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# **Toronto Hydro-Electric System Limited**

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## **Conservation and Demand Management 2006 Annual Report**

Ontario Energy Board File No. RP-2004-0203/EB-2004-0485

March 30, 2007

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## 1. Introduction

On December 10, 2004 the Ontario Energy Board (“Board”) issued its 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 Toronto Hydro-Electric System Limited (“Toronto Hydro”), the Board issued its Final Order on February 3, 2005 under docket number RP-2004-0203 / EB-2004-0485.

The Board’s Decision indicated that annual reporting “should be done on a calendar year and should be filed with the Board no later than March 31st of the following year” and would be subject to a public review. On December 21, 2005 the Board issued a Guideline for Annual Reporting of CDM Initiatives that explained more fully the requirements. On March 1, 2007 the Board issued the “Amended Requirements for Annual Reporting of CDM Initiatives”. This report has been prepared in accordance with those guidelines and requirements.

The second year of Conservation and Demand Management was very successful for Toronto Hydro. Collaborative efforts with the Coalition of Large Distributors allowed us to launch many initiatives in a similar manner. Programs and initiatives were developed to engage employees, stakeholders, and all customer classes of electricity users within Toronto Hydro’s boundaries. The key thrusts of our program were to reduce the summer peak demand and help promote a conservation culture in Ontario. Highlights from 2006 include:

- Achieved peak demand reductions of 49,594 kW and energy savings of 155,734,484 kWh.
- Successfully launched Summer Challenge Program, the first of its kind in Canada and achieved a 28.5% participation rate.
- Worked with Home Depot and retired 6,607 old, inefficient room air conditioners.
- Worked with the OPA and Summerhill, successfully launched the Fall Energy Conservation Campaign, also known as “Bright Ideas”.
- By the end of 2006, enrolled more than 37,000 customers and installed more than 24,000 load control switches in peaksaver program. The number installed far exceeded the initial target of about 4,000.
- Provided incentive to Enwave for the completion of deep lake water cooling at seven customer locations with a total peak demand reduction of 11,516 kW.
- Working with large customers, installed equipment to allow stand-by generators to be available for dispatch during summer peak load periods.
- The Summer Challenge and peaksaver programs were so successful that the Premier of Ontario and the Minister of Energy announced that these programs would be rolled out to the rest of Ontario in 2007.

These programs and many others are explained further in this report.

## 2. Evaluation of the CDM Plan

Refer to Appendix A, B and C for an evaluation of Toronto Hydro's CDM activities during 2006.

Some components of Toronto Hydro's CDM plan relate to the deployment of SMART meters, which was undertaken to support Provincial government policy direction. The impact of SMART meters on kWh consumption or kW demand has not yet been assessed.

### 3. Discussion of the Programs

#### Residential and Small Commercial (< 50 kW)

##### Co-branded Mass Market Program

###### **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 is becoming synonymous with initiatives such as Compact Fluorescent Lighting (CFL) change-out programs, LED Holiday Light exchanges, energy audits, hot water heater blanket wraps, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Access to online services such as energy consumption calculators, an energy expert, and personalized energy audit services are components of this program.

###### **Target users**

Mass-market including residential and small commercial (<50 kW).

###### **Benefits**

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

##### **Discussion of 2006 Activities**

###### ***The Home Depot Inc.***

###### Action

- o Working with Home Depot and the Clean Air Foundation, Toronto Hydro implemented and executed Keep Cool Program in June 2006. The goal of Keep Cool is to encourage the public to retire old, inefficient room air conditioners (RACs) by offering incentives such as retail gift cards and free recycling.
- o Toronto Hydro customers were able to drop off their old unit at 12 participating Home Depot locations and in exchange receive a \$25 gift card from Home Depot.
- o Keep Cool program staff were at every participating retail location to receive the RACs and provide education on the environmental and economic benefits of reducing electricity use in the summer.
- o The Ontario Power Authority (OPA) agreed to co-fund this program and help offset the incremental costs accrued from the RACs recycled.

###### Results to Date

- o 6,607 old, inefficient room air conditioners were collected and recycled.
- o 455 kW peak demand reductions and 2,705,274 kWh energy savings were achieved in 2006.

###### Next Steps

- o Continue to work with Home Depot on contracted conservation projects.
- o Launch another RAC recycling program in 2007.

### ***powerWISE® Brand and Website***

#### 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 a co-brand. HUC offered powerWISE for joint ownership and the CLD agreed that we would use this mark.
- Weekly conference call meetings are held with the communications subcommittee to coordinate all powerWISE and branding activities.
- The Ministry of Energy (Director of Communications) participates on weekly conference calls, as does the Ontario Power Authority (Director of marketing).

#### Results to Date

- PowerWISE is being used extensively by the CLD to brand CLD conservation programs.
- The powerWISE brand has been used by the Ministry of Energy in their 2006 advertising campaign.
- The powerWISE website received 181,701 visits.

#### Next Steps

- Extend the powerWISE brand to the OPA and other LDCs.
- Continue to develop and promote the powerWISE brand and website in conjunction with the Ministry of Energy and the OPA.

### ***Bright Ideas 2006 – Fall Energy Conservation Campaign***

#### Action

- Working in partnership with four retailers (The Home Depot, Home Hardware, Costco and Wal-Mart), Toronto Hydro and the OPA ran the 2006 Bright Ideas Fall Campaign, which included giving away a free 2-pack of CFL bulbs, a halogen torchiere exchange and an opportunity to recycle old incandescent holiday light strings.
- The purpose of the Campaign was to deliver a series of giveaways, exchanges and education to augment the OPA's Every Kilowatt Counts (EKC) coupon. By promoting the EKC coupons and Bright Ideas incentives in-store and engaging customers one-on-one, the Bright Ideas Campaign was successful in achieving significant participation, feedback and electricity savings.
- The Halogen torchiere exchange was the first of its kind in Ontario. Customers were encouraged to bring in their old inefficient halogen torchiere lamp (300-500W) and exchange it for \$30 off a compact fluorescent torchiere (55W).
- In addition to the giveaways and exchanges, the Bright Ideas Campaign encouraged people to sign up for **peaksaver**, a program aimed at Toronto Hydro customers who have central air conditioning systems currently installed in their homes.

#### Results to Date

- There were 70,956 2-packs CFL bulbs distributed in the CFL Giveaway events, representing 141,912 CFL bulbs.
- A total of 4,785 halogen torchieres were collected, more than doubling the original target of 2,400.
- Customers brought in 15,960 incandescent holiday strings to be recycled.
- In addition, based on actual sales data from retailers, the number of product redemptions/sales (spillover sales) from the Bright Ideas 2006 Campaign was as follows: 209,452 CFL bulbs, 2,298 programmable thermostats, 11,942 dimmers and 672 motion sensors.
- 333 kW peak demand reductions and 33,080,820 kWh energy savings were achieved in 2006.

#### Next Steps

- Continue to work with the OPA and implement a similar program in 2007.

### ***SLED (Seasonal Light Emitting Diode) Light Exchange - TABIA***

#### Action

- Toronto Hydro contracted the Toronto Association of Business Improvement Areas (TABIA) as a CDM Partner to deliver eleven events in November and December, 2006, throughout the City of Toronto during the Neighborhood Lighting Ceremony, in conjunction with the Toronto Cavalcade of Lights.
- Toronto Hydro Customers were invited to attend an event and exchange two old sets of incandescent holiday lights for one new set of SLEDs.
- Customers were also given energy efficiency educational information from Toronto Hydro and a coupon from Home Hardware for a discount on additional SLEDs.

#### Results to Date

- 8,877 sets of incandescent holiday lights were turned in.
- 4,500 sets of SLEDs were distributed over the events.
- Annual energy savings in 2006 were 168,115 kWh.

#### Next Steps

- A similar exchange event is planned for 2007.

### ***Code Green – TV Show***

#### Action

- This initiative consists of sponsoring a six-part educational mini-series featuring the retrofit of twelve homes from across the country. Contestants were given \$15,000 each to compete against one another to renovate their homes in an effort to create the greatest savings in energy consumption and the greatest reduction in greenhouse gas emissions.

#### Results to Date

- The program aired in 2006.
- There are minimal kW or kWh reductions associated with this project for Toronto, but it is considered to aid in the creation of a conservation culture.

#### Next Steps

- Consider similar sponsorships for 2007.

### ***Window Posters and Fleet messaging***

#### **Action**

- The intention of this project is to educate and provide actionable information to encourage behavioural changes through placement of energy efficient tips on posters in the Toronto Hydro Head Office windows at 14 Carlton Street, a high foot/vehicle traffic area as well as on THESL vehicles that are seen throughout the city.

#### **Results to Date**

- Ten posters, with four on a seasonal rotation, are located on the front windows of the building. The posters feature THESL logos along with the conservation tips.
- Over 500 THESL vehicles have been branded with conservation tips.

#### **Next Steps**

- Continue to refresh posters and fleet during 2007.

### ***Coolshops***

#### **Action**

- Contracted the Clean Air Foundation to conduct lighting audits and deliver energy savings advice to small commercial businesses.
- 2006 program included the delivery of a free Palm Pilot-assisted energy audit targeted towards lighting, and the installation of free lighting products, plus discounts on lighting purchases.

#### **Results to Date**

- 761 businesses audited.

#### **Next Steps**

- Consider supporting program again in 2007



## Summer Challenge Program

### **Description:**

The program is based on the 20/20 program that was implemented in California in 2001. The 2006 Summer Challenge Program ran for 63 days from July 15, 2006 to September 15, 2006. Customers who reduced their kilowatt hour consumption for the program period by 10 percent (nominally) or more compared to the base (the equivalent period in 2005, weather-normalized), received a 10 percent rebate on their total bill for the program period, at the conclusion of the program.

### **Target users**

Residential and small commercial customers.

### **Benefits**

The primary objectives of the Summer Challenge program are to reduce electrical demand and consumption during the summer peak period, and to cultivate a culture of conservation among customers. Program serves as a catalyst to participate in other energy conservation programs.

At the same time, the program also has research objectives, which are to:

- Determine customer awareness of, and manner of participation in, the Summer Challenge program.
- Determine if the “no enrolment” feature is a positive design element that encourages sustained participation.
- Determine whether Toronto Hydro’s customer information system provides helpful information that can be easily communicated to and understood by our customers, to help them achieve their individual targets.

## **Description of 2006 Activities**

### **10/10 Program**

#### Action

- The program was the first of its kind in Canada and it ran from July 15 to September 15.
- Prior to the launch of the Summer Challenge, customer focus groups were held to assess customers’ comprehension of the program design and the impact of proposed communications messages.
- Based on the feedback from customer surveys, an advertising campaign was prepared that highlighted the “10 per cent Credit” available to Toronto Hydro customers who successfully met their conservation targets.
- Toronto Hydro invested \$551,000 to bring the message to residential and small commercial customers by way of a variety of communication vehicles that included public relations, direct mail, advertising, promotion, bill inserts, in-store promotion, interactive voice response and web communications.
- Customers were advised through advertising and news media reports to visit the Toronto Hydro website, where they were prompted to enter their Toronto Hydro account number or meter number to determine their personal Summer challenge kilowatt hour savings targets.

- Additional call centre resources were proactively put in place to handle anticipated increases in call volumes, and to encourage sustained participation in the Challenge.

#### Results to Date

- “Earned media” coverage generated through news releases and media conferences scored very strong results through a total of 108 radio, television and newspaper stories. At the mid-point of the campaign, 71 per cent of Torontonians polled had heard about the Summer Challenge program. Electricity customers who reside outside of the City of Toronto were also exposed to the media coverage and as such, customer awareness and emphasis on the need for sustained conservation was expanded without cost to neighbouring utilities.
- 29.0 per cent of eligible Toronto residential electricity customers and 23.6 per cent of eligible small commercial customers earned financial incentives for curbing their electricity use as part of Toronto Hydro’s Summer Challenge program. Overall, 28.5 per cent of eligible customers received a 10 per cent summer challenge credit.
- Total rebates to residential customers and small commercial customers were: \$2,473,192 and \$667,126, respectively.
- A total of 71,465,304 kWh savings were achieved during program period, which included 54,825,445 kWh savings from residential customers and 16,639,859 kWh savings from small commercial customers.
- Based on the program’s success, the Premier of Ontario and the Minister of Energy announced that the Summer Challenge would become one of the two successful conservation and demand management programs conducted by Toronto Hydro to be replicated across the province.

#### Next Steps

- The program will be expanded across the province in 2007.
- Toronto Hydro will include all customer classes in its 2007 Summer Challenge program.

## Residential 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 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 reduces the need to bring on large peaking generators.

## **Description of 2006 Activities**

### **Direct Load Control – peaksaver Program Residential**

#### Action

- Enrolled more than 34,000 residential customers and Installed more than 22,000 load control switches by the end of 2006.
- Developed and implemented an M&V plan for the peaksaver program.
- Registered a demand response facility with the IESO for the Emergency Load Reduction Program, or ELRP.
- Established the demand response dispatch operation center with the necessary systems and processes to respond to the ELRP dispatch notification.
- Activated load control twice in the summer of 2006 along with peaksaver commercial, resulting in peak demand reductions of about 15MW.

#### Results to Date

- By the end of 2006, more than 34,000 residential customers were enrolled and more than 22,000 participants were installed with the load control switches. The number installed far exceeded the initial target of about 4,000.
- Installed demand response capacity of more than 25 MW (at 35 degrees C) by the end of 2006.
- peaksaver was selected by the Government for rolling out to the rest of Ontario.

#### Next Steps

- Continue with full deployment in 2007.
- Extend dispatch operation service to other LDCs to facilitate Government rolling out of peaksaver program in Ontario.

## TAPS Program

### Description

This initiative is a partnership with Enbridge in their highly successful TAPS program. Enbridge is distributing CFLs and installing energy savings measures in homes that they would not normally consider (i.e. homes with electric water heaters and electric heating).

### Target users

Residential customers

### Benefits

This program is simple in concept and highly effective, since CFLs use 75% less energy than incandescent bulbs and fit into standard sockets. Although a single change-out makes a very small difference, wide-scale use of CFLs has a significant impact.

## Description of 2006 Activities

### Enbridge - TAPS

#### Action

- Partnering with Enbridge Gas Distribution Inc., Toronto Hydro continued the project in 2006 that delivered efficient showerheads and CFL bulbs to Toronto Hydro customers.
- The subcontractors of Enbridge visited customers' residences and performed the following services:
  - Install pipe wrap on water heater lines
  - Conduct test to determine if showerheads are already low-flow
  - Replace up to two showerheads
  - Provide home owner with two faucet aerators
  - Drop off four CFL bulbs
  - Install programmable thermostat (for low income customer only)
  - Provide literature with energy efficiency tips

#### Results to Date

- 12,356 homes were visited.
- 963 efficient showerheads and 56 programmable thermostats were installed.
- 49,424 CFL bulbs and 1,950 aerators were dropped off.
- 913 pipe wraps and 963 bag tests were performed
- Peak demand reductions of 42 kW and energy savings of 5,500,647 kWh were achieved in 2006.

#### Next Steps

- Continue the program with Enbridge in 2007.

## Social Housing Program

### Description

Due to aging housing stock, financial constraints and high incidences of electric heating, the Social Housing Sector is a prime candidate for CDM incentives.

### Target users

Local social housing corporations, non-profit homes and co-operative housing.

### Benefits

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

## Description of 2006 Activities

### Toronto Community Housing Corporation

#### Action

- Toronto Community Housing Corp. started appliance replacement in January 2006. Contractors were used to implement the program.
- Old, inefficient refrigerators and stoves were replaced with new Energy Star appliances.
- Monthly results were sent to Toronto Hydro for verification and incentive payment.

#### Results to Date

- 24,031 old refrigerators and 24,829 old stoves were removed and replaced with new ones in 2006.
- Peak demand reductions of 403 kW and energy savings of 3,143,889 kWh were achieved in 2006.

#### Next Steps

- Continue the appliance replacement program in 2007.
- Start lighting retrofits in 19 buildings in early 2007.

### Social Housing Services Corporation

#### Action

- Social Housing Services Corporation is the provincial umbrella agency representing social and low income housing.
- An agreement for CDM initiatives in non Toronto Community Housing Corporation properties was under development in 2006.

#### Results to Date

- The project will proceed in 2007.

#### Next Steps

- Implement the agreement in the approved properties in 2007.

## LED Traffic Signals

### **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 approximately 80% less electricity. Other benefits include reduced maintenance (LEDs last longer) and improved visibility.

## **Description of 2006 Activities**

### **City of Toronto LED Traffic Lights**

#### Action

- The project started to deliver results in 2006.
- Toronto Hydro monitored and verified the quarterly report from the City and incentive payment was made accordingly.

#### Results to Date

- Conventional traffic lights at 244 intersections were replaced with LED lights.
- Peak demand reductions of 243 kW and energy savings of 2,129,803 kWh were achieved in 2006.

#### Next Steps

- Continue the success of the project in 2007.

## Leveraging Energy Conservation and/or Load Management Programs

### **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 their 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, institutional, 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.

## **Description of 2006 Activities**

### **3080 Yonge Street Lighting Retrofits**

#### Action

- The project consisted of changing the existing T12 lamp and magnetic ballast to the more efficient T8 lamp with reflector and electronic ballast.
- Post-implementation audit was done after project completion.

#### Results to Date

- 1,848 fixtures were replaced.
- Peak demand reductions of 103 kW and energy savings of 479,002 kWh were achieved in 2006.

#### Next Steps

- Project is complete.

### **Momiji Seniors Residence Lighting Retrofits**

#### Action

- The major initiative consisted of changing existing lighting of T12 fluorescent with magnetic ballast, metal halide fixtures and incandescent lamps to new and more efficient T8 lighting and CFL technology.
- The installation began during the second week of May 2006 and was completed at the end of June 2006.

#### Results to Date

- 2,501 fixtures were converted.
- Peak demand reductions of 27 kW and energy savings of 258,324 kWh were achieved in 2006.

#### Next Steps

- Project is complete.

### **U of T Scarborough Campus – Student Residences**

#### Action

- The program included conversion of the interior incandescent lighting to compact fluorescents, conversion of the outdoor lighting to a new form of compact fluorescent technology, and the conversion of electric domestic hot water heating to natural gas.
- The installation started at the beginning of 2006 and by the end of March 2006 indoor and outdoor lighting retrofits were completed.

#### Results to Date

- 3,408 indoor fixtures and 107 outdoor lights were retrofitted.
- 11 water heaters have been converted from electricity to natural gas.
- Peak demand reductions of 3.54 kW and energy savings of 410,141 kWh were achieved in 2006.

#### Next Steps

- Continue and complete the project in 2007.

### **U of T – St. George Campus – Various Buildings**

#### Action

- This major initiative consists of lighting retrofit of three buildings on the St. George campus and upgrading the chilled water system in nine buildings. The project also targets behavioural change.
- The feasibility studies for the three lighting retrofit projects were completed and reviewed.

#### Results to Date

- The engineering design work for the lighting retrofit at Robarts Library was completed and tendered. Anticipated completion date is July 2007
- The removal of the existing building air conditioning water chiller and the replacement with a new water chiller was successfully completed at the OISE building in 2006. Results will be submitted in early 2007.
- In the fall of 2006, the Conservation through Behaviour Change Program was expanded to seven residences and three offices at the University reaching over 4,000 campus members.

#### Next Steps

- Monitor implementation and results in 2007.

### **McDonald's Restaurants – Conservation Program**

#### Action

- The project includes four conservation initiatives:
  1. Employee Energy Awareness Program
  2. Replacement of refrigeration systems.
  3. Lighting Retrofits.
  4. HVAC – replacing existing rooftop units with new mid efficiency units.
- Project implementation was fully executed in 2006.

#### Results to Date



- The anticipated project completion date is early 2007.

Next Steps

- Monitor and verify results in 2007.

### **Toronto Hydro Energy Service Inc. (TH Energy)**

Action

- By the end of 2006, TH Energy completed lighting retrofits projects at the following locations:
  - Optima Condominium – 81 Navy Wharf Way
  - Matrix Condominium – 373 Front Street West
  - Apex Condominium - 365 Front Street West
  - Kraft Lighting – 56 Huxley Road
  - Courtyard By Marriott – 475 Yonge Street

Results to Date

- Peak demand reductions of 212 kW and energy savings of 1,728,905 kWh were achieved in 2006.

Next Steps

- Continue to work with TH Energy and deliver peak demand savings in 2007.

### **The Bank of Nova Scotia – Lighting Retrofits**

Action

- The project consists of lighting retrofit at different Bank of Nova Scotia locations. Various energy efficient measures will be targeted.
- The contract was drafted in October 2006 and sent to the CDM Partner for review and signature.

Results to Date

- The project will proceed in 2007.

Next Steps

- Monitor implementation and results in 2007.

### **Hospital for Sick Children – Lighting Retrofit**

Action

- The project consists of lighting retrofit at the hospital where one of the most energy efficient lighting systems will be utilized consisting of new I8-28 watt fluorescent lamps and new T8 universal voltage LBF high efficiency electronic ballasts.

Results to Date

- The project will proceed in 2007.

Next Steps

- Monitor implementation and results in 2007.

### **Granite Club – Lighting Retrofit**

Action

- The contract was signed in the middle of 2006.

- Toronto Hydro conducted an on-site visit while the project was being implemented.

Results to Date

- The project will proceed in 2007.

Next Steps

- Monitor implementation and results in 2007.

### **Toronto District School Board – Lighting Retrofits**

Action

- The main aspect of the project is the retrofit of the existing interior lighting systems in each school facility from T12 to T8 fluorescent technology or other approved energy efficient lighting systems.
- Contract with Toronto District School Board was signed in October 2006.
- Full implementation was underway.

Results to Date

- The project will proceed and deliver results in early 2007.

Next Steps

- Monitor project and results.

### **York University**

Action

- York University worked with MCW Custom Energy Solutions to propose energy savings for the Keele and Glendon campuses.
- The measures developed included both energy and water efficiency measures, such as lighting, new steam chillers, tertiary chilled water pumping systems, modified condenser water systems, new compressed air systems, ice storage and conversion of constant volume air handling to variable air volume.
- Contract with York University was signed in late 2006.

Results to Date

- The project will proceed in 2007.

Next Steps

- Monitor project and results in 2007.

### **City of Toronto - Arenas**

Action

- The project included energy and water efficiency retrofits to approximately 100 of the City's arenas and outdoor ice rinks.
- By the end of first quarter 2006, the CDM partner completed the retrofits in East District that includes the following arenas:
  - Agincourt R.C. – 31 Glen Watford Drive
  - Centennial R.C. – 250 Dolly Varden Blvd.
  - Commander Park C.C. – 140 Commander Blvd.
  - Heron Park C.C. – 292 Manse Road
  - Malvern C.R.C. – 30 Sewells Road
  - McGregor C.C. – 2231 Lawrence Avenue

- Mid Scarborough C.C – 2467 Eglinton Avenue East
- Scarborough Gardens Arena – 75 Birchmount Road
- Scarborough Village C.C – 3600 Kingston Road

Results to Date

- Peak demand reductions of 150 kW and energy savings of 710,465 kWh were achieved in 2006.

Next Steps

- Continue the project in 2007 and complete energy retrofits in other districts.

### **City of Toronto – Fire Stations**

Action

- The project involves energy and water efficiency retrofits to eighty-five of the City's fire stations.
- The project implementation was underway in 2006.

Results to Date

- The project will proceed in 2007.

Next Steps

- Monitor project and results in 2007.

### **City of Toronto – Civic Centres**

Action

- The project consisted of installing an array of energy efficient measures at the selected civic facilities.
- By the end of first quarter 2006, the CDM partner completed the lighting retrofits at the following facilities:
  - Communication Building – 703 Don Mills Road
  - City Hall – 100 Queen Street West
  - East York Civic Centre – 850 Coxwell Avenue
  - Eastview Community Centre – 86 Blake Street
  - Metro Hall – 55 John Street
  - Police Garage – 2050 Jane Street
  - Scadding Court Community Centre – 707 Dundas Street West

Results to Date

- In total, 12,858 old fixtures were removed from the above six locations in 2006 and 13,074 energy efficient measures were installed.
- Peak demand reductions of 316 kW and energy savings of 1,578,917 kWh were achieved in 2006.

Next Steps

- Project is complete.

### **City of Toronto – Exhibition Place Buildings**

Action

- The project involves energy and water efficiency retrofits to six buildings at Exhibition Place. The project includes measures such as building envelope

upgrades, HVAC and control upgrades and/or replacements, and lighting retrofits.

- The project implementation was underway in 2006.

Results to Date

- The project will proceed in 2007.

Next Steps

- Monitor project and results in 2007.

### **City of Toronto – Direct Energy Centre**

Action

- The initiative consists of a lighting retrofit of Exhibition Halls A, B, C and D and the heritage Court of the National Trade Centre at Exhibition Place.
- The project implementation was underway in 2006.

Results to Date

- The project will proceed in 2007.

Next Steps

- Monitor project and results in 2007.

### **powerWISE Business Incentive Program (PBIP)**

Action

- This program invites small commercial customers (under 100kW) to apply for an incentive to install measures that improve energy efficiency.
- The program is being conducted by each of the CLD partners and applications can be done over each Utility's website.

Results to Date

- By the end of 2006, Toronto Hydro received and approved 76 PBIP applications with a total kW target of 2,737.
- Incentive payments have been made to 16 applicants that completed installation in 2006.
- Peak demand reductions of 345 kW and energy savings of 1,852,872 kWh were achieved in 2006.

Next Steps

- Promote the program in 2007.
- Increase the upper limit of kW target to 1,000.

## 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.

## Description of 2006 Activities

### Direct Load Control – peaksaver Program Small Commercial

#### Action

- Enrolled more than 2,600 small commercial customers and installed more than 1,000 load control switches by the end of 2006.
- Developed and implemented an M&V plan for the peaksaver program.
- Registered a demand response facility with the IESO for the Emergency Load Reduction Program, or ELRP.
- Established the demand response dispatch operation center with the necessary systems and processes to respond to the ELRP dispatch notification.
- Activated load control twice in the summer of 2006 along with residential peaksaver, resulting in peak demand reductions of about 15MW.

#### Results to Date

- By the end of 2006, more than 2,600 small commercial customers were enrolled and more than 1,000 participants were installed with the load control switches.
- Installed demand response capacity of more than 4 MW (at 35 degrees C) by the end of 2006 including residential customers.
- peaksaver was selected by the Government for rolling out to the rest of Ontario.

#### Next Steps

- Continue with full deployment in 2007.
- Extend dispatch operation service to other LDCs to facilitate Government rolling out of peaksaver program in Ontario.

## Design Advisory Program

### **Description**

This initiative helps to create an integrated approach to the design process for new buildings, and involves architects, engineers, building owners and Toronto Hydro design advisors, with the goal of creating more energy efficient buildings.

### **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. 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.

## **Description of 2006 Activities**

### **Design Advisory Program – Enbridge**

#### Action

- The initiative is focusing on New Building Construction Program (NBCP). NBCP offers incentives to an owner of a building to build a more energy efficient building. In this turnkey project, on a monthly basis in 2006, Enbridge Gas Distribution (EGD) submitted to Toronto Hydro a list of potential projects in the City of Toronto, with their expected completion dates. Upon completion of the design of the building/project, EGD forwarded to Toronto Hydro, a summary report showing kW and kWh savings. Energy savings were determined by an Approved Energy Simulation Program, which could be any of the following: EE4-CBIP, EE4-Code, or CBIP 33-Wizard.

#### Results to Date

- Out of 20 locations included in the program by the end of 2006, six had been fully occupied.
- Peak demand reductions of 197 kW and energy savings of 416,321 kWh were achieved in 2006.
- Project will proceed in 2007.

#### Next Steps

- Continue to work with EGD and promote the program in 2007.

### **Design Advisory Program – City of Toronto**

#### Action

- The program would secure voluntary improvements in energy efficient design and practices for the construction of new buildings or building additions in the City of Toronto. Buildings can be industrial, commercial or high-rise multi-residential. Improvements are targeted to achieve at least 25% energy savings over standard building code design.

#### Results to Date

- Project was delayed in 2006 and will proceed in 2007.
- Next Steps
- Monitor project and results in 2007.

## ***Distribution Loss Reduction***

### **Distribution Loss Reduction**

#### **Description:**

The Distribution Loss Reduction Program is a broad network based initiative to drive greater efficiencies within Toronto Hydro's grid. This program will identify opportunities for system enhancements. Next steps will be to complete the engineering analysis and feasibility studies. Projects will be prioritized and selected based on the most attractive investment to results ratio. Items to be addressed may include, but are not limited to:

**Power Factor Correction** - Under the Power Factor Correction initiative, a power factor assessment will be completed which will identify locations for the installation of power factor correction capacitor banks. The results and available funding will determine which projects proceed.

**Voltage Conversion** - Voltage upgrades can reduce 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. This program could also involve changing out all the meters on a particular feeder to SMART Meters so that the exact losses can be determined.

**Power System Load Balancing** - This program is designed to ascertain where load shifting can occur within the grid to improve system efficiency including the location of optimized "open points".

**Voltage Profile Management** - Changing voltage profiles at the distribution station level can result in a peak reduction at the controllable distribution stations. This is in addition to the IESO's voltage reduction program and will not interfere with the effectiveness of that program.

**Line Loss Reductions** - Replacement of conductors such as #6 AWG copper with #2 AWG aluminum can reduce line losses. An evaluation of where such opportunities exist may be undertaken. The results and available funding will determine which projects proceed.

**Transformer and Other Losses** - Using infrared scans of transformers this program will help to identify additional electricity losses including overloaded equipment. "Hot" transformers will be investigated further to determine operational improvement opportunities.

#### **Target users**

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

#### **Benefits**

Reduced electricity distribution system delivery losses will reduce system demand, relieve network capacity to accommodate growth, and reduce 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.

### **Description of 2006 Activities**

#### **Power Diversion**

Action



- CDM fund was used to support staff that would determine instances of power diversion.
- Working with other authorities, Toronto Hydro identified the causes of the power diversion and billed the losses accordingly.

Results to Date

- Peak demand reductions of 3,472 kW and energy savings of 9,422,595 were achieved in 2006.

Next Steps

- Continue power diversion program in 2007.

## ***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-turbine, 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 green house gas (GHG) emissions. Other benefits include improved system reliability, reduced harmonics, backup power possibilities, education and skills development.

### **Description of 2006 Activities**

#### **Enwave Projects**

##### Action

- In 2005, Toronto Hydro entered into agreements with Enwave Energy Corporation (Enwave) to launch a series of projects, which would result in the replacement of existing water chiller equipment with Enwave district cooling service utilizing deep lake water cooling technology.
- Deep lake water cooling is an alternative to typical water chiller systems that supplement building air conditioning (i.e. electric chilling towers). The delivery of the district cooling service to customer buildings allows the removal of chillers, pumps and cooling towers from these buildings and delivers the same quantity of cooled water with substantially less electrical energy input.
- Enwave completed the construction work before August 2006 and started deep lake water cooling operation in mid summer 2006 for the following locations:
  - Adelaide Place
  - Richmond Adelaide Centre
  - TD Centre
  - Commerce Court

- Metro Hall
- Simpson Tower & HBC Store

Results to Date

- Peak demand reductions of 11,516 kW and energy savings of 22,535,961 kWh were achieved in 2006.

Next Steps

- Continue to work with Enwave and expand the project list.

### **Exhibition Place – PV Power Generation**

Action

- The project involves the installation of solar photo-voltaic (PV) generation on the roof of the Horse Palace at Exhibition Place.

Results to Date

- The installation was completed in 2006 – kW results will be reported in 2007.

Next Steps

- Monitor project and verify results in 2007.

### **1 Avondale – Baghai Developments**

Action

- The project consists of the installation two renewable forms of energy (wind turbine and solar photo-voltaic panels) to supplement power requirements for common areas.

Results to Date

- Project was completed in 2006 – kW results will be reported in 2007.

Next Steps

- Monitor and verify results in 2007.

## Stand-by Generators

### **Description**

This program provides 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.

## **Description of 2006 Activities**

### **Yorkdale Mall/Oxford Properties**

#### Action

- The CDM partner's existing generator was upgraded in 2006.
- A new bi-fuel generator was installed in 2006.
- Both generators were dispatched on May 11, 2006 while the Minister of Energy was present.

#### Results to Date

- Peak demand reductions of 455 kW were achieved in 2006.

#### Next Steps

- A new natural gas generator will be installed in 2007
- Continue to dispatch generators on peak.

### **First Canadian Place**

#### Action

- The major initiative consisted of the CDM partner participating as a "peak shaver" with four existing 750 kW diesel generators.
- All four generators at the customer's site were dispatched on May 11, 2007 while the Minister of Energy was present.

#### Results to Date

- Peak demand reductions of 888 kW were achieved in 2006

#### Next Steps

- Continue to dispatch generators on peak.

### **Fairmont Royal York Hotel**

#### Action

- The major initiative consisted of the CDM partner participating as a "peak shaver" with two existing 750 kW diesel and one new 750 kW natural gas generators.
- Two existing generators were upgraded in 2006 and are ready for dispatch.

- Both generators were dispatched on May 11, 2006 while the Minister of Energy was present.

Results to Date

- Peak demand reductions of 443 kW were achieved in 2006.

Next Steps

- Continue to dispatch generators on peak.

**In addition to the above three projects, the generators of the following projects were also dispatched on May 11, 2006 while the Minister of Energy was present:**

Enbridge Consumers Gas Inc.  
Ontario Power Generation  
North York General Hospital  
Toronto Hydro Building – 5800 Yonge Street

## ***Overall Program Support***

### **Description**

Project review, approval, tracking and results verification as well as development of contracts with CDM Partners.

### **Target Users**

All customer classes.

### **Benefits**

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

## **Description of 2006 Activities**

### **Regulatory Reporting and Program Support**

#### Action

- Successfully filed 2005 CDM Annual Report to the OEB.
- Worked with business units and kept track of project status and results.
- Submitted quarterly report to the OEB.

#### Results to Date

- 187MW of projects approved and contracted.

#### Next Steps

- Continue with regulatory reporting function.
- Smooth transition from OEB funding to OPA funding.

## 4. Lessons Learned

### Working Together

During the past year, the members of the Coalition of Large Distributors (Toronto Hydro, Hydro Ottawa, Horizon Utilities, Veridian, Enersource Hydro Mississauga and Powerstream) have worked together on the execution of their individual CDM plans. A Steering Committee oversees and coordinates joint actions, and program-specific working committees promote the sharing of ideas, experiences and costs. The benefits of this joint action are numerous. For example:

#### Purchasing power:

- Together, the CLD group represents about 40% of the Province's electricity load. Accordingly, the group commands the attention of the marketplace when seeking vendors to support its CDM programs. The joint purchasing power of the CLD has provided it with access to the most innovative products and services available, at very competitive costs.

#### Consistent messaging:

- The adoption and promotion of the powerWISE brand by the CLD members will provide significant long-term benefits. The development of this single brand that is recognized by consumers and synonymous with energy efficiency can be leveraged to maximize the reach and penetration of future CDM initiatives, in a way that could not be achieved by each member LDC on its own.

#### Cost Sharing:

- While local electricity markets and customer contacts often deserve and demand customized treatment, other aspects of CDM programs are common and lend themselves to cost sharing. The CLD members agreed early on to a standard cost sharing formula to ensure that benefits were fairly allocated. During 2005, CLD members jointly funded a number of initiatives such as the establishment of the [www.powerwise.ca](http://www.powerwise.ca) website, the development of the powerWISE Business Incentives Program and more. Sharing costs has enabled individual CLD members to help minimize program costs.

#### Exchange of Ideas/Approaches:

- Customers' attitudes towards energy use are not homogeneous. Achieving a conservation culture in Ontario will require experimentation with varied and diverse approaches. Working in partnership, the CLD members have learned from each other's successes and setbacks. For example, Toronto Hydro's launch of its peakSAVER program in late 2005 offered proof that many customers are willing to participate in an air conditioner load control program for a nominal financial reward. This success translated into a broader scale program across all CLD service areas in 2006.

## Market Conditions

- Toronto Hydro reviewed proposals from proponents on a “first come first served” basis and committed 100% of the available CDM funds to projects completing by 2007.
- It was evident, particularly from the Home Depot and Fridge Unplugged programs that residential customers are eager to learn about, and install, more energy savings measures.
- In the commercial, industrial and institutional sectors it was surprising to learn that many companies have not installed energy savings measures in order to reduce power costs. It was found that capital investment decisions must have a very fast payback, typically less than two years. The CDM incentive made energy efficiency projects viable for a significant number of customers.
- There are a number of larger customers that have generators used for back-up power requirements. Working with these customers we were able to retrofit these installations to make the generators available for dispatch on peak. This capability can significantly reduce summer peak loads.
- We were able to design and install the peakSAVER load management system whereby customers’ air conditioning units can be managed to reduce summer peak demand.
- In the Social Housing Program, it became very evident that the needs of low income housing tenants must be addressed. Social and low income housing customers are typically spending a greater percentage of their income on utilities or rent and can least afford to retrofit their unit or purchase efficient appliances. Education in this sector is critical. Fortunately we were able to commit CDM incentives to Toronto Community Housing Corporation in order specifically address these issues, but there is much more that can be done.
- 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
- Public education is a critical element as we build a culture of conservation. We must continue to balance the need for short-term results while fostering a long-term conservation attitude.



## Regulatory Environment

The regulatory environment remained relatively stable in 2006 compared to 2005 and the experience gained through 2005 was leveraged in 2006. TRC analysis and experience gained in 2005 has been applied to all contracts in 2006. All TRC analysis has been done according to the OEB TRC Guide.

The energy conservation “choices” are increasing with both the Ministry of Energy and the OPA entering the market. A cooperative effort among various agencies will be required or customer confusion will result:

- The energy industry must coordinate its many organizations and their individual efforts to ensure that program delivery is efficient, readily available and understood by all customers. The goal should be rapid program deployment through the LDC’s direct channel to market. 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, OPA, IESO, EDA, etc would be beneficial in this regard.
- 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, we must strive to streamline the LDC’s administrative reporting efforts where possible.

### Comments on Program Success

	Successful? H/M/L	Continue?	Notes
<b>Residential and Commercial &lt;50kW</b>			
Co-Branded Mass Market	Yes – H	Yes	Significant interest in mass market for techniques for saving energy
Summer Challenge Programs	Yes – H	Yes	Will be expanded province wide
Residential Load Control Initiative	Yes – H	Yes	peakSAVER program shows great potential
TAPS Program	Yes – H	Yes	Excellent Program
Social Housing Program	Yes – M	Yes	Sector needs significant support, particularly through tenant education; higher prevalence of electric heat
<b>Commercial Institutional and Industrial &gt;50kW</b>			
SMART Meter Program	Yes - H	Yes	As part of Provincial Directive
LED Traffic Signals	Yes - M	Yes	Project underway
Leveraging Energy Conservation or Load Mgmt	Yes - H	Yes	Significant interest in CI&I Sector
CI&I Load Control	Yes - H	Yes	Significant potential for on-peak load reductions
Energy Audits and Feasibility Studies	No - L	No	No measurable kW/kWh benefits
Design Advisory Program	Yes-M	Yes	Project moving slow
<b>Distribution Loss Reduction</b>			
Distribution Loss Reduction	Yes-M	Yes	Power Diversion only
<b>Distributed Generation</b>			
Load Displacement	Yes - H	Yes	Significant potential for on-peak load reductions
Standby Generators	Yes - H	Yes	
<b>Overall Program Support</b>			
Program Support Initiatives	Yes - H	Yes	These activities support all the program areas and assist with marketing, promotion and governance

## 5. Conclusions

While 2006 was a period of continued development and learning for Toronto Hydro, the year was very successful with an almost 300% increase in peak demand savings compared to 2005. Results for 2006 were significant and benefited from programs, such as the peaksaver pilot program, launched in 2005, which was expanded into a full program in 2006 and is now being adopted by the OPA as a province-wide program. We quickly created and went to market with new Conservation and Demand Management programs and continued to make considerable progress:

- Ninety three per cent of funds spent (\$37 million out of \$40 million). Remainder will be spent in the first quarter of 2007.
- Peak demand savings of 49.6 MW and energy savings of 155.7 million kWh achieved in 2006.
- Excellent exposure in all customer segments.

We continued to gain market experience and we re-evaluated and fine-tuned our plans. An example is the successful Summer Challenge program implemented for the Residential and Small Commercial customers, which has resulted in the OPA adopting this program as a Standard Program offering for 2007.

With limited existing resources, CDM program implementation requires the significant use of partnerships. We continued to maximize our results by working with the Coalition of Large Distributors, which provided a significant advantage in knowledge and resource sharing, efficiency and cost effectiveness.

## Appendix A - Evaluation of the CDM Plan

	<sup>5</sup> Cumulative Totals Life-to-date	Total for 2006	Residential & Small Commercial (<50 kW)	Commercial, Industrial & Institutional	Distribution Loss Reduction	Distributed Energy	<sup>4</sup> Smart Meters	Overall Program Support
Net TRC value (\$):	\$ 86,712,647	\$83,507,261	\$44,820,423	\$9,716,719	\$565,825	\$29,209,141		-\$643,458
Benefit to cost ratio:	2.38	3.36	3.36	4.52	15.48	3.29		0.00
Number of participants or units delivered:	n/a	n/a	666,097 - number of residential and small commercial customers	1,069	1	16		n/a
Lifecycle (kWh) Savings:	1,534,328,655	990,582,165	325,328,884	92,431,656	9,422,595	563,399,030		n/a
Report Year Total kWh saved (kWh):	247,343,702	155,734,484	116,064,049	7,711,878	9,422,595	22,535,961		n/a
Total peak demand saved (kW):	62,358	49,594	26,493	5,878	3,472	13,752		n/a
Total kWh saved as a percentage of total kWh delivered (%):	0.47%	0.61%	0.45%	0.03%	0.04%	0.09%		n/a
Peak kW saved as a percentage of LDC peak kW load (%):	n/a	0.99%	0.53%	0.12%	0.07%	0.27%		n/a
<sup>1</sup> Report Year Gross C&DM expenditures (\$):	\$36,973,465	\$23,543,739	\$17,350,431	\$583,613	\$39,090	\$4,477,242	\$288,516	\$643,458
<sup>2</sup> Expenditures per kWh saved (\$/kWh):	\$0.15	\$0.15	\$0.15	\$0.08	\$0.00	\$0.20		n/a
<sup>3</sup> Expenditures per kW saved (\$/kW):	\$593	\$475	\$655	\$99	\$11	\$326		n/a
Utility discount rate (%):	5.43%							

<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

A. **Name of the Program:** **Co-branded Mass Market Program**

**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 LDCs, this program is becoming synonymous with specific initiatives such as Compact Fluorescent Lighting (CFL) change out programs, LED Holiday Lights, 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).

**Benefits**

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

**Measure(s):**

	Measure 1	Measure 2	Measure 3
<i>Base case technology:</i>	incandescent bulbs	old room air conditioners (RAC)	incandescent holiday lights
<i>Efficient technology:</i>	CFL bulbs	RAC removal/replacement	SLED
<i>Number of participants or units delivered for reporting year:</i>	300,416	5,713	29,337
<i>Measure life (years):</i>	3-4	6 (old); 12 (new)	30
<i>Number of Participants or units delivered life to date</i>	797,522	10,908	120,018
	Measure 4	Measure 5	Measure 6
<i>Base case technology:</i>	none	none	none
<i>Efficient technology:</i>	programmable thermostats	dimmer switches	motion detectors
<i>Number of participants or units delivered for reporting year:</i>	2,298	11,942	672
<i>Measure life (years):</i>	18	10	10
<i>Number of Participants or units delivered life to date</i>	2,298	11,942	672

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	12,420,757	26,463,176
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	2,514,272	7,698,432
<i>Incremental Measure Costs (Equipment Costs)</i>	979,732	979,732
<i>Total TRC costs:</i>	3,494,005	8,678,165
<i>Net TRC (in year CDN \$):</i>	8,926,752	17,785,011
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	3.55	3.05

C. <u>Results:</u> (one or more category may apply)		<u>Cumulative Results:</u>	
<b><u>Conservation Programs:</u></b>			
Demand savings (kW):	Summer	788	4,020
	Winter		
	<i>lifecycle</i>	<i>in year</i>	<i>Cumulative Lifecycle</i>
Energy saved (kWh):	168,078,926	35,954,209	401,460,001
Other resources saved :			Cumulative Annual Savings
Natural Gas (m3):	7,804,560	433,587	86,538,864
Other (specify):			
D. <u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:		
	Incremental O&M:	2,514,272	3,401,772
	Incentive:	298,350	4,188,171
	Total:	2,812,622	7,589,943
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:	-	-

E. Assumptions & Comments:

- There are three projects included in this program that delivered results in 2006: The Home Depot, Multi-retailer Fall Campaign and TABIA SLED Exchange.
- Total utility direct costs under section D include the OPA's contribution of \$1,688,451. Therefore, Toronto Hydro's actual spending after the recovery from the OPA is \$1,124,172.

<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

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

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

The program is based on the 20/20 program that was implemented in California in 2001. The 2006 Summer Challenge Program runs for 63 days from July 15, 2006 to September 15, 2006. Customers who reduced their kilowatt hour consumption for the program period by 10 percent (nominally) or more compared to the base (the equivalent period in 2005, weather-normalized), received a 10 percent rebate on their total bill for the program period, at the conclusion of the program.

**Target Users**

Residential and small commercial customers.

**Benefits**

The primary objectives of the Summer Challenge program are to reduce electrical demand and consumption during the summer peak period, and to cultivate a culture of conservation among customers. Program serves as a catalyst to participate in other energy conservation programs.

At the same time, the program also has research objectives, which are to:

- Determine customer awareness of, and manner of participation in, the Summer Challenge program.
- Determine if the "no enrolment" feature is a positive design element that encourages sustained participation.
- Determine whether Toronto Hydro's customer information system provides helpful information that can be easily communicated to and understood by our customers, to help them achieve their individual targets.

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	none		
Efficient technology:	behaviour change		
Number of participants or units delivered for reporting year:	539,313		
Measure life (years):	1		
Number of Participants or units delivered life to date	539,313		

**B. TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	5,014,397	5,014,397
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):	897,943	897,943
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:	897,943	897,943
Net TRC (in year CDN \$):	4,116,454	4,116,454
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	5.58	5.58

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

**Cumulative Results:**

**Conservation Programs:**

	Summer		Cumulative Lifecycle	Cumulative Annual Savings
	lifecycle	in year		
Demand savings (kW):				
Energy saved (kWh):	71,465,304	71,465,304	71,465,304	71,465,304
Other resources saved :				
Natural Gas (m <sup>3</sup> ):				
Other (specify):				

**D. Actual Program Costs:**

	Reporting Year	Cumulative Life to Date
Utility direct costs (\$):		
Incremental capital:		
Incremental O&M:	897,943	897,943
Incentive:	3,140,318	3,140,318
Total:	4,038,261	4,038,261
Utility indirect costs (\$):		
Incremental capital:		
Incremental O&M:		
Total:	-	-

**E. Assumptions & Comments:**

1. Incremental O&M is allocated 70%/30% between residential customers and small commercial customers.
2. 10% of free ridership prescribed by the OEB is used in the TRC calculation.
3. Since avoided costs of generation, transmission and distribution are effective only from 2008 (as per Navigant report), the demand reduction achieved by 2006 program does not result in additional TRC benefits.

<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

A. **Name of the Program:** Residential Load Control Initiative

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

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

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	none		
Efficient technology:	load control switch		
Number of participants or units delivered for reporting year:	22,962		
Measure life (years):	15		
Number of Participants or units delivered life to date	22,962		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	41,052,133	41,052,133
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):	1,151,977	3,296,647
Incremental Measure Costs (Equipment Costs)	9,618,378	9,618,378
Total TRC costs:	10,770,355	12,915,025
Net TRC (in year CDN \$):	30,281,778	28,137,108
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	3.81	3.18

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

**Cumulative Results:**

**Demand Response Programs:**

Dispatchable load (kW):	25,258	25,258
Peak hours dispatched in year (hours):		

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs (\$):	Incremental capital:	9,618,378	10,396,809
	Incremental O&M:	1,151,977	2,518,216
	Incentive:		
	Total:	10,770,355	12,915,025
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:	-	-

E. **Assumptions & Comments:**

1. Average peak demand reduction per participant is 1.1 kW according to a consulting study from U.S.
2. Zero percent of free ridership is used as the program is technology driven and enrollment based.
3. No kWh savings have been recognized as the program is one of the Demand Response programs.

<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

**A. Name of the Program:** **TAPS Program**

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

This initiative is a partnership with Enbridge in their highly successful TAPS program. Enbridge is distributing CFLs and installing energy savings measures in homes that they would not normally consider (i.e. homes with electric water heaters and electric heating).

**Target Users**  
Residential and small commercial customers

**Benefits**  
This program is simple in concept and highly effective, since CFL's use 75% less energy than incandescent bulbs and fit into standard sockets. Although a single change-out makes a very small difference, wide-scale use of CFL's could have a significant impact.

**Measure(s):**

	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5
<i>Base case technology:</i>	none	none	none	none	none
<i>Efficient technology:</i>	Efficient Showerheads	pipewrap	CFLs - 14 w and 23 w	aerators	Prog. Thermostats
<i>Number of participants or units delivered for reporting year:</i>	963	913	49,424	1,950	56
<i>Measure life (years):</i>	12	6	4	12	18
<i>Number of Participants or units delivered life to date</i>	1,558	1,464	80,708	3,078	62

**B. TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	1,996,900	3,089,688
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	223,557	579,702
<i>Incremental Measure Costs (Equipment Costs)</i>	154,876	154,876
<i>Total TRC costs:</i>	378,432	734,577
<b>Net TRC (in year CDN \$):</b>	<b>1,618,468</b>	<b>2,355,110</b>
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	5.28	4.21

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

		Cumulative Results:
<b>Conservation Programs:</b>		
<i>Demand savings (kW):</i>	Summer	42
	Winter	68
		Cumulative
		Annual
<i>Energy saved (kWh):</i>	lifecycle	in year
	27,416,358	5,500,647
<i>Other resources saved :</i>		Cumulative Lifecycle
		Savings
<i>Natural Gas (m3):</i>		44,230,552
<i>Water (m<sup>3</sup>):</i>	347,576	28,965
		559,629
		46,636

**D. Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>	172,084	172,084
	<i>Incremental O&amp;M:</i>	223,557	579,702
	<i>Incentive:</i>		
	<i>Total:</i>	395,641	751,786
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>		
	<i>Total:</i>	-	-

**E. Assumptions & Comments:**

Actual equipment costs are used in TRC calculation.

<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

A. **Name of the Program:** **Social Housing Program**

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

Due to aging housing stock, financial constraints and high incidences of electric heating, the Social Housing Sector is a prime candidate for CDM incentives.

**Target Users**

Local social housing corporations, non-profit homes and co-operative housing.

**Benefits**

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

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
<i>Base case technology:</i>	old refrigerators	old stoves	
<i>Efficient technology:</i>	energy star refrigerators	energy star stoves	
<i>Number of participants or units delivered for reporting year:</i>	24,031	24,829	
<i>Measure life (years):</i>	19	18	
<i>Number of Participants or units delivered life to date</i>	24,031	24,829	

<b>B. TRC Results:</b>	<b>Reporting Year</b>	<b>Life-to-date TRC Results:</b>
<sup>1</sup> TRC Benefits (\$):	3,359,576	3,359,576
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	53,915	201,286
<i>Incremental Measure Costs (Equipment Costs)</i>	3,428,690	3,428,690
<i>Total TRC costs:</i>	3,482,605	3,629,976
<i>Net TRC (in year CDN \$):</i>	(123,029)	(270,400)
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	0.96	0.93

<b>C. Results:</b> (one or more category may apply)	<b>Cumulative Results:</b>			
<b>Conservation Programs:</b>				
<i>Demand savings (kW):</i>	Summer	403	403	
	Winter			
	<i>lifecycle</i>	<i>in year</i>	<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>
<i>Energy saved (kWh):</i>	58,368,296	3,143,889	58,368,296	3,143,889
<i>Other resources saved :</i>				
<i>Natural Gas (m3):</i>				
<i>Other (specify):</i>				

<b>D. Actual Program Costs:</b>		<b>Reporting Year</b>	<b>Cumulative Life to Date</b>
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>	53,915	201,286
	<i>Incentive:</i>	968,088	968,088
	<i>Total:</i>	1,022,003	1,169,374
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>		
	<i>Total:</i>	-	-

**E. Assumptions & Comments:**

Incremental Measure Costs in Section B includes payroll costs of \$256,780 from CDM partner - Toronto Community Housing Corporation.

<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

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

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

This initiative involves replacing traffic signals at intersections to 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 approximately 80% less electricity. Other benefits include reduced maintenance (LED's last longer) and improved visibility.

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
<i>Base case technology:</i>	conventional traffic lights		
<i>Efficient technology:</i>	LED traffic lights		
<i>Number of participants or units delivered for reporting year:</i>	1		
<i>Measure life (years):</i>	25		
<i>Number of Participants or units delivered life to date</i>	1		

**B. TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	2,750,425	2,750,425
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>		
<i>Incremental Measure Costs (Equipment Costs)</i>	219,600	219,600
<i>Total TRC costs:</i>	219,600	219,600
<b>Net TRC (in year CDN \$):</b>	<b>2,530,825</b>	<b>2,530,825</b>
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	12.52	12.52

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

**Cumulative Results:**

**Conservation Programs:**

<i>Demand savings (kW):</i>	<i>Summer</i>	243	243	
	<i>Winter</i>			
	<i>lifecycle</i>	<i>in year</i>	<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>
<i>Energy saved (kWh):</i>	53,245,080	2,129,803	53,245,080	2,129,803
<i>Other resources saved :</i>				
<i>Natural Gas (m3):</i>				
<i>Other (specify):</i>				

**D. Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>		
	<i>Incentive:</i>	139,648	139,648
	<i>Total:</i>	139,648	139,648
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>		
	<i>Total:</i>	-	-

**E. Assumptions & Comments:**

No actual costs information was provided by the CDM partner, so cost estimates of \$1,000 per intersection was used.

<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

A. **Name of the Program:** **Leveraging Energy Conservation and/or Load Management Programs**

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

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 LDC's 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.

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
<i>Base case technology:</i>	old lighting systems	electric water heaters	
<i>Efficient technology:</i>	energy efficient lighting systems	natural gas water heaters	
<i>Number of participants or units delivered for reporting year:</i>	6	11	
<i>Measure life (years):</i>	varies with project	18	
<i>Number of Participants or units delivered life to date</i>	9	11	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	2,074,812	3,439,313
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	156,987	846,335
<i>Incremental Measure Costs (Equipment Costs)</i>	2,270,165	2,624,209
<i>Total TRC costs:</i>	2,427,152	3,470,544
<i>Net TRC (in year CDN \$):</i>	(352,340)	(31,231)
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	0.85	0.99

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

**Cumulative Results:**

**Conservation Programs:**

	Summer	Winter	Cumulative Lifecycle	Cumulative Annual Savings
<i>Demand savings (kW):</i>	1,157		1,507	
<i>Energy saved (kWh):</i>	26,696,938	5,165,754	47,421,333	7,966,033
<i>Other resources saved:</i>				
<i>Natural Gas (m3):</i>				
<i>Other (specify):</i>				

D. **Actual Program Costs:**

	Reporting Year	Cumulative Life to Date
<i>Utility direct costs (\$):</i>		
<i>Incremental capital:</i>		282,355
<i>Incremental O&amp;M:</i>	156,987	453,403
<i>Incentive:</i>	152,895	322,530
<i>Total:</i>	309,883	1,058,288
<i>Utility indirect costs (\$):</i>		
<i>Incremental capital:</i>		
<i>Incremental O&amp;M:</i>		
<i>Total:</i>	-	-

E. **Assumptions & Comments:**

- There are six projects included in this program that delivered kw savings in 2006: University of Toronto at Scarborough, THESI, Powerwise Business Incentive Program, Momiji Lighting Retrofit, City of Toronto and 3080 Yonge Street.
- As actual cost information for City of Toronto is not available, costs were estimated based on average cost per kW saved for PBIP projects.

<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

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

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

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

**Target Users**

Larger commercial, industrial and institutional customers.

**Benefits**

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

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	none		
Efficient technology:	load control switch		
Number of participants or units delivered for reporting year:	1,044		
Measure life (years):	15		
Number of Participants or units delivered life to date	1,044		

B. <b>TRC Results:</b>	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	6,956,931	6,956,931
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):	31,896	101,437
Incremental Measure Costs (Equipment Costs)	6,367	6,367
Total TRC costs:	38,263	107,804
<b>Net TRC (in year CDN \$):</b>	<b>6,918,668</b>	<b>6,849,127</b>
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	181.82	64.53

C. <b>Results:</b> (one or more category may apply)	<b>Cumulative Results:</b>	
<b>Demand Response Programs:</b>		
Dispatchable load (kW):	4,280	4,280
Peak hours dispatched in year (hours):		

D. <b>Actual Program Costs:</b>	Reporting Year	Cumulative Life to Date
Utility direct costs (\$):		
Incremental capital:	6,367	6,367
Incremental O&M:	31,896	101,437
Incentive:		
Total:	38,263	107,804
Utility indirect costs (\$):		
Incremental capital:		
Incremental O&M:		
Total:	-	-

E. **Assumptions & Comments:**

1. Average peak demand reduction per participant is 4.1 kW according to a consulting study from U.S.
2. Zero percent of free ridership is used as the program is technology driven and enrollment based.
3. No kWh savings have been recognized as the program is one of the Demand Response programs.

<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

<b>A. Name of the Program:</b>		<b>Design Advisory Program</b>			
<b>Description of the program (including intent, design, delivery, partnerships and evaluation):</b>					
This initiative helps to create an integrated approach to the design process for new buildings, and involves architects, engineers, building owners and Toronto Hydro design advisors, with the goal of creating more energy efficient buildings.					
<b>Target Users</b> Commercial, Industrial and Institutional customers.					
<b>Benefits</b> 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.					
<b>Measure(s):</b>					
		Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)	
Base case technology:		conventional building design			
Efficient technology:		integrated design			
Number of participants or units delivered for reporting year:		7			
Measure life (years):		30			
Number of Participants or units delivered life to date		7			
<b>B. TRC Results:</b>			<b>Reporting Year</b>	<b>Life-to-date TRC Results:</b>	
<sup>1</sup> TRC Benefits (\$):			693,680	693,680	
<sup>2</sup> TRC Costs (\$):					
	Utility program cost (excluding incentives):		23,467	23,467	
	Incremental Measure Costs (Equipment Costs)		50,646	50,646	
	Total TRC costs:		74,114	74,114	
<b>Net TRC (in year CDN \$):</b>			619,567	619,567	
<b>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</b>			9.36	9.36	
<b>C. Results:</b> (one or more category may apply)			<b>Cumulative Results:</b>		
<b>Conservation Programs:</b>					
Demand savings (kW):		Summer	197	197	
		Winter			
				Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):		lifecycle	12,489,638	12,489,638	416,321
Other resources saved :					
Natural Gas (m3):					
Other (specify):					
<b>D. Actual Program Costs:</b>			<b>Reporting Year</b>	<b>Cumulative Life to Date</b>	
Utility direct costs (\$):		Incremental capital:			
		Incremental O&M:	23,467	23,467	
		Incentive:	72,352	72,352	
		Total:	95,819	95,819	
Utility indirect costs (\$):		Incremental capital:			
		Incremental O&M:			
		Total:	-	-	
<b>E. Assumptions &amp; Comments:</b>					
1. The program includes seven locations that obtained occupancy permit by the end of 2006.					
2. 30% of free ridership has been used in TRC calculation, consistent with what's been used in gas industry.					
3. kW and kWh savings are based on model results provided by CDM partner.					
<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

A. **Name of the Program:** **Distribution Loss Reduction Program**

**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. Next steps will be to complete the engineering analysis and feasibility studies. Projects will be prioritized and selected based on the most attractive investment to results ratio. Items to be addressed may include, but are not limited to:  
Power Factor Correction; Voltage Conversion; Power System Load Balancing; Voltage Profile Management; Line Loss Reductions; Transformer and Other Losses.

**Target Users**

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

**Benefits**

Reduced electricity distribution system delivery losses will reduce system demand, relieve network capacity to accommodate growth, and reduce 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.

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
<i>Base case technology:</i>	none		
<i>Efficient technology:</i>	identified and disconnected units of power diversion		
<i>Number of participants or units delivered for reporting year:</i>	1		
<i>Measure life (years):</i>	1		
<i>Number of Participants or units delivered life to date</i>	1		

B. <b>TRC Results:</b>	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	604,914	9,903,119
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	39,090	17,139,823
<i>Incremental Measure Costs (Equipment Costs)</i>		
<i>Total TRC costs:</i>	39,090	17,139,823
<b>Net TRC (in year CDN \$):</b>	565,825	(7,236,704)
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	15.48	0.58

C. <b>Results:</b> (one or more category may apply)	Cumulative Results:			
<b>Line Loss Reduction Programs:</b>				
<i>Peak load savings (kW):</i>		3,472		7,413
			<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>
<i>Energy savings (kWh):</i>	<i>lifecycle</i>	<i>in year</i>		
	9,422,595	9,422,595	265,834,357	41,218,874

D. <b>Actual Program Costs:</b>	Reporting Year	Cumulative Life to Date
<i>Utility direct costs (\$):</i>		18,942,819
<i>Incremental capital:</i>		
<i>Incremental O&amp;M:</i>	39,090	80,529
<i>Incentive:</i>		
<i>Total:</i>	39,090	19,023,348
<i>Utility indirect costs (\$):</i>		
<i>Incremental capital:</i>		
<i>Incremental O&amp;M:</i>		
<i>Total:</i>	-	-

E. **Assumptions & Comments:**

The program includes Power Diversion only in 2006.

<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

A. **Name of the Program:** **Load Displacement**

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

Distributed generation behind the customer's meter provides an excellent opportunity to displace load from the local distribution system's grid in a very effective manner. Load displacement technology, such as combined heat and power systems, provides increased power efficiency and thermal systems. 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 green house gas (GHG) emissions. Other benefits include improved system reliability, reduced harmonics, backup power possibilities, education and skills development.

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	electric air conditioning		
Efficient technology:	deep lake water cooling		
Number of participants or units delivered for reporting year:	7		
Measure life (years):	25		
Number of Participants or units delivered life to date	7		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	39,527,433	39,527,433
<sup>2</sup> TRC Costs (\$):		
Utility program cost (excluding incentives):	202,983	202,983
Incremental Measure Costs (Equipment Costs)	10,093,819	10,093,819
Total TRC costs:	10,296,803	10,296,803
Net TRC (in year CDN \$):	29,230,630	29,230,630
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	3.84	3.84

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

**Cumulative Results:**

**Conservation Programs:**

	Summer	Winter	Cumulative Lifecycle	Cumulative Annual Savings
Demand savings (kW):	11,516		11,516	
Energy saved (kWh):	563,399,030	22,535,961	563,399,030	22,535,961
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

D. **Actual Program Costs:**

	Reporting Year	Cumulative Life to Date
Utility direct costs (\$):		
Incremental capital:		
Incremental O&M:	202,983	202,983
Incentive:	1,837,300	1,837,300
Total:	2,040,283	2,040,283
Utility indirect costs (\$):		
Incremental capital:		
Incremental O&M:		
Total:	-	-

E. **Assumptions & Comments:**

- The program contains seven locations under Enwave Deep Lake Water Cooling project.
- Although all the buildings operate beyond summer period, kWh savings were calculated using summer months only.

<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

A. **Name of the Program:** **Stand-by Generators**

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

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.

**Measure(s):**

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
<i>Base case technology:</i>	existing stand-by generators		
<i>Efficient technology:</i>	upgraded generators		
<i>Number of participants or units delivered for reporting year:</i>	9		
<i>Measure life (years):</i>	10		
<i>Number of Participants or units delivered life to date</i>	13		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):	2,446,115	6,172,273
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	1,956,208	2,399,582
<i>Incremental Measure Costs (Equipment Costs)</i>	511,396	2,458,030
<i>Total TRC costs:</i>	2,467,604	4,857,612
<i>Net TRC (in year CDN \$):</i>	(21,490)	1,314,661
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	0.99	1.27

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

**Cumulative Results:**

**Distributed Generation and Load Displacement Programs:**

<i>Amount of DG installed (kW):</i>	2,235	6.935
<i>Energy generated (kWh):</i>		
<i>Peak energy generated (kWh):</i>		
<i>Fuel type:</i>	bio diesel and natural gas	

D. **Actual Program Costs:**

	Reporting Year	Cumulative Life to Date
<i>Utility direct costs (\$):</i>		487,956
<i>Incremental capital:</i>		
<i>Incremental O&amp;M:</i>	1,956,208	2,233,750
<i>Incentive:</i>	480,751	1,012,751
<i>Total:</i>	2,436,959	3,734,457
<i>Utility indirect costs (\$):</i>		
<i>Incremental capital:</i>		
<i>Incremental O&amp;M:</i>		
<i>Total:</i>	-	-

E. **Assumptions & Comments:**

The program includes nine generators at four customer locations.

<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

**A. Name of the Program:** **Regulatory Reporting and Program Support**

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

Project review, approval, tracking and results verification. Development of contracts with CDM Partners.

**Target Users**

All customer classes.

**Benefits**

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

**Measure(s):**

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

**B. TRC Results:**

	Reporting Year	Life-to-date TRC Results:
<sup>1</sup> TRC Benefits (\$):		
<sup>2</sup> TRC Costs (\$):		
<i>Utility program cost (excluding incentives):</i>	643,458	1,209,601
<i>Incremental Measure Costs (Equipment Costs)</i>		
<b>Total TRC costs:</b>	<b>643,458</b>	<b>1,209,601</b>
<b>Net TRC (in year CDN \$):</b>	<b>(643,458)</b>	<b>(1,209,601)</b>
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	n/a	n/a

**D. Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>	643,458	1,209,601
	<i>Incentive:</i>		
	<i>Total:</i>	643,458	1,209,601
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&amp;M:</i>		
	<i>Total:</i>	-	-

**E. Assumptions & Comments:**

<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 C - Program and Portfolio Totals

Report Year: **2006**

### 1. Residential & Small Commercial (<50 kW) Programs

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Co-branded Mass Market Program	\$ 12,420,757	\$ 3,494,005	\$ 8,926,752	3.55	35,954,209	168,078,926	788	\$ 1,124,172
Summer Challenge Program	\$ 5,014,397	\$ 897,943	\$ 4,116,454	5.58	71,465,304	71,465,304		\$ 4,038,261
Residential Load Control Initiative	\$ 41,052,133	\$ 10,770,355	\$ 30,281,778	3.81			25,258	\$ 10,770,355
TAPS Program	\$ 1,996,900	\$ 378,432	\$ 1,618,468	5.28	5,500,647	27,416,358	42	\$ 395,641
Social Housing Program	\$ 3,359,576	\$ 3,482,605	\$ -123,029	0.96	3,143,889	58,368,296	403	\$ 1,022,003
<b>*Totals App. B - Residential &amp; Small Commercial (&lt;50 kW)</b>	<b>\$ 63,843,763</b>	<b>\$ 19,023,340</b>	<b>\$ 44,820,423</b>	<b>3.36</b>	<b>116,064,049</b>	<b>325,328,884</b>	<b>26,493</b>	<b>\$ 17,350,431</b>
Residential & Small Commercial (<50 kW) Indirect Costs not attributable to any specific program	→							
<b>Total TRC Costs</b>		\$ 19,023,340						
<b>**Totals TRC - Residential &amp; Small</b>	<b>\$ 63,843,763</b>	<b>\$ 19,023,340</b>	<b>\$ 44,820,423</b>	<b>3.36</b>				

### 2. Commercial, Industrial & Institutional Programs

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
LED Traffic Signals	\$ 2,750,425	\$ 219,600	\$ 2,530,825	12.52	2,129,803	53,245,080	243	\$ 139,648
Leveraging Energy Conservation & Load Management Programs	\$ 2,074,812	\$ 2,427,152	\$ -352,340	0.85	5,165,754	26,696,938	1,157	\$ 309,883
Commercial, Industrial & Institutional Load Control Initiative	\$ 6,956,931	\$ 38,263	\$ 6,918,668	181.82			4,280	\$ 38,263
Design Advisory Program	\$ 693,680	\$ 74,114	\$ 619,567	9.36	416,321	12,489,638	197	\$ 95,819
<b>*Totals App. B - Commercial, Industrial &amp; Institutional</b>	<b>\$ 12,475,849</b>	<b>\$ 2,759,129</b>	<b>\$ 9,716,719</b>	<b>4.52</b>	<b>7,711,878</b>	<b>92,431,656</b>	<b>5,878</b>	<b>\$ 583,613</b>
Commercial, Industrial & Institutional Indirect Costs not attributable to any specific program	→							
<b>Total TRC Costs</b>		\$ 2,759,129						
<b>**Totals TRC - Commercial, Industrial &amp; Institutional</b>	<b>\$ 12,475,849</b>	<b>\$ 2,759,129</b>	<b>\$ 9,716,719</b>	<b>4.52</b>				

### 3. Distribution Loss Reduction Programs

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Distribution Loss Reduction	\$ 604,914	\$ 39,090	\$ 565,825	15.48	9,422,595	9,422,595	3,472	\$ 39,090
<b>*Totals App. B - Distribution Loss Reduction</b>	<b>\$ 604,914</b>	<b>\$ 39,090</b>	<b>\$ 565,825</b>	<b>15.48</b>	<b>9,422,595</b>	<b>9,422,595</b>	<b>3,472</b>	<b>\$ 39,090</b>
Distribution Loss Reduction Indirect Costs not attributable to any specific program	→							
<b>Total TRC Costs</b>		\$ 39,090						
<b>**Totals TRC - Distribution Loss Reduction</b>	<b>\$ 604,914</b>	<b>\$ 39,090</b>	<b>\$ 565,825</b>	<b>15.48</b>				

#### 4. Distributed Energy Programs

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Load Displacement	\$ 39,527,433	\$ 10,296,803	\$ 29,230,630	3.84	22,535,961	563,399,030	11,516	\$ 2,040,283
Stand-by Generators	\$ 2,446,115	\$ 2,467,604	-\$ 21,490	0.99			2,235	\$ 2,436,959
<b>*Totals App. B - Distributed Energy</b>	\$ 41,973,548	\$ 12,764,407	\$ 29,209,141	3.29	22,535,961	563,399,030	13,752	\$ 4,477,242
Distributed Energy Indirect Costs not attributable to any specific program								
<b>Total TRC Costs</b>		\$ 12,764,407						
<b>**Totals TRC - Distributed Energy</b>	\$ 41,973,548	\$ 12,764,407	\$ 29,209,141	3.29				

#### 5. Overall Program Support Programs

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Regulatory Reporting & Program Support		\$ 643,458	-\$ 643,458	0.00				\$ 643,458
<b>*Totals App. B - Overall Program Support</b>	\$ -	\$ 643,458	-\$ 643,458	0.00	-	-	-	\$ 643,458
Overall Program Support Indirect Costs not attributable to any specific program								
<b>Total TRC Costs</b>		\$ 643,458						
<b>**Totals TRC - Overall Program Support</b>	\$ -	\$ 643,458	-\$ 643,458	0.00				

#### 6. 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 (\$) → 288,516

#### LDC's CDM PORTFOLIO TOTALS

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
<b>*TOTALS FOR ALL APPENDIX B</b>	\$ 118,898,074	\$ 35,229,424	\$ 83,668,650	3.37	\$ 155,734,484	\$ 990,582,165	\$ 49,594	\$ 23,543,739
Any <i>other</i> Indirect Costs not attributable to any specific program		\$ 161,389						
<b>TOTAL ALL LDC COSTS</b>		\$ 35,390,813						
<b>**LDC' PORTFOLIO TRC</b>	\$ 118,898,074	\$ 35,390,813	\$ 83,507,261	3.36				

\* 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.