283 pembroke street west – p.o. box 1087
pembroke, ontario K8A 6Y6
tel: (613) 732-3687 – fax: (613) 732-9838
web: www. orpowercorp.com

May 11, 2009

Ontario Energy Board
PO Box 2319, 2300 Yonge Street
Suite 2700
Toronto, ON M4P 1E4

Attention: Ms. Kirsten Walli, Board Secretary

Via Courier

Dear Ms. Walli:

RE: 2008 C&DM Annual Report
Third Tranche Funding, Ottawa River Power Corporation
RP 2004-0203/EB 2004-0435

Please find enclosed the 2008 Conservation & Demand Management Annual Report for Ottawa River Power Corporation.

As per filing guidelines, there are three hard copies of the report and two electronic copies, one in PDF format and the second in Excel format consisting only of the appendices.

Yours truly,

Douglas Fee, P.Eng.
President

Encl.

\\Server\data\ORPC Files\Administration\A01-Assoc\OEB C&DM 2006 Report\OEB Cover Letter.doc

Ottawa River Power Corporation
Third Tranche Funding

RP 2004-0203/ EB-2004-0435

Conservation and Demand 2008 Annual Report

1. Introduction

Ottawa River Power Corporation (ORPC) is an LDC serving 10,500 customers in the villages of Beachburg, Killaloe, the Town of Almonte (within the Municipality of Mississippi Mills) and the City of Pembroke. On March 18, 2005 the C&DM Plan for ORPC was approved by the OEB in the amount of $296,000.

The approved program consisted of:

Program	Brief Description	Amount
Conservation Challenge	Residential and commercial program to educate customers on conservation by means of a energy challenge	$105,500
LED Traffic Light Program	Conversion of existing traffic lights with the City of Pembroke	$ 17,500
Smart Meter Pilot Program	Procurement of 400 smart meters, MAS hardware & software system	$142,000
System Loss Study	Modeling and study of system losses within the distribution system	$ 25,000
Municipal Lighting Program	Upgrading of municipal street lighting to HPS lighting	$ 6,000

2. Evaluation of the CDM Plan

The **Energy Challenge** was kicked off in May 2005. The program focus was creating a conservation culture within our residential customers. The Energy Challenge drew to a close at the end of 2006 (dependent on meter reading date). During the year, the program was supported through a update mail-out to participants and conservation information on our web site. The program was closed off in early 2007 with the final calculation of the year-over-year energy savings, a letter to all participants and a draw for those that reached the 10% reduction target. Details of the program are outlined in Appendix A1.

During the fall of 2005, Ottawa River Power Corporation commenced the **LED traffic light** program. Two intersections in the City of Pembroke were converted from incandescent lights to LED lights. This pilot, under the C&DM program, provided the initiative for the municipality to undergo a complete conversion of all the intersections in the City. All the intersections in the City were completed (18 in

total) in 2006 with the funding of the project being provided through Ottawa Energy Solutions, an LDC and City of Pembroke affiliate. A description of the program is in Appendix A2.

The third program is the study of **system losses** within the distribution system. In 2006, the field work of collecting the distribution system data was completed and entered into the Dromey System model. Work is presently underway modeling the data and completing the engineering report.

The **municipal street light** upgrade took place in during 2007. In total 15 lights were changed from mercury vapour to high pressure sodium. The city of Pembroke continued work in 2008 and replaced an additional nine lights at their own cost.

The fifth C&DM program was the start of a **Smart Meter Pilot Program**, where 400 meters were procured along with the MAS hardware and software system. In 2007 approximately 220 meters were installed and in 2008 the remaining 180 meter were installed.

3. Discussion of Programs

3.1. Energy Challenge – The Residential Energy Challenge was launched as a customer awareness and education program. The nature of the program was to challenge customers to reduce the consumption, year over year, by 10%. The focus of the program was the threefold thrust of conservation, environmental stewardship and cost savings. The enticement for meeting the goal was the chance to win $5000 worth of Energy Star appliances or lighting or envelop improvements. As well, there were runner-up prizes of 25 – $500 toward similar conservation measures. The program was kicked off in the spring of 2005.

The activity level in 2006 included a review of the progress for all of the participants that included a mail-out report on their progress to date. Beyond the mail out information, support was given through the web site and telephone staff.

The activity level in 2007 was limited to the awarding of prizes to customers whose name had been randomly drawn from among those customers who had been successful in their 10% electricity savings. Activity also included meeting with these winners to discuss their choice of conservation projects or improvements and encourage continued conservation into the future.

During 2008 an information session was held for small commercial customers to encourage conservation. From this three small commercial customers had energy audits completed and one customer undertook some conservation work.

3.2. LED Traffic Program – The program was commenced in 2005 and completed in March 2006. The aim of the program was to provide an incentive to the City by converting two intersections. The City of Pembroke then undertook to convert the remaining intersections with proceeds of the energy and maintenance savings over five years. Reporting on the program is attached in Appendix B.

3.3. System Loss – The program was initiated to identify system losses as a basis of setting priority future capital expenditure as well as identifying easy reductions that can be accomplished immediately (i.e. system configuration). Modeling of the system was completed and the evolution and preparation of the final report was commenced. Early observations were, that in the radial systems, reconductoring is not cost effective and transformer losses are a major contribution to the system losses. Modeling the impact of switching configurations is yet to be modeled fully.

3.4. Municipal Streetlighting – During 2007 the utility initiated a street light replacement program in the City of Pembroke. Fifteen mercury vapor (MV) lights were replaced with fifteen high pressure sodium (HPS) lights as follows:

3 x 400W MV to 3 x 250W HPS
8 x 250W MV to 8 x 150W HPS
4 x 400W MV to 4 x 150W HPS

3.5. Smart Meter Pilot Program – On December 14, 2006 Ottawa River Power Corporation filed an application with the Board (EB2006-0212) to reallocate $142,000 from its Load Management Project to a Smart Meter Pilot Project. This was approved on February 6, 2007. OPRC entered into an agreement with Elster metering and procured approximately 400 Smart Meters as well as MAS hardware and MAS Communication Server Software. As mentioned ORPC installed 220 meters during 2007 and piloted the processes required for the full implementation of the pilot project. In 2008 the remaining 180 meters were installed.

4. Lessons Learned

Specifically, the lessons learned to date on our programs are:

4.1. Energy Challenge

As indicated in ORPC's prior reports, the sign up rate was disappointing. With a customer base of 8500, we had 317 signed up for the Challenge. We had hoped, with a local presence and promotion, that our participation rate would have been higher. It is encouraging that the customers, which did participate in the program, do have a good grasp of the need to conserve and the steps to take in the home to accomplish this. This may perhaps be a case of "preaching to the converted". The 10/10 Summer Challenge will be somewhat of a repeated program but will have the obvious advantage of the automatic enrollment.
The evaluation and establishing the TRC is difficult. Beyond the number of participants that sign on to the program, those that finish and those that are successful in meeting the 10% reduction goal, it is difficult to ascertain exactly what the customers did to accomplish the reduction goal.

4.2. LED Traffic Lights

City officials are keen on the program but lack of funding prevented full involvement. The tie to funding from Ottawa River Energy Solutions provided a means for the City to make it happen within their existing budgets, thus creating a win-win proposition

4.3. System Loss Study

This was a simple program with a low budget utilizing a summer engineering student that, with minimal direction, gathered data and ran the model. The model is in a form that can be used on an ongoing basis either with utility staff and/or outside consultants. The main outcome to date shows the importance of purchasing low loss distribution transformers. Further work in 2007 should identify areas for energy saving in betterment or new construction.

4.4. Municipal Streetlighting

This too was a simple program with a low budget. The City hopes to build on the program with an amount set aside in their annual budget. The TCR rating on this program is poor due to the 6 year life and the change from mercury vapour to HPS does not offer large energy savings.

4.5. Smart Meter Pilot Project

The Smart Meter program provided exposure to the installation and communication requirements to implement the program. This work has put the utility in a good position for the full implementation.

5. Conclusion

Two of the five C&DM programs (LED traffic light conversion and the System loss study) were completed in 2006.

The municipal Street lighting project was completed in 2007.

The residential Energy Challenge took place in 2006 with prizes awarded in 2007. A small commercial C&DM program (part of the Energy Challenge) was completed in 2008.

The smart meter project began in 2007 and was completed in 2008.

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.

	Total for 2008	Residential	[5] Low Income	Commercial	Institutional	Industrial	Agricultural	LDC System	[4] Smart Meters	Other #1	Other #2
Net TRC value ($):	**$ 232,953**	**$ -**	**$**	**$ 232,953**	**$ -**	**$ -**	**$ -**	**$ -**		**$ -**	**$ -**
Benefit to cost ratio:	27.55	0.00		27.55	0.00	0.00	0.00	0.00		0.00	0.00
Number of participants or units delivered:	*528*	489		3	36						
Lifecycle (kWh) Savings:	10,964,592	1,006,217		4,318,890	5,639,485	0	0	0		0	0
Report Year Total kWh saved (kWh):	287,926	0		287,926	0	0	0	0		0	0
Total peak demand saved (kW):	35	0		35	0	0	0	0		0	0
Total kWh saved as a percentage of total kWh delivered (%):	5.580%			2.20%							
Peak kW saved as a percentage of LDC peak kW load (%):	0.09%			0.09%							
[1] *Report Year Gross C&DM expenditures ($):*	$ 116,197	$ -	$	$ 8,775	$ -	$ -	$ -	$ -	$ 107,422	$ -	$ -
[2] *Expenditures per KWh saved ($/kWh):*	$ 0.01	$ -	$	$ 0.00	$ -	$ -	$ -	$ -		$ -	$ -
[3] *Expenditures per KW saved ($/kW):*	$ 3,319.92	$ -	$	$ 250.72	$ -	$ -	$ -	$ -		$ -	$ -

Utility discount rate (%):	7.25

[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 totals from Low Income programs that fall under both commerical and residential.

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Energy Challenge (2008 Update)

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

The residential part of the energy challenge started in the summer of 2005 and ended in late 2006. At that time, the customer's consumption records were reviewed to ascertain savings. The average savings was 12% . While this was primarily an education program, it was hoped that year over year will follow through. Cost/benefit carry on as reported in 2006. In 2008 an education session was held for commercial customers to provide information and encourage conservation. In addition energy audits were completed for three large commerical customers. One customer acted on the audit and completed a grocery store refrigeration upgrade.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Incon Lqts	Customers Inlisting	
Efficient technology:	CFL	Various	
Number of participants or units delivered for reporting year:	0	0	
Measure life (years):			
Number of Participants or units delivered life to date	317	172	

B. **TRC Results:**

	Reporting Year	TRC Results:
[1] *TRC Benefits ($):*	*$ 23,304.00*	83120
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*$ 8,775.08*	42355.08
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	$ 8,775.08	42355.08
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$ 2.66	1.97

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

			Cumulative Results:
Conservation Programs:			
Demand savings (kW):	*Summer*	27	27
	Winter	35	35
	lifecycle	*in year*	
Energy saved (kWh):	*15*	287926	
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:	$ 8,775.08	$ 42,355.32
	Incentive:		
	Total:	$ 8,775.08	$ 42,355.32
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. **Assumptions & Comments:**

ORPC's Energy Challenge was a predessor of the OPA's Summer Savings program and provided awareness for customers on conservation. There were a few customers that felt that they had made the changes to the usage patterns in the our Challenge and therefore could do little more with the Summer Savings Program.

[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 B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Smart Meter Pilot Program (2008 Reporting Period)

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

ORPC received approval form the OEB to undertake a Smart meter pilot program under the C&DM Program. The program consisted of the installation of 400 meters and a MAS server. In 2007 the MAS server was installed and approximately 220 meters. Training of staff and development of the installation process was studied. During 2008 the remaining 180 meters were installed and the final project management fees were paid upon completion of the pilot program.

Measure(s):

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

B. **TRC Results:**

	Reporting Year	TRC Results:
[1] *TRC Benefits ($):*		
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):		
Incremental Measure Costs (Equipment Costs)	$ 107,422.15	210,086.18
Total TRC costs:		
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		

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

			Cumulative Results:
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):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 107,422.15	$ 210,086.18
	Incremental O&M:		
	Incentive:		
	Total:	$ 107,422.15	$ 210,086.18
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

Inasmuch as this was a pilot and customers were not placed on a TOU billing option no energy reduction or shifting could be attributed to the program

[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 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 B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** LED Traffic Light Retrofit Program (2008 Update)

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

ORPC provided the funding through their C&DM Program to supply the labour and material to convert two intersections from incandescent lighting to LED lighting. This provided the impetus for the municipality to enter into an agreement with Ottawa River Energy Solutions to complete the conversion of the remaining intersections in the City, 18 in total, to LED. The energy saving will be realized immediately and the City will pay for the conversion over five years through the energy savings. This project provided the incentive for the municipality to undertake the conversion of all the traffic lights in the City. The conversion of all the intersections was completed in 2006.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Incondecent Traffic Lights		
Efficient technology:	LED lights		
Number of participants or units delivered for reporting year:	18 intersections and three caution lights		
Measure life (years):	25		
Number of Participants or units delivered life to date	18 intersections and three caution lights		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*		288399
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):		
Incremental Measure Costs (Equipment Costs)		16493
Total TRC costs:		16493
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		17

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

			Cumulative Results:	
Conservation Programs:				
Demand savings (kW):	*Summer*			26.2
	Winter		26.2	
	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):			5729575	229183
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:*		$ 16,493.00
	Incremental O&M:		
	Incentive:		
	Total:		$ 16,493.00
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

Included in the cost/benefit is a savings in maintenance costs for the elimination for the need to change bulbs. Experience to date has shown that the failure rate of the LED heads is minimal and the cleaning reduction during the bulb changes is not a problem.

[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 B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Street Light Replacement Program (2008 Report)

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

During 2007 the utility initiated a street light replacement program in the City of Pembroke. Fifteen mercury vapor street lights were replaced with fifteen high pressure sodium street lights as follows:
3x400W MV to 3x250W HPS, 8x250W MV to 8x150W HPS, 4x400W MV to 4x150W HPS

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Mercury vapour SL		
Efficient technology:	HPS SL		
Number of participants or units delivered for reporting year:	15		
Measure life (years):			
Number of Participants or units delivered life to date	15		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 3,759.00	$ 3,759.00
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):		$ 5,006.64
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	$ -	$ 5,006.64
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		$ 0.75

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

Conservation Programs:

			Cumulative Results:	
Demand savings (kW):	*Summer*			
	Winter			
	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*6*	9285	55710	9285
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:		$ 5,006.64
	Incentive:		
	Total:	$ -	$ 5,006.64
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

Benefits were based on a 6 year payback as sugggested in the TCR report. That reflects the life of the bulb but the fixture will be in place and continue to deliver savings in the long term. The program also was an incentive for the municpality to budget funds for additional street light changes. The municipality continued the upgrade program in 2008 from thier own budget.

[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 B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** System Loss Study (2008 Update)

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

Work on the system losses commenced in 2005 as part of a summer student project. Collection of asset information was done and mapped within the GIS system. Work continued in 2006 with the preparation of the model using DESS software from Dromey Systems. The model was used to look at the impact of serveral senarios. See discussion in Part E

Measure(s):

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

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*		
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):		$ 22,997.52
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:		$ 22,997.52
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		

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):				
	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:*		$ 10,990.20
	Incremental O&M:		$ 12,007.32
	Incentive:		
	Total:		$ 22,997.52
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

Models were created for the four service areas of ORPC. Loss studies were run at various load levels and circuit configurations. The information that was learned was: 1. A major part of the load loss is due the load loss of distribution transformers - purchase specifications have been changed to include load loss as a purchase criteria, 2. Line loss has an impact but it is less than expected. This is due to the lines being sized for electric heat which has now disappeared. As well, the short feeder lengths reduce the losses. The items identified for further study are: cost effectiveness of retiring old transformers (we may find that due to all copper construction and over design current path they may be more efficient), and cost effectiveness of voltage conversion (4160 to 14,400 volts).

[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: 2008

1. Residential Programs

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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 ($)
Energy Challenge			$ -	0.00		1,006,217		
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 - Residential**	$ -	$ -	$ -	0.00	0	1,006,217	0	$ -
Residential Indirect Costs not attributable to any specific program →								
Total Residential TRC Costs		$ -						
****Totals TRC - Residential**	**$ -**	**$ -**	**$ -**	**0.00**				

2. Commercial Programs

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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 ($)
Energy Programs	$ 241,728	$ 8,775	$ 232,953	27.55	287,926	4,318,890	35	$ 8,775
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**	$ 241,728	$ 8,775	$ 232,953	27.55	287,926	4,318,890	35	$ 8,775
Commercial Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ 8,775						
****Totals TRC - Commercial**	**$ 241,728**	**$ 8,775**	**$ 232,953**	**27.55**				

3. Institutional Programs

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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 ($)
LED Traffic Lights			$ -	0.00		5,583,775		
Municipal Street Lights			$ -	0.00		55,710		
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	5,639,485	0	$ -
Institutional Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Institutional**	**$ -**	**$ -**	**$ -**	**0.00**				

4. Industrial Programs

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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 Loss Study			$ -	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 C			$ -	0.00				
***Totals App. B - LDC System**	$ -	$ -	$ -	0.00	0	0	0	$ -
LDC System Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - LDC System**	**$ -**	**$ -**	**$ -**	**0.00**				

7. Smart Meters Program

Only spending information that was authorized under the 3rd tranche of MARR is required to be reported for Smart Meters.

Report Year Gross C&DM Expenditures ($)	107,422

8. Other #1 Programs

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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

List each Appendix B in the cells below; Insert additional rows as required.

Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.

	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**	$ 241,728	$ 8,775	$ 232,953	27.55	$ 287,926	$ 10,964,592	$ 35	$ 116,197
*Any **other** Indirect Costs not attributable to any specific program*	→							
TOTAL ALL LDC COSTS		$ 8,775						
****LDC' PORTFOLIO TRC**	$ 241,728	$ 8,775	$ 232,953	27.55				

* 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.

Appendix D - Total Life Evaluation of the CDM Plan

Table is to be completed manually by totalling the information from each year of activity

	[5] Cumulative Totals Life-to-date	Residential	[6] Low Income	Commercial	Institutional	Industrial	Agricultural	LDC System	[4] Smart Meters	Other #1	Other #2
Net TRC value ($):	$ 519,200.00	**$ 35,946.00**	**$**	**$ 232,953.00**	**$ 253,867.00**	**$**	**$**	**-$ 3,566.00**		**$**	**$**
Benefit to cost ratio:	32.97	1.07		26.54	11.81			-6.45			
Number of participants or units delivered:	*932*	489		3	36			4			
Lifecycle (kWh) Savings:	*10964592*	1006217		4318890	5639485						
Total kWh saved (kWh):	*1809485*	817717		287926	703842						
Total peak demand saved (kW):	*61*			35	26						
Total kWh saved as a percentage of total kWh delivered (%):	*0.002299324*	*0.001039078*		*0.000365869*	*0.000894377*						
Peak kW saved as a percentage of LDC peak kW load (%):	*0.001627448*			*0.000933782*	*0.000699002*						
[1] *Gross C&DM expenditures ($):*	$ 296,939.11	$ 33,580.24	$	$ 8,775.08	$ 21,500.09	$	$	$ 22,997.52	$ 210,086.18	$	$
[2] *Expenditures per KWh saved ($/kWh):*	$ 6.09	$ 24.35	$	$ 32.81	$ 32.74	$	$	$		$	$
[3] *Expenditures per KW saved ($/kW):*	$ 4,851.95	$	$	$ 250.72	$ 820.61	$	$	$		$	$
Utility discount rate (%):	7.25										

[1] Expenditures are reported on cumulative 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. Actual expenditures for the total third tranche period need to be reported.
[5] Includes total for the reporting year, plus prior years, if any (for example, 2008 CDM Annual report for third tranche will include 2007, 2006, 2005 and 2004 numbers, if any).
[6] Includes totals from Low Income programs that fall under both commerical and residential.