Peninsula West Utilities Limited

RP-2004-0203/EB-2002-0555

2006 Annual Report
CDM Funded Through Rates

March 31, 2007

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1. Introduction

Peninsula West Utilities Limited (Pen West) provides electrical distribution to approximately 16,000 customers within the Municipalities of Lincoln, Pelham and West Lincoln located on the south shore of Lake Ontario. We have a combination of rural and suburban customers and our service territory covers 544 square kilometers.

In order to develop a Conservation & Demand Management Program we worked collectively with the Niagara Erie Power Alliance (NEPA), which consists of eleven LDC's, to have a regional approach as well as achieve economies of scale by pooling our resources.

The NEPA 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 NEPA 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.

Our plan recognizes the need to deliver safe and reliable electricity, while taking a proactive approach to conservation. Programs delivered in 2006 resulted in positive steps in achieving the provincial goals of conservation. We hope to continue in 2007 with some localized programs as well as support the proposed OPA initiatives.

The following is a list of proposed C&DM projects and initiatives. It is the intent to extend these programs to September 2007.

Project	**Target User**	**Approved Expenditures**	**Actual Expenditure to Dec. 31, 2005**	**Actual Expenditure to Dec. 31, 2006**
Co-branded Mass Market Program	Residential & Small Commercial (<50kW)	$62,606.43	$15,473.18	$53,765.58
Smart Metering/Prepaid Metering Program	Residential & Small Commercial (<50kW)	$59,582.00	$3,492.00	
Energy Audits Programs	Residential & Small Commercial (<50kW)	$15,651.60		
Social Housing Programs	Residential – Non-profit & Social Housing	$12,627.17		
Smart Metering/Interval Metering Programs	Large User, Industrial/General Service & Institution Facilities	$21,214.20	$3,263.71	$1,110.52
Energy Audits/Feasibility Audits	Large User, Industrial/General Services & Institution Facilities	$21,214.20	$795.00	
LED Traffic Light Retrofits	Municipalities	$6,048.86		
Load Management Programs/Load Control Programs	Large User, Industrial/General Service, Institution Facilities & Residential	$28,285.60	$4,775.00	
Distribution Loss Reduction	LDC programs aimed to benefit all Customer Classes	$227,230.02	$43,194.61	$74,731.44
		$454,460.08	**$70,993.50**	**$129,607.54**

2. Evaluation of the CDM Plan

Over this past year Pen West has implemented CDM projects that have effectively reduced another 155 kW in demand with annual savings of 1,257,565 kWh and total project savings over the lifespan of the technology of 30,905,235 kWh.

Appendix A depicts our overall CDM portfolio summarizing both programs with qualitative and quantitative results. Our overall TRC net present value is $226,782 with total spending of $129,608.

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

- Educational components like the Seasonal Light Exchange
- Staff development and education in CDM

Other programs initiated to improve system performance will pay dividends in the future as other projects are planned. These expenditures have provided the foundation to implement upcoming voltage conversions, conductor upgrades and re-configuration of system open points.

3. Discussion of the Programs

A summary of our CDM initiatives is listed below and includes completed as well as started in 2006 projects. Appendix B includes details on the programs with TRC values.

Residential Programs

Seasonal Light Exchange

TRC – for results see CDM Evaluation spreadsheet - appendix B1

Timeline – November 2006

This was a new program initiated by Pen West late in 2006 to coordinate with the holiday season and the final weeks of the fall "Every Kilowatt Counts" campaign. Its intent was to inform customers of potential savings to be had in exchanging their old 7W, 5W and mini lights for the new LED lights. Customers were advised of the program through local newspaper ads and had a choice of visiting 3 different sites on two different occasions.

Due to the uncertainty of how this program might be adopted, we decided to be generous in our offering and provided customers with two new strings for each old string exchanged. This was more than enticing. Customers lined up well in advance and many were disappointed as we would quickly give away all that a location had to offer. Only 6% of our customer base was able to participate in the program.

Though this initiative was well received, we would consider a future event with less incentive offered. Disposal of the old strings was also a concern due to the mix of glass, plastic and copper wire. Future programs would be advised to address these issues.

Overall, significant winter peak load was removed from the system. The program was successful in raising customer awareness.

Refrigerator Replacement

TRC – for results see CDM Evaluation spreadsheet - appendix B2

Timeline – July to September 2006

The Refrigerator Replacement Program was a pilot project involving most of the utilities in the Niagara peninsula. Customers were given the option of having their "working" second fridges picked up for disposal at no cost. They would be taken to a scrap yard or landfill once refrigerants were properly disposed and glass or plastic shelving removed. The customer also received $30 in energy efficiency coupons for the purchase of compact fluorescent lights and an indoor timer.

The program was advertised through billing inserts and local newspaper ads. Brochures were also available at our 3 bill payment sites.

Approximately 1% of residents responded over the three months which the program was offered. This resulted in 126 refrigerators being taken out of service. Of those that redeemed coupons, 324 CFL's and 38 timers were acquired.

Customers tended to participate in the program to eliminate the hassles of refrigerator disposal. However, there seemed to be significant interest in receiving an incentive as well. Few calls were received about the program by our customer service reps except for the concern about the timing of the delivery of the incentive coupons.

The OPA's upcoming version of this of this program does not offer incentives but does try to coordinate with local municipality pick-ups. Many of the NEPA LDC's will probably have lower participation rates over the remainder of the year due to the success of last year's program.

Every Kilowatt Counts Campaign

TRC – for results see CDM Evaluation spreadsheet - appendices B3 & B4

Timeline – Summer and Fall 2006

Once again, Pen West participated in a coupon incentive program involving all residential customers within our territory. Through direct mail pieces, customers were provided coupons for a variety of energy efficient items. These were as follows:

Summer Program

- Compact Fluorescent Lights ($5 off for a pack of 2)
- Ceiling Fans ($25 off)
- Programmable Thermostats ($15 off)
- Light and Appliances Timers ($5 off)

Fall Program

- Compact Fluorescent Lights ($3 off)
- Seasonal LED lights ($5 off a string of 50)
- Programmable Thermostats ($15 off)
- Dimmers ($3 off)
- Motion Sensors ($7 off)

Items were available at most large hardware retailers. The participation rate for the summer program was about 2% of our residential base while the fall program had a higher participation of 6%. Much of this was due to the lack of availability of items in the summer months. Many of these supply chain issues were resolved upon the start of the fall campaign.

Overall, the program had a positive cost benefit profile and at minimal cost to deploy. Very few queries were made of the utility's customer service reps.

Smart Metering Programs

Interval Metering – Large Volume Customers

TRC- for information only, see CDM Evaluation spreadsheet - appendix B5

Timeline – Ongoing

In response to the smart meter initiative, all of our large customers (>50 kW) who have peak energy demands greater than 200kW have had an interval meter installed. In total 12 customers received an interval meter in 2006. Our Conditions of Service clearly reflect the requirement for all new customers with loading greater than 200 kW to have an interval meter installed. In addition, we are considering the extension of this program to those customers exceeding 250,000 kWh/yr.

Each customer is required to connect a phone line to allow remote interrogation. Alternative communication technology is under consideration to make these installations less costly for the customer and the data more accessible.

We also plan to communicate with all interval account customers to encourage monitoring and influence changes in their energy consumption to off-peak timeframes. Preliminary observations show a reduction of 2% of usage when customers convert to this real-time metering.

LDC System Programs

System Optimization

TRC – for results see CDM Evaluation spreadsheet - appendix B6

Timeline – Ongoing

Permanent improvements to our overall loss factor will benefit all our customers. A number of projects have been launched to improve overall distribution system efficiency. These include; a study on our rural distribution feeders to measure voltage quality; conductor upgrades to optimize loading requirements; an analysis of our distribution loading and a review of current automation technology to alter tap settings within distribution transformer stations. Results from each of these initiatives should improve the quality of voltage delivered to the customer and allow us to minimize system losses.

Implementation of the recommendations from each study is underway. In addition to these plans, automated monitoring of the system has begun to be able to efficiently react and re-configure the network on a real-time basis.

Peninsula West Utilities still has several areas that can and should be converted to a higher distribution voltage. There are opportunities to change sections of the distribution system from 4 kV & 8kV to 27.6kV. A conversion to this higher primary voltage will reduce line losses, in turn providing overall benefits to our customer base. In total, about 115kW of losses have been reduced this past year. This is just the beginning of converting more than 25MW of load over the next 10 years.

These conversions also provide us the opportunity to take older (high loss) transformers out of service and replace them with more efficient models built to modern standards. This is the first step in the process of decommissioning aged substation transformers and eliminating their associated losses.

The conversion areas covered by this work include a substantial area surrounding Smithville. Further conversions are planned in 2007 for Caistor Centre, Fonthill and Jordan Harbour. Other partial circuits will be converted as various line extension projects proceed.

4.0 Lessons Learned

Creating a balanced plan requires a concerted effort to include a mix of localized programming to engage a community commitment and broader initiatives to connect Pen West Utilities to a provincial goal and solution.

Our plan was developed with the express desire to improve our overall customer base efficiency and target specific customer segments. Our limited budget of $454,460 required some creative approaches. Some reallocation of funds may be necessary as we introduce more capital intensive programs in the future.

The improvement of our overall loss factor during the conversion of 8kV lines to 27.6 kV benefits our entire customer base. Converting twelve of our largest customers to interval meters is an important start of initiating other demand response programs. Showing customers when they use the power, with the relative price signal, creates the proper support for ongoing efforts on their part that could lead to onsite capital improvements to reduce their consumption and demand.

Our participation in the "Every Kilowatt Counts" campaign in both summer and fall seasons were successful. Final results showed 6% customer participation. Other residential programs included a seasonal LED light exchange effort and a refrigerator retirement initiative. We learned that customers will act with zest given the appropriate incentive. This was all too apparent in our exchange program which we collected one old string of Christmas lights in exchange for two new strings of LED lights. Over 4,800 strings were given away in less than 6 hours. Customers also took advantage of the refrigerator pick-up program over a 3 month stretch in the summer, exceeding our expectations by 26%. A modest coupon incentive really did seem to have an effect on customer participation.

A valued component of our CDM efforts is our joint co-operation with the NEPA members. It is clear that a consistent message and branding over a larger geographical area improves the success for long term goals of a sustained conservation culture. In 2007, we are continuing to explore the inclusion of other working groups to streamline messaging to customers, learn from each other and to whenever possible co-ordinate programming to maximize customer results, share in costs and reduce confusion in the market.

Going forward, we will continue to strive towards continued customer education to build on our past efforts and support of specific customer projects. Ongoing efforts to minimize line losses will encompass much of our capital spending.

5.0 Conclusions

In 2006 we embarked on key initiatives to introduce our customers to our collective goals to commit to changing our energy usage. Our overall conclusion is that our customers are ready and willing to participate in using new products and using energy differently. We will encourage customers to continue to shift their loads into non-peak periods through education and incentives. With improvements in communication technology, we hope to begin to provide real-time feedback to customers.

Peninsula West Utilities has benefited by actively participating with the NEPA group to leverage programming, remaining adaptable to the regulatory changes, maintaining low cost initiatives through bulk purchasing and whenever possible, foster a regional solution for our customers. We are committed to local delivery of CDM programming to our customers and look forward to continued cost effective innovative solutions. Close coordination in rolling-out the four OPA sponsored programs will our focus for 2007.

Appendix A - Evaluation of the CDM Plan

Highlighted boxes are to be completed manually, white boxes are linked to Appendix C and will be brought forward automatically.

	[5] Cumulative Totals Life-to-date	Total for 2006	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	[4] Smart Meters	Other #1	Other #2
Net TRC value ($):		**$ 122,343**	**$ 169,450**	**$ -**	**$ -**	**$ -**	**$ -**	**$ (47,107)**		**$ -**	**$ -**
Benefit to cost ratio:		2.17	6.70	0.00	0.00	0.00	0.00	0.37		0.00	0.00
Number of participants or units delivered:											
Lifecycle (kWh) Savings:		30,905,235	3,800,043	0	0	0	0	27,105,192		0	0
Report Year Total kWh saved (kWh):		1,257,565	354,058	0	0	0	0	903,506		0	0
Total peak demand saved (kW):		155	40	0	0	0	0	115		0	0
Total kWh saved as a percentage of total kWh delivered (%):		0.35%									
Peak kW saved as a percentage of LDC peak kW load (%):		0.20%									
[1] *Report Year Gross C&DM expenditures ($):*		$ 129,608	$ 53,766	$ -	$ -	$ -	$ -	$ 74,731	$ 1,111	$ -	$ -
[2] *Expenditures per KWh saved ($/kWh):*		$ 0.00	$ 0.01	$ -	$ -	$ -	$ -	$ 0.00		$ -	$ -
[3] *Expenditures per KW saved ($/kW):*		$ 838.56	$ 1,345.49	$ -	$ -	$ -	$ -	$ 652.10		$ -	$ -

Utility discount rate (%):	6.25%

[1] Expenditures are reported on accrual basis.
[2] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.
[3] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.
[4] Please report spending related to 3rd tranche of MARR funding only. TRC calculations are not required for Smart Meters. Only actual expenditures for the year need to be reported.
[5] Includes total for the reporting year, plus prior year, if any (for example, 2006 CDM Annual report for third tranche will include 2005 and 2004 numbers, if any.

Appendix B1 - Discussion of the Program

A. **Name of the Program:** Christmas Light Exchange

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

This was a community based program designed to raise the awareness of customers about conservation. Within the service territory we allowed the exchange of one old set of Christmas lights for two new LED strings. In total, 4830 new strings were distributed to about 5.3% of our customer base.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	44,508 kWh/yr		
Efficient technology:	1,246 kWh/yr		
Number of participants or units delivered for reporting year:	2,415		
Measure life (years):	30		
Number of Participants or units delivered life to date	2415		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	*$ 55,025.27*	
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*$ 1,117.74*	
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	$ 1,117.74	
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	50.23	

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*	0	
	Winter	18.86	

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*1,297,866.4*	43,262.2		
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:

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

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$ 1,122.34	
	Incentive:	$ 29,438.42	
	Total:	$ 30,560.76	
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made to a third party service provider to run an incentives program are program costs, and are to be included as TRC costs under the "Utility Program Costs" line.

Appendix B2 - Discussion of the Program

A. **Name of the Program:** Refrigerator Replacement

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

The utility promoted through a bill insert and local advertising, to pick up and decommission a secondary fridge The unit had to be older than 5 years, at least 10 cubic feet and in working condition. Customers were also provided with a redeemable coupon for 6 compact fluorescent lights (measure 2) and one indoor timer (measure 3).

Measure(s):

	Refrigerator Pick-up	Compact Fluorescent Lights	Indoor Timers
Base case technology:	1200 kWh/yr	139 kWh/yr	876 kWh/vr
Efficient technology:	0	35 kWh/yr	584 kWh/vr
Number of participants or units delivered for reporting year:	126	324	38
Measure life (years):	6	4	20
Number of Participants or units delivered life to date	126	324	38

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	*$ 63,232.00*	
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*$ 13,036.00*	
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	$ 13,036.00	
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	4.85	

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*	33.4	
	Winter	34.36	

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*1,017,684*	172,102		
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:

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

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$ 12,636.00	
	Incentive:	$ 3,550.00	
	Total:	$ 16,186.00	
Utility indirect costs ($):	*Incremental capital:*	$ -	
	Incremental O&M:		
	Total:	$ -	

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix B3 - Discussion of the Program

A. **Name of the Program:** **2006 Summer Every KiloWatt Counts Campaign**

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

This program involved the use of coupons sent to customers via direct mailings for CFL's, ceiling fans, indoor timers and programmable thermoststs. Most large hardware outlets particpated in the program.

Measure(s):

	CFL's	Ceiling Fans	Indoor Timers	Programable Thermostats
Base case technology:	139 kWh/yr	139 kWh/yr	876 kWh/yr	16,293 kWh/yr
Efficient technology:	35 kWh/yr	139 kWh/yr	584 kWh/yr	14,973 kWh/yr
Number of participants or units delivered for reporting year:	240	17	37	31
Measure life (years):	4	20	20	18
Number of Participants or units delivered life to date	240	17	37	31

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	*$ 20,018.00*	
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*$ 4,912.00*	
Incremental Measure Costs (Equipment Costs)	$ 3,098.00	
Total TRC costs:	$ 8,010.00	
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	2.50	

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

Cumulative Results:

Conservation Programs:

		lifecycle	in year	*Cumulative Lifecycle*	Cumulative Annual Savings
Demand savings (kW):	*Summer*				
	Winter				
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):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$ 4,912.00	
	Incentive:		
	Total:	$ 4,912.00	
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix B4 - Discussion of the Program

A. **Name of the Program:** 2006 Fall Every KiloWatt Counts Campaign

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

This program involved the use of coupons sent to customers via direct mailings for CFL's, programmable thermostats, dimmer switches and motion sensors. Most large hardware outlets and retail stores participated in the program.

Measure(s):

	CFL's	Xmas LED Lights	Prog Therm.	Bsbd Prog Therm.	Dimmers	Motion Sensors
Base case technology:	139 kWh/yr	4,976 kWh/yr	765,757kWh/yr	5,400 kWh/yr	17,539 kWh/yr	13.781 kWh/yr
Efficient technology:	35 kWh/yr	139 kWh/yr	703,745kWh/yr	4,963 kWh/yr	12,277 kWh/yr	9.643 kWh/yr
Number of participants or units delivered for reporting year:	881	270	47	2	42	22
Measure life (years):	4	30	18	18	10	20
Number of Participants or units delivered life to date						

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	*$ 53,146.00*	
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*$ 1,182.00*	
Incremental Measure Costs (Equipment Costs)	$ 5,437.00	
Total TRC costs:	$ 6,619.00	
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	8.03	

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*		4.95		
	Winter		31		
		lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):		*1,120,541*	123,539		
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):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$ 1,182.00	
	Incentive:		
	Total:	$ 1,182.00	
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix B5 - Discussion of the Program

A. **Name of the Program:** Smart Meter Installations

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

This utility has had an ambitious program of converting all customers with loads greater than 250,000 kWh/yr or peak load of more than 200 kW to interval/smart meters. These meters measure and store data on a 15 minute basis and communicate back to the utility via phone lines. Costs associated with the communication set-up have been captured in this program.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	N/A		
Efficient technology:	N/A		
Number of participants or units delivered for reporting year:	12		
Measure life (years):	10		
Number of Participants or units delivered life to date	12		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 27,444.00	
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	$ 1,111.00	
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	$ 1,111.00	
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	24.70	

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

			Cumulative Results:	
Conservation Programs:				
Demand savings (kW):	*Summer*	12		
	Winter	12		
	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*600,000*	60,000		
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):			

D.	**Actual Program Costs:**		**Reporting Year**	**Cumulative Life to Date**
	Utility direct costs ($):	*Incremental capital:*	$ 1,111.00	
		Incremental O&M:		
		Incentive:		
		Total:	$ 1,111.00	
	Utility indirect costs ($):	*Incremental capital:*		
		Incremental O&M:		
		Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix B6 - Discussion of the Program

A. **Name of the Program:** System Optimization

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

Various studies have been initiated to reduce system load losses. Of these initiatives, actual measurements of voltage loss in outlying districts, installation of feeder loading devices and modelling of distribution system software have been implemented to verify suspected problem areas. Results of the studies will lead to system optimization through future capital investment. Projects to convert primary voltages, balance feeder loading, upgrade conductors and eliminate inefficient transformers will be pursued.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	N/A		
Efficient technology:	N/A		
Number of participants or units delivered for reporting year:	114.6 kW		
Measure life (years):	30		
Number of Participants or units delivered life to date			

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	*$ 27,624.00*	
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*$ 74,731.00*	
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	$ 74,731.00	
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	0.37	

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*		
	Winter		

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
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):		114.6	
	lifecycle	*in year*	
Energy savings (kWh):	27,105,192	903,506	

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):		

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 60,001.00	
	Incremental O&M:	$ 14,730.00	
	Incentive:		
	Total:	$ 74,731.00	
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix C - Program and Portfolio Totals

Report Year: **2006**

1. Residential Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Christmas Light Exchange	$ 56,143	$ 1,118	$ 55,025	50.23	21,631	1,297,866	0	$ 30,561
Refrigerator Replacement	$ 63,232	$ 13,036	$ 50,196	4.85	172,102	1,017,684	33	$ 16,186
Summer Every Kilowatt Counts	$ 20,018	$ 8,010	$ 12,008	2.50	36,786	363,952	2	$ 4,912
Fall Every Kilowatt Counts	$ 59,765	$ 6,619	$ 53,146	9.03	123,539	1,120,541	5	$ 1,182
Name of Program E			$ -	0.00				
Name of Program F			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program J			$ -	0.00				
***Totals App. B - Residential**	$ 199,158	$ 28,783	$ 170,375	6.92	354,058	3,800,043	40	$ 53,766
Residential Indirect Costs not attributable to any specific program →		$ 925						
Total Residential TRC Costs		$ 29,708						
****Totals TRC - Residential**	**$ 199,158**	**$ 29,708**	**$ 169,450**	**6.70**				

2. Commercial Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Name of Program A	$ -	$ -	$ -	0.00	-	-	-	-
Name of Program B			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program D			$ -	0.00				
Name of Program E			$ -	0.00				
Name of Program F			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program J			$ -	0.00				
***Totals App. B - Commercial**	$ -	$ -	$ -	0.00	0	0	0	$ -
Commercial Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Commercial**	**$ -**	**$ -**	**$ -**	**0.00**				

3. Institutional Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Name of Program A			$ -	0.00				
Name of Program B			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program D			$ -	0.00				
Name of Program E			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program J			$ -	0.00				
***Totals App. B - Institutional**	$ -	$ -	$ -	0.00	0	0	0	$ -
Institutional Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Institutional**	**$ -**	**$ -**	**$ -**	**0.00**				

4. Industrial Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Name of Program A			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program D			$ -	0.00				
Name of Program E			$ -	0.00				
Name of Program F			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program J			$ -	0.00				
***Totals App. B - Industrial**	$ -	$ -	$ -	0.00	0	0	0	$ -
Industrial Indirect Costs not attributable to any specific program	→							
Total TRC Costs		$ -						
****Totals TRC - Industrial**	**$ -**	**$ -**	**$ -**	**0.00**				

5. Agricultural Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Name of Program A			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program D			$ -	0.00				
Name of Program E			$ -	0.00				
Name of Program F			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program J			$ -	0.00				
***Totals App. B - Agricultural**	$ -	$ -	$ -	0.00	0	0	0	$ -
Agricultural Indirect Costs not attributable to any specific program	→							
Total TRC Costs		$ -						
****Totals TRC - Agricultural**	**$ -**	**$ -**	**$ -**	**0.00**				

6. LDC System Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
System Optimization	$ 27,624	$ 74,731	-$ 47,107	0.37	903,506	27,105,192	115	$ 74,731
Name of Program B			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program D			$ -	0.00				
Name of Program E			$ -	0.00				
Name of Program F			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program C			$ -	0.00				
***Totals App. B - LDC System**	$ 27,624	$ 74,731	-$ 47,107	0.37	903,506	27,105,192	115	$ 74,731
LDC System Indirect Costs not attributable to any specific program	→							
Total TRC Costs		$ 74,731						
****Totals TRC - LDC System**	**$ 27,624**	**$ 74,731**	**-$ 47,107**	**0.37**				

7. Smart Meters Program

Report Year Gross C&DM Expenditures ($) →	1,111

8. Other #1 Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Name of Program A			$ -	0.00				
Name of Program B			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program D			$ -	0.00				
Name of Program E			$ -	0.00				
Name of Program F			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program J			$ -	0.00				
***Totals App. B - Other #1**	$ -	$ -	$ -	0.00	0	0	0	$ -
Other #1 Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Other #1**	**$ -**	**$ -**	**$ -**	**0.00**				

9. Other #2 Programs

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Name of Program A			$ -	0.00				
Name of Program B			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program D			$ -	0.00				
Name of Program E			$ -	0.00				
Name of Program C			$ -	0.00				
Name of Program G			$ -	0.00				
Name of Program H			$ -	0.00				
Name of Program I			$ -	0.00				
Name of Program J			$ -	0.00				
***Totals App. B - Other #2**	$ -	$ -	$ -	0.00	0	0	0	$ -
Other #2 Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Other #2**	**$ -**	**$ -**	**$ -**	**0.00**				

LDC's CDM PORTFOLIO TOTALS

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
***TOTALS FOR ALL APPENDIX B**	$ 226,782	$ 104,439	$ 122,343	2.17	$ 1,257,565	$ 30,905,235	$ 155	$ 129,608
*Any **other** Indirect Costs not attributable to any specific program* →								
TOTAL ALL LDC COSTS		$ 104,439						
****LDC' PORTFOLIO TRC**	$ 226,782	$ 104,439	$ 122,343	2.17				

* The savings and spending information from this row is to be carried forward to Appendix A.
** The TRC information from this row is to be carried forward to Appendix A.