2
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 2	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 3	4
E	Customer Growth	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
F	New Generation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
G	Municipal Obligation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 2	2
I	Operational Issue	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
J	No-Compliance (ESA)	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
K	System Optimization	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
L	Community Benefits	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

MOST POLES ARE UNTREATED CEDAR, MAJORITY OF POLES ON CON 2 APPEAR TO HAVE BEEN REPLACED IN THE 80's, MAIN CONCERN IS BAD POLE TOPS 2 Ø's ON ARMS UNUSED, ARMS ARE WORN OUT.

Potential Rebuilds to Extend Useful Life

REMOVE 2 Ø's AND ARMS, CUT TOPS AND NEW PINS, FEW NEW POLES. ON LINE 2

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

60 poles
9 Tx's
$210K
ID: 1058

Niagara-on-the-Lake Hydro

OVERHEAD Line Section -- Risk Assessment

Location MCNAB AND CARLTON AREA

References 4 KV SYSTEM FED BY RABBIT TX 99008

Age (Range) ESTIMATED TO BE 55 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☒ Maintenance Issues
- ☒ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☒ Non-Compliance (ESA)

Pole Concerns

- ☒ Broken/Rotten
- ☒ Leaning
- ☐ Crossarms
- ☐ Insulators
- ☒ Sleeves
- ☐ Pins
- ☒ Loose Hardware
- ☐ Finished Grade
- ☒ Pole Condition
- ☒ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☒ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☒ Clearance
- ☐ Undersized (<#6)
- ☒ Other
- ☐ Broken Strands
- ☐ Trees
- ☒ <#2ACSR
- ☐ Unfused

Main Bus

- ☒ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☒ Open Wire

Services

- ☒ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☒ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☒ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☒ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☒ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☒ Clearances

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No Impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 4	4
B	Worker Safety Risk	No Impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	2
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 2	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 3	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	4
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 3	3
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

HALF OF POLES ARE UNTREATED CEDER AND ARE IN POOR CONDITION, LOTS OF LEANING POLES, SMALL AMOUNT OF OPEN BUSS, SMALL SECTION WAS REBUILT IN 2004 ON McNAB 40' POLES

LINE ON CARLTON SHOULD BE REASSESSED BECAUSE OF PROXIMITY TO ROAD AND HEIGHT AND DUE TO UNTREATED CEDARS

Potential Rebuilds to Extend Useful Life

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

25 poles
7 tx's.

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location Townline Rd (Line 3) to Con. 7

References 4K.V. Conversion

Age (Range) 50 yrs.

☐ Urban ☑ Rural

Risk Rating: RED ☐ ☑ YELLOW PURPLE ☐ BLUE ☐

Common Concerns

- ☑ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues – Backyard const.
- ☑ Municipal Obligation
- ☑ Worker Safety
- ☑ Reliability
- ☑ Operational Issue
- ☐ Non-Compliance (ESA)

Pole Concerns

- ☑ Broken/Rotten
- ☑ Leaning
- ☐ Crossarms
- ☑ Insulators
- ☑ Sleeves
- ☑ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☑ Pole Condition
- ☐ Untreated

Anchors

- ☑ Tension
- ☑ Guy Guard
- ☐ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☑ <#2ACSR
- ☑ Unfused

Main Bus

- ☐ Triplex
- ☑ Guy Guard
- ☐ Sag
- ☐ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☑ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☑ Cracked Bushing
- ☐ Rust
- ☐ CSP
- ☑ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☑ Connections
- ☐ Grounding
- ☐ Alignment
- ☐ Locks
- ☑ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I	
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I	
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I	
D	Maintenance issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I	
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I	
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
	Date						Total Score	0
	Project Description / Assessment / Notes / Comments:							
	Potential Rebuilds to Extend Useful Life							
						Reviewed by:		

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

MISC

20 poles
7 Txs
~~ID # 1025~~
$90K
ID: 1059

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location LINE 1 AREA 4 CON 3

References 4 KV SYSTEM FED BY RABBIT 99030

Age (Range) ESTIMATED 40 TO 50 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☒ Maintenance Issues
- ☐ Municipal Obligation
- ☒ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☒ Non-Compliance (ESA)

Pole Concerns

- ☒ Broken/Rotten
- ☐ Leaning
- ☒ Crossarms
- ☒ Insulators
- ☒ Sleeves
- ☒ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☒ Pole Condition
- ☒ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☒ Rod Condition
- ☐ Guy Insulator
- ☒ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☒ Clearance
- ☐ Undersized (<#6)
- ☒ Other
- ☐ Broken Strands
- ☐ Trees
- ☒ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☒ Open Wire

Services

- ☒ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☒ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☒ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☒ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☒ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☒ Clearances

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 4	4
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 3	3
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 2	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 4	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	3
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 4	4
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	3
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	3
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

MOSTLY UNTREATED CEDERS WITH BAD TOPS & POOR X ARMS, OPEN WIRE SOILD COPPER COUDLE TX'S BELOW SECONDARY: 2 Ø'S NOT IN USE ON XARMS. 1 NEUTRAL ON CONS 3 IS IN BAD CONDITION WITH ONE NEW POLE.

Potential Rebuilds to Extend Useful Life

REMOVE X ARMS & 2 Ø'S, CUT TOPS & NEW TOP PINS WILL EXTEND LIKE PLUS REPLACING SOME OPEN BUSS COPPER.

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

26 poles
7 TX's

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location Line 1 (between Con. 6 & Con. 7)

References 4 kV System fed by Rabbit 99019

Age (Range) 45 yrs.

☐ Urban ☑ Rural

Risk Rating: RED ☐ ☑ YELLOW PURPLE ☐ BLUE ☐

Common Concerns

☑ Public Safety ☐ Children**
☐ Environmental Concern
☑ Maintenance Issues
☑ Municipal Obligation
☑ Worker Safety
☐ Reliability
☐ Operational Issue
☑ Non-Compliance (ESA)

Pole Concerns

☑ Broken/Rotten
☑ Leaning
☐ Crossarms
☑ Insulators
☑ Sleeves
☑ Pins
☑ Loose Hardware
☐ Finished Grade
☑ Pole Condition
☐ Untreated

Anchors
☑ Tension
☑ Guy Guard
☐ Rod Condition
☐ Guy Insulator
☐ Cutouts

Riser Pole
☐ Public Safety
☐ Cables/Guards
☐ Brackets
☐ Grounding
☐

Primary and Secondary Conductor Concerns

☐ High Voltage
☐ Sag
☑ Clearance
☐ Undersized (<#6)
☑ Other
☐ Broken Strands
☐ Trees
☑ <#2ACSR
☐ Unfused

Main Bus
☑ Triplex
☐ Guy Guard
☐ Sag
☐ Open Wire

Services
☑ Triplex
☐ Cables/Guards
☐ Open Wire
☐

Transformer Concerns

☐ Below Secondary
☑ Arrestors
☐ Oil Leaks
☐ Oil Leaks
☑ Cutouts
☐ PCBs
☐ Cracked Bushing
☑ Rust
☐ CSP
☐ Brackets
☐ Cluster Mount 3Ø
☐

Switch Concerns

☑ Connections
☑ Grounding
☐ Alignment
☐ Locks
☑ Insulators
☐ Nomenclature
☐ Brackets
☑ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I	
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I	
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I	
D	Maintenance issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I	
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I	
I	Operational issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

Convert to 27.6 K.V. System

Potential Rebuilds to Extend Useful Life

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

6-8 Poles
2 TX's

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location Creek Rd / Lakeshore

References 4 K.V. Fed by Rabbit 99022

Age (Range) 50 yrs

☐ Urban ☑ Rural

Risk Rating: RED ☐ ☑ YELLOW PURPLE ☐ BLUE ☐

Common Concerns

☑ Public Safety ☐ Children**
☐ Environmental Concern
☑ Maintenance Issues
☑ Municipal Obligation
☑ Worker Safety
☐ Reliability
☐ Operational Issue
☑ Non-Compliance (ESA)

Pole Concerns

☑ Broken/Rotten
☐ Leaning
☐ Crossarms
☑ Insulators
☑ Sleeves
☑ Pins
☑ Loose Hardware
☐ Finished Grade
☑ Pole Condition
☐ Untreated

Anchors

☑ Tension
☑ Guy Guard
☐ Rod Condition
☐ Guy Insulator
☐ Cutouts

Riser Pole

☐ Public Safety
☐ Cables/Guards
☐ Brackets
☐ Grounding
☐

Primary and Secondary Conductor Concerns

☐ High Voltage
☐ Sag
☑ Clearance
☐ Undersized (<#6)
☑ Other
☐ Broken Strands
☐ Trees
☑ <#2ACSR
☐ Unfused

Main Bus

☐ Triplex
☐ Guy Guard
☐ Sag
☑ Open Wire

Services

☑ Triplex
☐ Cables/Guards
☐ Open Wire
☐

Transformer Concerns

☐ Below Secondary
☑ Arrestors
☐ Oil Leaks
☐ Oil Leaks
☑ Cutouts
☐ PCBs
☐ Cracked Bushing
☐ Rust
☐ CSP
☐ Brackets
☐ Cluster Mount 3Ø
☐

Switch Concerns

☑ Connections
☐ Grounding
☐ Alignment
☐ Locks
☑ Insulators
☐ Nomenclature
☐ Brackets
☑ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I	
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C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I	
D	Maintenance issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I	
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F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I	
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

Convert to 27.6 K.V.

Potential Rebuilds to Extend Useful Life

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

ID: 1046 60K 15 poles 3Ø 1 3Ø

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location LAKE SHORE ROAD To Read

References WEST OF 5151 AND L105 M2 3 ϕ

Age (Range) 34 YEARS.

✓ RURAL URBAN

Risk Rating: RED ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☑ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☐ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☐ Leaning
- ☑ Crossarms
- ☑ Insulators
- ☐ Sleeves
- ☐ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☑ Pole Condition
- ☑ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☐ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☐ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☐ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☐ Rust
- ☑ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☐ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☐ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 2	2
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	1
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 1	1
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 3	5
E	Customer Growth	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
F	New Generation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
G	Municipal Obligation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 4	4
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 3	3
I	Operational Issue	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
J	No-Compliance (ESA)	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
K	System Optimization	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
L	Community Benefits	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
	Date JULY 3 12						Total Score	0

Project Description / Assessment / Notes / Comments:

UNTREATED CEDARS ARE IN POOR CONDITION WITH X ARMS. DEAD END POLE IS IN VERY BAD SHAPE, CSP TX's.

2 LATTICALS ARE IN NEW CONDITION

Potential Rebuilds to Extend Useful Life

POLE REPLACEMENT WILL BRING THIS SECTION IN TO BLUE CATAGORY LIKE LEATHERSIDE OF SECTION

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

ID: 1047 17 poles 4 Tx's

$65 K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location CHURCH RD WEST OF STEWART

References 16 KV 1Ø FED FROM C107

Age (Range) 37 YEARS TO 60 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☒ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☒ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☐ Leaning
- ☐ Crossarms
- ☐ Insulators
- ☐ Sleeves
- ☐ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☒ Pole Condition
- ☒ Untreated

Anchors

- ☒ Tension
- ☐ Guy Guard
- ☒ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☒ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☒ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☐ Open Wire

Services

- ☒ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☒ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☐ Rust
- ☒ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☒ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☒ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No Impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 2	3
B	Worker Safety Risk	No Impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	2
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 1	1
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 3	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 2	3
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	2
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
	Date JULY 3 12						Total Score	0

Project Description / Assessment / Notes / Comments:

HALF OF POLES ARE UNTREATD AND ARE IN POOR CONDITION, 35' POLES WITH 16 KV CLASS INSULATORS, CSP TXS, CLOSE CLEARANCES DUE TO SHORT POLES SECONDARY IS CLOSE TO GROUND IN MANY SPOTS

Potential Rebuilds to Extend Useful Life

REBUILD LINE WITH POLES AND CONDUCTOR

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

Project ID# 1100 (HS)

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location CON 2

References 3 Ø FED FROM C760

Age (Range) 40 - 60 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☑ YELLOW PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ ~~Maintenance Issues~~
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☑ ~~Reliability~~
- ☐ Operational Issue
- ☑ ~~Non-Compliance (ESA)~~

Pole Concerns

- ☐ Broken/Rotten
- ☑ ~~Leaning~~
- ☑ ~~Crossarms~~
- ☑ ~~Insulators~~
- ☑ ~~Sleeves~~
- ☐ Pins
- ☑ ~~Loose Hardware~~
- ☐ Finished Grade
- ☑ ~~Pole Condition~~
- ☑ ~~Untreated~~

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ ~~Rod Condition~~
- ☐ Guy Insulator
- ☑ ~~Cutouts~~

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☑ ~~Sag~~
- ☑ ~~Clearance~~
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☑ ~~Triplex~~
- ☐ Guy Guard
- ☐ Sag
- ☑ ~~Open Wire~~

Services

- ☑ ~~Triplex~~
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ ~~Cutouts~~
- ☐ PCBs
- ☐ Cracked Bushing
- ☐ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☑ ~~Grounding~~
- ☐ Alignment
- ☐ Locks
- ☑ ~~Insulators~~
- ☐ Nomenclature
- ☐ Brackets
- ☑ ~~Clearances~~

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 4	4
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	3
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 1	1
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 4	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 4	4
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	3
	Date NOV 30 12						Total Score	0

Project Description / Assessment / Notes / Comments:

THIS SECTION HAS TREAT + UNTREATED POLE IN ROUGH COMMON WITH ROUGH X ARMS, GLASS TOP TIE INSULATORS,

Potential Rebuilds to Extend Useful Life

COMPLETE REBUILD

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

24 poles
6 Tx's
#90K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

ID: 1090

Location LINE 2 BETWEEN CON 4 AND CON 2

References 4 KV SYSTEM FED BY RABBIT #99017

Age (Range) ESTIMATED AT 40 TO 60 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☐ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☐ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☐ Leaning
- ☐ Crossarms
- ☐ Insulators
- ☐ Sleeves
- ☐ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☐ Pole Condition
- ☐ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☐ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☐ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☐ Open Wire

Services

- ☐ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☐ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☐ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☐ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☐ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 3	3
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	3
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 2	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 2	5
E	Customer Growth	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
F	New Generation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
G	Municipal Obligation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 2	2
I	Operational Issue	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
J	No-Compliance (ESA)	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
K	System Optimization	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
L	Community Benefits	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

UNTREATED CEDARS ARE POOR, OTHERWISE GOOD TO FOR ANY, PORTION OF LINE REBUILT IN 95 AND MAY BE USEFULL.

Potential Rebuilds to Extend Useful Life

CLEAN UP AFEW POLE TOPS, REPLACE SOME OPEN WIRE

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

58 poles
no txs

$290 K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

ID: 1084

Location CON 2

References M1 QUEENSTON GOLF COURSE TO LINE 7

Age (Range) 25 YEARS - 63 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☑ YELLOW ☐ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☑ Worker Safety
- ☑ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☑ Leaning
- ☑ Crossarms
- ☑ Insulators
- ☑ Sleeves
- ☑ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☑ Pole Condition
- ☑ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☑ Sag
- ☑ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☐ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☐ Rust
- ☐ CSP
- ☑ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☐ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☑ Brackets
- ☑ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 3	3
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	2
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 1	1
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 4	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I	
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 4	4
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 4	4
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	2
	Date	OCT 1 12					Total Score	0

Project Description / Assessment / Notes / Comments:

THIS SECTION IS PART OF MI TRUNK SYSTEM. IT HAS MOSTLY 35' CEDAR THAT ARE IN BAD CONDITION WITH X ARMS AND GLASS INSUL

Potential Rebuilds to Extend Useful Life

SYSTEM UPGRADE

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

37 poles
12 TXs
4 1Ø
33 3Ø
$225K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location York Rd and Conc 3 – Conc 2 and Conc 3

References 4 kV FDR by Rabbit 99032 ID: 1083

Age (Range) 58 years to 30 years

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☑ YELLOW PURPLE ☐ BLUE ☐

Common Concerns

- ☑ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☑ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☑ Leaning
- ☑ Crossarms
- ☑ Insulators
- ☑ Sleeves
- ☑ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☑ Pole Condition
- ☑ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☑ Undersized (<#6)
- ☐ Other
- ☑ Broken Strands
- ☑ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☑ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☑ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☐ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☐ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I: 3	3
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I: 2	1
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I: 2	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I: 5	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I: 1	1
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I: 1	1
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I: 1	1
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I: 5	4
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I: 4	4
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I: 3	3
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I: 4	3
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I: 4	3
	Date	OCT 1 12					Total Score	0

Project Description / Assessment / Notes / Comments:

POLES FOR THE MOST PART ARE IN GOOD CONDITION, ALTHOUGH X ARMS ARE ROTTED WITH ISOLATED Ø'S ON THEM, ALL OPEN COPPER #6 & #4 WIRE

Potential Rebuilds to Extend Useful Life

COMPLETE REBUILD, 1Ø OR 3Ø. CONTRACTOR MAY BE NECESSARY DUE TO ROAD AND CLEARANCE CONDITIONS AND CAN BE DONE QUICKLY

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

26 poles
~~$~~ 130K
TOTALS

ID:1061

Niagara-on-the-Lake Hydro

OVERHEAD Line Section -- Risk Assessment

Location LAKESHORE RD

References M 2 FROM C214 TO C 315 TOWNLINES

Age (Range) 42 YEARS TO 61 YEARS

RURAL URBAN

Risk Rating: RED ☐ YELLOW PURPLE ☑ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☐ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☐ ~~Non-Compliance (ESA)~~

Pole Concerns

- ☐ Broken/Rotten
- ☐ Leaning
- ☐ Crossarms
- ☐ ~~Insulators~~
- ☐ ~~Sleeves~~
- ☐ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☐ ~~Pole Condition~~
- ☐ ~~Untreated~~

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☐ ~~Rod Condition~~
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☐ ~~Clearance~~
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☐ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☐ ~~Open Wire~~

Services

- ☐ ~~Triplex~~
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☐ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☐ Rust
- ☐ ~~CSP~~
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☐ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☐ Clearances

NOTL Hydro Capital Project Prioritization System

	Criteria	Impact						
		Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 3	2
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	2
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 2	2
D	Maintenance issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 4	5
E	Customer Growth	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	2
F	New Generation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
G	Municipal Obligation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	2
H	Reliability/Quality improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 3	3
I	Operational Issue	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 3	2
J	No-Compliance (ESA)	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
K	System Optimization	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
L	Community Benefits	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	2
	Date SEPT 4 12						Total Score	0

Project Description / Assessment / Notes / Comments:

THIS PORTION OF THIS FEEDER IS ALL GLASS INSULATORS. 35 TO 40' POLES TREATED, NEWER POLES ARE UNTREATED CEDARS; SOME GUYING MISSING OLD CONDUCTOR WITH SLEEVES

Potential Rebuilds to Extend Useful Life

POLE LINE AND CONDUCTOR REBUILD

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

* Life extending suggestions

~~32~~ 27 poles
9 Txs

110K

ID: 10~~42~~

Niagara-on-the-Lake Hydro

OVERHEAD Line Section -- Risk Assessment

Location LINE 1 AREA (Conc 1 to Con 3)

References 4 kV SYSTEM FED BY RABBIT 99015

Age (Range) 33 ~~YEARS~~ TO 66 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☑ Broken/Rotten
- ☐ Leaning
- ☑ Crossarms
- ☐ Insulators
- ☑ Sleeves
- ☑ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☑ Pole Condition
- ☑ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☑ Other
- ☐ Broken Strands
- ☐ Trees
- ☑ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☑ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☑ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 4	4
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 3	3
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 2	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or repiaced within last 40+ years and is in bad condition	P x I 4	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 4	4
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	3
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	3
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

LINE 1 FED BY RABBIT 99015 – MANY X ARMS ARE IN POOR CONDITION WITH WOOD PINS 3 Ø CONSTRUCTION WITH ONLY 1 Ø OPERATING. SOME UNTREATED POLES WITH BAD TOPS HARD WARE IS IN OTHERWISE GOOD CONDITION. 3/0 & 1/0 CONDUCTORS WITH SOLID COPPER OPEN WIRE BUSS. AND MANY SINGLE TX's. MOST POLES ARE TREATED & ARE VERY SOLID.

Potential Rebuilds to Extend Useful Life

REMOVE X ARMS AND 2 UNUSED Ø WITH WOOD PINS, OPEN WIRE BUSS WILL EXTEND LIFE BUT IT IS A GOOD PROJECT TO REPLACE.

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

5-10 years

53 poles
21 Tx's
$250K
ID 1071

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location LINE 3 CON 7

References 4 KV SYSTEM FED BY RABBIT TX 99010

Age (Range) 43 YEARS TO 64 YEARS

✓ RURAL URBAN

Risk Rating: RED ☐ ORANGE ☐ YELLOW PURPLE ☑ BLUE ☐

Common Concerns

- ☑ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☑ Municipal Obligation
- ☑ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☑ Leaning
- ☑ Crossarms
- ☐ Insulators
- ☑ Sleeves
- ☑ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☐ Pole Condition
- ☐ Untreated

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☑ Other
- ☐ Broken Strands
- ☐ Trees
- ☑ <#2ACSR
- ☐ Unfused

Main Bus

- ☑ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☑ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☑ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☐ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☐ Clearances

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 3	3
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 2	2
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 1	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 2	5
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	2
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 1	1
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 3	3
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 2	2
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	2
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	P x I 2	3
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

95 % OF POLES ARE TREATED AND SOLID AS IS HARDWARE. TOWNLINE SECTION OF LINE IS INACCESSIBLE BY TRUCK & SHOULD BE LOOKED AT TO MOVE ONTO TOWN LINE RD. MINIMAL AMOUNT OF OPEN BUSS X ARMS ARE IN BAD CONDITION. AND WOOD PINS

Potential Rebuilds to Extend Useful Life

REMOVE X ARMS AND INSTALL TOP PINS. REPAIR AS PROBLEMS ARISE

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

5-10 year

60 poles
24 Tx's

Niagara-on-the-Lake Hydro

#276K

OVERHEAD Line Section -- Risk Assessment

ID 11072

Location LINE 1 CON 7

References 4 KV SYSTEM FED BY RABBIT TX 99009

Age (Range) 44 YEARS

✓RURAL URBAN

Risk Rating: RED ☐ ORANGE ☐ YELLOW PURPLE ☑ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☐ Leaning
- ☐ Crossarms
- ☐ Insulators
- ☐ Sleeves
- ☐ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☐ Pole Condition
- ☐ Untreated

Anchors
- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator
- ☐ Cutouts

Riser Pole
- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☑ <#2ACSR
- ☐ Unfused

Main Bus
- ☑ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☑ Open Wire

Services
- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire
- ☐

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø
- ☐

Switch Concerns

- ☐ Connections
- ☑ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

27- LINE2

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	P x I 1	2
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	P x I 1	1
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	P x I 1	2
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	P x I 2	5
E	Customer Growth	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	2
F	New Generation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	2
G	Municipal Obligation	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	2
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	P x I 2	2
I	Operational Issue	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	1
J	No-Compliance (ESA)	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
K	System Optimization	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 1	2
L	Community Benefits	Very Low impact	Low impact	Moderate impact	High impact	Very High impact	P x I 2	2
	Date						Total Score	0

Project Description / Assessment / Notes / Comments:

95% OF POLES ARE TREATED AND IN SOLID CONDITION ALSO HARDWARE LOOKS GOOD SMALL AMOUNT OF OPEN BUSS * 2 CONDUCTOR, NO OBVIOUSE WEAR & TEAR IN THIS SECTION.

Potential Rebuilds to Extend Useful Life

REPLACE OR REPAIR AS PROBLEMS ARISE

Reviewed by:

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

ID: 1038

38 poles @ 3K = 114K
10 Tx's @ 4K = 40K
154K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location CONS #6 AND WARNER RD AREA

References 4 KV SYSTEM FEED BY RABBIT # 99027

✓ RURAL URBAN

Risk Rating: RED ☐ ✓ YELLOW PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☑ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☑ Broken/Rotten
- ☐ Leaning
- ☐ Crossarms
- ☐ Insulators
- ☐ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☑ Pole Condition

Anchors
- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator

Riser Pole
- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☑ Cutouts

AGE RANGE 30 YEARS TO 50 YEARS OLD

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☑ Trees
- ☑ <#2ACSR
- ☐ Unfused

Main Bus
- ☑ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☐ Open Wire

Services
- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☑ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø

Switch Concerns

- ☐ Connections
- ☑ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☐ Clearances

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location CONS 6 AND WARNER RD AREA

References 4 KV SYSTEM FED BY RABBIT #99027

Notes/Comments

AGE OF POLES IS BETWEEN 30 AND 50 YEARS OLD BY DATE STAMPS. APPOROXIMATY HALF OF POLES ARE TREATED, POLES NOT TREATED ARE IN RUFF SHAPE WITH ROTTED TOPS AND THINNER DIAMETER ALLOWING HARDWARE TO BE LOOSE. MAIN INTERSEC POLE AT WARNER & CON 6 IS 4 YEARS OLD TO ESA STANDARD

3 SECTIONS OF LINE ARE INACCESSIBLE BY BUCKET TRUCK AND HEAVILY TREED. ALSO CROSSED BY IIS LINE AND WOULD REQUIRE NEW DIP POLES IN FUTURE, SOME CORNER POLES ARE NOT GUYED, 1/0 & #2 PRIM & NUET. CONDITION UNKNOWN

Reviewed By: MARTY

Date: JUNE 22 12

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High	Probability (P)	Impact (I)
		1	2	3	4	5		
A	Public Safety Risk	No Impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	3	3
							P x I	
B	Worker Safety Risk	No Impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	2	2
							P x I	
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	1	2
							P x I	
D	Maintenance issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	3	5
							P x I	
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	1	1
							P x I	
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	1	1
							P x I	
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	1	1
							P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	2	2
							P x I	
I	Operational issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
	Date JUNE 22 12						Total Score	0
	Project Description							
	CON 6 AND WARNER RD AREA							

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

ID: 1043

38 poles @ $3000 = $115K

10 TXs @ $5K = $50K

$165K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location CONS 6 AREA @ Line 6

References 4 KV SYSTEM FED BY RABBIT 99025

✓ RURAL URBAN

Risk Rating: RED ☐ YELLOW ✓ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☑ Broken/Rotten
- ☑ Leaning
- ☑ Crossarms
- ☐ Insulators
- ☑ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☐ Pole Condition

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐ Cutouts

AGE RANGE 32 YEARS TO 62 YEARS

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☐ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☑ Broken Strands
- ☐ Trees
- ☑ <#2ACSR
- ☐ Unfused
- ✓ SLEEVES

Main Bus

- ☑ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☑ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☑ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø

Switch Concerns

- ☐ Connections
- ☑ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location CONS #6 AREA

References 4 KV SYSTEM FED BY RABBIT 99025

Notes/Comments

ALL POLES TREATED, ALTHOUGH THERE ARE A FEW ROTTED X ARMS, POLES LOOK SOLID. LEANING POLES BUT SOLID 3/0, 1/0, #2 ACSR CONDUCTORS, F4 MAIN AND RABBIT POLES STAMPED 1993 & BUILT TO USE STANDARDS. MACENTYRE SLEEVES ARE PRESENT ON PRIMARY CONDUCTORS AN NUETRALS MOST POLES ARE IN THE DITCH ALLOWING TREATMENT & CREOSOTED POLES TO LEAK INTO WATER RUN OFF.

Reviewed By: MARTY

Date: JUNE 22 12

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High		
		1	2	3	4	5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	2	3
							P x I	
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	2	2
							P x I	
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	4	5
							P x I	
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	4	4
							P x I	
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	2	2
							P x I	
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	3	3
							P x I	
	Date	JUNE 22 12					Total Score	0
	Project Description	CONS 6 LINE 6 AREA						

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

ID: 1044

22 poles
5 Tx's
#90K

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location LINE 3 CONS 6 AREA

References 4 KV SYSTEM FED BUY RABBIT 99030

RURAL URBAN

Risk Rating: RED ☐ YELLOW ☑ PURPLE ☐ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☑ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☑ Broken/Rotten
- ☑ Leaning
- ☑ Crossarms
- ☐ Insulators
- ☑ Pins
- ☑ Loose Hardware
- ☐ Finished Grade
- ☐ Pole Condition

Anchors

- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐ Cutouts

AGE RANGE 39 YEARS TO 62 YEARS

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☑ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☐ Trees
- ☑ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☐ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø

Switch Concerns

- ☐ Connections
- ☑ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location LINE 3 CONS 6 AREA

References 4 KV SYSTEM FED BY RABBIT 99030

Notes/Comments

3/4 OF THE POLES ARE TREATED AND IN GOOD CONDITION AND SOLID, X-ARMS ARE IN POOR CONDITION

1/0 & #2 ACSR CONDUCTORS. MAIN LINE RABBIT POLE STAMP DATE OF 1990 AND NOT TO USF STANDARD

POLES UNTREATED HAVE ROTTED TOPS

Reviewed By: MARTY

Date: JUNE 22 12

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low 1	Low 2	Moderate 3	High 4	Very High 5	Probability (P)	Impact (I)
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	3	3
							P x I	
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	2	2
							P x I	
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	3	5
							P x I	
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	4	5
							P x I	
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	3	3
							P x I	
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	3
							P x I	
	Date	JUNE 22 12					Total Score	0
	Project Description	LINE 3 CONS 6 AREA						

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

Geographical

22 poles
6 Tx's
$90K
ID: 1075

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location LINE 4

References 4 KV SYSTEM FED BY RABBIT 99028

✓RURAL URBAN

Risk Rating: RED ☐ YELLOW PURPLE ☑ BLUE ☐

Common Concerns

- ☐ Public Safety
- ☐ Children**
- ☐ Environmental Concern
- ☑ Maintenance Issues
- ☐ Municipal Obligation
- ☐ Worker Safety
- ☐ Reliability
- ☐ Operational Issue
- ☑ Non-Compliance (ESA)

Pole Concerns

- ☐ Broken/Rotten
- ☐ Leaning
- ☑ Crossarms
- ☐ Insulators

AGE RANGE 20 YEARS TO 43 YEARS

Anchors

- ☐ Pins
- ☐ Loose Hardware
- ☐ Finished Grade
- ☐ Pole Condition
- ☐ Tension
- ☐ Guy Guard
- ☑ Rod Condition
- ☐ Guy Insulator

Riser Pole

- ☐ Public Safety
- ☐ Cables/Guards
- ☐ Brackets
- ☐ Grounding
- ☐ Cutouts

Primary and Secondary Conductor Concerns

- ☐ High Voltage
- ☐ Sag
- ☑ Clearance
- ☐ Undersized (<#6)
- ☐ Other
- ☐ Broken Strands
- ☑ Trees
- ☑ <#2ACSR
- ☐ Unfused

Main Bus

- ☐ Triplex
- ☐ Guy Guard
- ☐ Sag
- ☑ Open Wire

Services

- ☑ Triplex
- ☐ Cables/Guards
- ☐ Open Wire

Transformer Concerns

- ☐ Below Secondary
- ☐ Arrestors
- ☐ Oil Leaks
- ☐ Oil Leaks
- ☑ Cutouts
- ☐ PCBs
- ☐ Cracked Bushing
- ☑ Rust
- ☐ CSP
- ☐ Brackets
- ☐ Cluster Mount 3Ø

Switch Concerns

- ☐ Connections
- ☑ Grounding
- ☐ Alignment
- ☐ Locks
- ☐ Insulators
- ☐ Nomenclature
- ☐ Brackets
- ☑ Clearances

Niagara-on-the-Lake Hydro

OVERHEAD Line Section – Risk Assessment

Location LINE 4

References 4 KV SYSTEM FED BY RABBIT 99028

Notes/Comments

ALL POLE TREATED AND LOOK TO BE IN GOOD CONDITION

ONLY A COUPLE OF X ARMS, PIN FRAMING PROMINENT

2 SECTIONS OF OPEN BUS SECONDARY COPPER. RABBIT

POLE IS 40' NOT TO USF STANDARD

LINE IS IN GOOD CONDITION GENERALY

Reviewed By: MARTY

Date: JUNE 22 12

NOTL Hydro Capital Project Prioritization System

		Impact						
	Criteria	Very Low	Low	Moderate	High	Very High	Probability (P)	Impact (I)
		1	2	3	4	5		
A	Public Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Public safety is strongly compromised if the project is not completed	2	2
							P x I	
B	Worker Safety Risk	No impact on public safety	Low Safety Concern	Moderate Safety Concern	High Safety Concern	Worker safety is strongly compromised if the project is not completed	2	2
							P x I	
C	Environmental Concern	There is no environmental Concern	Low environmental Concern	Moderate environmental Concern	High environmental Concern	Environment is clearly threatened subject to detrimental effects by the present situation (leaks, spills etc.)	2	2
							P x I	
D	Maintenance Issues – Asset Condition Assessment	Asset installed or replaced within last 4 years and is in excellent condition	Asset installed or replaced within last 10 years and is in good condition	Asset installed or replaced within last 20 years and is in fair condition	Asset installed or replaced within last 30 years and is in poor condition	Asset installed or replaced within last 40+ years and is in bad condition	2	3
							P x I	
E	Customer Growth	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
F	New Generation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
G	Municipal Obligation	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	2
							P x I	
H	Reliability/Quality Improvement	Completing this project will have no expected improvement to reliability of the system or individual asset	Completing this project will have low impact on improvement of reliability of the system or individual asset	Completing this project will have moderate impact on improvement of reliability of the system or individual asset	Completing this project will have high impact on improvement of reliability of the system or individual asset	Completing this project will have very high impact on improvement of reliability of the system or individual asset	2	2
							P x I	
I	Operational Issue	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	1	2
							P x I	
J	No-Compliance (ESA)	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	2	3
							P x I	
K	System Optimization	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	1	2
							P x I	
L	Community Benefits	Very Low Impact	Low Impact	Moderate Impact	High Impact	Very High Impact	1	2
							P x I	
	Date	JUNE 22 12					Total Score	0
	Project Description	LINE 4 4KV RABBIT 99028						

Probability Category: 1 Very Low (Risk not expected to occur) 2 Low (Risk less likely to occur) 3 Probable (Risk may or may not occur) 4 High (Risk more than likely to occur) 5 Very High (Risk expected to occur)

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 11 - Equipment Failure Analysis

Outage Summary for 2012

	2012 Total	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Total Momentary Outages	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Customer Hours of Interruption	12517	1575.85	386.67	20.50	124.67	4930.50	141.30	2410.35	1936.83	571.83	131.00	282.25	5.00
Total Customer Interruptions	7692	1078.00	114.00	9.00	35.00	2455.00	102.00	2731.00	848.00	186.00	36.00	92.00	6.00
Loss of Supply Cust/Hrs of Interruption	4860	0.00	0.00	0.00	0.00	4860.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loss of Supply Customer Interruptions	1	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adjusted Customer Hours of Interruption	7657	1575.85	386.67	20.50	124.67	70.50	141.30	2410.35	1936.83	571.83	131.00	282.25	5.00
Adjusted Customer Interruptions	7691	1078.00	114.00	9.00	35.00	2454.00	102.00	2731.00	848.00	186.00	36.00	92.00	6.00

Summary of Causes	Totals
Unknown Causes	6
Scheduled Outages	15
Tree Contact	6
Lightning	5
Equipment Failure	11
Adverse Weather	2
Human Element	2
Foreign Interference	8
Adverse Environment	2
Loss of Supply	1

OUTAGE LOG

Outage: 5.2

Date (mm/dd/yyyy)	Time Out (24 hr EST)	Time In (24 hr EST)	Reclose Only 'R'	Line/Feeder (All Effected)		Manual Count	Total Customers Interrupted
May 14, 2012	07:40:00	10:30:00		York M1		3	3
				York M2			
Total Outage Time	02:50:00	0.118055556		York M3			
	2.83 hr			future			
Total Customer Hours	8.5						
				NOTL F1			
Cause of Interruption				NOTL F2			
(insert'X')				NOTL F4			
Unknown							
Scheduled Outage				King F1			* King included
Loss of Supply				King F2			in F4 numbers
Tree Contact				King F3			
Lightning							
Equipment Failure	X						
Adverse Weather							
Human Element			Urban				
Foreign Interference			Rural	X			
Adverse Environment			(insert "x")				

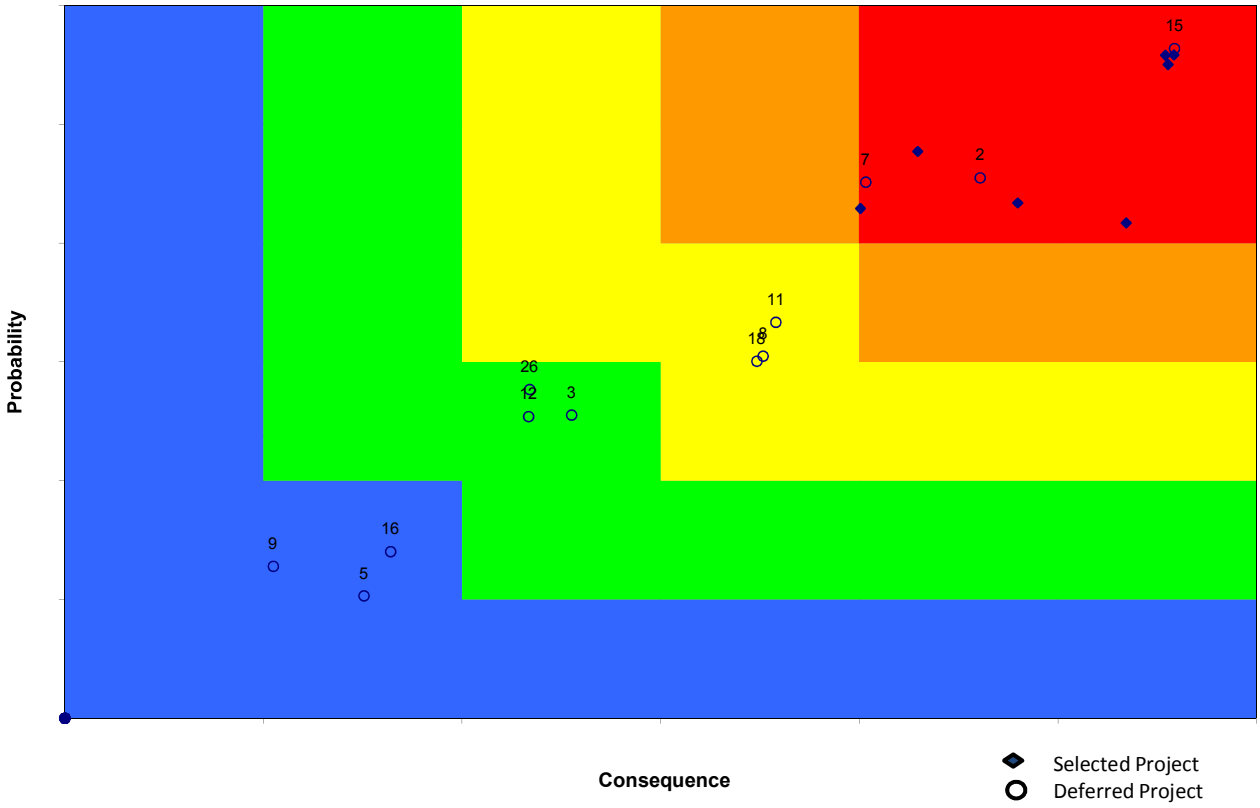
Weather Conditions	Wet
Area Affected	Line 3
Type of Work Completed	Replaced faulted transformer
Follow up Action Required	None

Jon — Recorded By: Craig — Date: 14/05/2012

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 12a - Asset Management Risk Matrix

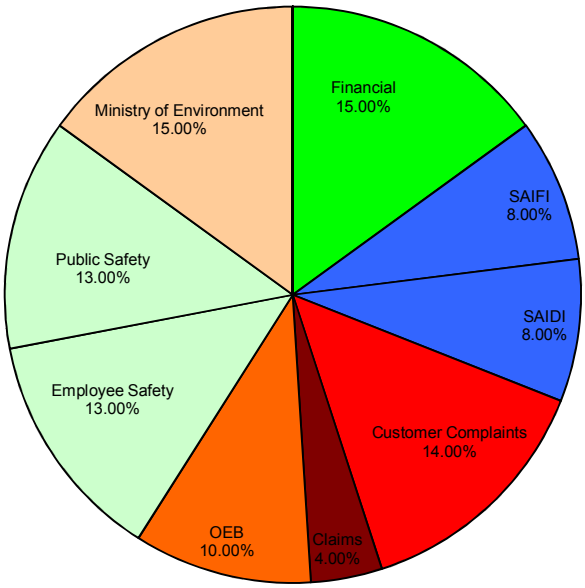
NOTL HYDRO Risk Matrix for Capital Projects



DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 12b – Strategic Objectives

NOTL HYDRO Strategic Objective Breakdown



DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 13 - Truck Servicing Schedule

Niagara-on-the-Lake Hydro Inc.

2006 Truck and Trailer Maintenance

Truck Service	Truck	Trailer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3 Month Service	5													
	10													
	20													
	37													
6 Month Service	5													
	10													
	20													
	37													
		81												
		82												
		83												
Annual Safety Inspection	5													
	10													
	20													
	37													
		81												
		82												
		83												
24 Month Service	5													
	10													
	20													
	37													
Aerial Device 6 Month Inspection	5													
	10													
	20													
	37													
Annual Dielectric & Hydraulic	5													
	10													
	20													
	37													

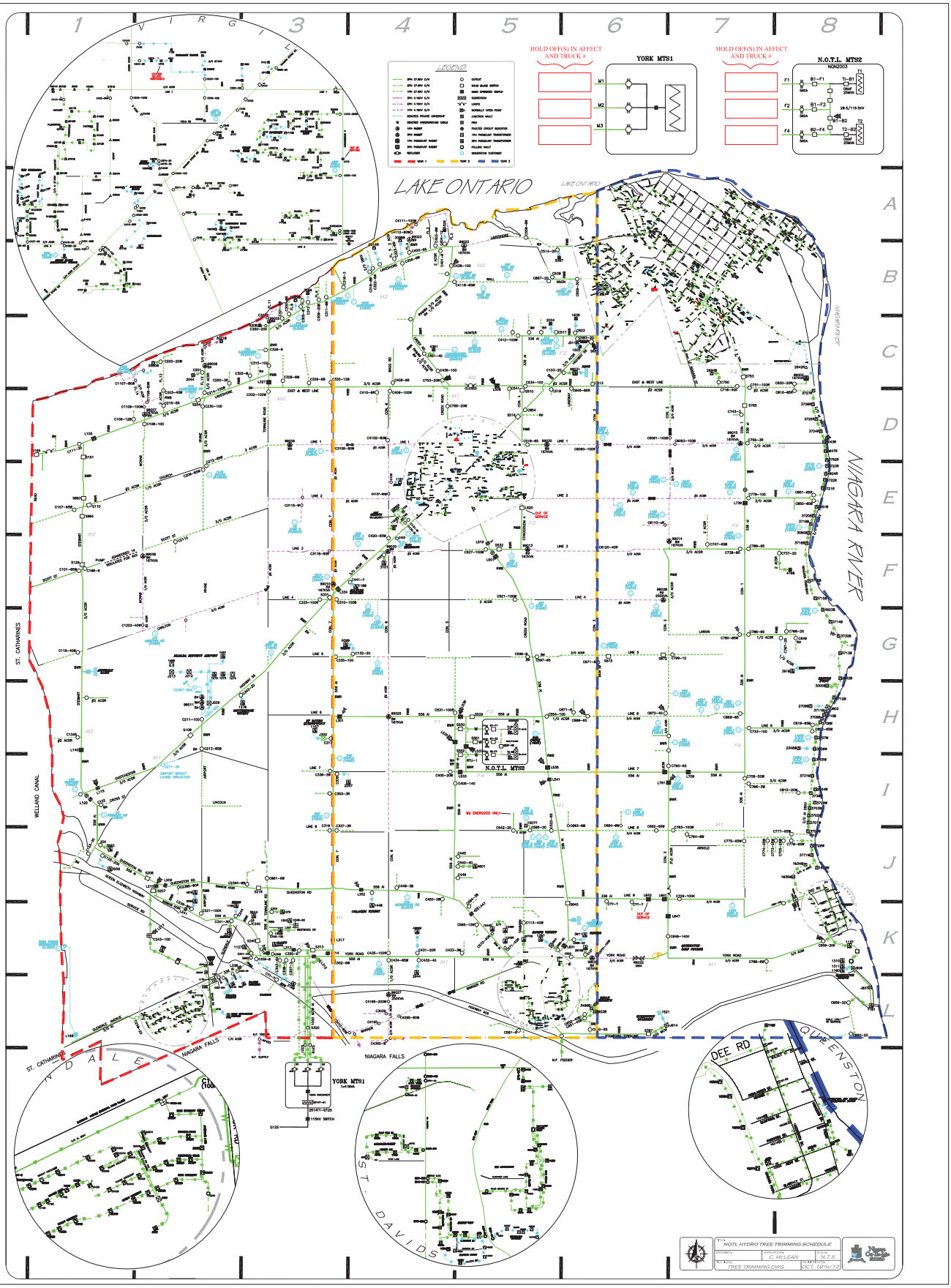
Niagara-on-the-Lake Hydro Inc.

2006 Light Truck Maintenance

Light Truck Service	Truck	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3 Month Service													
	7												
	13												
	23												

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 14 - Tree trimming Schedule


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
LEGEND
HOLD OFF(S) IN AFFECT AND TRUCK #
YORK MTS1
HOLD OFF(S) IN AFFECT AND TRUCK #
N.O.T.L. MTS2
NON2003
LAKE ONTARIO
NIAGARA RIVER
WELLAND CANAL
ST. CATHARINES
NIAGARA FALLS
QUEENSTON
DEE RD
ST. DAVIDS
YORK MTS1
N.O.T.L. MTS2
NOTL HYDRO TREE TRIMMING SCHEDULE
C. MCLEAN
N.T.S.
TREE TRIMMING.DWG
OCT. 19TH/17

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 15 - Capital Plan 2014-18

Capital Expenditures 2014-2018

5.1.1

		2014	2015	2016	2017	2018
	Drivers					
System Access	Mandated service obligations	**New Customer Connections ($35,000)**	**New Customer Connections ($35,000)**	**New Customer Connections ($35,000)**	**New Customer Connections ($35,000)**	**New Customer Connections ($35,000)**
	Mandated service obligations	**New revenue meters ($10,000)**	**New revenue meters ($10,000)**	**New revenue meters ($10,000)**	**New revenue meters ($10,000)**	**New revenue meters ($10,000)**
	Customer service requests	**Property development/expansions($55,000)**	**Property development/expansions($55,000)**	**Property development/expansions($55,000)**	**Property development/expansions($55,000)**	**Property development/expansions($55,000)**
		CCRAs for subdivisions and expansions	CCRAs for subdivisions and expansions	CCRAs for subdivisions and expansions	CCRAs for subdivisions and expansions	CCRAs for subdivisions and expansions
System Renewal	Project to replace aging assets with	**Old Town Rebuild Phase 3 ($330,000)**	**Old Town Rebuild Phase 4 ($385,000)**	**Old Town Rebuild Phase 5 ($400,000)**	**Old Town Rebuild Phase 6 ($400,000)**	**Old Town Rebuild Phase 7 ($400,000)**
	new cables, transformers, switches	Johnson - Simcoe to Dorchester	Johnson - Dorchester to Palatine	Niagara Blvd - Orchard to Lansdowne	Gage - Simcoe to Dorchester and	Centre - Simcoe to Dorchester
					Dorchester - Gage to Centre	
	replace aging meters	**Replacement revenue meters ($30,000)**	**Replacement revenue meters ($30,000)**	**Replacement revenue meters ($30,000)**		**Replacement revenue meters ($30,000)**
		Polyphase >50 kW	Polyphase >50 kW	Polyphase >50 kW		Polyphase >50 kW
	Replace asset at end of useful life	**Miscellaneous TS components ($5000)**	**Replace Unit at MTS#2 ($3,000,000)**	**Miscellaneous TS components ($5000)**	**Miscellaneous TS components ($5000)**	**Miscellaneous TS components ($5000)**
	and upgrade unit		50 mVA unit proposed			
	Project to replace aging assets with	**Rural O/H Project #1 ($200,000)**	**Rural O/H Project #1 ($270,000)**	**Rural O/H Project #1 ($190,000)**	**Rural O/H Project #1 ($265,000)**	**Rural O/H Project #1 ($205,000)**
	new poles, transformers, switches	Conc 2, Line 7-9 27.6 kV	Concession 6 - Warner Rd area 16 kV	Line 2 - Concession 2-4 16 kV	Line 1 - Concession 1-4 16 kV	Line 2 and Concession 7 area 16 kV
						2
	Project to replace aging assets with	**Rural O/H Project #2 ($155,000)**	**Rural O/H Project #2 ($150,000)**	**Rural O/H Project #2 ($180,000)**	**Rural O/H Project #2 ($120,000)**	**Rural O/H Project #2 ($195,000)**
	new poles, transformers, switches	Conc 6, Line 6-8 16 kV	Concession 2 - Line 1-3 16 kV	Carlton - Townline to McNab 16 kV	Concession 7 - Line 3 - Townline 16 kV	Line 1 - Townline to Concession 6 16 kV
	Project to replace aging assets with	**Rural O/H Project #3 ($140,000)**	**Rural O/H Project #3 ($105,000)**	**Rural O/H Project #3 ($120,000)**	**Rural O/H Project #3 ($105,000)**	**Rural O/H Project #3 ($165,000)**
	new poles, transformers, switches	York Rd, Conc 2-3 27.6kV	Concession 2 - Line 6-7 16 kV	Lakeshore - Stewart to Read 27.6 kV	Line 2 - Concession 1-2 16 kV	Line 3 and Concession 6 16 kV
	Project to replace aging assets with	**Rural O/H Project #4 ($110,000)**	**Rural O/H Project #4 ($90,000)**	**Rural O/H Project #4 ($105,000)**	**Rural O/H Project #4 ($40,000)**	
	new poles, transformers, switches	Line 4, Conc 2-3 16 kV	Concession 6 - Line 5-6 16 kV	McNab - Carlton to Scott 16 kV	Lakeshore at 4 Mile Creek 16 kV	
System Service	Miscellaneous customer-driven	**Miscellaneous upgrades/extensions ($5000)**	**Miscellaneous upgrades/extensions ($5000)**	**Miscellaneous upgrades/extensions ($5000)**	**Miscellaneous upgrades/extensions ($5000)**	**Miscellaneous upgrades/extensions ($5000)**
	extensions/improvements	Customer driven projects/upgrades	Customer driven projects/upgrades	Customer driven projects/upgrades	Customer driven projects/upgrades	Customer driven projects/upgrades
	Improve reliability, functionality	**System Integration GIS/FIS/CIS/ODS ($90,000)**	**SCADA/GIS upgrades, automation ($50,000)**	**SCADA/GIS upgrades, automation ($50,000)**	**SCADA/GIS upgrades, automation ($50,000)**	**SCADA/GIS upgrades, automation ($50,000)**
		Outage management system development	Smart Grid development	Smart Grid development	Smart Grid development	Smart Grid development
General Plant	Replace aging fleet	**New service vehicle ($30,000)**				**New service vehicle ($30,000)**
	Replace aging units	**Replacement office computers ($5000)**	**Replacement office computers ($5000)**	**Replacement office computers ($5000)**	**Replacement office computers ($10,000)**	**Replacement office computers ($5000)**
	Business operations efficiency	**Software Upgrades (CIS, FIS etc.) ($65,000)**	**Software Upgrades (CIS, FIS etc.) ($40,000)**	**Software Upgrades (CIS, FIS etc.) ($40,000)**	**Software Upgrades (CIS, FIS etc.) ($40,000)**	**Software Upgrades (CIS, FIS etc.) ($40,000)**
		Northstar, Great Plains etc. upgrades	Northstar, Great Plains etc. upgrades	Northstar, Great Plains etc. upgrades	Northstar, Great Plains etc. upgrades	Northstar, Great Plains etc. upgrades
	Business operations efficiency	**Computer and Office equipment ($10,000)**	**Computer and Office equipment ($10,000)**	**Computer and Office equipment ($10,000)**	**Computer and Office equipment ($10,000)**	**Computer and Office equipment ($10,000)**
	Non system physical plant	**Stores and Building equipment ($10,000)**	**Stores and Building equipment ($10,000)**	**Stores and Building equipment ($10,000)**	**Stores and Building equipment ($100,000)**	**Stores and Building equipment ($10,000)**
					New garage roof	
TOTALS		**$ 1,285,000.00**	**$ 4,250,000.00**	**$ 1,250,000.00**	**$ 1,250,000.00**	**$ 1,250,000.00**

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 16 - Capital Plan Maps

NOTL Hydro 5 Year Overhead Capital Plan

Legend

NOTLH

Year

- 2014
- 2015
- 2016
- 2017
- 2018

N

W E

S

King St DS

NOTL MTS2

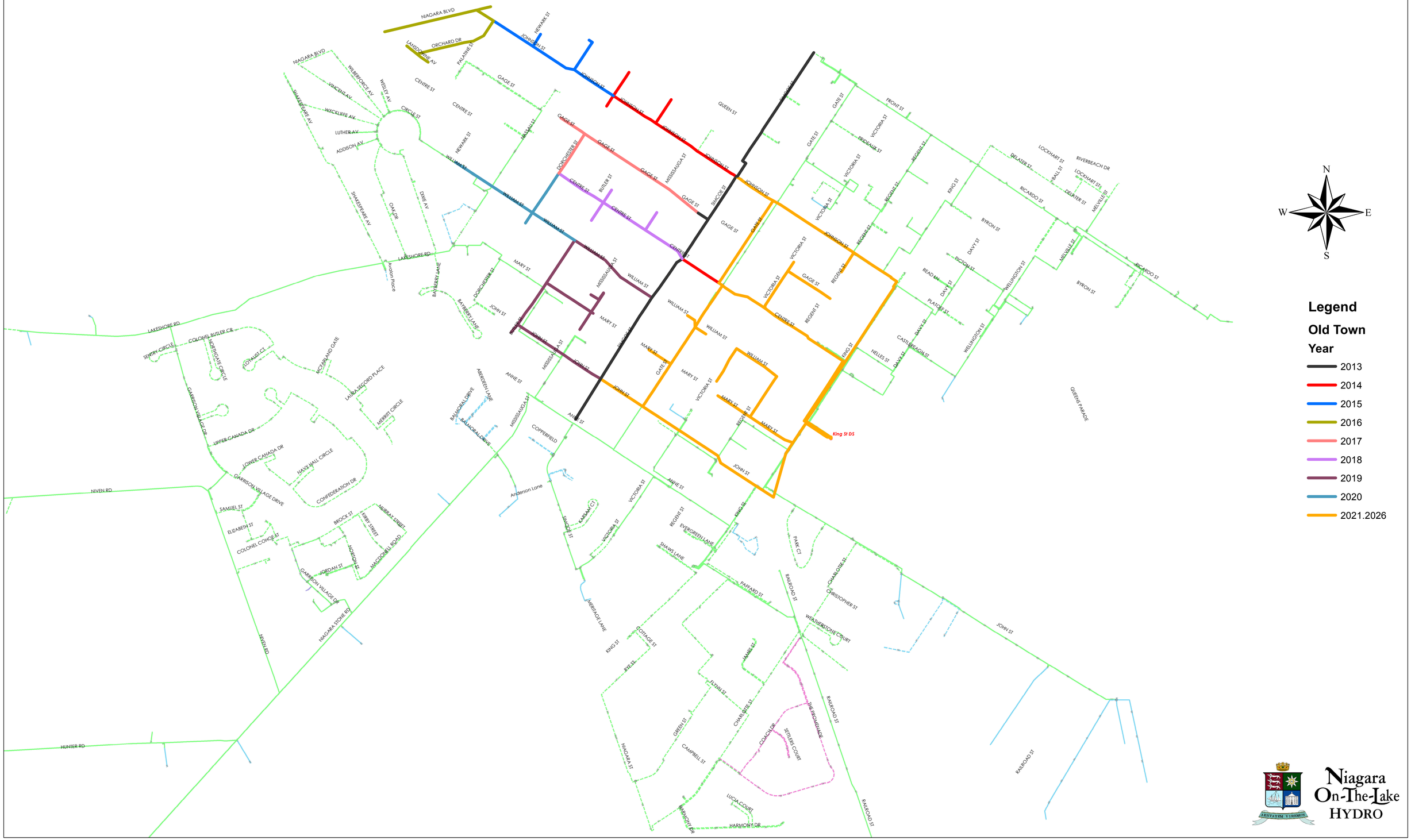
York MTS1

0 0.5 1 2 3 4 Kilometers

Niagara On-The-Lake HYDRO

AESTATEM VIREMUS

Old Town Underground Conversion Program



DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 17 - OPA letter

OPA Letter of Comment:

Niagara-on-the-Lake Hydro Inc.

Distribution System Plan

September 11, 2013

ONTARIO POWER AUTHORITY

Introduction

On March 28, 2013, the Ontario Energy Board ("the OEB" or "Board") issued its Filing Requirements for Electricity Transmission and Distribution Applications; Chapter 5 – Consolidated Distribution System Plan Filing Requirements (EB-2010-0377). Chapter 5 implements the Board's policy direction on 'an integrated approach to distribution network planning', outlined in the Board's October 18, 2012 Report of the Board - A Renewed Regulatory Framework for Electricity Distributors: A Performance Based Approach.

As outlined in the Chapter 5 filing requirements, the Board expects that the Ontario Power Authority ("OPA") comment letter will include:

- the applications it has received from renewable generators through the FIT program for connection in the distributor's service area;
- whether the distributor has consulted with the OPA, or participated in planning meetings with the OPA;
- the potential need for co-ordination with other distributors and/or transmitters or others on implementing elements of the REG investments; and
- whether the REG investments proposed in the DS Plan are consistent with any Regional Infrastructure Plan.

Niagara-on-the-Lake Hydro Inc. – Distribution System Plan

The OPA received a draft Distribution System Plan ("Plan") from Niagara-on-the-Lake Hydro Inc. ("NOTL Hydro") on August 19, 2013. The OPA has reviewed the Plan and has provided its comments below.

OPA FIT/microFIT Applications Received

On page 2 of its Plan, NOTL Hydro indicates that currently it has connected 86 microFIT projects and 3 FIT projects for a combined connected capacity of 1.177 MW of renewable generation.

According to OPA's information, to date, the OPA has received and offered contracts to 93 microFIT projects, totalling approximately 0.83 MW of capacity in NOTL Hydro's distribution system. Additionally, the OPA has received and offered contracts to 5 FIT applications, totalling 0.59 MW. These projects combine for total capacity of approximately 1.42 MW of renewable generation through the OPA FIT and microFIT programs, all of which remain active to date.

In addition to the FIT and microFIT applications, NOTL Hydro identified that it has connected 2 SOP generators (hydro–electric and biogas) for a combined capacity of approximately 3 MW. The OPA confirms that, to date, it has also received and offered contracts to 2 SOP applications (hydro–electric and biogas) for a combined capacity of approximately 2.35 MW in NOTL Hydro's distribution system.

Ontario Power Authority
120 Adelaide Street West, Ste. 1600, Toronto, Ontario M5H 1T1 Tel 416 967-7474 Fax 416 967-1947 1-800-797-9604 Toll Free
info@powerauthority.on.ca www.powerauthority.on.ca

The OPA finds that NOTL Hydro's Plan is reasonably consistent with the OPA's information regarding renewable energy generation applications to date.

Consultation / Participation in Planning Meetings; Coordination with Distributors / Transmitters / Others; Consistency with Regional Plans

At this time, neither a Regional Infrastructure Plan, nor an Integrated Regional Resource Plan has been completed for NOTL Hydro's service territory. The OPA notes that as part of the Niagara Region, NOTL Hydro is included in "Group 3" which is the final group in the regional planning prioritization. As a result, the OPA is unable to comment on whether NOTL Hydro's renewable energy generation investments are consistent with a Regional Infrastructure Plan.

In fact, NOTL Hydro has not identified any renewable generation enabling capital expansion expenditures, although its 5 year capital expenditure program has planned renewable generation enabling expenditures for the continued development of an outage management system and various smart grid-related technological components. Additionally, after receiving a recent consultant's report, NOTL Hydro through discussions with the IESO and Hydro One Transmission, is in the planning process of replacing/upgrading one transformer unit at its MTS#2 Transformer Station to ensure its distribution system provides customers with safety, security and reliability of long-term supply. NOTL Hydro notes that it expects most of the growth in its service area will be along the QEW corridor, and that the Glendale 27.6 kV plant serving this area is capable of supplying the projected new load without the need for any major expansion or reinforcement.

The OPA appreciates the opportunity to comment on the information provided as part of Niagara-on-the-Lake Hydro Inc.'s Distribution System Plan.

Ontario Power Authority
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DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 18 – Hydro One Letters

Niagara On-The-Lake HYDRO

Via E-mail

September 12, 2013

Hydro One Networks Inc.

Attention: Bing Young, Director, Transmission System Development, Asset Management

Re: Regional Infrastructure Planning Launch & Amendments to the Transmission System Code and Distribution System Code

This correspondence is in reply to your e-mail request regarding Section 8.5.1 of the Distribution System Code (DSC) dated September 5, 2013.

Niagara-on-the-Lake Hydro is aware of the formation of 21 Regions and prioritization groups within these regions for regional planning initiatives and accordingly is copying the designated Niagara LDCs with this response.

NOTL Hydro wishes to advise that we are in the process of seeking additional transmission capacity to supply our distribution system within the next five years. In particular, we are proposing to replace one 15/20/25 mVA unit at our MTS #2 with a 30/40/50 mVA unit. We have no other comments with respect to the PPWG report.

Regards

Jim Huntingdon
President

Canadian Niagara Power Inc.
Grimsby Power Inc.
Horizon Utilities Corporation
Niagara-On-The-Lake Hydro Inc.
Welland Hydro-Electric System Corp.

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15th Floor, South Tower
Toronto, ON M5G 2P5
www.HydroOne.com

Tel: (416) 345-5420
Fax: (416) 345-4141
ajay.garg@HydroOne.com

September 18, 2013

Jim Huntingdon President
Niagara-on-the-Lake Hydro Inc.
8 Henegan Road, PO Box 460
Virgil, Ontario, L0S 1T0

Dear Mr. Huntingdon**:**

Subject: Regional Planning Status

In reference to your request for a regional planning status letter, please note that your Local Distribution Company (LDC) belongs to the Niagara Region, which is in Group 3. A map showing details with respect to the 21 Regions/Groups and list of LDCs in each Region is attached in Appendix A and B respectively.

This letter is to confirm that the regional planning process has not been initiated nor has a Regional Infrastructure Plan (RIP) been developed for the sub-region within the Niagara Region affecting the Niagara-on-the-Lake Hydro Region. I am expecting, as per the new process, that the regional planning for the Niagara Region will be initiated in 4th quarter of 2016. Hydro One will formally notify your organization in advance, along with other stakeholders, prior to launching the regional planning process.

The new planning process provides flexibility, during the transition period to the new process, and will ensure that both distribution and transmission planning continue to address any short-term needs. Hydro One looks forward to working with Niagara-on-the-Lake Hydro Inc. in executing the new regional planning process.

If you have any further questions, please feel free to contact me.

Sincerely,

Ajay Garg
Manager - Regional Planning Coordination and Load Connections
Hydro One Networks Inc.

Cc:
Brad Colden, Manager – Customer Business Relations

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 19 – Asset Ages

NOTL Hydro
Pole Summary

	2010	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Grand Total
WOOD - 20 FOOT	0	7	2	0	0	0	0	0	**9**
WOOD - 25 FOOT	0	11	4	0	0	0	0	0	**15**
WOOD - 30 FOOT	0	200	175	140	73	0	0	0	**588**
WOOD - 35 FOOT	16	1	112	91	464	409	377	299	**1769**
WOOD - 40 FOOT	2	25	24	75	153	250	260	268	**1057**
WOOD - 45 FOOT	70	20	41	10	250	288	300	255	**1234**
WOOD - 50 FOOT	8	0	0	1	15	53	60	62	**199**
WOOD - 55 FOOT	3	0	0	0	0	0	3	9	**15**
WOOD - 60 FOOT	1	0	0	0	0	0	0	3	**4**
WOOD - 65 FOOT	0	0	0	0	0	0	0	0	**0**
Grand Total	**100**	**264**	**358**	**317**	**955**	**1000**	**1000**	**896**	**4890**

% of Poles by Decade	2%	5%	7%	6%	20%	20%	20%	18%

Conclusion: The majority of the poles for NOTL Hydro were installed between the 1970s-2000s, with 1970s to 1990s being the most pre-dominant years.

NOTL Hydro
OH Conductor Summary

	Bare Overhead HV Conductor					OH LV (Secondary) Conductor			
Age	Length (m)	**1 Phase**	**2 Phase**	**3 Phase**	Age	Length (m)	**Phase 1**	**Phase 2**	**Phase 3**
1940s	-	-	-	-	1940s	-	-	-	-
1950s	13,174	1,529	406	11,239	1950s	-	-	-	-
1960s	33,000	13,787	668	18,545	1960s	3,735	3,632	-	103
1970s	42,870	17,833	872	24,165	1970s	22,922	22,456	-	466
1980s	46,390	17,627	1,014	27,749	1980s	40,448	39,424	-	1,024
1990s	50,000	20,887	1,014	28,099	1990s	57,451	55,966	-	1,485
2000s	45,201	15,739	1,026	28,436	2000s	55,546	54,200	-	1,346
2010	5,400	5,400	-	-	2010	1,350	1,200	-	150
	236,035	92,802	5,000	138,233		181,452	176,878	-	4,574

OH Services Account created in 2000

NOTL Hydro
Conduit Summary

Age	Conduit (Primary Cable, m) 1 Phase	2 Phase	3 Phase	Conduit (Secondary Cable) Length (m)	Phase 1	Phase 2	Phase 3
1940s	-	-	-	-	-	-	-
1950s	-	-	-	-	-	-	-
1960s	-	-	-	-	-	-	-
1970s	902	17	538	22,176	13,971	-	8,205
1980s	15485	292	9,223	57,327	36,116	-	21,211
1990s	18582	350	11,068	75,021	47,263	-	27,758
2000s	20861	393	12,425	73,253	46,150	-	27,104
2010	2318	44	1,380	8,139	5,127	-	3,011
	58,148	1,096	34,634	235,916	148,627	-	87,289

NOTL Hydro
UG Conductor Summary

	Underground HV Cable					UG LV Cable			
Age	Length (m)	**Phase 1**	**Phase 2**	**Phase 3**	Age	Length (m)	**Phase 1**	**Phase 2**	**Phase 3**
1940s	-	-	-	-	1940s	-	-	-	-
1950s	-	-	-	-	1950s	-	-	-	-
1960s	-	-	-	-	1960s	-	-	-	-
1970s	10,000	6,194	117	3,689	1970s	25,000	24,516	-	484
1980s	25,000	15,485	292	9,223	1980s	65,000	63,740	-	1,260
1990s	30,000	18,582	350	11,068	1990s	85,000	83,352	-	1,648
2000s	33,422	20,679	437	12,306	2000s	83,053	81,443	-	1,610
2010	913	-	-	913	2010	9,190	9,011	-	179
2010	4,540	4,540	-	-		267,243	262,062	-	5,181
	103,875	65,480	1,196	37,199	UG Services Account created in 2000				

NOTL Hydro
Transformer Summary

TRANSFORMERS AGE DETERMINATION

Age

	1500	1000	750	500	300	225	167	150	100	75	50	37.5	30	25	15	10	5	kVA Size
Totals	4	4	13	26	68	17	45	17	424	74	363	35	27	398	41	254	15	1825
1940s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1950s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	
1960s	0	0	0	0	0	0	0	0	0	0	3	0	0	0	19	42	9	
1970s	0	0	0	0	0	0	2	0	0	6	23	7	0	19	9	21	5	
1980s	0	1	1	6	36	3	7	3	15	23	103	18	0	82	9	135	0	
1990s	1	0	6	10	27	7	24	7	206	31	124	10	27	154	0	47	0	
2000s	2	3	4	10	5	7	12	7	200	12	98	0	0	125	0	0	0	
2010	1	0	2	0	0	0	0	0	3	2	12	0	0	16	0	8	0	
2010 (Used)	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	

DISTRIBUTION SYSTEM PLAN ATTACHMENTS

ATTACHMENT 20 - Mission and Values

Niagara-on-the-Lake Energy Inc.

Mission Statement

Niagara-on-the-Lake Energy Inc. is committed to operating as a sustainable high performance, customer driven business, delivering value-added energy-related services and products by:

- Providing the highest standard safety, service and reliability,
- Assessing Green Energy opportunities
- Operating with integrity in all our dealings, and
- Building value for our shareholder, the town of Niagara-on-the-Lake.

Values

Our values reflect our mission and our desire to maintain the trust that the community has placed in us:

- Providing the highest standard of safety, service and reliability
  - Consistently improve controlled reliability
  - Assessing new technologies as they become available
  - Deliver the service wanted/expected by our customers at the lowest possible cost
  - Maintain the first quartile performance in the average bill to our customers amongst the Niagara-Erie area LDC's
  - Achieve highest standard of E&USA equivalent Zero Quest

- Assessing Green Energy opportunities
  - Ensuring the technical and financial feasibility of GE initiatives
  - Assisting customers in implementation of GE activities
  - Implementing value-added projects

THIS MISSION STATEMENT AND VALUES WERE ESTABLISHED BY THE BOARD OF DIRECTORS OF NIAGARA-ON-THE-LAKE ENERGY INC. ON JANUARY 2, 2001 AND REVISED DECEMBER 23, 2009

Operating with integrity in all our dealings.

- Open and honest communications with our staff, customers, government agencies, associates and partners, and with other electric utilities, the media and Town Council.
- Integrity in our financial statements.

- Building value for our shareholder, the Town of Niagara-on-the-Lake.

  - Leaving everything we touch better than we found it:
    - Enhance the environment;
    - Develop positive relationships.
  - Balance the need for both long and short term returns.
  - Support the goals of our owner, the Town.
  - Protect and enhance the value of our assets.
  - Maintain a strong electric utility team.