



Hydro Ottawa Limited

Conservation and Demand Management 2007 Annual Report

Hydro Ottawa - RP-2004-0203\EB-2005-0523

March 31, 2008

Table of Contents

1. Introduction	4
2. Evaluation of Overall Plan	5
3. Discussion of the Programs	6
3.1 Residential and Small Commercial (< 50 kW).....	6
3.1.1 Co-Branded Mass Market	6
3.1.2 Smart Meter Pilot (<50kW).....	10
3.1.3 Design Advisory Program (<50 kW).....	12
3.1.4 Residential Load Control Program	13
3.1.5 Energy Audits and Support	14
3.1.6 powerWISE® Fridge & Freezer Bounty Program	18
3.1.7 Electric Avenue.....	19
3.1.8 Social Housing Program.....	20
3.2 Commercial, Industrial and Institutional (>50 kW).....	22
3.2.1 Smart Meter Program	22
3.2.3 Leveraging Energy Conservation and Load Management.....	24
3.2.3.1 powerWISE® Business Incentive Program.....	24
3.2.4 Commercial Industrial & Institutional (CI&I) Load Control Initiative	26
3.2.5 On the Bill Financing	27
3.2.6 Design Advisory Program (CI&I)	28
3.3 Distribution Loss Reduction.....	29
3.4 Distributed Energy & Load Displacement.....	30
3.4.1 Stand-by Generators	32
3.5 Overall Program Support.....	33
4. Lessons Learned	34
5. Conclusion.....	37

APPENDIX A

APPENDIX B

APPENDIX C

1. Introduction

On December 10, 2004 the Ontario Energy Board (“Board”) issued its oral decision in the RP-2004-0203 proceeding, with respect to six (6) applications filed by the Coalition of Large Distributors (“CLD”) comprising Enersource Hydro Mississauga, Horizon Utilities Corporation, Hydro Ottawa Limited, PowerStream Inc., Toronto Hydro-Electric System Limited and Veridian Connections. This report is a requirement of that decision. In respect of the application filed by Hydro Ottawa Limited (“Hydro Ottawa”), the Board issued its Final Order on February 3, 2005 under docket number RP-2004-0203\EB-2005-0523.

The Board’s decision indicated that annual reporting “should be done on a calendar year and should be filed with the Board no later than March 31st of the following year” and would be subject to a public review. On December 21, 2005 the Board issued a *Guideline for Annual Reporting of CDM Initiatives* that explained more fully the requirements. On March 3 2008 the Board reissued the Requirements for Annual Reporting of Conservation and Demand Management (CDM”) Initiatives. This report has been prepared in accordance with those guidelines.

On December 13, 2006 Hydro Ottawa received approval from the Board to reallocate \$2,300,000 previously allocated to Distribution Loss Reduction, Distributed Energy and Program Support. This 2007 annual report reflects Hydro Ottawa’s actual spending as per the Board’s approved reallocation.

Hydro Ottawa’s CDM activities for 2007 represent a winding down of activities funded under the third tranche of Market Adjusted Revenue Requirement. Hydro Ottawa’s expenditures and results are therefore significantly lower than in the previous year.

Hydro Ottawa’s 2007 results continue to show that Conservation and Demand Management can be extremely cost-effective when LDCs work together in sharing program development experiences to help reduce the cost of designing and delivering programs, and are also given the opportunity to deliver programs tailored to meet their particular local market conditions.

2. Evaluation of Overall Plan

Refer to Appendices A, B and C for a full evaluation of Hydro Ottawa's Conservation and Demand Management ("CDM") activities during 2007.

Some components of Hydro Ottawa's CDM plan relate to the deployment of Smart Meters, which is being undertaken to support provincial government policy direction. The impact of Smart Meters on kWh consumption and kW demand has not been assessed.

3. Discussion of the Programs

3.1 Residential and Small Commercial (< 50 kW)

3.1.1 Co-Branded Mass Market

Description

This flagship co-branded mass-market program (powerWISE[®]) is a multifaceted approach to fostering the conservation culture in Ontario. Through development of a significant cooperative effort among six of the largest municipal LDCs, this program has become synonymous with specific initiatives such as Compact Fluorescent Lighting (“CFL”) change out programs, Light Emitting Diode (“LED”) Christmas Lights Exchanges, Energy Star, Multi-Choice, energy audits, hot water heater blanket wraps, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Access to online services such as energy consumption calculators, an energy expert and personalized energy audit services are components of this program.

Target users

Mass-market including residential and small commercial <50 kW of monthly demand.

Benefits

Increased awareness, improved product supply, culture shift, and significant demand and energy reductions.

Discussion of 2007 Activities

powerWISE[®] Brand

Action

- Hamilton Utilities Corp. (“HUC”) registered the powerWISE[®] mark prior to CDM activities.
- During CLD CDM plan preparation, it was agreed that the CLD would collectively develop and use the brand. HUC offered powerWISE[®] for coalition use and the CLD agreed to use this mark.
- Supported television, radio and print advertising campaigns were executed throughout 2007 to raised awareness of the brand. The campaigns were developed and deployed by the Ministry of Energy (“MOE”).

Results to Date

- The powerWISE® brand has been widely used and become synonymous with conservation messaging.

Next Steps

- Maximize the effectiveness of the powerWISE® brand

powerWISE Website

Action

- The powerWISE® website www.powerwise.ca was jointly developed and announced on April 1st, 2005.
- This website provides one common location for general electricity conservation information and useful industry links.
- Links have also been provided for customers to reach their CLD member's home website for specific local program information.
- The site also has an archive of the various powerWISE® advertising campaigns that ran throughout the year.

Results to Date

- No results to report

Next Steps

- Continue to promote www.powerwise.ca as a source for conservation information.

Ontario Power Authority – Every Kilowatt Counts (“EKC”)

Action

- The Conservation Bureau of the OPA developed a major mass-market retail campaign to advance the penetration of energy efficient devices into the marketplace through point of purchase redeemable coupons.
- Coupon and information booklets were distributed through the mail to all Ontario households for each campaign.
- Spring Campaign April 23, 2007 to June 15, 2007
 - Compact Fluorescent Light bulb (\$3.00 off per individual or multi-pack)
 - Outdoor Solar Lighting (\$5.00 off)
 - Energy Star Ceiling fans (\$25.00 off)
 - Motion Sensors (\$5.00 off)
 - Dimmer Switches (\$3.00 off)
 - Pleated Furnace or AC Filters 3 pack or more (\$3.00 off)
 - Promoted Cool Saving Rebate furnace and air conditioner programs
- Fall Campaign September 17, 2007 to November 30, 2007
 - Compact Fluorescent Light bulbs (\$2.00 off)
 - Seasonal Light Emitting Diode lights (“SLEDs”) (\$2.00 off)

- Programmable Baseboard Thermostats (\$15.00 off)
- Energy Star Fixtures and Lamps (\$7.00 off)
- Power Bars with Timers (\$5.00 off)
- T8 Fluorescent Fixtures (\$5.00 off)
- Light control Devices – Motion, Timer, Dimmer (\$2.00 off)

Results to Date

- All Hydro Ottawa customers received the coupon booklets in both the spring and fall.
- Spring ekc campaign coupon redemption results are pending from the OPA

Next Steps

- The Conservation Bureau will continue to operate this program.
- The Spring 2008 EKC program will run April 18 to June 15.
- A Fall 2008 EKC program will run from October 1 to November 16.

powerWISE[®] School Based Education Initiative

Action

- Hydro Ottawa's Hazard Hamlet Safety Education program for Grades 1-8 includes safety and conservation messages.

Results to Date

- Over 17,000 primary grade students at 41 schools received safety and conservation education in 2007.
- This represents approximately 20% of the Ottawa region primary grade students.
- A one-hour presentation targeted at Grade 5 students on electricity conservation was delivered in 22 schools reaching a total of 1316 students.

Next Steps

- Continue to develop and deliver the Hazard Hamlet program to approx 17,000 additional students in 2008.
- Continue to offer the presentation and speaking notes to Grade 5 teachers at Ottawa school boards.

powerWISE[®] Fleet Branding

Action

- On Nov 3rd, 2005 the CLD announced the powerWISE[®] Fleet Branding Program and all vehicles were branded in 2006.
- Conservation messages under the powerWISE[®] brand were applied to LDC vehicles to increase conservation messaging to the mass market.

Results to Date

- Hydro Ottawa vehicles have been branded.

Next Steps

- New vehicles will be branded when brought into service.

Hydro Ottawa Website

Action

- The website www.HydroOttawa.com was refurbished in April 2005 to provide a stronger emphasis on conservation.
- The website now offers three streams - residential information, business information and conservation information.
- The conservation section of the website is designed to provide Hydro Ottawa customers with immediate access to local conservation initiatives.
- The website also acts as a repository for general electricity conservation information and offers useful links to other conservation related websites.
- A "My Hydro" link was added in 2007 to provide customers with on line access to their billing and consumption history.

Results to Date

- In 2007 www.hydroottawa.com had over 2,200,000 page-views and CDM accounted for 207,764 of those visits or 9.34% of all page-views.
- 61,600 Helpful Conservation Tips were downloaded from the Hydro Ottawa web site.

Next Steps

- Continue to enhance and update the website with new materials, links and applications.

3.1.2 Smart Meter Pilot (<50kW)

Description

A pilot program for residential Smart Meters was deployed to enable the assessment of metering, communications, settlement, load control and other technologies that may be used to accommodate the universal application of Smart Meters in the future. Further, sub-metering opportunities for the purposes of customer information in bulk-metered situations (i.e. condominiums) may be considered.

This initiative will commence upon the release of a formal definition of a Smart Meter by the Board.

Target users

Residential and small commercial customers.

Benefits

This program supports the Minister of Energy's commitment to the installation of 800,000 Smart Meters across Ontario by 2007. It will provide Hydro Ottawa with the experience and knowledge needed to efficiently expand the use of Smart Meters over the next several years.

In conjunction with appropriate rate structures, the program will also provide customers participating in the pilot programs with an incentive to conserve or shift energy use.

Action

- A Smart Meter pilot was undertaken in Ottawa testing two different meter technologies.
- Customers were engaged in three different areas of the City to test the technologies as well as the customer implications and response.

Results to Date

- 200 meters were deployed throughout three test bed communities including Lindenlea (50 meters), Manor Park (50 meters), and Alta Vista (100 meters).
- Two customer approaches to Smart Meter installation were tested. In Lindenlea and Manor Park volunteers were solicited. In Alta Vista we simply provided notice that Smart Meters were to be installed. For the most part, customers readily accepted the Smart Meters.
- Monthly time-of-use consumption reports were mailed to participants.

- Participants were provided the capability to view their hourly consumption information online by 8:00am of the following day.
- Ten participant's homes were fitted with in-home displays to permit real-time viewing of consumption information and costs.
- A detailed focus group with a cross section of participants was conducted to gain a better understanding of how the time-of-use information influenced their electricity usage.
- A final survey was conducted with all participants with the results used to formulate communication and educational materials for the full-scale roll-out.
- All participants were offered a free home electricity audit as a "Thank You" for their participation in the pilot.
- Experience gained in this pilot allowed Hydro Ottawa to participate in the OEB sponsored Ontario Smart Price Pilot ("OSPP"), which tested the true impact of exposing consumers to time-of-use pricing.
- The pilot ended on September 30, 2006.
- Full deployment of smart meters and the communication network began on September 5, 2006 and a total of 175,235 residential smart meters have been installed to yearend 2007.

Next Steps

- Continue with full deployment of smart meters in accordance with government mandate.
- No further action to be taken in respect to this program.

3.1.3 Design Advisory Program (<50 kW)

Description

This initiative helps to create an integrated approach to the design process for new buildings, and involves architects, engineers, building owners and design advisors.

Target users

Developers and designers who deal with residential and small commercial customers

Benefits

This program results in cost effective improvements to the energy efficiency of a building without adversely affecting other performance requirements stipulated by the owner. More specifically, the Advisor can develop an energy performance model to demonstrate achievable energy savings and provide a breakdown of energy end uses. Through the installation of energy efficient equipment during construction, the customer benefits by avoiding stranded costs incurred with equipment upgrades.

Action

- Hydro Ottawa was the first LDC in Canada to support Natural Resources Canada's ("NRCan") national Energy Star for New Homes initiative. This program was launched in a new community being developed by two local homebuilders.
- Energy Star Homes are fitted with improvements that result in a 1 kW reduction over the electricity consumed in a traditional model of the same house.
- Hydro Ottawa offered a \$100 incentive per home for the first 100 homes payable to the builder to facilitate promotion of these homes.

Results to Date

- Hydro Ottawa did not receive any uptake on our incentive offer but a significant number of Energy Star homes were built in our service territory in 2007.

Next Steps

- No further action to be taken in respect to this program.

3.1.4 Residential Load Control Program

Description

Load control uses a real time communications link to enable or disable customer loads at the discretion of the utility. These controls are usually engaged during system peak periods or when required to relieve pressure on the system grid and may include such “dispatchable” loads as electric hot water tanks, pool pumps, lighting, air conditioners, etc.

Target users

Direct load control applies to all market segments. Though the control systems and technologies may vary by market segment, the methodology remains the same.

Benefits

Load control allows customers to respond quickly to external price signals. This also provides a mechanism for utilities to relieve pressure on constrained areas within the distribution grid and also reduces the need to bring on large peaking generators.

Action

- Hydro Ottawa participated with other CLD members in the design and implementation of a Load Control pilot program targeting residential and small commercial customers’ central air conditioners.
- Based on the success of the pilot program Hydro Ottawa implemented the **peaksaver** program in cooperation with the OPA in 2007.

Results to Date

- Honeywell Utility Solutions was chosen as the service provider for the **peaksaver** residential load control pilot program.
- 1430 residential thermostats and 51 small commercial thermostats were installed under the pilot program, for an annual savings of 233,161 kWh and 267 kW demand reduction.
- An additional 1894 thermostats were installed under the OPA program in 2007.

Next Steps

- Participate in the OPA **peaksaver** program for 2008

3.1.5 Energy Audits and Support

Description

Through visits to customers' homes or by working through existing service providers, Hydro Ottawa will provide conservation information and make specific recommendations for energy savings in such areas as major appliances, lighting, air leakage, hot water, heating and cooling. Incentives may also be provided. Services could be further tailored for specific subsidized housing applications.

Target users

Residential and small commercial customers

Benefits

The consumer receives a clear, concise and prioritized report identifying opportunities for energy savings as well as the associated costs and payback period (as applicable).

powerWISE[®] Tips

Action

- A brochure providing electricity saving tips was developed for general distribution through a variety of promotional opportunities (powerWISE[®] PowerPack, conservation events, etc).

Results to Date

- Approximately 3,900 powerWISE[®] Tips brochures were distributed through promotional events.

Next Steps

- Continue to distribute the powerWISE[®] Tips brochure at promotional events.

powerWISE[®] PowerPack

Action

- Hydro Ottawa created the powerWISE[®] PowerPack for promotional purposes. The PowerPack consists of:
 - Two CFL bulbs
 - One Light Emitting Diode ("LED") nightlight
 - Several brochures including powerWISE[®] Tips and National Resources Canada materials.

- To qualify to receive a free powerWISE® PowerPack (retail value \$20), Hydro Ottawa customers must;
- Participate in the Hydro Ottawa powerWISE® Fridge & Freezer Bounty Program conservation program
- Complete an energy conservation survey with a CDM agent.

Results to Date

- Hydro Ottawa distributed 1448 powerWISE® PowerPacks in 2007.
- The powerWISE® PowerPack concept is also used by other members of the CLD in a variety of promotional opportunities.

Next Steps

- No further action to be taken in respect to this program.

powerWISE® Electricity Tune-up

Action

- Hydro Ottawa launched the powerWISE® Electricity Tune-up in April 2005.
- The powerWISE® Electricity Tune Up includes:
- A personal home visit by a qualified conservation consultant who spends 30 minutes identifying potential conservation opportunities and provides a written report outlining practical conservation options.
- The installation of the powerWISE® PowerPack items.
- If the customer has an electric water heater, the consultant installs a water tank blanket and some insulating pipe wrap.
- Energy efficient showerheads and faucet aerators were added to the program in 2006.
- The powerWISE® Electricity Tune-up retails at \$100. Hydro Ottawa contributes \$50 towards each Tune-up to reduce the consumer's cost for this expert consulting service to \$50.

Results to Date

- In 2007 39 electricity tune-ups were conducted.

Next Steps

- No further action to be taken in respect to this program.

Seasonal LED Exchange

Action

- Hydro Ottawa provided 450 strings of 35 light seasonal LED lights and 100 strings of 70 light seasonal LED lights to the City of Ottawa for their outdoor lighting initiative.

Results

- The additional seasonal lights deployed resulted in savings of 6550 kWh per year

Next Steps

- No further action to be taken in respect to this program.

Smart Business Ottawa

Action

- Hydro Ottawa provided an incentive for customers to engage in this program offered through the EnviroCentre to provide audits and retrofits for owners and operators of small to medium sized businesses and commercial buildings.
- The program provides:
- An audit of all major electrical appliances and equipment, including fans, pumps, as well as lighting and heating (if electric) and air conditioning;
- A seven-day Time of Day (“TOD”) load profile,
- A report describing investment opportunities and payback potential for upgrades based on both increased power rates and TOD rates;
- A turnkey installation service for recommended upgrades at extra cost.

Results to Date

- Only 5 customers took advantage of this program in 2007.

Next Steps

- No further action to be taken in respect to this program.

Conservation Van

Action

- 2007 was the second year for the Hydro Ottawa conservation van
- The program was staffed by summer students who participated in 24 community events, 17 key account events and 4 summer camps
- The summer students also worked with 22 schools, reaching 46 classes and a total of 1316 Grade 5 students presenting a teaching module on electricity and conservation.

- Concentrated on education regarding CFL bulbs and other simple and effective conservation tips.

Results to Date

- Distributed 6075 CFL bulbs, and 3916 powerWISE® Tips brochures.
- Distributed nearly 10,000 pieces of conservation material from the provincial and federal governments.
- Enhanced public awareness of conservation and available Hydro Ottawa programs.

Next Steps

- Continued participation in targeted public events.
- Evolve conservation messaging.

Canadian Electric Association (CEA)

Action

- Cooperation to coordinate the development and implementation of CDM programs and initiatives at the National level.

Results to Date

- Planning work underway.

Next Steps

- Continue participation.

3.1.6 powerWISE® Fridge & Freezer Bounty Program

Description:

A program designed to facilitate the removal of old inefficient fridges & freezers from service. Old inefficient appliances that are common in many basements use significant amounts of electricity.

Target users

Residential customers.

Benefits

Customers will benefit from the free removal, decommissioning and environmentally appropriate recycling of the components as well as electricity consumption reductions. The electricity system benefits from a reduction in both demand and consumption due to the removal of inefficient appliances.

Action

- Hydro Ottawa developed and launched one of the first refrigerator reclamation programs in the Province on June 6th, 2005.
- The program, designed to remove working fridges from basements, garages, etc. ensured appropriate disposal of the fridges and that the metals were recycled.
- The program was expanded to include freezers in 2006.
- A powerWISE® PowerPack was left with each participant as encouragement to continue to think about conservation and as a thank you 'Bounty' to the customer.

Results to Date

- This very popular program reclaimed over 5600 old inefficient fridges and freezers from inception to completion on April 30.
- 855 fridges and freezers were reclaimed in 2007.
- Each customer saved up to \$150 per year in electricity savings by removing their old inefficient appliances.
- Hydro Ottawa shared the program design with Hydro One who implemented the program in August 2006.
- Hydro Ottawa shared this successful program with the OPA for provincial implementation and participated in the Great Refrigerator Retirement Program offered by the OPA in 2007.

Next Steps

- No further action to be taken in respect to this program.

3.1.7 Electric Avenue

Description:

A pilot neighbourhood of selected homes and/or small businesses may be chosen to become a “showcase” community to demonstrate the overall effectiveness of energy conservation initiatives including energy audits, retrofits and load control devices etc.

Target users

Residential and small commercial customers

Benefits

Potential high visibility project that could demonstrate the before and after impact of serious energy conservation and load control initiatives

Action

- Hydro Ottawa’s “Electric Avenue” program included demonstration projects in 14 community homes (resource centers in low income and social housing areas). The homes were audited to identify cost effective upgrades, retrofitted and showcased to the local community. Information was posted on the improvements that have been made and their impact on electricity bills for education purposes.
- In addition, 10 individual low-income homes were equipped with electric thermal storage units to demonstrate this technology and to provide data for analysis.

Results to Date

- Electric thermal storage units were installed and have been operational since March 2006. Electric water heating improvements were also installed. Monitoring of the systems continued through the winter of 2006-07.
- Energuide for houses audits were completed and reports submitted to the housing authority.
- A pictogram based energy conservation messaging system was developed to address the lack of English or French language skills of many of the inhabitants of the social housing communities.

Next Steps

- No further action to be taken in respect to this program.

3.1.8 Social Housing Program

Description

A province wide centralized energy management service for the social housing sector may be developed in collaboration with the Provincial Government, utilities (e.g. Enbridge, Union Gas) and others.

A pilot program was conducted to determine feasibility with an expectation that a full-scale provincial program would follow.

Target users

Local social housing corporations, non-profit homes and co-op housing

Benefits

Synergies will be created through the combined initiatives of the various agencies.

Power Group – PowerPlay Audits

Action

- Power Group audits were conducted in cooperation with the City of Ottawa, EnviroCentre and the Poverty Issues Action Committee (“PIAC”).

Results to Date

- In 2007 151 Ontario Works households have taken advantage of the Power Play program.
- Each participant received a powerWISE® tune-up and report.
- Over 170,000 kWh were saved through a variety of installed measures ranging from energy efficient showerheads and tank wraps to clothes drying racks.

Next Steps

- No further action to be taken in respect to this program.

powerWISE® Electricity Tune-ups for Low Income Customers

Action

- Fully subsidized powerWISE® electricity tune-ups were offered through EnviroCentre for low-income residents.

- Customers were referred by social agencies including The Salvation Army and Community Support groups.

Results to Date

- Tune-ups were conducted on 258 low-income households and reports delivered in 2007.
- Approximately 150,000 kWh were saved through the installation of electric water heating conservation devices and compact fluorescent bulbs.

Next Steps

- No further action to be taken in respect to this program.

3.2 Commercial, Industrial and Institutional (>50 kW)

3.2.1 Smart Meter Program

Description:

Hydro Ottawa will make an investment to further the use of Smart or interval meters by commercial industrial and institutional (CI&I") customers. This program will commence upon the release of a formal definition of a SMART meter by the Board.

Target users

Commercial, Industrial and Institutional customers larger than 50 kW

Benefits

This program supports the Minister of Energy's commitment to the installation of Smart Meters across Ontario. These meters are seen as an important means of establishing a 'conservation culture' in Ontario. In conjunction with appropriate rate structures, they will encourage customers to conserve or shift energy use.

Action

- Four technologies were being tested by Hydro Ottawa for C&I customers in 2007 and all appeared acceptable.

Results to Date

- Hydro Ottawa has concentrated on the deployment of commercial smart meters with existing Elster technology in 2007 because of our investment in the data collection engine and head end.
- Commercial meter deployment at yearend 2007 is 4,409 C&I smart meters installed in the HOL system.
- A number of C&I customers are being billed using smart meter reads, removing the need to send Meter Readers to the field.

Next Steps

- The pilot ended on December 31, 2006.
- Hydro Ottawa continues to test the telecommunications technologies deployed as part of the broader Smart Meter Initiative
- Wireless collection of smart meter data for C&I customers has proven itself reliable in our 2007 deployment. Wireless collectors will be rolled out in a larger way in 2008 as a result.

3.2.2 LED Traffic Lights

Description

This initiative involves replacing traffic signals at intersections with light-emitting diode (“LED”) technology, which is now fairly common in many U.S. municipalities.

Target users

Municipalities

Benefits

This program results in significant energy savings since the LED technology uses greater than 80% less electricity. Other benefits include reduced maintenance (LEDs last longer) and improved visibility.

Action

- A business case is under development by the City of Ottawa Traffic Department for a program to retrofit traffic signals with LEDs in 2008
- LED retrofit budgets and current technologies are under review at the municipality.

Results to Date

- Agreement developed with the City Traffic Department to deploy LED traffic lights once an acceptable technology is chosen.

Next Steps

- Finalize acceptable technology for local winter conditions.
- Complete the planned deployment of LED traffic lights in 2008

3.2.3 Leveraging Energy Conservation and Load Management

3.2.3.1 powerWISE® Business Incentive Program

Description

Existing energy conservation and/or load management programs such as NRCan's Energy Innovators Initiative, Enbridge initiatives etc. will be promoted and incentives may be provided to advance market uptake of these programs and implementation of the recommendations. The LDCs are well positioned to introduce such programs to their customer base. Work will be conducted with the existing program providers to maximize leverage opportunities. Promotion will potentially include face-to-face meetings, conferences and seminars.

Target users

Large consumers over 50 kW including schools, large commercial facilities, institutional facilities, industrial, and municipal facilities

Benefits

Customer awareness and additional incentives will help advance market uptake of audit services, feasibility studies and retrofit opportunities already established within the government program framework.

Action

- This program provides incentives of up to \$50K per customer to advance energy conservation projects.
- Two streams of funding are available:
- The Prescriptive program provides incentives for specific technologies on a predetermined cost per unit basis, i.e. retrofitting T12 lighting to T8 lighting.
- Custom Projects will be considered on an individual case basis with incentives at \$150 per kW.

Results to Date

- This program was launched in October 2005.
- The Prescriptive technology list was expanded in 2007.
- Application forms and support documents were updated in 2007.
- Hydro Ottawa paid out \$65,749 in incentives in 2007 and reduced demand 519 kW and saved 2,806,916 kWh.
- Hydro Ottawa shared this very successful program with the OPA and participated in the Electricity Retrofit Incentive Program offered provincially by the OPA in 2007.

Next Steps

- Continue to honour existing commitments for projects pre-approved for incentives until third tranche funding is exhausted.
- No further action to be taken in respect to this program.

3.2.4 Commercial Industrial & Institutional (CI&I) Load Control Initiative

Description

Load control uses a real time communications link to enable or disable customer loads at the discretion of the utility. These controls are usually engaged during system peak periods or when required to relieve pressure on the system grid.

Target Users

Larger commercial, industrial and institutional customers

Benefit

Demand control provides lower costs and increased stability for customers and utilities.

Action

- Third party service provider actively contacting customers to develop Demand Response curtailment capacity.

Results to Date

- Discussions have taken place with a number of customers interested in making demand response capacity available for dispatch by Hydro Ottawa.
- No formal commitments have been made to date.

Next Steps

- Continue to promote the program to potential customers.
- Contract where possible with participating customers for demand response capacity.
- Make adjustments to the program, promote the results and provide support for further installations.
- Engage engineering and operations personnel in developing load control as part of the LDC supply mix.

3.2.5 On the Bill Financing

Description

On-the-Bill financing will start with a pilot offering that will be developed to help remove a significant energy conservation purchase barrier. This will allow customers to finance their conservation investment off their balance sheet via an “expense budget” on their hydro bill instead of having to contend for scarce capital dollars. Financing arrangements will be made with third party investment organizations and the payment amounts will be presented on the customer’s hydro bill.

Target Users

Larger commercial, industrial and institutional customers

Benefit

It is anticipated that this program will remove a significant energy conservation investment-purchasing barrier.

Action

- No action taken.

Results to Date

- No results to report.

Next Steps

- No further action to be taken in respect to this program.

3.2.6 Design Advisory Program (CI&I)

Description

This initiative helps to create an integrated approach to the design process for new buildings, and involves architects, engineers, building owners and design advisors.

Target users

Commercial, Industrial and Institutional customers

Benefits

This program results in cost effective improvements to the energy efficiency of a building without adversely affecting other performance requirements stipulated by the owner. An energy performance model can be created to demonstrate achievable energy savings and can provide a breakdown of energy use. Through the installation of energy efficient equipment during construction, the customer benefits by avoiding the stranded costs incurred with equipment upgrades after the fact.

Action

- No action taken.

Results to Date

- No results to report.

Next Steps

- No further action to be taken in respect to this program.

3.3 Distribution Loss Reduction

Description:

The Distribution Loss Reduction Program is a broad network based initiative to drive greater efficiencies within the distribution grid. This program will identify opportunities for system enhancements. Next steps will be to complete the engineering analysis and feasibility studies. Items to be addressed may include the following:

Power Factor Correction - A power factor assessment will be completed which will identify locations for the installation of power factor correction capacitor banks.

Voltage Conversion - Voltage upgrades can save up to 90% of the losses associated with a feeder as higher voltages and lower current results in lower losses. This study will ascertain the locations and value of voltage conversions.

Power System Load Balancing - This program is designed to ascertain where load shifting can occur to improve system efficiency. It is estimated that approximately 5% - 10% of system losses could be saved.

Voltage Profile Management - Changing voltage profiles at the distribution station level can result in a peak reduction at the controllable distribution stations.

Line Loss Reductions - Replacement of conductors can reduce line losses. An evaluation of where such opportunities exist may be undertaken.

Target users

The results of this program will positively impact all of Hydro Ottawa's customers.

Benefits

Reducing electricity distribution system delivery losses will have a number of positive impacts including reducing system demand, relieving network capacity to accommodate growth and reducing the requirement for new generating capacity in the Province. Costs associated with distribution system delivery losses are recovered through electricity distribution charges. Reductions in these costs will therefore benefit all customers.

Action

- No action taken.

Results to Date

- No results to report.

Next Steps

- No further action to be taken in respect to this program.

3.4 Distributed Energy & Load Displacement

Description

Distributed generation behind the customer's meter provides an excellent opportunity to displace load from the local distribution system's grid in a very effective manner. Load displacement technology, such as combined heat and power systems, provides increased power efficiency and thermal systems. Combined with an existing or new district heating distribution system this technology contributes to the development of sustainable energy networks within Ontario's communities.

Other technologies such as micro-turbines, wind, biomass fuels and solar provide additional options to meet the customer's needs. This initiative will facilitate the development and implementation of these opportunities. Financial incentives will be considered based on the project's viability.

Development of educational and technology programs in conjunction with local colleges and universities may be considered. Small pilots or demonstration projects to promote alternative and renewable energy sources may also be considered.

Target users

Commercial, industrial and residential schools, colleges and universities

Benefits

Benefits include additional capacity within the grid. Cleaner technologies result in reductions in Greenhouse Gas ("GHG") emissions. Other benefits include improved system reliability, reduced harmonics, back-up power possibilities, education and skills development.

Action

- A demonstration site for solar thermal and photovoltaic is being installed at a Hydro Ottawa facility.
- This installation will displace electricity used for the building heat and hot water systems as well as generate electricity for the facility.
- Thermal energy will be stored off-peak and used on-peak (night time to day time) and stored during the summer for use in the winter heating season.
- Hydro Ottawa has engaged a third party service provider who is actively contacting customers to develop Distributed Energy capacity.
- An additional third party service provider is also actively contacting City of Ottawa facilities to develop Distributed Energy capacity.

Results to Date

- Installation in Hydro Ottawa facility is planned for 2008.
- Discussions have taken place with a number of customers interested in making generation capacity available for dispatch by Hydro Ottawa.
- No formal commitments have been made to date.

Next Steps

- Complete the installation planned for the Hydro Ottawa facility.
- Develop Generation Control Infrastructure at Hydro Ottawa to dispatch Distributed Generation.
- Continue to promote the program to potential customers.
- Contract where possible with participating customers for distributed energy capacity
- Make adjustments to the program, promote the results and provide support for further installations.
- Engage engineering and operations personnel in developing distributed energy as part of the LDC supply mix.

3.4.1 Stand-by Generators

Description

This program may provide for the use of customers' existing standby generators when required and/or economical. Environmentally friendly generators will be the primary focus of this initiative however all generators may be considered if needed during an emergency.

Target Users

Commercial and industrial customers with sufficiently sized standby generators.

Benefits

Reduction of customer and system peak demand and energy costs. This additional supply may be able to bid into the Ontario energy market in the future.

Action

- Through a joint initiative with the CLD, a leading energy consultant was engaged to survey target customers to assess the capacity and availability of back-up generators in Hydro Ottawa's service area.
- Upon completion of this customer survey, the CLD engaged the same consultant to further study and make detailed recommendations on a back-up generator program through which distributed generation capacity could be aggregated and made available during times of supply constraints. The study, which will assess technical, financial and operational issues, is currently underway.
- Also with the CLD, have worked with representatives of Enbridge Consumers Gas to identify and remove barriers to the use of back-up generators.

Results to Date

- Discussions have taken place with a number of customers interested in making back-up generation capacity available for dispatch by Hydro Ottawa.
- No formal commitments have been made to date.

Next Steps

- Continue to promote the program to potential customers.
- Contract where possible with participating customers for distributed energy capacity
- Engage engineering and operations personnel in developing standby generation as part of the LDC supply mix.

3.5 Overall Program Support

Description

Several program supporting initiatives may be considered such as; an annual Key Account Conference, Home Show participation, an energy conservation website, customer newsletters, staff training and media support activities etc. Outreach support to smaller utilities is an additional area that may be explored.

Target Users

All customer classes

Benefits

Supports existing programs and drives energy conservation awareness that will facilitate the culture change in Ontario.

Action

- No action taken.

Results to Date

- No results to report.

Next Steps

- No further action to be taken in respect to this program.

4. Lessons Learned

Hydro Ottawa is learning as each CDM initiative is implemented and we have accomplished much to date by working both together through various partnerships and relationships and separately with external service providers. The unprecedented cooperation between utilities, especially throughout the CLD continues to strengthen and all have benefited from the shared learning and program development efficiencies.

Hydro Ottawa continues to develop internal and external structures to manage CDM and our processes are now in place. Hydro Ottawa believes that these initiatives and this experience will pay significant dividends in future. In particular, Hydro Ottawa has learned the following:

Program Development

1. CDM program development does take time. In particular, legal and environmental issues must be thoroughly addressed up front in order to ensure long-term sustainable conservation success.
2. LDCs have demonstrated that they are the most effective channel to their customers for conservation programs. Customers have grown to depend on their local distributor for conservation support, advice and programs. This is critical to minimizing customer confusion while maximizing brand equity, cost effectiveness and conservation results.
3. Commercial Load Control (Demand Response) and Distributed Energy programs piloted as part of the CDM plan show great promise as a means of reducing electricity system demand but require considerable time and effort to overcome customer implementation barriers. Customer revenues provided by these programs have to address the financial realities that customers face in making this capacity available.
4. Each LDC has unique markets, resources and needs requiring a range of diverse and individual strategies and tactics that can be customized for successful local CDM program implementation. Providing communities with a range of provincial OPA programs, in conjunction with custom LDC programs, makes good strategic sense.
5. There is a need for consistent ownership of programs, consistent labeling of programs and consistent delivery agents for such programs. Without these key ingredients, the credibility of good programs – and of the organization offering them – may be undermined and with it consumers' willingness to engage in conservation and demand management programs in future.
6. Hydro Ottawa found that simple, low cost incentives like the powerWISE® PowerPack or free CFL bulbs were very well received by residential customers, offered good Total Resource Cost (TRC) results and proved that customers did not require significant incentives to participate in programs. In fact, ease of participation accompanied by moderate incentives with a perceived high value to customers appear to be the hallmarks of program success.

7. The powerWISE® Business Incentive Program showed Hydro Ottawa that Commercial and Industrial customer timelines for conservation projects are often longer than expected and have a lower sense of urgency than Hydro Ottawa would prefer. Incentives have to be very meaningful, in order to encourage and speed up conservation projects at this large commercial level.
8. Commercial Programs must address the needs of the customers at the Corporate, Municipal, Provincial and National levels to allow implementation across jurisdictions and beyond individual stores. Coordination and consistency is required to allow large Corporations to make programs available to all store locations regardless of location by City or Province.

Education

1. Public education is a critical element as Hydro Ottawa builds a culture of conservation, yet under the current regulatory framework, no funding is available through the OPA and no reportable benefits can be attributed to this activity. This effectively penalizes Utilities for participating in this type of worthwhile and necessary initiative.
2. Residential customers are generally aware of the simple products and initiatives that are available to help them to reduce their energy consumption. However, they have a limited understanding of the dollar impact and quick return provided by simple solutions such as pipe wrap, SLED and CFL bulbs. It is critical to educate our customers and to provide a savings comparison in dollars to highlight these impacts. Real time, in home, energy monitors offer customers an effective tool to better understand and manage their consumption, which would be of particular value when time of use pricing comes into effect.
3. It is important to offer Commercial and Industrial customers access to information through convenient forums such as trade shows. There are many emerging technologies and an explosion of service providers in the marketplace. Hydro Ottawa needs to concentrate efforts on helping these customers understand not only the technologies but the impact and value these technologies can have on their specific organizations. This will lead to increased participation and adoption of new energy efficient technologies.

Regulatory Issues

1. It is clear that CDM programs require and will benefit from continuity and consistency of funding. The funding transition to the OPA that occurred in 2007 created a period of uncertainty which disrupted programs at the beginning of the year followed by a ramping up in mid year. The result was lost momentum in conservation programs savings and customer confusion.
2. The energy industry must coordinate the individual efforts of its many organizations to ensure that program delivery is efficient, readily available and understood by all

customers. Most customers don't understand the relationship among the various organizations within the hydro industry, so an attempt to deliver programs to the end customer by different groups only confuses the customer and suggests a lack of industry coordination. Clarity regarding the roles of the LDC, EDA, OEB, OPA and the IESO would be beneficial in this regard.

3. TRC analysis has become more complicated with the introduction of new TRC analysis tools and measures lists. There are two sets of standards, one from the OEB and one from the OPA. We recommend the use of a single financial standard set by the OEB.
4. Consideration should be given to R&D funding to support program development. This would encourage development of new ideas and control any potential risks involving new technologies.
5. As a deregulated industry with shareholders, it is worth remembering that LDC shareholders expect some remuneration from CDM. All programs must balance the needs of market transformation and sustainability with a consistent rate of return.

5. Conclusion

Hydro Ottawa developed and ramped up an effective Conservation and Demand Management program and generated some impressive results using third tranche of MARR funding. Hydro Ottawa has taken action, learned by doing and improved with experience.

Results for 2007 are significantly less than in previous years as programs originally launched in 2005 were wound down as third tranche funding was exhausted.

Hydro Ottawa was able to maximize results by working with the Coalition of Large Distributors, which provided a significant advantage in knowledge and resource sharing, efficiency and cost effectiveness. As we gained market experience, we were able to fine-tune our individual CDM plans for mutual benefit.

Hydro Ottawa enjoyed highly recognized successes with two particular programs developed by Hydro Ottawa. The powerWISE[®] Fridge Bounty Program and the powerWISE[®] Business Incentive Program both proved to be very popular with our customers and were since adopted by other LDCs and the Ontario Power Authority for implementation across the Province in 2007. The powerWISE[®] retail coupon program was also so effective that it was adopted by the Ontario Power Authority and re-launched as the “Every Kilowatt Counts” Spring and Fall retail campaigns.

The constraints facing the Provincial electricity distribution system are well known and have created a heightened sense of urgency for all users to contribute to better management of our electricity demand. Our customers are recognizing the value of conserving electricity and Hydro Ottawa’s role in delivering CDM programs locally is well established. Hydro Ottawa is committed to helping lead the evolution to a culture of conservation in this Province and will work with the regulator, the Ontario Power Authority and other members of the Coalition of Large Distributors to make this happen.

Appendix A - Evaluation of the CDM Plan

	⁵ Cumulative Totals Life-to-date	Total for 2007	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	⁴ Smart Meters	Other #1	Other #2
<i>Net TRC value (\$):</i>	\$18,853,940	\$ 805,097	\$ 393,076	\$ 492,517	\$ -	\$ -	\$ -	\$ (80,495)		\$ -	\$ -
<i>Benefit to cost ratio:</i>	2.35	1.79	1.93	1.96	0.00	0.00	0.00	0.00		0.00	0.00
<i>Number of participants or units delivered:</i>											
<i>Lifecycle (kWh) Savings:</i>	398,394,554	23,853,494	11,366,297	12,487,197	0	0	0	0		0	0
<i>Report Year Total kWh saved (kWh):</i>	67,657,016	4,822,641	2,015,726	2,806,916	0	0	0	0		0	0
<i>Total peak demand saved (kW):</i>	5,981	795	275	519	0	0	0	0		0	0
<i>Total kWh saved as a percentage of total kWh delivered (%):</i>		0.06									
<i>Peak kW saved as a percentage of LDC peak kW load (%):</i>		0.06									
¹ <i>Report Year Gross C&DM expenditures (\$):</i>	\$ 8,024,593	\$ 1,140,862	\$ 421,323	\$ 579,304	\$ -	\$ -	\$ -	\$ 80,495	\$ 59,740	\$ -	\$ -
² <i>Expenditures per kWh saved (\$/kWh):</i>	\$0.12	\$ 0.05	\$ 0.04	\$ 0.05	\$ -	\$ -	\$ -	\$ -		\$ -	\$ -
³ <i>Expenditures per kW saved (\$/kW):</i>	\$ 1,341.68	\$ 1,435.91	\$ 1,530.77	\$ 1,115.58	\$ -	\$ -	\$ -	\$ -		\$ -	\$ -
<i>Utility discount rate (%):</i>	5.61										

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, 2007 CDM Annual report for third tranche will include 2006, 2005 and 2004 numbers, if any).

Appendix B - Discussion of the Program

A. **Name of the Program:** Co-Branded Mass Market Program (Reference page 6 of 2007 Annual Report)

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

This flagship co-branded mass-market program (e.g. powerWISE®) is a multifaceted approach to fostering the conservation culture in Ontario. Through development of a significant cooperative effort among six of the largest municipal LDC's, this program will become synonymous with specific initiatives such as Compact Fluorescent Lighting (CFL) change out programs, LED Christmas Lights, Energy Star, Multi-Choice, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Creation of online services such as energy consumption calculators, etc. were included in co-branded mass market.

Measure(s):

	Spring ekc campaign	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Incandescent bulb and average existing stock		
Efficient technology:	CFL's, ceiling fans, outdoor solar lights, motion sensors, dimmer switches, furnace fans		
Number of participants or units delivered for reporting year:	Results pending from OPA		
Measure life (years):	CFL- 4 years, Ceiling fans - 20 years, motion sensors and dimmers - 10 years		
Number of Participants or units delivered life to date	There have been a total of 472,832 participants in 2005 - 2006 over the community outreach and retail program areas		

B. TRC Results:	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):		
² TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ 113,686.73	\$949,437.28
Incremental Measure Costs (Equipment Costs)		
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		339.28	
	Winter			
	lifecycle	in year	Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):			159,954,663	24,626,078
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

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. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>	\$ 116,686.73	\$949,437.28
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 116,686.73	\$949,437.28
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

E. Assumptions & Comments:

Results are still pending from the Ontario Power Authority for the ekc spring coupon campaign made possible through the mailing list provided by Hydro Ottawa

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

A. **Name of the Program:** Residential Load Control - *peakSaver* (Reference page 13 of 2007 Annual Report)

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

The Load Control Initiative materialized as the *peakSaver* Pilot Program. It was officially launched in June 2006.

This load control initiative involves the free installation of programmable thermostats. The thermostats were supplied by Cannon Technologies, while the service provider was Honeywell Utility Solutions. The target of 1,200 thermostats was exceeded with 1,315 residential stats being installed. The control strategy will involve off/on cycling for air conditioning loads during the control period.

Measure(s):

	Utility Control	Programmable Thermostat	Measure 3 (if applicable)
Base case technology:	None	Regular Thermostat	
Efficient technology:	Utility Control	Programmable Thermostat	
Number of participants or units delivered for reporting year:	166	166	
Measure life (years):	18	18	
Number of Participants or units delivered life to date	1481	1481	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):	\$ 96,914.00	\$1,430,494.90
² TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ 154,174.88	\$554,987.87
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 154,174.88	\$554,987.87
Net TRC (in year CDN \$):	-\$ 57,260.88	\$875,507.04
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$ 0.63	2.58

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	Summer	74.7	266.8
	Winter		

	lifecycle	in year	Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):	807,928	44,885	4,573,446	233,161

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):	83	740.5
Peak hours dispatched in year (hours):		

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

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. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>	\$ 36,912.79	\$ 424,530.01
	<i>Incremental O&M:</i>	\$ 117,262.09	\$ 130,457.86
	<i>Incentive:</i>	\$ -	\$ -
	<i>Total:</i>	\$ 154,174.88	\$ 554,987.87
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

E. Assumptions & Comments:

[Redacted area]

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

A. **Name of the Program:** Energy Audit, Support and Incentives ("EAS&I") (Reference page 14 of 2007 Annual Report)

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

Through visits to customers homes or working through existing service providers, Hydro Ottawa will provide conservation information and make specific recommendations for energy savings in such areas as major appliances, lighting, air leakage, hot water, heating and cooling. Incentives may also be provided. Services could be further tailored for specific subsidized housing applications.

Measure(s):

	PowerWISE Tune ups	Smart Business Ottawa	CFLs
<i>Base case technology:</i>	Unwrapped Water Heater, 60 watt Incandescent bulbs	Small Commercial status quo	60 watt incandescent bulb and 5 Watt seasonal lights
<i>Efficient technology:</i>	Tank wrap, CFLs	Small Commercial audit	13 watt CFL, SLEDs
<i>Number of participants or units delivered for reporting year:</i>	39 tuneups, 78 CFL, 19 tank wrap	5	6375 CFLs, 458 - 35 light SLEDs and 100 - 70 light SLEDs
<i>Measure life (years):</i>	4, 6	1	4. 30
<i>Number of Participants or units delivered life to date</i>	377 tune ups	22	300

B. TRC Results:	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):	\$ 174,948.00	\$7,671,061.02
² TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	\$ 15,718.03	\$99,126.23
<i>Incremental Measure Costs (Equipment Costs)</i>		
<i>Total TRC costs:</i>	\$ 15,718.03	\$1,568,149.50
<i>Net TRC (in year CDN \$):</i>	\$ 159,230.00	\$6,102,911.60
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	\$ 11.13	4.89

C. Results: (one or more category may apply)	Cumulative Results:			
Conservation Programs:				
<i>Demand savings (kW):</i>		<i>Summer</i>	0.36	2061.95
		<i>Winter</i>		
		<i>lifecycle</i>	<i>in year</i>	<i>Cumulative Lifecycle</i>
<i>Energy saved (kWh):</i>	2,758,787	644,694	104,679,500	24,118,082
<i>Other resources saved :</i>				
<i>Natural Gas (m3):</i>				
<i>Other (specify):</i>				
Demand Management Programs:				
<i>Controlled load (kW)</i>				
<i>Energy shifted On-peak to Mid-peak (kWh):</i>				
<i>Energy shifted On-peak to Off-peak (kWh):</i>				
<i>Energy shifted Mid-peak to Off-peak (kWh):</i>				
Demand Response Programs:				
<i>Dispatchable load (kW):</i>				
<i>Peak hours dispatched in year (hours):</i>				

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
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D. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>	\$ 15,718.03	\$ 14,851,013.00
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 15,718.03	\$ 14,851,013.00
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

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 B - Discussion of the Program

A. **Name of the Program:** Fridge and Freezer Bounty (Reference page 18 of 2007 Annual Report)

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

The Fridge and Freezer Bounty is a secondary appliance retirement program where the cost of removal is incurred by Hydro Ottawa. When an appliance is picked up customers received a powerWISE® power pack consisting of 2 CFL light bulbs, an LED night light and various energy conservation information pieces.

Measure(s):

	Fridge Retirement	Freezer Retirement	PowerWISE Power pack
Base case technology:	Existing second fridge	Existing freezer	60 watt incandescent
Efficient technology:	Removal	Removal	13W CFL
Number of participants or units delivered for reporting year:	535	320	1710
Measure life (years):	6	6	4
Number of Participants or units delivered life to date	4116	1812	9402

B. TRC Results:	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):	\$ 412,008.00	\$2,823,419.68
² TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ 188,838.34	\$693,027.14
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 188,838.34	\$693,027.14
Net TRC (in year CDN \$):	\$ 223,169.66	\$2,130,392.54
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$ 2.18	4.07

C. Results: (one or more category may apply)	Cumulative Results:			
Conservation Programs:				
Demand savings (kW):	Summer	189.78	1340.74	
	Winter		150.42	
			Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):	lifecycle	5,693,250	1,004,813	39,186,200
Other resources saved :				6,823,501
Natural Gas (m3):				
Other (specify):				
Demand Management Programs:				
Controlled load (kW)				
Energy shifted On-peak to Mid-peak (kWh):				
Energy shifted On-peak to Off-peak (kWh):				
Energy shifted Mid-peak to Off-peak (kWh):				
Demand Response Programs:				
Dispatchable load (kW):				
Peak hours dispatched in year (hours):				

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

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. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:		
	Incremental O&M:	\$188,838.34	\$ 693,027.14
	Incentive:		
	Total:	\$188,838.34	\$ 693,027.14
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[Redacted area]

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

A. **Name of the Program:** Electric Avenue (Reference page 19 of 2007 Annual Report)

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

A community based project to reach out into social housing communities with a message of conservation and the evaluation of Electric Thermal Storage ("ETS") heaters to displace base board heating and reduce heating costs in low income social housing

Measure(s):

	Electric Thermal Storage Units	Electric DHW Measures + CFLs	Education and Energuide Audits
<i>Base case technology:</i>	Baseboard heaters	Unwrapped tank, unwrapped pipe, inefficient water devices, 60 watt incandescent	Do Nothing
<i>Efficient technology:</i>	ETS Units	tank wrap, showerhead, aerators, pipe wrap, CFLs	10 energuide for houses audits and 5 community house presentations
<i>Number of participants or units delivered for reporting year:</i>			
<i>Measure life (years):</i>			
<i>Number of Participants or units delivered life to date</i>	10	10	15

TRC Results:	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):	\$ -	8372.6
² TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	\$ 16,799.00	\$ 91,869.24
<i>Incremental Measure Costs (Equipment Costs)</i>	\$ -	
<i>Total TRC costs:</i>	\$ 16,799.00	\$ 91,869.24
Net TRC (in year CDN \$):	-\$ 16,799.00	-\$83,496.64
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	\$ -	\$0.09

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

Conservation Programs:

<i>Demand savings (kW):</i>	<i>Summer</i>	0	0.76
	<i>Winter</i>	0	0

	<i>lifecycle</i>	<i>in year</i>	<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>
<i>Energy saved (kWh):</i>	142,114	0	142,114	13,941
<i>Other resources saved :</i>				
<i>Natural Gas (m3):</i>				
<i>Other (specify):</i>				

Demand Management Programs:

<i>Controlled load (kW)</i>		
<i>Energy shifted On-peak to Mid-peak (kWh):</i>		
<i>Energy shifted On-peak to Off-peak (kWh):</i>		
<i>Energy shifted Mid-peak to Off-peak (kWh):</i>		

Demand Response Programs:

<i>Dispatchable load (kW):</i>		
<i>Peak hours dispatched in year (hours):</i>		

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
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D. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>	\$ 16,799.00	\$ 91,869.24
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 16,799.00	\$ 91,869.24
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

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 B - Discussion of the Program

A. **Name of the Program:** Social Housing (Reference page 20 of 2007 Annual Report)

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

The social housing program had two active facets in 2007. PowerWISE Tune-ups were provided to low income customers free of charge with Hydro Ottawa paying the full \$100 charge for the site visit and report. The PowerPlay audits consisted of an enhanced power WISE Tune-up and the installation of a wider variety of conservation measures.

Measure(s):

	Low Income Tune-ups	PowerPlay Audits	Measure 3 (if applicable)
<i>Base case technology:</i>	status quo	status quo	
<i>Efficient technology:</i>	Tune-Up, Tank Wrap, Pipe Wrap, Showerhead, Aerators, CFLs	Audit, Showerhead, Tank Wrap, Tank Temperature, Cold Water Detergent, Aerators, CFLs, Pipe Insulation, Clothes Dryer Rack, Window Film, Timer, Power Bar, Patio Door Film, Kettle	
<i>Number of participants or units delivered for reporting year:</i>	258 low income tuneups plus a variety of measures	151 powerplay audits plus a variety of measures	
<i>Measure life (years):</i>	1,6,612,12,4	1,12,6,1,12,12, 4,6,10,1, 20, 1, 1,4,18	
<i>Number of Participants or units delivered life to date</i>	582 tune ups plus a variety of measures	583 powerplay audits plus a variety of measures	

B. TRC Results:	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):	\$ 130,528.23	\$341,788.56
² TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	\$ 7,111.35	\$142,193.81
<i>Incremental Measure Costs (Equipment Costs)</i>		
<i>Total TRC costs:</i>	\$ 7,111.35	\$142,193.81
Net TRC (in year CDN \$):	\$ 123,417.00	\$199,594.78
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	18.35	2.40

C. Results: (one or more category may apply)	Cumulative Results:			
Conservation Programs:				
<i>Demand savings (kW):</i>		<i>Summer</i>	10.4	28.18
		<i>Winter</i>		
		<i>lifecycle</i>	<i>in year</i>	<i>Cumulative Lifecycle</i>
<i>Energy saved (kWh):</i>	2,106,332	321,334	5,534,152	871,433
<i>Other resources saved :</i>				
<i>Natural Gas (m3):</i>				
<i>Other (specify):</i>				
Demand Management Programs:				
<i>Controlled load (kW)</i>				
<i>Energy shifted On-peak to Mid-peak (kWh):</i>				
<i>Energy shifted On-peak to Off-peak (kWh):</i>				
<i>Energy shifted Mid-peak to Off-peak (kWh):</i>				

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
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D. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:		
	Incremental O&M:	\$ 7,111.35	\$ 142,193.81
	Incentive:		
	Total:	\$ 7,111.35	\$ 142,193.81
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[Redacted area]

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

A. **Name of the Program:** Leveraging Energy Conservation and Load Management (Reference page 24 of 2007 Annual Report)

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

Leveraging Energy Conservation savings are being accomplished through the powerWISE[®] Business Incentive Program. This program offers financial incentives to large customers for projects that improve electricity consumption and reduce peak demand.

There are two application paths for customers: **prescriptive** and **custom**. The prescriptive path is for common measures and lighting retrofits. The custom path offers flexibility for customers performing retrofits that do not fall under the prescriptive path, and requires that the project reduces peak demand by at least 10 kW. Custom applications must be pre-approved to be considered. All details for this program are available on www.hydroottawa.com.

Measure(s):

	Prescriptive Projects	4 Custom Projects	Measure 3 (if applicable)
Base case technology:	Existing Lighting	Existing Technologies	
Efficient technology:	Lighting upgrades	Energy Efficient Technologies	
Number of participants or units delivered for reporting year:	18	4	
Measure life (years):	4,5,6,25	5, 6,15	
Number of Participants or units delivered life to date	45 prescriptive projects	5 Custom Projects	

B. TRC Results:	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):	\$ 1,006,072.75	\$2,742,020.34
² TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ 468,891.30	\$630,410.90
Incremental Measure Costs (Equipment Costs)	\$ 816,620.18	\$2,159,924.30
Total TRC costs:	\$ 1,285,511.48	\$2,790,335.20
Net TRC (in year CDN \$):	-\$ 279,438.73	-\$ 48,314.94
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$ 0.78	0.98

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

Conservation Programs:

	Summer	519.29	1260.28	
	Winter			88.19
			Cumulative	Cumulative
	lifecycle	in year	Lifecycle	Annual Savings
Demand savings (kW):				
Energy saved (kWh):	12,487,197	2,806,916	35,543,585	6,408,070
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
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D. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>	\$ 468,891.30	\$ 630,410.90
	<i>Incentive:</i>	\$ 65,749.00	\$ 327,371.00
	<i>Total:</i>	\$ 534,640.30	\$ 957,781.90
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

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 B - Discussion of the Program

A. **Name of the Program:** Commercial Industrial & Institutional (CI&I) Load Control Initiative

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

Load control uses a real time communications link to enable or disable customer loads at the discretion of the utility. These controls are usually engaged during system peak periods or when required to relieve pressure on the system grid.

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):	\$ 1,914.85	1914.85
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 1,914.85	1914.85
Net TRC (in year CDN \$):	-\$ 1,914.85	-\$ 1,914.85
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$ -	0

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

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. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>	\$ 1,914.85	\$ 1,914.85
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 1,914.85	\$ 1,914.85
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

E. Assumptions & Comments:

[Redacted area]

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

A. **Name of the Program:** Distribution Loss Reduction (Reference page 30 of 2007 Annual Report)

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

The Distribution Loss Reduction Program is a broad network based initiative to drive greater efficiencies within the distribution grid. This program will identify opportunities for system enhancements.

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):	\$ 80,495.32	
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 80,495.32	
Net TRC (in year CDN \$):	-\$ 80,495.32	
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		

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

Conservation Programs:

Demand savings (kW):		Summer	0		
		Winter	0		0

Energy saved (kWh):	0	lifecycle	0	in year	Cumulative Lifecycle
Other resources saved :					Cumulative Annual Savings
Natural Gas (m3):					
Other (specify):					

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
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D. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:	\$ 56,920.32	\$ 754,088.38
	Incremental O&M:	\$ 23,575.00	\$ 177,025.59
	Incentive:		
	Total:	\$ 80,495.32	\$ 931,113.97
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 B - Discussion of the Program

A. **Name of the Program:** Distributed Energy and Load Displacement

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

Distributed generation behind the customer's meter provides an excellent opportunity to displace load from the local distribution system's grid in a very effective manner. Load displacement technology, such as combined heat and power systems, provides increased power efficiency and thermal systems. Combined with an existing or new district heating distribution system this technology contributes to the development of sustainable energy networks within Ontario's communities.

Other technologies such as micro-turbines, wind, biomass fuels and solar provide additional options to meet the customer's needs. This initiative will facilitate the development and implementation of these opportunities. Financial incentives will be considered based on the project's viability.

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):	\$ 42,749.75	\$69,949.75
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 42,749.75	\$69,949.75
Net TRC (in year CDN \$):	-\$ 42,749.75	\$ -
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		

C. Results: (one or more category may apply)	Cumulative Results:			
Conservation Programs:				
Demand savings (kW):	Summer	0		0
	Winter	0		0
			Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):	lifecycle	0	0	0
Other resources saved :	in year			
Natural Gas (m3):				
Other (specify):				
Demand Management Programs:				
Controlled load (kW)				
Energy shifted On-peak to Mid-peak (kWh):				
Energy shifted On-peak to Off-peak (kWh):				
Energy shifted Mid-peak to Off-peak (kWh):				
Demand Response Programs:				
Dispatchable load (kW):				
Peak hours dispatched in year (hours):				

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):		0	0
Energy generated (kWh):		0	0
Peak energy generated (kWh):		0	0
Fuel type:			

Other Programs (specify):

Metric (specify):		
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D. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>	\$ 42,749.75	\$69,949.75
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 42,749.75	\$69,949.75
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

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: **2007**

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 (\$)
<i>Co Branded Mass Market</i>	\$ -	\$ 113,687	-\$ 113,687	0.00	0	0	0	\$ 113,687
<i>Electric Avenue</i>	\$ -	\$ 16,799	-\$ 16,799	0.00	0	0	0	\$ 16,799
<i>Residential Load Control</i>	\$ 96,914	\$ 154,175	-\$ 57,261	0.63	44,885	807,928	75	\$ 154,175
<i>Energy Audit Support and Incentives</i>	\$ 174,948	\$ 15,718	\$ 159,230	11.13	644,694	2,758,787	0	\$ 15,718
<i>Fridge and Freezer Bounty</i>	\$ 412,008	\$ 188,838	\$ 223,170	2.18	1,004,813	5,693,250	190	\$ 188,838
<i>Social Housing</i>	\$ 130,528	\$ 7,111	\$ 123,417	18.35	321,334	2,106,332	10	\$ 7,111
*Totals App. B - Residential	\$ 814,398	\$ 496,328	\$ 318,070	1.64	2,015,726	11,366,297	275	\$ 421,323
<i>Residential Indirect Costs not attributable to any specific program</i>		-\$ 75,006						
Total Residential TRC Costs		\$ 421,323						
**Totals TRC - Residential	\$ 814,398	\$ 421,323	\$ 393,076	1.93				

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 (\$)
<i>Leveraging Energy Conservation and Load Management</i>	\$ 1,006,073	\$ 468,891	\$ 537,182	2.15	2,806,916	12,487,197	519	\$ 534,640
<i>C I and I Load Control</i>	\$ -	\$ 1,915	-\$ 1,915	0.00	0	0	0	\$ 1,915
<i>Distributed Energy</i>	\$ -	\$ 42,750	-\$ 42,750	0.00	0	0	0	\$ 42,750
*Totals App. B - Commercial	\$ 1,006,073	\$ 513,556	\$ 492,517	1.96	2,806,916	12,487,197	519	\$ 579,304
Total TRC Costs		\$ 513,556						
**Totals TRC - Commercial	\$ 1,006,073	\$ 513,556	\$ 492,517	1.96				

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 (\$)
<i>Name of Program A</i>			\$ -	0.00				
<i>Name of Program B</i>			\$ -	0.00				
<i>Name of Program C</i>			\$ -	0.00				
*Totals App. B - Institutional	\$ -	\$ -	\$ -	0.00	0	0	0	\$ -

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 (\$)
<i>Name of Program A</i>			\$ -	0.00				
<i>Name of Program C</i>			\$ -	0.00				
<i>Name of Program C</i>			\$ -	0.00				
*Totals App. B - Industrial	\$ -	\$ -	\$ -	0.00	0	0	0	\$ -

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 (\$)
<i>Name of Program A</i>			\$ -	0.00				
<i>Name of Program C</i>			\$ -	0.00				
<i>Name of Program C</i>			\$ -	0.00				
*Totals App. B - Agricultural	\$ -	\$ -	\$ -	0.00	0	0	0	\$ -

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 (\$)
<i>Distribution Loss Reduction</i>	\$ -	\$ 80,495	-\$ 80,495	0.00	0	0	0	\$ 80,495
<i>Name of Program B</i>			\$ -	0.00				
<i>Name of Program C</i>			\$ -	0.00				
*Totals App. B - LDC System	\$ -	\$ 80,495	-\$ 80,495	0.00	0	0	0	\$ 80,495

Total TRC Costs		\$ 80,495						
**Totals TRC - LDC System	\$ -	\$ 80,495	-\$ 80,495	0.00				

7. Smart Meters Program

Report Year Gross C&DM Expenditures (\$) 59,740

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 (\$)
<i>Name of Program A</i>			\$ -	0.00				
<i>Name of Program B</i>			\$ -	0.00				
<i>Name of Program C</i>			\$ -	0.00				
*Totals App. B - Other #1	\$ -	\$ -	\$ -	0.00	0	0	0	\$ -

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				
*Totals App. B - Other #2	\$ -	\$ -	\$ -	0.00	0	0	0	\$ -

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	\$ 1,820,471	\$ 1,015,374	\$ 805,097	1.79	\$ 4,822,641	\$ 23,853,494	\$ 795	\$ 1,140,862
TOTAL ALL LDC COSTS		\$ 1,015,374						
**LDC' PORTFOLIO TRC	\$ 1,820,471	\$ 1,015,374	\$ 805,097	1.79				

* 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.