

Ottawa River Power Corporation

RP 2004-0203/ EB-2004-0435

Conservation and Demand 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
Load Control Program	Revival of a load control program operated prior to market deregulation	\$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

In 2005, three programs were started.

The Energy Challenge was kicked off in May 2005. The program focus was creating a conservation culture within our residential customers. The program will continue until the end of 2006. Details of the program are outlined in Appendix A1.

The LED traffic light program commenced in the fall of 2005 with the conversion from incandescent lights to LED lights in two intersections in the City of Pembroke. 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. This work commenced in the fall and was completed in March 2006. A description of the program is in Appendix A2.

The final program was the study of system losses within the distribution system. The work completed in 2005 was the completion of the background modeling data for three of our four municipalities supplied by ORPC. Work will continue in 2006 with the completion of the background asset information and the load flow modeling.

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 are runner-up prizes of 12 – \$500 toward similar conservation measures. The program was kicked off in the spring of 2005.

Customer information, education and awareness were accomplished thorough:

- Billing stuffer to each customer
- Newspaper and radio advertising
- Mall and fair displays
- Newspaper articles
- Energy Meter loans from local libraries
- Conservation segment in elementary schools with a prize draw for sign ups
- Celebrity conserver sign up (Mayor Jacyno)
- Public speaking at service groups

The contest extends to the fall of 2006 for the final tally.

3.2. LED Traffic Program – The program was commenced in 2005 and completed in March 2006. Reporting on the program is attached in Appendix B.

3.3. System Loss – The program was initiated to identify system losses for the basis of setting priority future capital expenditure as well as identifying easy reductions that can be accomplished immediately (i.e. system configuration).

4. Lessons Learned

Having been involved as a distributor during Ontario Hydro's old conservation programs and utility customers over many years, this current approach to conservation was quite a departure. The programs were identified, and submitted for approval in a rushed fashion. In retrospect, it could have been better coordinated to achieve better leverage on what now have become province wide initiatives.

The support of programs is interesting. We chose to do “home grown” initiatives lacking making use of local media to get the message out. It was decided with the small budget, that while mistakes might be made, the money would go further than using consultants for program development and execution.

More specifically, the lessons learned for the programs that are underway include:

4.1. Energy Challenge

- The sign up rate was disappointing. With a customer base of 8500, we have 311 signed up for the Challenge. With a good connection to our customer base the reasons seem to be people don't notice information, don't get around to it, etc. We also feel that a lot of customers don't believe there is anything more they can do. They already believe they conserve enough. It was encouraging, however, to find out the OEB expectation for the coupon program is only 5%.

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

- A simple program with a low budget utilizing a summer engineering student that, with minimal direction, can gather data and run the model. The model will be in a form that it can be used on an ongoing basis either with utility staff and/or outside consultants.

5. Conclusion

Three of the five C&DM programs of Ottawa River Power Corporation are underway. It is planned that the municipal street lighting program will commence in 2006. The largest program identified by ORPC is the load management program. It has become problematic due to the rate set up. It was hoped that new rates would provide an incentive to customers to allow control of their major loads. Discussions are underway between a number of utilities that have load control programs and the Ontario Power Authority to try and make use of these systems.

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>	\$17,632.61	\$9,732.87		\$16,341.00			-\$ 8,441.26				
<i>Benefit to cost ratio:</i>	3.15	0.33		2.82			n/a				
<i>Number of participants or units delivered:</i>	319	317		2			n/a				
<i>Total kWh to be saved over the lifecycle of the plan (kWh):</i>	490,080.00			490,080			n/a				
<i>Total in year kWh saved (kWh):</i>	126,937.00	102,433		24,504			n/a				
<i>Total peak demand saved (kW):</i>	7.56	4.755		2.80			n/a				
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>	81.16%	0.39%		80.77%			n/a				
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>	0.01990%	0.0125%		0.0074%			n/a				
<i>Gross in year C&DM expenditures (\$):</i>	\$31,996.60	\$14,503.99		\$9,051.35			\$8,441.26				
<i>Expenditures per kWh saved (\$/kWh)*:</i>	\$2.85	\$0.1416		\$2.707			n/a				
<i>Expenditures per kW saved (\$/kW)**:</i>	\$6,282.89	\$3,050.26		\$3,232.625			n/a				
<i>Utility discount rate (%):</i>	7.25										

*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

(complete this section for each program)

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

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

As described in the report, the residential part of the energy challenge started in the summer of 2005 and will end in late 2006. At that time, the customer's consumption records will be reviewed to ascertain savings. While this is primarily an education program, it is hoped that year over year usage data will provide a metric for the program. Being reported at this time is energy savings due to the distribution of compact fluorescent bulbs that were given away as customers signed up for the program. On the cost side is the program advertising and administration costs. Costs and benefits do not coincide at this point and therefore the Benefit to Cost Ratio does not make sense.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Incandescent Lights		
Efficient technology:	CFL		
Number of participants or units delivered:	317		
Measure life (years):	3 Years		

B. **TRC Results:**

TRC Benefits (\$):		\$ 4,771.12
TRC Costs (\$):		
	Utility program cost (less incentives):	\$ 14,503.99
	Participant cost:	
	Total TRC costs:	\$ 14,503.99
Net TRC (in year CDN \$):		-\$ 9,732.87
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		\$ 0.33

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

Conservation Programs:

Demand savings (kW):	Summer	4.77
	Winter	4.77
	<i>lifecycle</i>	<i>in year</i>
Energy saved (kWh):	3	7079
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 savngs (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 (\$):	<i>Incremental capital:</i>	
	<i>Incremental O&M:</i>	\$ 14,503.99
	<i>Incentive:</i>	
	<i>Total:</i>	
Utility indirect costs (\$):	<i>Incremental capital:</i>	
	<i>Incremental O&M:</i>	
	<i>Total:</i>	
Participant costs (\$):	<i>Incremental equipment:</i>	
	<i>Incremental O&M:</i>	
	<i>Total:</i>	

E. **Comments:**

See notes in report

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

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** LED Traffic Light Program

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. For the 2005 reporting period, only figures for the initial two intersection will be reported.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	incandescent traffic lights		
Efficient technology:	LED lights		
Number of participants or units delivered:	2 intersections		
Measure life (years):	20		

B. **TRC Results:**

TRC Benefits (\$):		\$ 25,341.00
TRC Costs (\$):		
	Utility program cost (less incentives):	\$ 9,000.00
	Participant cost:	
	Total TRC costs:	\$ 9,000.00
Net TRC (in year CDN \$):		\$ 16,341.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		\$ 2.82

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

Conservation Programs:

Demand savings (kW):	Summer	26.2
	Winter	26.2
	<i>lifecycle</i>	<i>in year</i>
Energy saved (kWh):	490,080	24,504
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 savngs (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 (\$):	<i>Incremental capital:</i>	
	<i>Incremental O&M:</i>	
	<i>Incentive:</i>	
	<i>Total:</i>	
Utility indirect costs (\$):	<i>Incremental capital:</i>	
	<i>Incremental O&M:</i>	
	<i>Total:</i>	
Participant costs (\$):	<i>Incremental equipment:</i>	
	<i>Incremental O&M:</i>	
	<i>Total:</i>	

E. **Comments:**

Figures reported are for work and savings in the 2005 period. The greater amount of work and savings done at the City cost will be reported in 2006.

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

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** System Loss Study

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 informaton was done and mapped within the GIS system. Work will continue in 2006 with the preparation of the model and running of load flow scenarios to identy low cost/no cost loss reductions as well as provide information for future capital works. No savings have been identified at this stage of the work.

Measure(s):

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

B. **TRC Results:**

TRC Benefits (\$):	
TRC Costs (\$):	
Utility program cost (less incentives):	\$ 8,441.26
Participant cost:	
Total TRC costs:	\$ 8,441.26
<u>Net TRC (in year CDN \$):</u>	<u>-\$ 8,441.26</u>
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 begining 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 savngs (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 (\$):	<i>Incremental capital:</i>	
	<i>Incremental O&M:</i>	
	<i>Incentive:</i>	
	<i>Total:</i>	
Utility indirect costs (\$):	<i>Incremental capital:</i>	
	<i>Incremental O&M:</i>	
	<i>Total:</i>	
Participant costs (\$):	<i>Incremental equipment:</i>	
	<i>Incremental O&M:</i>	
	<i>Total:</i>	

E. **Comments:**

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