

**2005 OEB Annual
Conservation and Demand
Management Report
*RP-2004-0203/EB-2004-0523***

Submitted By Niagara-on-the-Lake Hydro Inc.

March 31, 2006

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1.0 Introduction

Niagara-on-the-Lake Hydro Inc. distributes electricity to approximately 8000 customers within the municipal boundaries of the Town of Niagara-on-the-Lake. We have a mix of urban and rural customers within our 132 square kilometers of operating area. Apart from the “Old Town”, the urban customer base is primarily concentrated in four hamlets, namely, Virgil, St. Davids, Queenston and Glendale, while the rural customer base are primarily agricultural based amongst orchards and vineyards.

Recognizing the critically short supply of electricity in Ontario, our goal is ultimately the development of a sustainable conservation culture with our customers. In order to achieve this goal more effectively we chose a regional approach to program development to derive economies of scales but to also create consistent regional information to the customers across 11 LDC's, known as NEPPA (Niagara Erie Public Power Alliance).

The NEPPA group has long be known in the Industry as a leader in facilitating regional understanding of regulatory changes, public safety messaging, co-ordination of training and now conservation and demand management.

Our Conservation and Demand Management (CDM) plan was prepared as a NEPPA initiative. Together we represented 525,000 customers and a total of \$5.5 million dollars of CDM funding. Our primary goal is to leverage common solutions and deliverables to maximize results when ever feasible.

During 2005, our primary concentration was to plan and create our foundation. High on the list was securing a customer communication branding to begin changing and building awareness for the long term. In 2006 our customers will enjoy further localized programming as well as our support for programming designed and delivered by the OPA.

The following table shows the approved plan expenditures by project as well as actual expenditures to December 31, 2005.¹

Project	Target Customers	Approved Expenditures	Actual Expenditure to Dec. 31, 2005
Co-branded Mass Market Program	LDC Program aimed to benefit all customers	20,000	\$12,077.93 ²
Smart Metering/Prepaid Metering Program	Residential and Small Commercial	\$10,000	\$8,764.36
Energy Audit/Feasibility Audits	All Customer Classes	\$10,000	\$88.89
LED Traffic Light Retrofits	Municipalities	\$10,000	\$9,114.98
Load Management/Load Control Programs	Residential & Small Commercial	\$10,000	\$1,500.00
Distribution Loss Reduction	All Customer Classes	\$128,440	\$83,680.57
Project and Budget Totals		\$198,440.00	\$115,226.73

¹ All programs completed or started in 2005 will be accompanied by Appendix B with accumulated results in Appendix A. Actual reported spending varies from our 4th quarter filing spending by \$3,275.39 to account for final expenditures for Mass Market Programs Lighten Your Electricity Bill coupon event and Conserver Joe as well as Energy Audits Program CEEA Webinars.

² Co-Branded Mass Market expenditures as reported in fourth OEB Quarterly Filings was \$8,891.43. We have opted to include additional expenditures that were spent in 2006 and accrued to 2005. First Quarter 2006 filings for OEB CDM reporting will reflect the new information.

2.0 Evaluation of the CDM Plan

Niagara-on-the-Lake Hydro Inc. has, or is in the process of, implementing CDM projects that will effectively reduce 115 kW in demand with annual savings of 207,311 kWh and total project savings over the lifespan of the technology of 1,721,530 kWh.

Appendix A depicts our overall CDM portfolio summarizing both programs with qualitative and quantitative results. Our overall TRC value is calculated at \$100,187 with total projected spending of \$171,721.11. We have opted to project TRC calculations for projects not completed by December 31, 2005. These programs include the CEEA TIDE Cold Water Wash Program recently completed and the projected Distribution Loss Program

Some programs are not designed to have specific quantifiable energy savings but are nevertheless effective and important in our view. Examples of this second category of program include:

- Educational components like the “Conserver Family” information
- Active participation in the implementation study of smart meters for low volume customers in Ontario
- Staff development and education in CDM

3.0 Discussion of the Programs

Below is a brief summary of our specific CDM activities completed and/or started in 2005. Appendix B included details on programs with TRC values listed below.

Projects

Co-branded Mass Market Program
1) Lighten Your Electricity Bill – Canadian Tire Coupon Program 2) CEEA TIDE Cold Water Wash 3) Conserver Joe Family Educational Program
Net TRC Benefit \$23,240.63

Lighten Your Electricity Bill

In conjunction with other NEPPA members and LDC’s across the province, we participated in a coupon campaign that offered customers the opportunity to purchase energy efficient products at Canadian Tire between October 1 to December 31, 2005.

All of our customers received their Lighten Your Electricity Bill coupon via a special unaddressed package containing, Conserver Joe Pamphlet and a coupon for Cold Water Wash Tide. In total 7500 packages were mailed to both our individually metered and bulk metered residential customers. In summary, the response amounted to a 10% participation and 806 products purchased according to the project administrator SeeLine Group Inc. The most popular products purchased were, LED Christmas Lights and Compact Fluorescents lights. A very positive Net TRC value resulted from this program.

CEEA - TIDE Cold Water Wash

This program involved the insertion of \$1 off TIDE Cold Water Wash detergent sent out to our entire customer base in a mass mailing in conjunction with the Lighten Your Electricity Bill coupon. This program also had a large positive Net TRC value. The final invoice for participation in this program was received in early 2006 but was included in the calculations. CEEA, the program administrator has indicated that an average of 3% of coupons were redeemed. Based on this figure, we used 180 coupons as the value for our TRC calculations.

Conserver Joe Family Educational Program

In partnership with the NEPPA group, we developed a diversified customer education package referred to as our media kit. The media kit is built around Conserver Joe and his family. The development of the kit was designed around the concept of a family approach. Each family member brings their own special touch to encouraging and sharing conservation.



We know that changing consumer habits to sustain ongoing support and belief in conservation would take the resources of the working folks, as well as the push and enthusiasm of our youth. The media kit was developed with the knowledge that the product could be further expanded including; for example, interactive youth website, school educational programs, updates on new technology and specific programming messaging.

To assist in local use of the Conserver Family, Product Use guidelines have been developed to keep our Conserver Family used in a consistent manner.

Conserver Joe and his family will be making appearances in various media as follows.

- **Conservation Handbook** – advises residential customers how to seasonally tune up their home to optimize energy use.
- **Newsletter** – a tabloid designed to share the success stories across LDCs utilizing the Conserver Joe.
- **Bill Inserts** – Initially 10 bill inserts have been developed each sharing a single conservation message. All four family members share a tips on saving energy.
- **Website** – www.conserverjoe.com – the website was developed to create a consistent message and branding. All NEPPA participants are able to use the website links.
- **Print Ads** – a selection of print ads have been developed for easy and quick circulation.

LED Traffic Light Retrofits
1) Old Town Decorative Christmas Light Conversion to LED 2) Town of NOTL Decorative Christmas Light Conversion to LED
Net TRC Benefit \$73,700.00

Old Town Decorative Christmas Light Conversion to LED

This plan involved replacing 367 strings of incandescent decorative Christmas lights in the downtown commercial core with 350 LED efficient lights. The energy savings on this project produced a NPV TRC result of \$68,400 and was appreciated by the Downtown merchants who stand to save thousands of dollars in annual energy costs.

Town of Niagara-on-the-Lake Decorative Christmas Light Conversion to LED

Similar to the Old Town LED conversion, this plan replaced 29 strings of incandescent decorative Christmas lights across the municipality with 30 LED efficient lights strings. The energy savings on this project produced a NPV TRC result of \$5,300. The future savings will benefit the municipality and ultimately, the entire customer base.

Regional Municipality of Niagara Traffic Light Conversions to LED (future)

This program is not included in the submission but will be completed in 2006. The traffic signals at three locations in Niagara-on-the-Lake will be converted to energy efficient LED's with a subsidy provided by NOTL Hydro Inc. as part of our plan.

Energy Audits / Feasibility Audits

- 1) CEEA Webinar participation
- 2) Industry Specific Conservation Training Sessions (Future)

Net TRC Value Qualitative

CEEA Webinars

Along with our NEPPA members, Niagara-on-the-Lake Hydro is participating in C&DM focused ‘Webinars’ featuring speakers such as Peter Love from the Conservation Bureau. These seminars have and continue to benefit our staff in developing future efficient C&DM programs through learning and interaction with participants and speakers. The TRC benefit is immeasurable.

Industry Specific Conservation Training Sessions

Niagara-on-the-Lake Hydro is in the process of co-organizing industry specific seminars with neighbouring NEPPA LDC’s. Seminars focusing on the Wine Industry, Agricultural Industry and Hospitality Industry are planned that will involve conservation experts from the industry as well as the IESO. This program is expected to primarily benefit commercial/agricultural customers. NOTL Hydro will attempt to measure the results of any individual energy efficient improvements that result from the seminars.

Smart Meter Program

- 1) OUSM Working Group Participation (Ongoing)
- 2) Interval Meter Installations

Net TRC Value Qualitative

OUSM Working Group Participation

NOTL Hydro is an active member of the Ontario Utility Smart Meter (OUSM) Working Group. This working group has made tremendous strides in advancing the implementation of Smart Meters, widely seen as a tool for customers to shift their electrical consumption from peak usage times. We are much more confident that the ‘smart meter’ system that we will ultimately choose for our customers will be the most effective tool as a result of our participation in this program. A regional or NEPPA smart meter network is our preferred option. Costs reported are for membership fees in the OUSM.

Interval Meter Installations (In Progress)

Commercial or industrial customers interested in converting their current conventional meters to that of ‘interval’ normally pay the additional cost of the interval technology versus the conventional meter. Commencing in 2006, customers that we mutually agree can utilize the interval technology as a tool to reduce their peak demands and shift load to

off peak periods will be offered an interval meter at no additional cost. The TRC costs submitted represent the additional cost of the interval meters purchased for this program versus conventional meters. The results of this program are immeasurable but are expected to assist in meeting government goals of having this technology installed on all customers.

Distribution Loss Reduction (In Progress)

1) Reconductoring and Conversion Projects

Net TRC Benefit \$13,600

Reconductoring and Conversion Project

NOTL Hydro recently purchased a software package recognized as an industry leader in evaluation distribution system losses and optimization. Prior to this purchase, we did not have the ability to determine high loss feeders or more efficient means of supply configurations. As a result, we have embarked on a multi-stage project(s) to oversize existing lower amperage conductors as well as convert existing 4 kV customers to lower loss 3-phase 27.6 kV. Although this work is in progress, the TRC results provided show only preliminary results from the reconductoring and not the 4 kV conversion. As a result, we expect to show even greater benefits in next year's annual report as the plan nears completion and the benefits of the 4 kV conversion are reflected. The TRC costs shown to date in this report include the purchase and setup costs of the software and the line improvement work to date (end 2005). This program will benefit all customer classes as the line loss factor on their bill is expected to be reduced as system losses are reduced.

Load Management Programs (In Progress)

- 1) TRC Tool
- 2) Website Improvements and Link to Conservation Site
- 3) Load Control in Conjunction with Smart Meters

Net TRC Benefits - Future

TRC Tool

NOTL Hydro purchased and received training on an EnerSpectrum TRC calculator. This is a very useful tool, not only for preparing this report, but also evaluating future potential C&DM programs for optimal value. The costs submitted in this report are for the software purchase.

Website Improvements and Link to Conservation Website

A number of improvements to our website aimed to focus users on conservation tips was completed in 2005 (but not as yet invoiced). NOTL Hydro also participated in a joint NEPPA initiative to link to a common Conserver Joe site (not yet invoiced).

Load Control in Conjunction with Smart Meters (Future)

With the installation of smart meters in 2006 or early 2007, NOTL Hydro plan to embark on a pilot program to test the value of controlling customer loads, such as air conditioners, in reducing our system load.

4.0 Lessons Learned

Smaller LDC Challenges

Niagara-on-the-Lake Hydro Inc. is a smaller LDC with only 17 employees. We found it most difficult to put forth a concerted effort to implement efficient C&DM programs while minimizing costs by not employing high-priced consultants. As a result, a great deal of extra staff time was spent on program setup, implementation and training. We are proud of our achievements despite the 'stressed' situation.

Distribution System Loss Improvements

With our new loss evaluation and system optimization software tool, we now have the opportunity to fine tune our system losses. The benefits of reduced system losses are great as system losses are at their maximum levels during peak load periods. It is the objective of our company to continue to reduce these losses and reduce the loss factor on all of our customer bills. We also plan to run the model on future capital projects to identify potential system improvements, such as over sizing conductors that will have a clear future TRC benefit.

LED Conversion Projects and Coupon Campaign

The two completed and one proposed LED conversion projects have a large TRC benefit. We will continue to seek out future LED projects to implement. The Lighten Your Electricity Bill coupon program through Canadian Tire also produced positive results.

NEPPA Participation

The NEPPA C&DM group joint efforts in initiating our C&DM plans and individual projects proved to be invaluable. The group effort was instrumental in addressing a number of concerns related to lack of additional human resources at a smaller LDC discussed above. NEPPA participation also allowed us to send out a common and

consistent 'conservation culture' message across the regions of Niagara and Erie-Grand at reduced costs due to greater economies of scale. We look forward to continued involvement in the NEPPA C&DM working group.

5.0 Conclusion

In 2005 we initiated a number of concurrent C&DM programs and experienced a number of early positive results. We continue to investigate and evaluate future C&DM opportunities through our participation in the CEEA webinars and NEPPA group participation. It is also our goal to reduce program costs going forward by sharing resources and program costs with neighbouring LDC's and NEPPA members.

In 2006 and 2007 we are forging ahead with plans to host industry specific conservation theme seminars while continuing with system line loss reduction plans. We are also excited by the opportunity to explore the benefits of load control devices in conjunction with smart meter installations.

We are committed to local delivery of CDM programming to our customers and look forward to continued cost effective innovative solutions.

Appendix A - Evaluation of the CDM Plan

	Total	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	Other 1	Other 2	Other 3	Other 4
<i>Net TRC value (\$):</i>	\$100,187	\$23,241	\$ 68,400.00	\$ 5,300.00			\$ 13,600.00	-\$ 1,500.00	-\$ 88.89	-\$ 8,764.36	
<i>Benefit to cost ratio:</i>	24.334	5.715	9.147	8.365			1.106				
<i>Number of participants or units delivered:</i>	8870	8486	350	30			1	1	1	1	
<i>Total kWh to be saved over the lifecycle of the plan (kWh):</i>	1721530	900386	528882	41645			250617				
<i>Total in year kWh saved (kWh):</i>	207311	178268	17629	1388			10025				
<i>Total peak demand saved (kW):</i>	115	46.12	44.05	3.47			21.34				
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>	0.1103	0.0948	0.0094	0.0007			0.0053				
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>	0.3026	0.1214	0.1159	0.0091			0.0562				
<i>Gross in year C&DM expenditures (\$):</i>	\$171,721.11	\$ 12,078.08	\$ 8,395.38	\$ 719.60			\$ 140,174.80	\$1,500.00	\$88.89	\$8,764.36	
<i>Expenditures per kWh saved (\$/kWh)*:</i>	\$0.6059	\$0.0134	\$0.0159	\$0.0173			\$0.559				
<i>Expenditures per kW saved (\$/kW)**:</i>	\$7,229	\$ 261.87	\$190.58	\$207.46			\$6,569				
<i>Utility discount rate (%):</i>	7.8										

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.

**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

Appendix

A. **Name of the Program:** NOTL Hydro Summary

Description of the program (including intent, design, delivery, partnerships and evaluation):

Summary of all 2005 Programs complete and in progress

Measure(s):	Measure 1	Measure 2 (if applicable)
Base case technology:		
Efficient technology:		
Number of participants or units delivered:		
Measure life (years):		

B. **TRC Results:**

TRC Benefits (\$):	\$	100,187.38
TRC Costs (\$):		
Utility program cost (less incentives):	\$	171,591.66
Participant cost:	\$	7,197.20
Total TRC costs:	\$	178,788.86
Net TRC (in year CDN \$):	-\$	78,601.48
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$	0.56

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	Summer	6.329011989	
	Winter	87.31368065	
		<i>lifecycle</i>	<i>in year</i>
Energy saved (kWh):		1470913	197286
Other resources saved:			
Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at beginning of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		21.34		
Energy savings (kWh):	<i>lifecycle</i>	250617	<i>in year</i>	10025

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	
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D. **Program Costs*:**

Utility direct costs (\$):	Incremental capital:	\$	144,914.80
	Incremental O&M:	\$	24,158.31
	Incentive:		
	Total:	\$	169,073.11
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		
Participant costs (\$):	Incremental equipment:		
	Incremental O&M:		
	Total:		

E. **Comments:**

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Appendix A - Evaluation of the CDM Plan

	Total	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	Other 1	Other 2	Other 3	Other 4
<i>Net TRC value (\$):</i>	\$ 23,240.63	\$ 23,240.63									
<i>Benefit to cost ratio:</i>	5.715	5.715									
<i>Number of participants or units delivered:</i>	8486	8486									
<i>Total kWh to be saved over the lifecycle of the plan (kWh):</i>	900386	900386									
<i>Total in year kWh saved (kWh):</i>	178268	178268									
<i>Total peak demand saved (kW):</i>	46.122	46.122									
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>	0.09482	0.09482									
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>	0.121375	0.121375									
<i>Gross in year C&DM expenditures (\$):</i>	\$ 12,078.08	\$ 12,078.08									
<i>Expenditures per kWh saved (\$/kWh)*:</i>	\$ 0.0134	\$ 0.0134									
<i>Expenditures per kW saved (\$/kW)**:</i>	\$ 261.87	\$ 261.87									
<i>Utility discount rate (%):</i>	7.8										

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.

**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

Appendix B - Discussion of the Program

A. **Name of the Program:** Co-Brand Mass Marketing

Description of the program (including intent, design, delivery, partnerships and evaluation):

Includes Canadian Tire Coupon Campaign, Conserve Joe Development and Educational Program and CEEA TIDE Cold Water Wash Coupons

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Conserve Joe Development	Canadian Tire Coupon Campaign	TIDE Cold Water Wash CEEA Coupon Campaign
Efficient technology:	Promote C&DM	LED's, CFL's Pstats, Timers	Cold water wash
Number of participants or units deliv	7500	806	180
Measure life (years):			

B. TRC Results:

TRC Benefits (\$):	\$ 42,386.46
TRC Costs (\$):	
Utility program cost (less incentives):	\$ 11,948.63
Participant cost:	\$ 7,197.20
Total TRC costs:	\$ 19,145.83
Net TRC (in year CDN \$):	\$ 23,240.63
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	2.21

C. Results: (one or more category may apply)

Conservation Programs:

Demand savings (kW):	Summer	6.329011989
	Winter	39.79348065
Energy saved (kWh):	lifecycle	in year
	900385.5397	178268.4856
Other resources saved :		
Natural Gas (m3):		
Other (specify):		

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at beginning of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
Energy savings (kWh):	lifecycle	in year

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	
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D. Program Costs*:

Utility direct costs (\$):	Incremental capital:	\$ -
	Incremental O&M:	\$ 9,430.08
	Incentive:	
	Total:	\$ 9,430.08
Utility indirect costs (\$):	Incremental capital:	
	Incremental O&M:	
	Total:	
Participant costs (\$):	Incremental equipment:	
	Incremental O&M:	
	Total:	

E. Comments:

NOTL Hydro in conjunction with the NEPPA group developed a customer educational program with bill inserts and a booklet to promote C&DM. The promotional was targeted at the family unit. We expect that a cultural shift

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Appendix A - Evaluation of the CDM Plan

	Total	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	Other 1	Other 2	Other 3	Other 4
<i>Net TRC value (\$):</i>	-\$ 88.89							-\$ 88.89			
<i>Benefit to cost ratio:</i>											
<i>Number of participants or units delivered:</i>											
<i>Total kWh to be saved over the lifecycle of the plan (kWh):</i>											
<i>Total in year kWh saved (kWh):</i>											
<i>Total peak demand saved (kW):</i>											
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>											
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>											
<i>Gross in year C&DM expenditures (\$):</i>	88.89							\$88.89			
<i>Expenditures per kWh saved (\$/kWh)*:</i>											
<i>Expenditures per kW saved (\$/kW)**:</i>											
<i>Utility discount rate (%):</i>	7.8										

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.

**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

Appendix

A. **Name of the Program:** Energy Audits

Description of the program (including intent, design, delivery, partnerships and evaluation):

To date we have participated in the CEEA Webinars. Seminars targeting specific Customer Groups at

Measure(s):

	Measure 1	Measure 2 (if applicable)
Base case technology:		
Efficient technology:	Promote C&DM	
Number of participants or units delivered:		
Measure life (years):		

B. **TRC Results:**

TRC Benefits (\$):		
TRC Costs (\$):		
	Utility program cost (less incentives):	\$ 88.89
	Participant cost:	
	Total TRC costs:	\$ 88.89
Net TRC (in year CDN \$):		-\$ 88.89
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		\$ -

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	Summer	
	Winter	
	<i>lifecycle</i>	<i>in year</i>
Energy saved (kWh):		
Other resources saved :		
Natural Gas (m3):		
Other (specify):		

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at beginning of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
	<i>lifecycle</i>	<i>in year</i>
Energy savings (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	
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D. **Program Costs*:**

Utility direct costs (\$):	Incremental capital:	
	Incremental O&M:	\$ 88.89
	Incentive:	
	Total:	\$ 88.89
Utility indirect costs (\$):	Incremental capital:	
	Incremental O&M:	
	Total:	
Participant costs (\$):	Incremental equipment:	
	Incremental O&M:	
	Total:	

E. **Comments:**

NOTL Hydro will be hosting Industry specific seminars to educate our customers on C&DM

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Appendix A - Evaluation of the CDM Plan

	Total	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	Other 1	Other 2	Other 3	Other 4
<i>Net TRC value (\$):</i>	\$ 73,700.00		\$ 68,400.00	\$ 5,300.00							
<i>Benefit to cost ratio:</i>	17.513		9.147	8.365							
<i>Number of participants or units delivered:</i>	380.000		350	30							
<i>Total kWh to be saved over the lifecycle of the plan (kWh):</i>	570527.521		528882	41645							
<i>Total in year kWh saved (kWh):</i>	19017.584		17629	1388							
<i>Total peak demand saved (kW):</i>	47.520		44.0515	3.4687							
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>	0.010116		0.009377	0.000738							
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>	0.125053		0.115925	0.009128							
<i>Gross in year C&DM expenditures (\$):</i>	\$ 9,114.98		\$ 8,395.38	\$ 719.60							
<i>Expenditures per kWh saved (\$/kWh)*:</i>	\$ 0.0332		\$0.0159	\$0.0173							
<i>Expenditures per kW saved (\$/kW)**:</i>	\$ 398.0363		\$190.58	\$207.46							
<i>Utility discount rate (%):</i>	7.8										

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.

**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

Appendix B - Discussion of the Program

A. Name of the Program: LED Lights

Description of the program (including intent, design, delivery, partnerships and evaluation):
 Conversion of Regional, Municipal and Commercial Incandescent Lights to LED. Commercial and Municipal completed in 2005

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Incandescent Lighting Downtown	Incandescent Lighting Town	
Efficient technology:	LED Lighting	LED Lighting	
Number of participants or units delivered:	350	30	
Measure life (years):	30	30	

B. TRC Results:

TRC Benefits (\$):		\$ 82,814.98
TRC Costs (\$):		
	Utility program cost (less incentives):	\$ 9,114.98
	Participant cost:	
	Total TRC costs:	\$ 9,114.98
Net TRC (in year CDN \$):		\$ 73,700.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		9.09

C. Results: (one or more category may apply)

Conservation Programs:

Demand savings (kW):	Summer	
	Winter	47,5202
Energy saved (kWh):	lifecycle	19017,58404
	in year	
Other resources saved:		
	Natural Gas (m3):	
	Other (specify):	

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at beginning of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
Energy savings (kWh):	lifecycle	in year

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	
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D. Program Costs:

Utility direct costs (\$):	Incremental capital:	
	Incremental O&M:	\$ 9,114.98
	Incentive:	
	Total:	\$ 9,114.98
Utility indirect costs (\$):	Incremental capital:	
	Incremental O&M:	
	Total:	
Participant costs (\$):	Incremental equipment:	
	Incremental O&M:	
	Total:	

E. Comments:

Very successful program

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Appendix A - Evaluation of the CDM Plan

	Total	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	Other 1	Other 2	Other 3	Other 4
<i>Net TRC value (\$):</i>	-\$ 1,500.00							-\$ 1,500.00			
<i>Benefit to cost ratio:</i>											
<i>Number of participants or units delivered:</i>	1							1			
<i>Total kWh to be saved over the lifecycle of the plan (kWh):</i>											
<i>Total in year kWh saved (kWh):</i>											
<i>Total peak demand saved (kW):</i>											
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>											
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>											
<i>Gross in year C&DM expenditures (\$):</i>	\$1,500							\$1,500			
<i>Expenditures per kWh saved (\$/kWh)*:</i>											
<i>Expenditures per kW saved (\$/kW)**:</i>											
<i>Utility discount rate (%):</i>	7.8										

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.

**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

Appendix B - Discussion of the Program

A. Name of the Program: Load Management

Description of the program (including intent, design, delivery, partnerships and evaluation):
 Purchase of a TRC tool in 2005. Website improvements to promote conservation including a link to a NEPPA conservation site (costs to appear in 2006).

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:			
Efficient technology:	Promote C&DM		
Number of participants or units delivered:	1		
Measure life (years):			

B. TRC Results:

TRC Benefits (\$):		
TRC Costs (\$):		
Utility program cost (less incentives):	\$	1,500.00
Participant cost:		
Total TRC costs:	\$	1,500.00
Net TRC (in year CDN \$):	-\$	1,500.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$	-

C. Results: (one or more category may apply)

Conservation Programs:

Demand savings (kW):	Summer	
	Winter	
Energy saved (kWh):	lifecycle	
	in year	
Other resources saved:	Natural Gas (m3):	
	Other (specify):	

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at beginning of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
Energy savings (kWh):	lifecycle	in year

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	
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D. Program Costs:

Utility direct costs (\$):	Incremental capital:	\$	1,500.00
	Incremental O&M:		
	Incentive:		
Total:	\$	1,500.00	
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		
Participant costs (\$):	Incremental equipment:		
	Incremental O&M:		
	Total:		

E. Comments:

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Appendix B - Discussion of the Program

A. Name of the Program: Smart Meter Research and Pilot Programs

Description of the program (including intent, design, delivery, partnerships and evaluation):
 Participation in Ontario Utility Smart Meter Working Group (OUSM) and Interval Meter installations

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Non-TOU Metering		
Efficient technology:	Smart (TOU) Metering		
Number of participants or units delivered:	1		
Measure life (years):			

B. TRC Results:

TRC Benefits (\$):		\$ -
TRC Costs (\$):		
	Utility program cost (less incentives):	\$ 8,764.36
	Participant cost:	
	Total TRC costs:	\$ 8,764.36
Net TRC (in year CDN \$):		-\$ 8,764.36
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		\$ -

C. Results: (one or more category may apply)

Conservation Programs:

Demand savings (kW):	Summer	
	Winter	
	lifecycle	in year
Energy saved (kWh):		
Other resources saved:		
	Natural Gas (m3):	
	Other (specify):	

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at beginning of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
	lifecycle	in year
Energy savings (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	
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D. Program Costs:

Utility direct costs (\$):	Incremental capital:	\$ 3,240.00
	Incremental O&M:	\$ 5,524.36
	Incidents:	
	Total:	\$ 8,764.36
Utility indirect costs (\$):	Incremental capital:	
	Incremental O&M:	
	Total:	
Participant costs (\$):	Incremental equipment:	
	Incremental O&M:	
	Total:	

E. Comments:

There is no measureable benefit, however, the program has advanced smart metering capability and knowledge within our company.

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Appendix A - Evaluation of the CDM Plan

	Total	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	Other 1	Other 2	Other 3	Other 4
<i>Net TRC value (\$):</i>	\$13,600						\$ 13,600.00				
<i>Benefit to cost ratio:</i>	1.10589						1.10589				
<i>Number of participants or units delivered:</i>	1						1				
<i>Total kWh to be saved over the lifecycle of the plan (kWh):</i>	250617						250617				
<i>Total in year kWh saved (kWh):</i>	10025						10025				
<i>Total peak demand saved (kW):</i>	21.34						21.34				
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>	0.00533						0.00533				
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>	0.05616						0.05616				
<i>Gross in year C&DM expenditures (\$):</i>	\$ 140,174.80						\$ 140,174.80				
<i>Expenditures per kWh saved (\$/kWh)*:</i>	\$0.55932						\$0.55932				
<i>Expenditures per kW saved (\$/kW)**:</i>	\$6,569						\$6,569				
<i>Utility discount rate (%):</i>	7.8										

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.

**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

Appendix B - Discussion of the Program

A. **Name of the Program:** Distribution Line Loss Improvements

Description of the program (including intent, design, delivery, partnerships and evaluation):

Purchase of Line loss improvement software tool (2004). Reconductoring of main Feeder to reduced Line losses. Program to be complete in 2007

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Lower Amperage Conductor		
Efficient technology:	High Capacity Conductor		
Number of participants or units deliv	1		
Measure life (years):	25		

B. **TRC Results:**

TRC Benefits (\$):	\$	142,040.00
TRC Costs (\$):		
Utility program cost (less incentives):	\$	128,440.00
Participant cost:		
Total TRC costs:	\$	128,440.00
Net TRC (in year CDN \$):	\$	13,600.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$	1.11

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	Summer	
	Winter	
	<i>lifecycle</i>	<i>in year</i>
Energy saved (kWh):		
Other resources saved :		
Natural Gas (m3):		
Other (specify):		

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at beginning of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		21.34
	<i>lifecycle</i>	<i>in year</i>
Energy savings (kWh):	250616.96	10024.6784

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	
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D. **Program Costs*:**

Utility direct costs (\$):	Incremental capital:	\$	140,174.80
	Incremental O&M:		
	Incentive:		
	Total:	\$	140,174.80
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		
Participant costs (\$):	Incremental equipment:		
	Incremental O&M:		
	Total:		

E. **Comments:**

DESS Software & support (\$11,734.80) was utilized to calculate line loss savings. Seasonal factors were applied to DESS kW line los

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

		Ontario Seasonal Average Avoided Energy Cost (\$/MWh)																					
Year	Hours/Period	Winter (December - March)									Summer (June - September)						Shoulder (April May October No						
		On Peak 7 - 11 am, 5 - 8 pm			Mid-Peak 11 am - 5 pm, 8 - 10 pm			Off Peak 10 pm - 7 am			On Peak 11 am - 5 pm			Mid-Peak 7 - 11 am, 5 - 10 pm			Off Peak 10 pm - 7 am			Mid-Peak 7 am - 10 pm			
		Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh	Hours
	125			84			45			112			80			46			81			41	
1		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
2		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
3		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
4		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
5		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
6		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
7		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
8		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
9		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
10		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
11		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
12		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
13		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
14		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
15		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
16		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
17		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
18		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
19		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
20		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
21		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
22		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
23		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
24		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29
25		87	21	1,861	59	21	1,259	32	21	675	112	21	2,379	56	21	1,189	32	21	686	57	21	1,216	29

Total

46,532

534

31,482

534

16,880

534

59,485

534

29,727

534

17,141

534

30,399

Total Project kWh	250616.96
Total Annual kWh	10024.6784
Total Kw Winter	21
Total Kw Summer	21

