



# **Hydro Ottawa Limited**

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**Conservation and Demand Management**

**2006 Annual Report**

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

**March 30, 2007**



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## 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. This report has been prepared in accordance with those guidelines. On March 1 2007 the Board issued Amended 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 2006 annual report reflects Hydro Ottawa’s actual spending as per the Board’s approved reallocation.

Hydro Ottawa is proud to report a significant increase in results in 2006. Hydro Ottawa increased its yearly expenditure in CDM activities by 220% in 2006 compared to 2005. Net kWh savings increased by over 800% compared to 2005 and the cost per kWh saved was lowered by 74% in 2006. Net kW savings increased by over 1,300% compared to 2005 and the cost per kW saved was lowered by over 82% in 2006.

Hydro Ottawa’s 2006 results 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 2006.

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 will 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 contemplated as 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 2006 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 joint ownership and the CLD agreed to use this mark.
- Supported television, radio and print advertising campaigns were executed throughout 2006 to raised awareness of the brand. The campaigns were developed and deployed by the Ministry of Energy (“MOE”).

#### Results to Date

- Interest in the powerWISE® brand has been expressed by the MOE, the Ontario Power Authority (“OPA”), Hydro One and other utilities.

#### Next Steps

- Extend the powerWISE® brand to the Ministry of Energy, the OPA, Hydro One and other Local Distribution Companies (“LDCs”).

### ***powerWISE Website***

#### Action

- The powerWISE® website [www.powerwise.ca](http://www.powerwise.ca) was jointly developed and announced on April 1<sup>st</sup>, 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

- In 2006 the powerWISE® website had over 218,000 visitors.

#### Next Steps

- Continue to promote [www.powerwise.ca](http://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 May 1, 2006 to August 31, 2006
  - Compact Fluorescent Light bulb (\$5.00 off per multi-pack)
  - Indoor/outdoor timers (\$5.00 off)
  - Ceiling fans (\$25.00 off)
  - Programmable thermostats (\$15.00 off)
  - Promoted Keep Cool – a Clean Air Foundation program
  - Promoted Cool Saving Rebate furnace and air conditioner programs
- Fall Campaign October 1, 2006 to November 30, 2006
  - Compact Fluorescent Light bulbs (\$3.00 off)

- Seasonal Light Emitting Diode lights (“SLEDs”) (\$5.00 off string of 50 or more)
- Motion Sensor Switches (\$5.00 off)
- Programmable Thermostats (\$15.00 off)
- Programmable Baseboard Thermostats (\$15.00 off)
- Dimmer Switches (\$3.00 off)

#### Results to Date

- All Hydro Ottawa customers received the coupon booklets in both the spring and fall.
- Over 135,000 coupons were redeemed locally.
- The campaigns produced savings of 222 kW and 21,549,421 kWh.

#### Next Steps

- The Conservation Bureau will continue to operate this program.
- The Spring 2007 EKC program will run April 16 to June 17.
- A Fall 2007 EKC program is being planned.

### ***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 received safety and conservation education in 2006.
- This represents approximately 20% of the Ottawa region primary grade students.
- Developed a one-hour presentation targeted at Grade 5 students on electricity and conservation. It was tested with 9 classes.

#### Next Steps

- Continue to develop and deliver the Hazard Hamlet program to approx 18,000 additional students in 2007.
- Offer the new presentation and speaking notes to all Grade 5 teachers at the Ottawa school boards. It is available on a CD for ease of distribution.

### ***powerWISE® Fleet Branding***

#### Action

- On November 3, 2005 the CLD announced the powerWISE® Fleet Branding Program and several new 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

- Most new 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](http://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.

#### Results to Date

- In 2006 [www.hydroottawa.com](http://www.hydroottawa.com) had over 2,000,000 page-views and CDM accounted for 184,306 of those visits or 9% of all page-views.
- 4,251 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.

### ***Code Green***

#### Action

- Code Green Canada was a six-part television series sponsored in part by the CLD members.
- It was broadcast nation-wide by the CBC in May 2006 and provided homeowners with information on how to reduce energy use and save money.
- Twelve contestants from across the country competed to retrofit their homes in an effort to reduce their energy and water consumption, as well as their greenhouse gas emissions.
- The homeowner who achieved the greatest reduction in consumption and emissions won a gas-electric 2006 hybrid Prius, courtesy of Toyota Canada.

#### Results to Date

- The series aired in May 2006.

#### Next Steps

- No next steps are planned with Code Green.

### **3.1.2 Smart Meter Pilot (<50kW)**

#### Description

A pilot program for residential Smart Meters will be 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 customers were only 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 94,707 residential Smart Meters were installed in 2006.

#### Next Steps

- Continue to test the telecommunications capabilities of the new meters
- Perform a detailed focus group with a cross section of participants to gain a better understanding of how time-of-use information influenced their electricity usage.
- Monitor the next Smart Meter roll-out steps as determined by the Ontario government.
- Transition to billing the customer time-of-use rates when they become effective.
- Work continues on the OSPP and the results will be reported by the OEB in the spring of 2007.

### **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 the incentive offer but a significant number of Energy Star homes were built in Hydro Ottawa's service territory in 2006.

#### 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 program targeting residential and small commercial customers’ central air conditioners.
- A request for proposal (“RFP”) was issued for response mid January 2006.

#### Results to Date

- Honeywell was chosen as the service provider for the **peaksaver™** residential load control pilot program.
- 1,315 residential thermostats were installed under the pilot program, for an annual savings of 188,276 kWh and 850 kW demand reduction.
- Additional 200 residential and small commercial thermostats to be installed under the pilot program in 2007.
- RFP issued for turnkey service provider for program beyond the pilot.

#### Next Steps

- Expand program across the City targeting 7,500 installations.
- Contract for load management head end service

### ***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<sup>®</sup> Tips***

##### Action

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

##### Results to Date

- Approximately 8,000 powerWISE<sup>®</sup> Tips brochures were distributed through promotional events.

##### Next Steps

- Continue to distribute the powerWISE<sup>®</sup> Tips brochure at promotional events.

#### ***powerWISE<sup>®</sup> PowerPack***

##### Action

- Hydro Ottawa created the powerWISE<sup>®</sup> PowerPack for promotional purposes. The PowerPack consists of:
  - Two CFL bulbs
  - One Light Emitting Diode ("LED") nightlight
  - Several brochures including powerWISE<sup>®</sup> 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 over 5,500 powerWISE® PowerPacks in 2006.
- The powerWISE® PowerPack concept is also used by other members of the CLD in a variety of promotional opportunities.

#### Next Steps

- Continue to deliver the powerWISE® PowerPacks until third tranche funding is exhausted.

### ***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 2006 45 retail tune-ups were conducted, representing a saving of over 19,000 kWh.

#### Next Steps

- Continue Tune-up program until third tranche budget is exhausted.

### ***Project Porchlight***

#### Action

- After a successful pilot project in the fall of 2005, Project Porchlight was tasked with going city wide in 2006.
- Hydro Ottawa contributed \$800k and worked with Project Porchlight to develop a plan to deliver one CFL bulb to every household in Ottawa.

- The success of the 10-week program was recognized by the Ministry of Energy when they donated an additional 20,000 bulbs to the program. The program was extended by two weeks to allow for the delivery of the additional bulbs.

#### Results to Date

- Paid delivery staff and volunteers delivered 220,000 CFL bulbs door to door across the City from September 26 to December 15.
- The resulting energy saving is enough to power 2,400 homes.

#### Next Steps

- There is no further action on this project.

### ***Cool Shops***

#### Action

- Contracted the Clean Air Foundation to conduct lighting audits and deliver energy savings advice to 1,200 small commercial businesses.
- Local Business Improvement Areas (“BIAs”) were contacted and Cool Shops flyers were distributed to the targeted businesses.

#### Results to Date

- 930 audits were conducted.
- 1,648 CFL bulbs installed (over 161,728 kWh saved).
- 984 LED exit light bulbs were installed (492 exit signs).

#### Next Steps

- Consider proposal from Clean Air Foundation for 2007 program.

### ***Keep Cool***

#### Action

- Contracted the Clean Air Foundation to deliver this program over 3 weekends in June.
- Radio, print advertising and postal walk distribution were used to advertise the program.

#### Results to Date

- 2,591 room air conditioners were reclaimed through this program.
- Over 1,100,000 kWh saved and 2,024 kW demand reduction.

#### Next Steps

- No further action on this project.



### ***Seasonal LED Exchange***

#### Action

- Hydro Ottawa sponsored a seasonal LED lighting exchange with 51 Ottawa schools in December.
- Students and parents were encouraged to trade in 2 strings of old incandescent lights for a string of new energy efficient LED lights.

#### Results

- 2,900 strings of old lights were recovered and recycled representing annual electricity saving of 58,000 kWh, enough to power 6.5 households for a year and a reduction of 16 tonnes of greenhouse gases.

#### Next Steps

- Hydro Ottawa will donate the \$3,500 received from the recycling of the old strings of lights to the school breakfast programs.

### ***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 14 customers took advantage of this program in 2006.

#### Next Steps

- Develop alternate approaches to this market.

### **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 6, 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 extended to accept an additional 1,000 fridges and then expanded again 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 4,492 old inefficient fridges and freezers in 2006.
- The savings are approximately 5,191,208 kWh of annual electricity consumption, or enough electricity to power 577 homes.
- 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 developed an on-line appointment booking system for this program so that customers could book appointments 24/7.

#### Next Steps

- The success and popularity of this program has been adopted by the OPA and will become a provincial program in 2007.
- Hydro Ottawa will wind down Fridge & Freezer Bounty at the end of Q1 2007 to make way for the new Provincial 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. Because the centers receive significant walk-in traffic information was posted on the improvements that had been made and their impact on electricity bills.
- In addition, 10 individual low-income homes were equipped with electric thermal storage units to demonstrate this technology and to provide data for analysis. Thermal storage units offer the ability to shift electric heating load from peak times to off peak times thereby reducing costs for homes heated by electric baseboard heaters when time of use rates come into effect.

#### Results to Date

- Electric thermal storage units were installed and have been operational since March 2006. Electric water heating improvements were also installed yielding 13,941 kWh savings. Monitoring of the systems is taking place through winter 2006-07 with a final report to follow.
- 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

- Hydro Ottawa will analyze the electric thermal storage unit performance to see if they warrant promotion and incentives when Time of Use rates come into effect. Hydro Ottawa will investigate more effective options for influencing energy conservation in social housing communities.

### **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 are underway in cooperation with the City of Ottawa, EnviroCentre and the Poverty Issues Action Committee (“PIAC”).
- This program will invest \$25k of CDM funds combined with matching funds from the Province for a total of \$125k.
- The target is to reduce electricity consumption in 1,000 low-income homes in Ottawa.
- The results of this program will be used to determine on-going initiatives in this sector.

#### Results to Date

- In 2006, 271 Ontario Works households have taken advantage of the Power Play program.
- Each participant received a powerWISE® tune-up and report.
- Over 360,000 kWh were saved through a variety of installed measures ranging from energy efficient showerheads and tank wraps to clothes drying racks.

#### Next Steps

- Hydro Ottawa will continue to spend third tranche funds in support of the Power Play program until funds are exhausted

### ***powerWISE® Electricity Tune-ups for Low Income Customers***

#### Action

- Fully subsidized powerWISE® electricity tune-ups are offered through EnviroCentre for low-income residents.
- Customers are referred by social agencies including The Salvation Army and Community Support groups.

#### Results to Date

- Tune-ups were conducted on 262 low-income households and reports delivered in 2006.
- Over 125,000 kWh were saved through the installation of electric water heating conservation devices and compact fluorescent bulbs.

#### Next Steps

- Hydro Ottawa will continue to spend third tranche funds in support of the Low Income Tune-up program until funds are exhausted.

## **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 tested by Hydro Ottawa for CI&I customers. We have identified that many larger meter vendors lag behind in the CI&I area as they concentrate on bringing their residential solutions to market.
- Hydro Ottawa developed pilots with Itron and Elster in 2005/2006
- The Itron pilots reviewed three technologies
  - Pilot #1 - SmartSync Wireless on Rogers Network, 5 Meters Only, 3 Element T.R. Interval
  - Pilot #2 - Trilliant Technologies (Nertec) Wireless on Bell Network, 5 Meters Only, 3 Element T.R. Interval
  - Pilot #3 - Sentinel Meter with Ethernet connection data backhaul on Rogers fiber network, 24 X 240V, 200A, Meters on Rogers flat rate services
- Elster Pilot:
  - This pilot tested Elster Meters with Mesh Network connection and data backhaul on POTS on the Elster collector.
  - This evaluation of 950 commercial type meters tests a mix of a variety of C&I meter types including: Commercial Self Contained Watthour Meters, Commercial Self Contained Demand Meters, and Commercial Transformer Rated Demand Meters.

#### Results to Date

- 900 meters were deployed throughout the Hydro Ottawa territory as part of this pilot. This includes retrofitting all commercial meters in all of Ottawa's main shopping malls.
- The testing of wireless communications technologies has uncovered many technical and operational issues and challenges for the creation of a reliable and cost-effective network. This information has proved invaluable for preparation for full-scale deployment.
- After the pilot a further 743 commercial Smart Meters were installed bringing the total to 1,643 commercial Smart Meters installed in 2006.

#### Next Steps

- The pilot ended on December 31, 2006.
- Hydro Ottawa continues to test the telecommunications efficacy in various field conditions and with the technologies deployed as part of the broader Smart Meter Initiative
- Assess the year-end results of the pilot and implement a final data communication strategy in Q1 of 2007.



### **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 2007
- 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.
- Begin installations in 2007 or rescind our offer of support to the City and reallocate funds to other programs.

### **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.
- Application forms and support documents were updated
- Paid out \$228,958 in incentives and reduced demand by 658 kW and saved 3,209,186 kWh.

#### Next Steps

- Continue to promote this program to key customers, contractors and energy service providers until third tranche funding is exhausted.
- Work with large property managers to promote projects across their portfolios.
- Develop projects with the City of Ottawa.
- The Business Incentive Program will become an OPA program in 2007.

### ***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

- Load Control Infrastructure in place at Hydro Ottawa for dispatching control of CI & I load.

#### Results to Date

- Developing project with prominent customers for 400 kW load control installation.

#### Next Steps

- Promote the technology to potential customers.
- Solicit bids for service providers to deliver additional load control capacity.
- 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

- Hydro Ottawa will be working with the City of Ottawa in 2007 to develop and test using Local Improvement Charges on property owners tax bill as method of funding longer return on investment energy efficiency upgrades.

### **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

- Cooperate with other CLD members to develop 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

- In 2006, completed installation and commissioning of the "AdaptiVolt" Voltage Profile Management System.
- Completed analysis of the Fallowfield F1 & F2 feeders and Moulton F1, F2, F3 and F4 feeders for power factor correction. Based on the results of the analysis it was determined that installing capacitors would reduce distribution

line loss on Fallowfield F2 feeder. It is intended that the capacitor installation project will be completed by June of 2007.

#### Results to Date

- Completed Adaptivolt Voltage profile feasibility study for Moulton DS.
- The Adaptivolt voltage control system was installed by July 1, 2006. Total energy savings (half year) as a result of system installation amounted to 1,850,000 kWh.

#### Next Steps

- Complete projects as approved.



### ***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.

#### Results to Date

- Installation is planned for 2007.

#### Next Steps

- Complete the installation planned for the Hydro Ottawa facility.

- Solicit bids for service providers to deliver additional 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

- Solicit bids for service providers to deliver additional standby generation 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.

### **Conservation Van**

#### Action

- 2006 was the first year for the Hydro Ottawa conservation van
- The program was staffed by summer students who participated in 19 community events, 12 key account events, 6 Keep Cool events and 1 summer camp.
- The summer students also worked with 9 Grade 5 classes to develop a teaching module on electricity and conservation.
- Partnering with the City of Ottawa, the conservation van also distributed information from the City on water conservation and anti-idling.
- Concentrated on education regarding CFL bulbs and other simple and effective conservation tips.

#### Results to Date

- Distributed 1,968 CFL bulbs, 2,229 canvas carry bags and 2,757 powerWISE® Tips brochures.
- Distributed over 5,800 other 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.

### ***Employee Challenge***

#### Action

- Employee challenge launched to increase employee awareness and engagement.
- 50 Hydro Ottawa employees took the powerWISE challenge to reduce their electricity use at home by 10%.

#### Results to Date

- 10 employees reduced their consumption by more than 10% with the winner reducing by 19% year over year.
- Collectively the group saved over 11,000 kWh.

#### Next Steps

- Continued employee events.
- Broaden conservation engagement strategies.

### ***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.

## 4. Lessons Learned

Hydro Ottawa is learning as each CDM initiative is implemented and much has been 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 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

- 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.
- Conservation opportunities exist with residential and small commercial customers but the channel to market has many challenges. These customers are overwhelmed by market information, but lack the appropriate tools or models to accurately assess their options to implement appropriate individual solutions.
- Hydro Ottawa found that simple, low cost incentives like the powerWISE<sup>®</sup> Power Pack 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.
- The powerWISE<sup>®</sup> Business Incentive Program showed Hydro Ottawa that Commercial and Industrial customer timelines for conservation projects are often longer than Hydro Ottawa 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.
- 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

- Public education is a critical element as Hydro Ottawa builds a culture of conservation, yet under the current reporting format, no reportable benefits can be attributed to this activity. This effectively penalizes utilities from participating in this type of worthwhile and necessary initiative.
- As Hydro Ottawa develops a conservation culture in Ontario, Hydro Ottawa must continue to balance the need for short-term results while fostering a long-term conservation attitude among the citizens and businesses in the Province.
- 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.
- 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

- 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 electricity 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. This may also assist in the smooth transition from OEB to OPA funded programs.
- The evolving regulatory environment for CDM has created some challenges as the rules for both third tranche funding and future programs continue to evolve. A stable framework is essential to the effective involvement of LDCs in CDM.
- Finally, it will be important to explore all opportunities to streamline the LDC's administrative reporting efforts wherever possible.

### 4.1 Recommendations by Program Area

Residential and Commercial <50kW	Successful / H/M/L	Continue	Notes
Co-Branded Mass Market	Yes – High	Yes	Identify credits for softer measures such as education programs that will encourage CLD to implement further.
Smart Meter Pilot	Yes – High	No	Smart Meter deployment is underway.
Design Advisory	Limited success to date	Too early to tell	Opportunity to influence the construction of energy efficient buildings.
Residential Load Control	Yes – High	Yes	Residential Load Control was very successful in 2006 and will be offered province wide in 2007
Energy Audit Support & Incentives	Yes – High	Yes	Standardize the specific measures to be included in this program.
Fridge & Freezer Bounty	Yes - High	No	This program will become a province wide program from the OPA and will include room air conditioners.
Project Porchlight	Yes - High	No	This program has been completed within Hydro Ottawa territory.
Cool Shops / Keep Cool	Yes – Medium	No	Funding availability.
Electric Avenue	Yes - Medium	No	Project provided understanding of challenges when working with the social housing segment. Learning opportunity with thermal storage heating. Introduction of a new supplier to Ontario.
Social Housing Program	Yes - High	Too early to tell	PowerPlay and Low income tune-ups offer great value to customers and might be supported through the OPA in future years.



<b>Commercial Institutional and Industrial &gt;50kW</b>			
	<b>Successful / H/M/L</b>	<b>Continue</b>	<b>Notes</b>
Smart Meter Program	Yes - High	No	Smart Meter deployment is underway.
LED Traffic Lights	Limited success to date	Yes	Project planned for 2007 with the City of Ottawa, but there is concern regarding the technology from the City.
Leveraging Energy Conservation or Load Mgmt	Yes - High	Yes	The Business Incentive Program will be offered province wide in 2007.
CI&I Load Control	Planned for 2007	Yes	This program will deliver key summer peak reductions.
<b>Distribution Loss Reduction</b>			
Distribution Loss Reduction	Yes - Medium	Yes	Adaptivolt savings are very encouraging and show that projects can have solid TRC results.
<b>Distributed Generation</b>			
Load Displacement	Too early to tell	Planned for 2007	These programs have considerable potential to encourage new distributed generation as well as to utilize existing generators.
Standby Generators	Too early to tell	Planned for 2007	
<b>Overall Program Support</b>			
Conservation Van	Yes- High	Yes	The conservation van activities support all the program areas and assist with conservation education.

## 5. Conclusion

While this was another discovery and development year for Hydro Ottawa's CDM program, the year was extremely successful with an over 8 fold increase in energy savings while reducing the cost per kWh saved by 75% and the cost per kW saved by 80% compared to 2005. Hydro Ottawa developed and ramped up an effective Conservation and Demand Management program and generated some impressive results. Hydro Ottawa has taken action, learned by doing and continued to improve programs.

Results for 2006 are significant because programs originally launched in 2005 had time to operate for a number of months, build momentum and generate results.

Hydro Ottawa was out of the gate in 2006 with some very successful programs. The original pilots were extended and expanded to meet the requirements of the customer base. The regulatory environment continued to evolve. Hydro Ottawa continued to forge ahead, develop unprecedented alliances within the industry and built a diversified program with exceptional second year results.

CDM Program development is a complex and time-consuming process. Procurement and legal processes were more costly and time consuming than originally expected. 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 market experience was gained, individual CDM plans were fine tuned as well.

Hydro Ottawa enjoyed highly recognized successes with two particular programs developed by Hydro Ottawa. The powerWISE<sup>®</sup> Fridge Bounty Program and the powerWISE<sup>®</sup> Business Incentive Program both proved to be very popular with customers and have since been adopted by other LDCs and will be adopted by the OPA and implemented across the Province in 2007. The powerWISE<sup>®</sup> retail coupon 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 campaign. The campaigns created enormous awareness and delivered over 21,000,000 kWh in savings in Ottawa or enough electricity to power over 2,400 homes annually.

Project Porchlight was very successful in touching every neighbourhood in Ottawa while delivering 21,500,000 kWh in savings or enough to power 2,400 homes annually.

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

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

	<sup>5</sup> Cumulative Totals Life-to-date	Total for 2006	Conservation and Demand Management Residential and Small Commercial <50kW	Conservation and Demand Management Commercial, Industrial and Institutional >50kW	Distribution Loss Reduction	Distributed Energy	Overall Program Support	<sup>4</sup> Smart Meters	Other #1	Other #2
Net TRC value (\$):	\$ 18,048,843	\$ 16,756,145	\$ 15,649,566	\$ 7,886	\$ 1,352,258	\$ (87,771)	\$ (165,794)		\$ -	\$ -
Benefit to cost ratio:	2.62	3.93	5.66	1.01	3.58	0.00	0.03		0.00	0.00
Number of participants or units delivered:	792,765	721,164	687,465	33,699						
Lifecycle (kWh) Savings:	374,541,060	327,854,911	269,687,917	21,096,748	37,000,000	0	70,246		0	0
Report Year Total kWh saved (kWh):	62,834,375	55,965,081	50,879,811	3,209,186	1,850,000	0	26,085		0	0
Total peak demand saved (kW):	5,186	4,816	4,158	658	0	0	0		0	0
Total kWh saved as a percentage of total kWh delivered (%):	0.42%	0.75%	0.68%	0.04%			0.00%			
Peak kW saved as a percentage of LDC peak kW load (%):		0.32%	0.28%	0.044%	NA	NA	NA			
<sup>1</sup> Report Year Gross C&DM expenditures (\$):	\$ 6,883,731	\$ 4,685,405	\$ 2,598,627	\$ 618,840	\$ 524,919	\$ 87,771	\$ 170,336	\$ 684,913	\$ -	\$ -
<sup>2</sup> Expenditures per kWh saved (\$/kWh):	\$ 0.11	\$ 0.08	\$ 0.05	\$ 0.19	\$ 0.28	\$ -	\$ 6.53		\$ -	\$ -
<sup>3</sup> Expenditures per kW saved (\$/kW):	\$ 1,327	\$ 973	\$ 625	\$ 941	\$ -	\$ -	\$ -		\$ -	\$ -
Utility discount rate (%):	5.6									

**Note Gross Life-to-date expenditures have been adjusted due to the impact of the seasonal LED product recall.**

- <sup>1</sup> Expenditures are reported on accrual basis.
- <sup>2</sup> Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings
- <sup>3</sup> Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.
- <sup>4</sup> 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.
- <sup>5</sup> Includes total for the reporting year, plus prior year, if any (for example, 2006 CDM Annual report for third tranche will include 2005 and 2004 numbers, if any).



# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Co-Branded Mass Market Program (Reference page 6 of 2006 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):**

	Community Outreach	Spring Retail - EKC	Fall Retail - EKC
<i>Base case technology:</i>	Incandescent Bulb and Average Existing Stock	Incandescent Bulb and Average Existing Stock	Incandescent Bulb, Average Existing Stock, 5 WATT Christmas lights C-7(25 lights) and Incandescent Mini Lights
<i>Efficient technology:</i>	CFLs	CFLs, Ceiling Fan, Timer and Programmable Thermostat	CFLs, Base Board Programmable Thermostats, Motion Sensors, Programmable Thermostat and Dimmer Switch
<i>Number of participants or units delivered for reporting year:</i>	187,313 participants and 3,065 CFLs	129,881 CFLs, 1,135 Ceiling Fans, 4,168 Timers and 1,125 Programmable Thermostats	70,456 CFLs, 230 Base Board Programmable Thermostats, 866 Motion Sensors, 1,550 Programmable Thermostat and 2,257 Dimmer Switches
<i>Measure life (years):</i>	CFLs - 4 years	CFLs - 4 years, Ceiling Fan - 20 years, Timer - 20 years and Programmable Thermostat - 18 years	CFLs - 4 years, Base Board Programmable Thermostats - 18 years, Motion Sensors - 20 years, Programmable Thermostat - 18 years
<i>Number of Participants or units delivered life to date</i>	There have been a total of 472,832 participants in 2005-06 over the Community Outreach and Retail program areas.		

**B. TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 7,959,700.84	\$ 9,466,857.84
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>		
<i>Incremental Measure Costs (Equipment Costs)</i>	\$ 786,518.55	\$ 835,750.55
<i>Total TRC costs:</i>	\$ 820,617.45	\$ 993,761.37
<i>Net TRC (in year CDN \$):</i>	\$ 7,139,083.39	\$ 8,473,096.47
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	\$ 9.70	\$ 9.53

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

**Cumulative Results:**

**Conservation Programs:**

<i>Demand savings (kW):</i>	<i>Summer</i>	222.12		
	<i>Winter</i>	N/A		
<i>Energy saved (kWh):</i>	<i>lifecycle</i>	131,459,599	<i>in year</i>	21,850,208
<i>Other resources saved :</i>			<i>Cumulative Lifecycle</i>	159,954,663
			<i>Cumulative Annual Savings</i>	24,626,078

Natural Gas (m3):

Other (specify):

**Demand Management Programs:**

Controlled load (kW)

Energy shifted On-peak to Mid-peak (kWh):

Energy shifted On-peak to Off-peak (kWh):

Energy shifted Mid-peak to Off-peak (kWh):

**Demand Response Programs:**

Dispatchable load (kW):

Peak hours dispatched in year (hours):

**Power Factor Correction Programs:**

Amount of KVar installed (KVar):

Distribution system power factor at beginning of year (%):

Distribution system power factor at end of year (%):

**Line Loss Reduction Programs:**

Peak load savings (kW):

lifecycle

in year

Energy savings (kWh):

**Distributed Generation and Load Displacement Programs:**

Amount of DG installed (kW):

Energy generated (kWh):

Peak energy generated (kWh):

Fuel type:

**Other Programs (specify):**

Metric (specify):

<b>D. <u>Actual Program Costs:</u></b>		<b><u>Reporting Year</u></b>	<b><u>Cumulative Life to Date</u></b>
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>	<input type="text"/>	<input type="text"/>
	<i>Incremental O&amp;M:</i>	\$ 34,098.90	\$ 83,330.90
	<i>Incentive:</i>	<input type="text"/>	\$ 106,489.00
	<i>Total:</i>	\$ 34,098.90	\$ 189,819.90
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>	<input type="text"/>	<input type="text"/>
	<i>Incremental O&amp;M:</i>	<input type="text"/>	<input type="text"/>
	<i>Total:</i>	<input type="text"/>	<input type="text"/>

**E. Assumptions & Comments:**

Retail coupon campaigns continue to prove to be very good at reaching mass markets.

<sup>1</sup> 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.

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

# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Residential Load Control - *peakSaver* (Reference page 13 of 2006 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:	1,315	1,315	
Measure life (years):	12	18	
Number of Participants or units delivered life to date	1,315	1,315	

B. <b>TRC Results:</b>	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 1,333,580.91	\$ 1,333,580.91
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):		
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 400,812.99	\$ 400,812.99
<b>Net TRC (in year CDN \$):</b>	\$ 932,767.92	\$ 932,767.92
<b>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</b>	\$ 3.33	3.33

C. <b>Results:</b> (one or more category may apply)	<b>Cumulative Results:</b>			
<b>Conservation Programs:</b>				
Demand savings (kW):	Summer	192.1		
	Winter	N/A		
	lifecycle	in year	Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):				
Other resources saved :				
Natural Gas (m3):				
Other (specify):				
<b>Demand Management Programs:</b>				
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):				
<b>Demand Response Programs:</b>				
Dispatchable load (kW):		657.5		
Peak hours dispatched in year (hours):				
<b>Power Factor Correction Programs:</b>				
Amount of KVar installed (KVar):				
Distribution system power factor at beginning of year (%):				

Distribution system power factor at end of year (%):

**Line Loss Reduction Programs:**

Peak load savings (kW):

*lifecycle*

*in year*

Energy savings (kWh):

**Distributed Generation and Load Displacement Programs:**

Amount of DG installed (kW):

Energy generated (kWh):

Peak energy generated (kWh):

Fuel type:

**Other Programs (specify):**

Metric (specify):

**D. Actual Program Costs:**

Utility direct costs (\$):

*Incremental capital:*

	<u>Reporting Year</u>	<u>Cumulative Life to Date</u>

\$ 387,617.22 \$ 387,617.22

*Incremental O&M:*

\$ 13,195.77 \$ 13,195.77

*Incentive:*

*Total:*

\$ 400,812.99 \$ 400,812.99

Utility indirect costs (\$):

*Incremental capital:*

*Incremental O&M:*

*Total:*

**E. Assumptions & Comments:**

The *peakSaver* residential load control was very successful and will be offered province wide through funding by the OPA mid to later 2007.

<sup>1</sup> 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

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



# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Energy Audit, Support and Incentives ("EAS&I") (Reference page 14 of 2006 Annual Report)

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

EAS&I activities touched 229,122 people in Ottawa, primarily through Project Porchlight, and delivered significant energy and demand savings.

**Measure(s):**

	Power Wise Tune-ups	Smart Business Ottawa - Audits	Cool Shops 2006
<i>Base case technology:</i>	Unwrapped Water Heater, 60 watt Incandescent bulbs	Small Commercial status quo	Small Commercial status quo, 60 watt incandescent, incandescent Exit Signs
<i>Efficient technology:</i>	Tank wrap, CFLs	Small Commercial audit	Small Commercial status quo, 1,648 CFLs, 484 LED Exit sign retrofit kits
<i>Number of participants or units delivered for reporting year:</i>	175	14	3,060
<i>Measure life (years):</i>	6, 4	1	25.4
<i>Number of Participants or units delivered life to date</i>	338	14	3,670

**Measure(s):**

	Project Porchlight	Direct Energy ECM + AC	Keep Cool RAC retirement
<i>Base case technology:</i>	60 watt bulb	Mid efficiency furnace, Permanent magnet furnace fan,	Low SEER Room Air Conditioner
<i>Efficient technology:</i>	13 watt CFL	High efficiency furnace, ECM furnace fan, High SEER Central AC	RAC retirement and High SEER replacement
<i>Number of participants or units delivered for reporting year:</i>	220,050	23 ECM + AC, 33 AC only and 35 ECM only	1,399 RACs retired and 933 replaced
<i>Measure life (years):</i>	4	15,14,15	6.12
<i>Number of Participants or units delivered life to date</i>	220,050	91	2,591

**Measure(s):**

	SLED Exchange 2006	Measure 2 (if applicable)	Measure 3 (if applicable)
<i>Base case technology:</i>	5,7 watt incandescent Xmas lights and mini-lights		
<i>Efficient technology:</i>	LED 35 light strings		
<i>Number of participants or units delivered for reporting year:</i>	3,400		
<i>Measure life (years):</i>	30		
<i>Number of Participants or units delivered life to date</i>	4,330		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 7,367,189.19	\$ 7,496,113.19
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):		
Incremental Measure Costs (Equipment Costs)	\$ 71,086.20	\$ 83,408.20
Total TRC costs:	\$ 1,502,281.56	\$ 1,552,431.56
<b>Net TRC (in year CDN \$):</b>	<b>\$ 5,864,907.63</b>	<b>\$ 5,943,681.63</b>
<b>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</b>	<b>\$ 4.90</b>	<b>4.83</b>



# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Fridge and Freezer Bounty (Reference page 18 of 2006 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
<i>Base case technology:</i>	Existing second fridge	Existing second freezer	60 watt incandescent + Incandescent seasonal lights
<i>Efficient technology:</i>	Removal	Removal	Replacement
<i>Number of participants or units delivered for reporting year:</i>	3,000	1,492	7,542 CFLs, 150 LED seasonal lights
<i>Measure life (years):</i>	6	6	4.30
<i>Number of Participants or units delivered life to date</i>	3,581	1,492	7,692

B. <b>TRC Results:</b>	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 2,154,980.68	\$ 2,411,411.68
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>		
<i>Incremental Measure Costs (Equipment Costs)</i>		
<i>Total TRC costs:</i>	\$ 468,273.80	\$ 504,188.80
<b>Net TRC (in year CDN \$):</b>	\$ 1,686,706.88	\$ 1,907,222.88
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	\$ 4.60	4.78

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

**Conservation Programs:**

<i>Demand savings (kW):</i>	<i>Summer</i>	1008.6	<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>		
	<i>Winter</i>	NA				
<i>Energy saved (kWh):</i>	<i>lifecycle</i>	29,728,070	<i>in year</i>	5,191,208	33,492,950	5,818,688
<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:**

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

**Line Loss Reduction Programs:**

Peak load savings (kW): lifecycle in year

Energy savings (kWh):

**Distributed Generation and Load Displacement Programs:**

Amount of DG installed (kW):

Energy generated (kWh):

Peak energy generated (kWh):

Fuel type:

**Other Programs (specify):**

Metric (specify):

<b>D. <u>Actual Program Costs:</u></b>		<b><u>Reporting Year</u></b>	<b><u>Cumulative Life to Date</u></b>
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>	\$ 468,273.80	\$ 504,188.80
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 468,273.80	\$ 504,188.80
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>		
	<i>Total:</i>		

**E. Assumptions & Comments:**

The Fridge and Freezer Bounty has been a hugely successful program for Hydro Ottawa and will be offered province wide through the OPA funded appliance retirement program in mid to later 2007.

<sup>1</sup> 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

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

# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Electric Avenue (Reference page 20 of 2006 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	10 energuide for houses audits and 5 community house presentations
<i>Efficient technology:</i>	ETS Units	tank wrap, showerhead, aerators, pipe wrap, CFLs	
<i>Number of participants or units delivered for reporting year:</i>	10	10 tank wraps, 10 showerhead, 20 aerators, 10 pipe wrap, 20 CFLs	15
<i>Measure life (years):</i>	18	6,12,12,6,4	1
<i>Number of Participants or units delivered life to date</i>	10	10	15

<b>TRC Results:</b>	<b>Reporting Year</b>	<b>Life-to-date TRC Results:</b>
<sup>1</sup> TRC Benefits (\$):	\$ 8,372.60	\$ 8,372.60
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>		
<i>Incremental Measure Costs (Equipment Costs)</i>		
<b>Total TRC costs:</b>	\$ 55,070.24	\$ 75,070.24
<b>Net TRC (in year CDN \$):</b>	-\$ 46,697.64	-\$ 66,697.64
<b>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</b>	\$ 0.15	\$ 0.11

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

**Conservation Programs:**

<i>Demand savings (kW):</i>		<i>Summer</i>	0.76		
		<i>Winter</i>	N/A		
	<i>lifecycle</i>	<i>in year</i>		<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>
<i>Energy saved (kWh):</i>	142,114	13,941		142,114	13,941
<i>Other resources saved :</i>					
<i>Natural Gas (m3):</i>					
<i>Water (m3):</i>		333.4			

**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:**

<i>Amount of KVar installed (KVar):</i>	
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Distribution system power factor at beginning of year (%):

Distribution system power factor at end of year (%):

**Line Loss Reduction Programs:**

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

Energy savings (kWh):

**Distributed Generation and Load Displacement Programs:**

Amount of DG installed (kW):

Energy generated (kWh):

Peak energy generated (kWh):

Fuel type:

**Other Programs (specify):**

Metric (specify):

D. <b>Actual Program Costs:</b>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:	<input type="text"/>	<input type="text"/>
	Incremental O&M:	\$ 55,070.24	\$ 75,070.24
	Incentive:	<input type="text"/>	<input type="text"/>
	Total:	\$ 55,070.24	\$ 75,070.24
Utility indirect costs (\$):	Incremental capital:	<input type="text"/>	<input type="text"/>
	Incremental O&M:	<input type="text"/>	<input type="text"/>
	Total:	<input type="text"/>	<input type="text"/>

**E. Assumptions & Comments:**

The measures and ETS heaters were installed and audit reports and presentations completed. The ETS units are being monitored through the 2006-07 winter. A final report will help to identify the benefit of ETS heaters in low income social housing.

<sup>1</sup> 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

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

# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Social Housing (Reference page 21 of 2006 Annual Report)

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

The social housing program had two active facets in 2006. 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	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>	1,125	3,341	
<i>Measure life (years):</i>	1,6,6,12,12,12,4	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>	1,225	3,836	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 186,673.23	\$ 211,260.23
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>		
<i>Incremental Measure Costs (Equipment Costs)</i>		
<i>Total TRC costs:</i>	\$ 113,875.46	\$ 135,082.46
<i>Net TRC (in year CDN \$):</i>	\$ 72,797.78	\$ 76,177.78
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	\$ 1.64	1.56

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

**Conservation Programs:**

<i>Demand savings (kW):</i>		<i>Summer</i>	14.86		
		<i>Winter</i>	N/A		
	<i>lifecycle</i>	<i>in year</i>		<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>
<i>Energy saved (kWh):</i>	3,003,207	489,714		3,427,820	550,099
<i>Other resources saved :</i>					
<i>Natural Gas (m3):</i>					
<i>Water (m3):</i>	4,462				

**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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<b>D. <u>Actual Program Costs:</u></b>		<b><u>Reporting Year</u></b>	<b><u>Cumulative Life to Date</u></b>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>	\$ 113,875.46	\$ 135,082.46
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 113,875.46	\$ 135,082.46
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>		
	<i>Total:</i>		

**E. Assumptions & Comments:**

Marketing services to low income and social housing customers has many different challenges compared to traditional marketing. Low income customers are not free riders because they have little to no discretionary money for any energy efficiency improvements.

<sup>1</sup> 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

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



# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Leveraging Energy Conservation and Load Management (Reference page 26 of 2006 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](http://www.hydroottawa.com).

**Measure(s):**

	26 Prescriptive Projects	1 Custom Application	Measure 3 (if applicable)
Base case technology:	Existing lighting	Existing lighting	
Efficient technology:	Lighting upgrades	Lighting upgrades	
Number of participants or units delivered for reporting year:	23,577	1	
Measure life (years):	5,5,5,5,6,6,6,6,30	6	
Number of Participants or units delivered life to date	29,021	1	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 1,579,390.59	\$ 1,735,947.59
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ 135,983.60	\$ 161,519.60
Incremental Measure Costs (Equipment Costs)	\$ 1,181,617.20	\$ 1,343,304.20
Total TRC costs:	\$ 1,317,600.80	\$ 1,504,823.80
Net TRC (in year CDN \$):	\$ 261,789.79	\$ 231,123.79
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$ 1.20	\$ 1.15

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

**Cumulative Results:**

**Conservation Programs:**

	Summer	Winter	lifecycle	in year	Cumulative Lifecycle	Cumulative Annual Savings
Demand savings (kW):	657.7	N/A				
Energy saved (kWh):			21,096,748	3,209,186	23,056,388	3,601,154
Other resources saved :						
Natural Gas (m3):						
Other (specify):						

**Demand Management Programs:**

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

**Demand Response Programs:**

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

**Power Factor Correction Programs:**

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

Distribution system power factor at end of year (%):

**Line Loss Reduction Programs:**

Peak load savings (kW):

*lifecycle*

*in year*

Energy savings (kWh):

**Distributed Generation and Load Displacement Programs:**

Amount of DG installed (kW):

Energy generated (kWh):

Peak energy generated (kWh):

Fuel type:

**Other Programs (specify):**

Metric (specify):

**D. Actual Program Costs:**

Utility direct costs (\$):

*Incremental capital:*

**Reporting Year**

**Cumulative Life to Date**

*Incremental O&M:*

\$ 135,983.60

\$ 161,519.60

*Incentive:*

\$ 228,958.00

\$ 261,622.00

*Total:*

\$ 364,941.60

\$ 526,628.60

Utility indirect costs (\$):

*Incremental capital:*

*Incremental O&M:*

*Total:*

**E. Assumptions & Comments:**

The powerWISE Business Incentive Program started slowly but has picked significant momentum. The program illustrates the length of time necessary for longer term projects to come to fruition.

<sup>1</sup> 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

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

# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Distribution Loss Reduction (Reference page 31 of 2006 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):**

	Adaptivolt Project	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Status quo		
Efficient technology:	Voltage Control System		
Number of participants or units delivered for reporting year:	1		
Measure life (years):	20		
Number of Participants or units delivered life to date	1		

B. <b>TRC Results:</b>	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 1,877,176.69	\$ 1,877,176.69
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ 524,918.65	\$ 850,618.65
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 524,918.65	\$ 850,618.65
Net TRC (in year CDN \$):	\$ 3.58	2.21
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		

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

**Conservation Programs:**

Demand savings (kW):	Summer	N/A		
	Winter	N/A		
	lifecycle	in year	Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):	37,000,000.00	1,850,000	37,000,000.00	1,850,000
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

**Demand Management Programs:**

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

**Demand Response Programs:**

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

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

Peak load savings (kW):

*lifecycle*

*in year*

Energy savings (kWh):

**Distributed Generation and Load Displacement Programs:**

Amount of DG installed (kW):

Energy generated (kWh):

Peak energy generated (kWh):

Fuel type:

**Other Programs (specify):**

Metric (specify):

**D. Actual Program Costs:**

Utility direct costs (\$):

*Incremental capital:*

**Reporting Year**

**Cumulative Life to Date**

\$ 376,968.06 \$ 697,168.06

*Incremental O&M:*

\$ 147,950.59 \$ 153,450.59

*Incentive:*

*Total:*

\$ 524,918.65 \$ 850,618.65

Utility indirect costs (\$):

*Incremental capital:*

*Incremental O&M:*

*Total:*

**E. Assumptions & Comments:**

Distribution loss reduction projects can provide significant energy savings with excellent benefit cost ratios. Projects should be seriously evaluated and undertaken when opportunities arise.

<sup>1</sup> 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

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

# Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Overall Program Support ( Reference Page 36 of 2006 Annual Report)

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

Overall program support initiatives are crosscutting projects that affect a wide variety of customer types and contacts such as; the annual Key Account Conference, participation in smaller trade show venues, an energy conservation website, customer newsletters, staff training and media support activities etc. Please note many pilot activities funded through overall program support in 2005 such as Project Porchlight were moved to other spending areas such as Co-Branded Mass Market and Energy Audit support and Incentives. This led to a significant reduction in Overall Program Support results for 2006.

**Measure(s):**

	Overall Program Support	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Incandescent bulbs		
Efficient technology:	CFLs		
Number of participants or units delivered for reporting year:	2,546		
Measure life (years):	4		
Number of Participants or units delivered life to date	2,546		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	\$ 4,541.66	\$ 746,548.53
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ 170,335.53	\$ 405,487.53
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	\$ 170,335.53	\$ 405,487.53
Net TRC (in year CDN \$):	-\$ 165,793.87	\$ 341,061.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	\$ 0.03	1.84

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

**Cumulative Results:**

**Conservation Programs:**

Demand savings (kW):	Summer	N/A						
	Winter	N/A						
Energy saved (kWh):	lifecycle	70,246	in year	26,085	Cumulative Lifecycle	11,782,694	Cumulative Annual Savings	2,912,752
Other resources saved :								
Natural Gas (m3):								
Other (specify):								

**Demand Management Programs:**

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

**Demand Response Programs:**

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

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

Metric (specify):

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<b>D. Actual Program Costs:</b>		<b>Reporting Year</b>	<b>Cumulative Life to Date</b>
Utility direct costs (\$):	Incremental capital:	\$ 49,999.65	
	Incremental O&M:	\$ 120,335.88	\$ 355,487.88
	Incentive:		
	Total:	\$ 170,335.53	\$ 355,487.88
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		

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**E. Assumptions & Comments:**

Overall program support is a catch all for many non-sector or non-program specific expenditures and general support of all programs. It also is used as an incubator for pilot projects. Hydro Ottawa purposefully moved projects that grew in scope and size to more appropriate spend areas.

<sup>1</sup> 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

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

# Appendix C - Program and Portfolio Totals

Report Year: 2006

## 1. Conservation and Demand Management Residential and Small Commercial <50kW Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle Savings (kWh)	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Co-Branded Mass Market Design Advisory - Residential Electric Avenue	\$ 7,959,701	\$ 820,617	\$ 7,139,083	9.70	21,850,208	131,459,599	222	\$ 34,098,90
Energy Audit Support and Incentives	\$ 8,373	\$ 55,070	\$ 46,698	0.00	0	0	0	\$ 0
Fridge and Freezer Bountty	\$ 7,367,189	\$ 1,502,282	\$ 5,864,908	4.90	23,146,464	101,589,409	2,062	\$ 1,526,495.36
Residential Load Control	\$ 2,154,981	\$ 468,274	\$ 1,686,707	4.60	5,191,208	29,728,070	1,009	\$ 468,273.80
Social Housing	\$ 1,333,581	\$ 400,813	\$ 932,768	3.33	188,276	3,765,518	850	\$ 400,812.99
*Totals App. B - Conservation and Demand Management Residential and Small Commercial <50kW	\$ 19,010,497	\$ 3,360,932	\$ 15,649,566	5.66	489,714	3,003,207	15	\$ 113,875.46

Conservation and Demand Management Residential and Small Commercial <50kW Indirect Costs not attributable to any specific program

Total Conservation and Demand Management Residential and Small Commercial <50kW TRC Costs

**Totals TRC - Conservation and Demand Management Residential and Small Commercial <50kW	\$ 19,010,497	\$ 3,360,932	\$ 15,649,566	5.66
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## 2. Conservation and Demand Management Commercial, Industrial and Institutional >50kW Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle Savings (kWh)	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Design Advisory - CI&I LED Retrofits for Traffic Lights	\$ -	\$ -	\$ -	0.00	0	0	0	\$ 0
CI&I Load Control	\$ -	\$ 253,904	\$ -253,904	0.00	0	0	0	\$ 253,904
On-the-bill financing	\$ -	\$ -	\$ -	0.00	0	0	0	\$ 0
Leveraging Energy Conservation & Load Management	\$ 1,579,391	\$ 1,317,601	\$ 261,790	1.20	3,209,186	21,096,748	658	\$ 364,936
*Totals App. B - Conservation and Demand Management Commercial, Industrial and Institutional >50kW	\$ 1,579,391	\$ 1,571,505	\$ 7,886	1.01	3,209,186	21,096,748	658	\$ 618,840

Conservation and Demand Management Commercial, Industrial and Institutional >50kW Indirect Costs not attributable to any specific program

Total TRC Costs

**Totals TRC - Conservation and Demand Management Commercial, Industrial and Institutional >50kW	\$ 1,579,391	\$ 1,571,505	\$ 7,886	1.01
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## 3. Distribution Loss Reduction Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle Savings (kWh)	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Distribution Loss reduction	\$ 1,877,177	\$ 524,919	\$ 1,352,258	3.58	1,850,000	37,000,000	0	\$ 524,919
*Totals App. B - Distribution Loss Reduction	\$ 1,877,177	\$ 524,919	\$ 1,352,258	3.58	1,850,000	37,000,000	0	\$ 524,919

Distribution Loss Reduction Indirect Costs not attributable to any specific program

Total TRC Costs

**Totals TRC - Distribution Loss Reduction	\$ 1,877,177	\$ 524,919	\$ 1,352,258	3.58
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#### 4. Distributed Energy Programs

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

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

Distributed Energy *Totals App. B - Distributed Energy  Distributed Energy Indirect Costs not attributable to any specific program	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle Savings (kWh)	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
	\$ -	\$ 87,771	\$ -87,771	0.00	0	0	0	\$ 87,771
	\$ -	\$ 87,771	\$ -87,771	0.00	0	0	0	\$ 87,771
<b>Total TRC Costs</b>		\$ 87,771						
<b>**Totals TRC - Distributed Energy</b>	\$ -	\$ 87,771	\$ -87,771	0.00				

#### 5. Overall Program Support Programs

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

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

Overall Program Support *Totals App. B - Overall Program Support  Overall Program Support Indirect Costs not attributable to any specific program	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle Savings (kWh)	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
	\$ 4,542	\$ 170,336	\$ -165,794	0.03	26,085	70,246	0	\$ 170,336
	\$ 4,542	\$ 170,336	\$ -165,794	0.03	26,085	70,246	0	\$ 170,336
<b>Total TRC Costs</b>		\$ 170,336						
<b>**Totals TRC - Overall Program Support</b>	\$ 4,542	\$ 170,336	\$ -165,794	0.03				

#### 7. Smart Meters Program

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

Report Year Gross C&DM Expenditures (\$)

684,913

#### LDC's CDM PORTFOLIO TOTALS

*TOTALS FOR ALL APPENDIX B  Any other Indirect Costs not attributable to any specific program	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle Savings (kWh)	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
	\$ 22,471,606	\$ 5,715,462	\$ 16,756,145	3.93	55,965,081	327,854,911	4,816	\$ 4,685,405
	\$ 22,471,606	\$ 5,715,462	\$ 16,756,145	3.93	55,965,081	327,854,911	4,816	\$ 4,685,405
<b>TOTAL ALL LDC COSTS</b>		\$ 5,715,462						
<b>**LDC' PORTFOLIO TRC</b>		\$ 5,715,462						

\* 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.