# London Hydro Inc -

# (RP-2004-0203 / EB-2005-0206) -

# *Conservation and Demand Management 2005 Annual Report*

Submitted: March 31, 2006

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## Appendices:

# 1 INTRODUCTION

## 1.1 Background

On May 31, 2004, the Minister wrote to electricity distributors pursuant to section 79.6 of the Ontario Energy Board Act, 1998 to allow them to proceed to the Ontario Energy Board with applications to establish deferral accounts within which to track expenditures on conservation and demand management initiatives. Pursuant to the Minister's letter, the Board has allowed distributors to recover funds from ratepayers to be invested in conservation and demand management initiatives.

On October 5, 2004, the Ontario Energy Board issued a procedural order to electricity distributors regarding distributor conservation and demand management activities and deferral accounts, and the procedure to be used for approval of expenditures related to these activities.

In January of 2005, London Hydro submitted its CDM Plan [1] for pre-approval of the fourteen (14) described initiatives. A decision and final order was received March 17th, 2005 [2].

Overall, distributors received approval to invest $163 million in conservation and demand management initiatives over a three year period. Included in this value is the $2.8 million approved for London Hydro Inc.

## 1.2 Purpose

The Ontario Energy Board's orders approving electricity distributor conservation and demand management plans [2] includes a provision that each distributor both report quarterly on their CDM programs and annually to file an report that incorporates a cost benefit analysis.

## 1.3 Scope

This document reports on London Hydro's investment progress in energy conservation and demand-side management initiatives, and resulting energy conservation achievements, over the nine-month time-frame from OEB approval of London Hydro's CDM Plan [2] to year-end (December 31st, 2005).

## 1.4 Program Evaluation Methodology

Within London Hydro's CDM Plan, the *Levelized Cost of Saved Energy* was advanced as straightforward methodology for gauging the effectiveness of each conservation / demand-management initiative. The methodology is detailed in Section 2.3.2, *Prioritization Methodology*, of this CDM Plan [1], and is simply used to ensure an investment in energy conservation will be less costly than the historic market price of generation.

In September 2005, the Ontario Energy Board published its *Total Resource Cost* methodology [6] for evaluating conservation / demand-management initiatives. The TRC Test uses projections of avoided electricity costs (marginal cost) to express benefits in a standard benefit-cost test calculation. Costs represent the incremental cost of the energy efficient equipment and any associated program support costs. The TRC results are expressed either as an $NPV value or as a benefit/cost ratio. For the Ontario context, the Ontario Energy Board directed Hydro One to develop a set of avoided costs to be used in a TRC evaluation framework. The resulting sets of avoided costs accommodate generation, transmission and distribution costs and reflect a "societal" perspective for the province of Ontario. Results expressed in this framework do not represent either the LDC's or the end user's perspective on cost effectiveness.[1]

In order to carryout the TRC calculations London Hydro invested in the EnerSpectum Group's *Total Resource Cost Calculator* computer program[2].

Pursuant to the OEB's requirements [5], individual total resource costs are reported herein for each program that is either complete or has measurable results. A levelized cost of saved energy is also reported herein for information purposes.

## 1.5 Local Context for CDM Programs

London Hydro's service territory is essentially islanded in southwestern Ontario. There are no other large LDC's that have information that cross pollinates into our service territory, i.e. our customers do not get the chance to compare our program to another LDC's easily. This allows London Hydro to create and execute programs that can be readily measured and evaluated, as spillover from advertising of other LDC programs does not directly influence our customers.

Note: The "powerWISE®" brand is being seen by Londoners on Toronto stations and the London newspaper but there has been less than a handful of inquiries to our call center even though we do not participate in that program. This also tells us that LDC branding is most important as the powerWISE brand is not directly associated with the local LDC. All of London Hydro's programs are branded with our logo and messaging.

[1] *Technology Assessment Study and TRC Analysis*; a report prepared for The Ontario Power Authority by SeeLine Group Inc; December 2005; pg 1. Report available online at URL: http://www.conservationbureau.on.ca/Storage/12/1722_OPA_Technology_Study_12_08_Final.pdf

[2] See URL: http://www.enerspectrum.com/products_services.php#calculator for a high level description of this software product.

## 1.6 References

Reference is made in this Annual Report to the following publications and correspondence:

[1] London Hydro System Planning Report SP04-05, *Towards a Sustainable Energy Future: Master Plan of Strategies and Approaches for Energy Conservation and Demand-Side Management Investments*; January 2005.

[2] Ontario Energy Board Decision and Order RP-2004-0203 / EB-2005-0206; re: *an Application by London Hydro Inc. for an Order Pre-approving its Conservation and Demand Management Plan*; March 17, 2005.

[3] Letter of November 1, 2005, to Peter O'Dell, Ontario Energy Board, from Ian McKenzie, London Hydro Inc; re: *Energy Conservation & Demand-Management Plan – Application to Transfer Monies between Initiatives*.

[4] Letter of November 22, 2005, to Ian McKenzie, London Hydro, from John Zych, Ontario Energy Board; re: *Application to Transfer Funds between Initiatives within a Conservation and Demand Management Plan, Board File No RP-2004-0203 / EB-2005-0206*.

[5] Ontario Energy Board publication "*Guideline for Annual Reporting of CDM Initiatives*", December 21, 2005.[3]

[6] Ontario Energy Board publication: *Total Resource Cost Guide*; September 2005.[4]

[3] Document available electronically on OEB website at URL: http://www.oeb.gov.on.ca/html/en/industryrelations/ongoingprojects_distconservation.htm

[4] Document available electronically on OEB website at URL: http://www.oeb.gov.on.ca/documents/cases/RP-2004-0203/cdm_trcguide_141005.pdf

# 2 EVALUATION OF THE CDM PLAN

Amongst the overall portfolio of energy conservation / demand-side management initiatives outlined in London Hydro's CDM Plan, only a few were complete or had measurable results sufficient for an interim indication of program effectiveness. The specific programs for which effectiveness metrics are being reported are:

- Municipal Traffic & Pedestrian Signals Upgrade Project;
- Residential Appliance Recycling Program; and
- Program to Increase Commercial Sector Energy Efficiency (sub-programs *Cool Shops – London* and *custom lighting upgrades* only).

The requisite matrix presentation of the effectiveness parameters is included as Appendix A herein.

London Hydro's CDM Plan was intended as a strategic planning document. Simply put, strategic planning determines where an organization is going over the next year or more, how it's going to get there and how it'll know if it got there or not. Any such document only exists as a guideline and should change as the world changes. Such is the case with London Hydro's CDM Plan. As circumstances have changed, it has been necessary to scale back or defer some programs while expanding other programs.

# 3 DISCUSSION OF PROGRAMS

Highlights for each program within London Hydro's portfolio of energy conservation and demand-side management initiatives are outlined herein. The requisite total resource cost analysis for each program is included herein as Appendix B in the required format.

## 3.1 Municipal Traffic & Pedestrian Signals Upgrade Project

| | |
|---|---|
| Description: | Refer to Section 3 of London Hydro's CDM Plan |
| Status: | Complete |
| Effectiveness: | |
| • Total Resource Cost: | $1,498,158.[96] (refer to Appendix B.1) |
| • Cost of Saved Energy: | 2.6 ¢/kW·h ☺ |
| Comments: | The program is completed; London Hydro is simply waiting for the City of London to quantify its recurring O&M savings that accrue from this project, after which the TRC calculation will be adjusted accordingly. |

## 3.2 Residential Power Cost Monitor

| | |
|---|---|
| Description: | Refer to Section 4 of London Hydro's CDM Plan |
| Status: | In-progress |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.2) |
| • Cost of Saved Energy: | |
| Comments: | This project is scheduled to continue until the end of March, 2006 after which the participants will receive another survey and their electric consumption data prior to and during the field trials will be submitted to the researchers for analysis. |

## 3.3 Residential Appliance Recycling Program

| | |
|---|---|
| Description: | Refer to Section 5 of London Hydro's CDM Plan |
| Status: | In progress |
| Effectiveness: | |
| • Total Resource Cost: | $47,671.[20] (refer to Appendix B.3) |
| • Cost of Saved Energy: | 2.8 ¢/kW·h ☺ |
| Comments: | One segment of London Hydro's refrigerator early retirement program is targeted to apartment buildings and social housing complexes. The homeowner segment of the program is expected to start in Spring 2006. |

## 3.4 Program to Increase Commercial Sector Energy Efficiency

### 3.4.1 Cool Shops – London (2005) Program

| | |
|---|---|
| Description: | Refer to Section 6.3.4 of London Hydro's CDM Plan |
| Status: | Complete |
| Effectiveness: | |
| • Total Resource Cost: | ($22,340.[60]) (refer to Appendix B.4A) |
| • Cost of Saved Energy: | 13.3 ¢/kW·h ☹ |
| Comments: | At the conclusion of the project, Clean Air Foundation (CAF) prepared a report entitled "*2005 Cool Shops Final Report*" (dated November 2005) reflecting experiences and results from programs run in Toronto, London, Ottawa, Markham, Peterborough, and Milton. |

### 3.4.2 Lockable CFL / LED Exit Lights for Apartment / Social Housing Buildings

| | |
|---|---|
| Description: | Refer to Section 6.1.4 of London Hydro's CDM Plan |
| Status: | Awaiting technology |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.4B) |
| • Cost of Saved Energy: | |
| Comments: | London Hydro awaiting the availability of a modified version of the lockable-CFL that will feature lower harmonic distortion / higher power factor characteristics than what is currently available in today's marketplace. |

### 3.4.3 Other Custom Lighting Upgrade Programs

| | |
|---|---|
| Description: | Refer to Section 6.1.5 of London Hydro's CDM Plan |
| Status: | Ongoing |
| Effectiveness: | |
| • Total Resource Cost: | $78,139.[19] (refer to Appendix B.4C) |
| • Cost of Saved Energy: | |
| Comments: | There are numerous lighting upgrade projects with a variety of technologies (e.g. HID dimming, daylight harvesting, etc), but only two were complete by the end of 2005. |

### 3.4.4 Vending Miser Program

| | |
|---|---|
| Description: | Refer to Section 6.1.3 of London Hydro's CDM Plan |
| Status: | Not started |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.4D) |
| • Cost of Saved Energy: | |
| Comments: | |

## 3.5 Distribution Shunt Capacitor Program

| | |
|---|---|
| Description: | Refer to Section 7 of London Hydro's CDM Plan |
| Status: | Program canceled |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.5) |
| • Cost of Saved Energy: | |
| Comments: | This program has been collapsed and monies transferred to the *Residential Appliance Recycling Program*. Refer to references [3] and [4]. |

## 3.6 Combined Heat & Power (CHP) Opportunities for Dispersed Generation

| | |
|---|---|
| Description: | Refer to Section 8 of London Hydro's CDM Plan |
| Status: | In-progress |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.6) |
| • Cost of Saved Energy: | |
| Comments: | The target customers have been outfitted with interval meters, and information regarding each customer's respective electricity, natural gas, and water consumption is being accumulated. Soon there will probably be sufficient profile information available for a consultant to start with the actual feasibility study. |

## 3.7 Energy Awareness in the Classroom Program

| | |
|---|---|
| Description: | Refer to Section 9 of London Hydro's CDM Plan |
| Status: | Program under development |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.7) |
| • Cost of Saved Energy: | |
| Comments: | An education consultant has completed preparation of the lesson plans and student workbooks for this program. Unfortunately, the energy kits that will be distributed to participating students and also used in other conservation |

| | |
|---|---|
| | programs have proven to be problematic on several fronts thereby delaying the start of the program. |

## 3.8 LCBO Warehouse Makeover Project

| | |
|---|---|
| Description: | Refer to Section 10 of London Hydro's CDM Plan |
| Status: | In-progress |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.8) |
| • Cost of Saved Energy: | |
| Comments: | |

## 3.9 Residential Summer Comfort Program

| | |
|---|---|
| Description: | Refer to Section 11 of London Hydro's CDM Plan |
| Status: | Program under development |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.9) |
| • Cost of Saved Energy: | |
| Comments: | |

## 3.10 Demand Response Enabling Technologies Program

| | |
|---|---|
| Description: | Refer to Section 12 of London Hydro's CDM Plan |
| Status: | Program under development |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.10) |
| • Cost of Saved Energy: | |
| Comments: | |

## 3.11 The Heat and Warmth (THAW) Plus Program

| | |
|---|---|
| Description: | Refer to Section 13 of London Hydro's CDM Plan |
| Status: | Program under development |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.11) |
| • Cost of Saved Energy: | |
| Comments: | |

## 3.12 Putting Our Own House in Order Program

| | |
|---|---|
| Description: | Refer to Section 14 of London Hydro's CDM Plan |
| Status: | Awaiting technology |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.12) |
| • Cost of Saved Energy: | |
| Comments: | |

## 3.13 Community One-Tonne Challenge Plus Program

| | |
|---|---|
| Description: | Refer to Section 15 of London Hydro's CDM Plan |
| Status: | Project scaled back and monies transferred |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.13) |
| • Cost of Saved Energy: | |
| Comments: | This program has been scaled back and monies transferred to the *Residential Appliance Recycling Program*. Refer to references [3] and [4]. |

## 3.14 Public Education Program

| | |
|---|---|
| Description: | Refer to Section 16 of London Hydro's CDM Plan |
| Status: | In-progress |
| Effectiveness: | |
| • Total Resource Cost: | (refer to Appendix B.14) |
| • Cost of Saved Energy: | |
| Comments: | Little money has been spent in this area to date, but this is expected to change significantly in 2006 as the focus of London Hydro's conservation programs changes from the commercial segment (where it is possible to achieve significant conservation results with little promotion) to the homeowner segment. |

# 4 LESSONS LEARNED

## 4.1 Ramping Up Takes Time

London Hydro has had much experience in the past with high quality programs and development and implementation of such programs takes time. Our recent experience has been that a well-developed program can exceed expectations for both participation and results. As one such example, for one of London Hydro's cornerstone projects, the *Chill Out – London* residential appliance recycling program, London Hydro has already formally requested considerable additional monies be transferred into this initiative due to significantly higher than expected subscription by the apartment & social housing sector. If the soon-to-be-launched homeowner segment of this *Chill Out - London* program also becomes over-subscribed, it will demonstrate the wisdom of taking one's time to get the program right the first time – in this business, there are rarely second chances.

## 4.2 Successful (more or less)

London Hydro has achieved some enviable energy conservation successes, and has also observed programs that were less successful with respect to customer uptake, program effectiveness, or both.

London Hydro credits successful results to the marketing of the overall conservation and demand management as well as individual programs approved by the OEB. The process to identify the successful market principles has also highlighted some less successful marketing ideas.

Some of the more successful strategies include:

- Creating a sense of urgency -

  A sense of urgency, whether it is driven by short time-lines, perceived limited funding, etc. can be used to generate actionable measures by program participants. In London Hydro's early retirement program for apartment / social housing refrigerators, we advised that our program would be over-subscribed and those that delayed were at risk for losing out on the available funding. By creating a sense of urgency the momentum of a successful start up can be leveraged to create further positive messages that can be used to motivate action by other potential participants.

- Promoting "Dollar Savings" as opposed to "Energy Savings" -

  London Hydro uses almost exclusively the message of monetary savings. Customers are motivated greater if they perceive that they are currently wasting resources rather than if they think they have future saving opportunities.

  In commercial institutions, decision makers are often less motivated by environmental issues; although a pleasant result, such messages are not a prime driver.

- Utilities participation is perceived by customers as a reduction in risk -

  Utilities have perceived expertise in energy conservation. This gives the customer a sense of comfort and leads to uptake of greater energy actions, particularly those with higher capital costs. This is particularly successful when the Utility invests directly in program incentives.

- Creating ownership -

  Customers must have a vested interest (money) in order to create a sustainable action. Customers become motivated to a greater extent when they have their own money invested in the energy action. Such customers have a tendency to "follow" their investment to ensure that it is performing well.

Some of the less successful strategies include:

- Free technologies, such as bulb giveaways -

  Giveaways can create the perception of a "valueless" product, which the customer may not go out later and purchase (in significant quantities). In most cases reports show that two given away achieves at best 1 extra sale. It would be better to give a purchase incentive for 4 bulbs at a discounted price rather than 2 free.

- Not dealing with decision makers -

  If you can not, by the second contact, get to the decision maker i.e. "cheque writer" move on. You may create a contact through operations but in the end you must get senior management buy-in to get the project approved. Do not count on operations to be able to sell the idea to senior management as difficulties may arise in obtaining approvals.

- Messaging -

  Conservation by its inherent definition infers that you must do with less to achieve conservation. Instead the message must be that Conservation is not doing without but doing better with.

## 4.3 Future Outlook

London Hydro has commissioned an independent third party to prepare a "Case Study" for its *Chill Out – London* Residential Appliance Recycling Program. NRCan has provided the funding for this case study with the intent that it be shared (at no cost) with government policy makers and other interested LDC's. The case study will be available after the *Chill Out – London* program has been completed, likely in Q3 of 2006, and will contain "lessons learned" that are specific to this initiative.

## 4.4 Maximizing Net Benefits to Society

When London Hydro initially developed its CDM plan, consideration was given to ensuring that all customer classes (residential, commercial, industrial) have access to the program's benefits and in approximate proportion to their contribution towards London Hydro's distribution revenues – refer to Section 2.1.2, *Secondary Goals*, of London Hydro's CDM Plan.

Although cost-benefit ratio information is only available for a few programs, the trend that appears to be emerging is that conservation projects for residential customers are generally less cost-effective than projects for commercial and industrial customers. If, in future, LDC's carried out conservation programs to maximize the net benefit to society as a whole, they would devote most of the program funding to commercial and industrial projects.

# 5 CONCLUSIONS

Although this document is entitled an Annual Report, this first edition only spans the nine (9) month period from mid-March 2005 when the CDM Plan received OEB approval until year end. In this time period, London Hydro has encountered the expected lead time associated with program development, the scaling back or deferral of some programs either due to reasons beyond London Hydro's control or that weren't envisioned at the time the CDM Plan was created, but also at least one resounding success story and early signs of a few other success stories.

London Hydro has applied two measurements of program effectiveness to each of its initiatives, namely the Total Resource Cost (TRC) as required by the Ontario Energy Board, and the Cost of Saved Energy (CSE) as London Hydro committed to do in its CDM Plan. For the two programs with positive TRC assessments (refer to Section 3.1 and 3.3 herein), the CSE at less than 3¢/kW·h is well below the historic blended market price for generation. For the contracted program with a negative TRC assessment (refer to Section 3.4.1 herein), the CSE at 13.3¢/kW·h was well above London Hydro's threshold of 4¢/kW·h.

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# Appendices

# Appendix A - Evaluation of the CDM Plan

| | Total | Residential | Commercial | Institutional | Industrial | Agricultural | LDC System | Traffic Signals | Other 2 | Other 3 | Other 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Net TRC value ($):* | $1,601,629 | $47,671 | $55,799 | | | | | $1,498,159 | | | |
| *Benefit to cost ratio:* | 1.61 | 1.01 | 1.63 | | | | | 1.81 | | | |
| *Number of participants or units delivered:* | 2,149 | 1,105 | 650 | | | | | 394 intersections | | | |
| *Total KWh to be saved over the lifecycle of the plan (kWh):* | 35,391,928 | 8,519,020 | 2,720,484 | | | | | 24,152,424 | | | |
| *Total in year kWh saved (kWh):* | 5,820,048 | 1,489,352 | 305,292 | | | | | 4,025,404 | | | |
| *Total peak demand saved (kW):* | 688 | 170 | 58 | | | | | 460 | | | |
| *Total kWh saved as a percentage of total kWh delivered (%):* | 0.164% | 0.042% | 0.009% | | | | | 0.113% | | | |
| *Peak kW saved as a percentage of LDC peak kW load (%):* | 0.098% | 0.024% | 0.008% | | | | | 0.065% | | | |
| *Gross in year C&DM expenditures ($):* | $864,932 | $280,019 | $51,967 | | | | | $532,947 | | | |
| *Expenditures per KWh saved ($/kWh)*:* | $0.02 | $0.03 | $0.02 | | | | | $0.02 | | | |
| *Expenditures per KW saved ($/kW)**:* | $1,257 | $1,647 | $890 | | | | | $1,160 | | | |

| | |
|---|---|
| *Utility discount rate (%):* | 7.00% |

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.
**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

# Appendix B.1 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Traffic & Pedestrian Signals Upgrade

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

The municipal traffic & pedestrian signals upgrade project was an undertaking by the City of London (with funding support from London Hydro's EC/DSM Plan) to convert the traffic and pedestrian signals at 394 intersections from incandescent lamps to state-of-the-art energy-efficient light emitting diode (LED) modules. Under the program 11,329 incandescent bulbs (with electrical input ratings ranging from 60 to 135 W) were replaced with LED modules (with input ratings ranging from 5 to 22 W).
Note: Q4 2005 report had an accrued value of spending which has been updated to the values included in this report.
Note: The program is completely described in Section 3, *Municipal Traffic & Pedestrian Signals Upgrade Project* , of London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Incandescent Bulbs | | |
| *Efficient technology:* | Light-Emitting Diode Modules | | |
| *Number of participants or units delive* | 394 intersections | | |
| *Measure life (years):* | 6 | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | $ | 3,342,997.96 |
| *TRC Costs ($):* | | |
| *Utility program cost (less incentives):* | $ | 6,283.00 |
| *Participant cost:* | $ | 1,844,839.00 |
| *Total TRC costs:* | $ | 1,851,122.00 |
| *Net TRC (in year CDN $):* | $ | 1,498,158.96 |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ | 1.81 |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 460 |
| | *Winter* | | 460 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | 24,152,424 | 4,025,404 |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | $ 6,282.76 |
| | *Incentive:* | $ 526,663.91 |
| | *Total:* | $ 532,946.67 |
| *Utility indirect costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | |
| | *Total:* | |
| *Participant costs ($):* | *Incremental equipment:* | $ 1,826,069.05 |
| | *Incremental O&M:* | |
| | *Total:* | $ 1,826,069.05 |

**E. Comments:**

From the City's perspective, this project represents more than simply an energy conservation opportunity (with the inherent recurring energy cost savings). Because the expected service life for an LED module is at least six years (and probably greater), the City can suspend its annual group relamping preventive maintenance program (with annual costs understood to be on the order of $65K) and may expect to see a decline in call-out costs in response to burned-out incandescent lamps. This value has not been finalized by the City of London and is not included in the TRC value. This will be updated for the year-end 2006 annual filing and will improve the effectiveness of this program.

For example, for an "advance arrow" signal, the customer would have required almost $225 in per module incentives to achieve a three-year return-on-investment strictly considering energy savings, but London Hydro limited the incentive to $4.75 so as not to exceed a levelized cost-of-saved energy of 4.1 ¢/kWh. The upgrade was carried out none-the-less based on maintenance cost savings.

The calculated levelized Cost of Saved Energy (CSE) for this project was just over 2.6 ¢/kWh.

The TRC for this project is likely less attractive than if it had been carried out considering only energy savings (i.e. conversion of red and green signals to LED technology, and leaving amber and advance signals as incandescent bulbs).

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

# Appendix B.2 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Residential Power Cost Monitor

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

The residential PowerCost Monitor project involved the installation of BlueLine's PowerCost Monitors in homes of 500 Hydro One Networks customers in the Peterborough, Timmins, Lincoln and Brampton areas for a period of twelve months. As a project participant, 70 PowerCost Monitors were also installed within London Hydro's service territory in March of 2005. The hypothesis being tested is that immediate and specific electricity end-use feedback (via an in-home display) will result in energy conservation behaviour.

Note: The program is completely described in Section 4, *Residential Power Cost Monitor - Pilot Project* , of London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | No feedback | | |
| *Efficient technology:* | In-home display | | |
| *Number of participants or units delive* | 70 | | |
| *Measure life (years):* | | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *N/A - pilot data not available* |
| *TRC Costs ($):* | | |
| *Utility program cost (less incentives):* | $ | 31,734.00 |
| *Participant cost:* | $ | - |
| *Total TRC costs:* | $ | 31,734.00 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | N/A |
| | *Winter* | | |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | N/A | N/A |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | | |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ | 31,734.00 |
| | *Incremental O&M:* | $ | - |
| | *Incentive:* | $ | - |
| | *Total:* | $ | 31,734.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | | 0 |
| | *Incremental O&M:* | | 0 |
| | *Total:* | | 0 |
| *Participant costs ($):* | *Incremental equipment:* | | 0 |
| | *Incremental O&M:* | | *0* |
| | *Total:* | | 0 |

**E. Comments:**

This project is scheduled to continue until the end of March, 2006 after which the participants will receive another survey and their electric consumption data prior to and during the field trials will be submitted to the researchers for analysis. London Hydro pilot data has not yet been collected and analyzed. Pilot study was to be run for a 1 year period with data collection at the end to determine if any conservation action were undertaken. Preliminary results from other LDCs participating in the co-operative show a 6.5% reduction in energy use. London Hydro expects similar results from data collected in the 3rd quarter of 2006 and will be reported for the 2006 year end TRC filing.

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

# Appendix B.3 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Residential Appliance Recycling Program (Interim Achievements for an Ongoing Program)

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

There are two distinct segments, approaches and timeframes for the *Chill Out – London* residential appliance recycling program:
- the commercial segment, directed to owners / property managers of apartment buildings and social housing providers, and is limited in scope to refrigerators.
- the homeowner segment, will be a more comprehensive program that includes upgrading primary refrigerators, right-sizing or elimination of secondary refrigerators, right-sizing or elimination of freezers, and disposal of room air-conditioners.

Note: The program is completely described in Section 5, *Residential Appliance Recycling Program* , of London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Vintage apartment refrigerators | Normal OEB Residential Program | |
| *Efficient technology:* | EnergyStar refrigerators | | |
| *Number of participants or units delive* | 1035 | 1035 | |
| *Measure life (years):* | 5 | 14 (19 -5) | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | $ | 629,424.00 |
| *TRC Costs ($):* | | |
| *Utility program cost (less incentives):* | $ | - |
| *Participant cost:* | $ | 581,752.80 |
| *Total TRC costs:* | $ | 581,752.80 |
| *Net TRC (in year CDN $):* | $ | 47,671.20 |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ | 1.08 |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 170 |
| | *Winter* | | 170 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | 8,519,020 | 1,489,352 |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | $ 88,057.36 |
| | *Incentive:* | $ 145,797.64 |
| | *Total:* | $ 233,855.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | |
| | *Total:* | |
| *Participant costs ($):* | *Incremental equipment:* | $ 347,903.00 |
| | *Incremental O&M:* | |
| | *Total:* | $ 347,903.00 |

**E. Comments:**

One segment of London Hydro's refrigerator early retirement program is targeted to apartment buildings and social housing complexes. Such refrigerators are normally "run to failure" and then replaced with a low-cost minimal-feature unit. The objective of London Hydro's program is to permanently retire these units from service X years earlier than otherwise would be the case (where X is assumed to be 5 years, but will be validated as part of the Case Study for this initiative). As such, the TRC should properly be based on the differential in annual energy consumption between the existing refrigerator stock and EnergyStar units for the first X years, and then the differential between a standard apartment refrigerator and an EnergyStar unit thereafter for the measure lifetime.

The levelized cost of saved energy (CSE) for refrigerators harvested to date under this initiative are projected to be 2.8 ¢/kWh.

The homeowner segment of the program is expected to start in early-May 2006 and run throughout the summer, or until available funding is exhausted. The age-degradation factors outlined in Table 5-2 of London Hydro's CDM Plan have been utilitized.

Results of program are preliminary.

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

# Appendix B.4A - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Cool Shops - London (Summer of 2005 Program)

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

London Hydro partnered with the Clean Air Foundation's multi-city *Cool Shops* program to deliver turnkey energy conservation measures to small retail businesses (e.g. restaurants, clothing, gift stores, small grocery stores, dry cleaner / Laundromats, etc.) within London Hydro's service territory throughout the summer of 2005. Initial customer contact was established via local business (and business improvement) associations.

Note: The program is better described in Section 6.3.4, *Execution Methodology for Small Businesses* , of London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Incandescent bulbs | | |
| *Efficient technology:* | Compact fluorescent lamps | | |
| *Number of participants or units delive* | 646 stores | | |
| *Measure life (years):* | 8,000 hrs | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | *$* | *33,353.62* |
| *TRC Costs ($):* | | |
| *Utility program cost (less incentives):* | $ | 31,289.52 |
| *Participant cost:* | $ | 24,404.70 |
| *Total TRC costs:* | $ | 55,694.22 |
| *Net TRC (in year CDN $):* | -$ | 22,340.60 |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | -$ | 1.49 |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 33 |
| | *Winter* | | 33 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | 285,984 | 142,992 |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | $ 31,289.52 |
| | *Incentive:* | $ 358.00 |
| | *Total:* | $ 31,647.52 |
| *Utility indirect costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | |
| | *Incremental O&M:* | $ 22,405.00 |
| | *Total:* | $ 22,405.00 |

**E. Comments:**

At the conclusion of the project, Clean Air Foundation (CAF) prepared a report entitled "*2005 Cool Shops Final Report*" (dated November 2005) reflecting experiences and results from programs run in Toronto, London, Ottawa, Markham, Peterborough, and Milton. For the London program, the levelized cost of saved energy (CSE) was calculated to be just over 13 cents per kWh, which greatly exceeds our program threshold of 4 cents per kWh.

London Hydro provided feedback and suggestions for improving future Cool Shops programs at a participants forum in Toronto in November 2005. A proposal for a revamped program that would run in summer of 2006 has been received from CAF, but no decisions have been made at this time as to whether London Hydro will run the program for a second year.

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

# Appendix B.4B - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Lockable CFL / LED Exit Lights for Apartment / Social Housing Buildings

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

This initiative is specifically targeted to apartment buildings and social housing complexes. High quality compact fluorescent lamps (CFL's) with a special lockable-base design are used to replace traditional incandescent bulbs in common areas and within fixed fixtures within tenant suites. Similarly, light-emitting diode (LED) modules are used to replace incandescent or first-generation CFL's in Exit lighting fixtures.

Note: The program is better described in Section 6.1.4, *Overview of Illuminated Exit Sign Program* , of London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Incandescent bulbs | Incandescent bulbs | |
| *Efficient technology:* | Lockable CFL's | Light-emitting diodes | |
| *Number of participants or units delivered:* | | | |
| *Measure life (years):* | 10,000 hrs | 100,000 hrs | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | $ - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ - |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | 0 | |
| | *Winter* | 0 | |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| | *Natural Gas (m3):* | | |
| | *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ 3,481.00 |
| | *Incentive:* | $ - |
| | *Total:* | $ 3,481.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

London Hydro expects that more than 30,000 lockable-CFL's will be installed under this program, but we are awaiting the availability of a modified version of the lockable-CFL that will feature lower harmonic distortion / higher power factor characteristics than what is currently available in today's marketplace.
This program is a component of the Commercial Energy Sector program approved by the OEB. To date, minimal spending has occurred on this program and TRC values are not available.

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

# Appendix B.4C - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Other Custom Lighting Upgrade Programs

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

**Purolater Energy Audit** - Audit performed in 2005 however cost saving measures not implemented until 2006. Minor spending in 2005. Energy savings will not be quantified until 2006. The 2006 annual report will have a TRC value for this program. **Volvo Dealership** - Included in TRC and spending values below, please see comments section of this page for more info. **Beck Manor** - Included in TRC and spending values below, please see comments section of this page for more info.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | HID Lighting | T12 Fluorescents | Various Lighting |
| *Efficient technology:* | HID Dimming Controls | T8 with electronic ballasts | Daylight Harvesting Controls |
| *Number of participants or units delivered:* | | | |
| *Measure life (years):* | | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | $ 111,556.02 |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ 2,140.00 |
| | *Participant cost:* | $ 31,276.83 |
| | *Total TRC costs:* | $ 33,416.83 |
| *Net TRC (in year CDN $):* | | $ 78,139.19 |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ 3.34 |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 25 |
| | *Winter* | | 25 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | 2,434,500 | 162,300 |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | | |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ | 4,428.00 |
| | *Incremental O&M:* | $ | 2,140.00 |
| | *Incentive:* | $ | 4,700.00 |
| | *Total:* | $ | 11,268.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |
| *Participant costs ($):* | *Incremental equipment:* | $ | 26,608.00 |
| | *Incremental O&M:* | | |
| | *Total:* | $ | 26,608.00 |

**E. Comments:**

**Beck Manor Assumptions** - Life Span of fixtures = 15 years, replacement differential of 8' T 12 to 4' T 8 = $1.50 in savings, replacement of 4' T12 to 4' T8 = $1.10 in costs. Average bulb lifespan = 3 years (some on 24/7 others on 16 hours per day)
**Volvo Dealership** - Dimming technology, no audit cost, London Hydro incented $4,700 of $18,700 included in calculation above, no incremental maintenance costs or extension of bulb life

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

# Appendix B.4D - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Vending Machine Energy Efficiency Program (Program Not Started)

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

Under this program, innovative intelligent controllers / occupancy sensor units (known by the tradename VendingMI$ER) are installed on coin-operated refrigerated vending machines.

Note: This program is detailed in Section 6.1.3, *Overview of Vending Machine Energy Efficiency Program* , of London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Refrigerated Vending Machine | | |
| *Efficient technology:* | VendingMiser Controller | | |
| *Number of participants or units delivered:* | | | |
| *Measure life (years):* | | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | $ - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ - |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | |
| | *Winter* | | |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | | |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | $ 1,856.00 |
| | *Incentive:* | |
| | *Total:* | $ 1,856.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | |
| | *Total:* | |
| *Participant costs ($):* | *Incremental equipment:* | |
| | *Incremental O&M:* | |
| | *Total:* | |

**E. Comments:**

A number of candidate customers for this technology (e.g. colleges, universities, schools, municipal recreation centres, Western Fair, etc) are currently inventorying their stock of refrigerated vending machines. Project rollout will likely be late Spring of 2006. Only minor spending on admin cost have been spent and TRC values are not available at this time.

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

# Appendix B.5 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Distribution Shunt Capacitor Program (Program Deferred & Monies Transferred)

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

This program has been collapsed and monies transferred to the Residential Appliance Recycling Program. Refer to November 1st letter to OEB, re: *Application to Transfer Monies Between Initiatives* , and OEB's letter of reply dated November 22, 2005.

**Measure(s):**

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

B. **TRC Results:**

| | |
|---|---|
| *TRC Benefits ($):* | |
| *TRC Costs ($):* | |
| *Utility program cost (less incentives):* | |
| *Participant cost:* | |
| *Total TRC costs:* | |
| *Net TRC (in year CDN $):* | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | |
| | *Winter* | | |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | | |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | |
| | *Incentive:* | |
| | *Total:* | |
| *Utility indirect costs ($):* | *Incremental capital:* | |
| | *Incremental O&M:* | |
| | *Total:* | |
| *Participant costs ($):* | *Incremental equipment:* | |
| | *Incremental O&M:* | |
| | *Total:* | |

**E. Comments:**

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

# Appendix B.6 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Combined Heat & Power (CHP) Opportunities

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

This project is primarily an engineering assessment of the feasibility for microturbine technology installed on the premises (I.e. dispersed generation) of three representative commercial / industrial customers that presently heat appreciable volumes of water for their processes. If the findings are encouraging, these customers and others with similar process needs will be presented with the findings of the feasibility study, and encouraged to consider this technology as a viable option for implementation.

Note: This program is described as Section 8, *Combined Heat & Power (CHP) Opportunities for Dispersed Generators* , in London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Gas-fired boilers | | |
| *Efficient technology:* | Microturbine | | |
| *Number of participants or units delivered:* | | | |
| *Measure life (years):* | | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$* - |
| *TRC Costs ($):* | | |
| *Utility program cost (less incentives):* | | $ - |
| *Participant cost:* | | $ - |
| *Total TRC costs:* | | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | |
|---|---|---|
| *Demand savings (kW):* | *Summer* | 0 |
| | *Winter* | 0 |
| | *lifecycle* | *in year* |
| *Energy saved (kWh):* | *0* | 0 |
| *Other resources saved :* | | |
| *Natural Gas (m3):* | | |
| *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ - |
| | *Incentive:* | $ - |
| | *Total:* | $ - |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

The target customers have been outfitted with interval meters, and information regarding each customer's respective electricity, natural gas, and water consumption is being accumulated. Soon there will probably be sufficient profile information available for a consultant to start with the actual feasibility study.

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

# Appendix B.7 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Energy Awareness in the Classroom Program

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

Since elementary schools are the established institutions where succeeding generations do much of their learning, it seems like a logical place to introduce the energy conservation creed. This program, which is targeted to younger students in elementary schools, is intended to increase their awareness of energy resource issues and provide them with some basic information so that they can monitor the energy use within their home and school building.

Note: This program is described in Section 9, *Energy Awareness in the Classroom Program* , of London Hydro's CDM Plan.

**Measure(s):**

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

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$* - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ 9,000.00 |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ 9,000.00 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | 0 | |
| | *Winter* | 0 | |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | | |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ | - |
| | *Incremental O&M:* | $ | 9,000.00 |
| | *Incentive:* | $ | - |
| | *Total:* | $ | 9,000.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | | 0 |
| | *Incremental O&M:* | | 0 |
| | *Total:* | | 0 |
| *Participant costs ($):* | *Incremental equipment:* | | 0 |
| | *Incremental O&M:* | | *0* |
| | *Total:* | | 0 |

**E. Comments:**

An education consultant has completed preparation of the lesson plans and student workbooks for this program. Unfortunately, the energy kits that will be distributed to participating students and also used in other conservation programs have proven to be problematic on several fronts - the refrigerator thermometers have gone through several design / layout iterations to resolve human factors issues, there have been delays obtaining logos from partner organization, etc - thereby delaying the start of the program. With all issues now within days of final resolution, the program will be ready to start in September 2006. As this program has not yet been rolled out to students, no energy savings have been attributed to this program. A TRC calculation at this point would be premature.

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

# Appendix B.8 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** LCBO Warehouse Makeover Project

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

This is a showcase project that will show the significant energy efficiency gains that are attainable via modernization of the lighting systems throughout the complex. The upgrades will consist of a combination of controls (dimming and occupancy) and technology. The opportunities and approach for this project is directly transferable to other warehouse and process plants within and outside of London Hydro's service territory.

Note: The project is described in Section 10, *LCBO Warehouse Makeover Project* , of London Hydro's CDM Plan.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | HID High-Bay Lighting | | |
| *Efficient technology:* | Improved bulb & dimming controls | | |
| *Number of participants or units delive* | 1 | | |
| *Measure life (years):* | | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | $ - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ - |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 0 |
| | *Winter* | | 0 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| | *Natural Gas (m3):* | | |
| | *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ - |
| | *Incentive:* | $ - |
| | *Total:* | $ - |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

As this program has not yet been started, a TRC value is premature. Current budgeting and planning have this program being active in late 2006. TRC values will be filed for this program for the 2006 Annual filing.

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

# Appendix B.9 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Residential Summer Comfort Program (Under Development)

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

In the summer months when the temperatures are soaring and humidity levels are high, the demand for air conditioning climbs with every degree the temperature outside climbs. On a hot summer day, the electrical load attributable to thousands of residential air conditioners can strain an electric power system. All energy efficiency actions that are targeted to residential air conditioning load will provide benefits to society by not having to run the peaking power plants.

Note: The program is described in Section 11, *Residential Summer Comfort Program* , of London Hydro's CDM Plan.

**Measure(s):**

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

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$* - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ - |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 0 |
| | *Winter* | | 0 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| | *Natural Gas (m3):* | | |
| | *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ - |
| | *Incentive:* | $ - |
| | *Total:* | $ - |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

This program is under development but will likely focus on advanced window film technology. Spending is not scheduled until mid-2007. TRC values will be filed in the 2007 Annual filing after expenditures and benefits have been identified.

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

# Appendix B.10 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Demand Response Enabling Technologies Program (Under Development)

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

This program addresses one element of a comprehensive demand response program, and is directed to so-called "*price notification customers*" - those customers with interruptible load or existing emergency/backup generation systems that can respond to a constrained electric grid. IVR technology will be used to transfer advance market pricing information to the customer via facsimile, electronic mail, or to the customers telephone, according to the customer's stated preference with respect to message media, lead time, and price threshold.
Note: The program is described in Section 12, *Demand Response Enabling Technologies Program* , of London Hydro's CDM Plan.

**Measure(s):**

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

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$ -* |
| *TRC Costs ($):* | | |
| *Utility program cost (less incentives):* | | $ - |
| *Participant cost:* | | $ - |
| *Total TRC costs:* | | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 0 |
| | *Winter* | | 0 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| *Natural Gas (m3):* | | | |
| *Other (specify):* | | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ 3,714.00 |
| | *Incentive:* | $ - |
| | *Total:* | $ 3,714.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

The project focus to date has been focused on reviewing alternative approaches and products for achieving the described function, and developing an understanding as to the manner in which LDC's may participate in future with comprehensive demand response program. An internal strategic planning report is being prepared, after which investments in technology (probably software at this stage) can be made - likely in the summer of 2006. Minimal spending on O&M for administrative functions have been spent, however, the program has not started to develop any savings and as a result TRC values are premature. Spending is currently scheduled for mid-2006. The 2006 annual report will include TRC values for this program.

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

# Appendix B.11 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** THAW Plus Program (Under Development)

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

This program is meant to assist the lower income customers in managing their energy needs and improving efficiencies within their home without penalizing them at a time when they are in a crisis situation. A delivery agent will be used to install a number of energy conservation measures (weatherizing films, insulating wraps on hot water pipes, installation of programmable thermostats, etc.).

Note: The program is described in Section 13, *The Heat and Warmth (THAW) Plus Program* , of London Hydro's CDM Plan.

**Measure(s):**

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

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$* - |
| *TRC Costs ($):* | | |
| *Utility program cost (less incentives):* | | $ - |
| *Participant cost:* | | $ - |
| *Total TRC costs:* | | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | |
|---|---|---|
| *Demand savings (kW):* | *Summer* | 0 |
| | *Winter* | 0 |
| | *lifecycle* | *in year* |
| *Energy saved (kWh):* | *0* | 0 |
| *Other resources saved :* | | |
| *Natural Gas (m3):* | | |
| *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ - |
| | *Incentive:* | $ - |
| | *Total:* | $ - |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

This program presents an opportunity to work cooperatively with Union Gas and several local manufacturers of conservation products. Spending is currently projected for Q4 2006. Again, TRC values are premature and the 2006 annual report will contain a TRC value for this project.

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

# Appendix B.12 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Putting Our Own House in Order Program (Awaiting Technology)

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

For consistency and credibility, any organization promoting energy conservation products or services must strive for an impeccable conservation record. If London Hydro is to be successful motivating others to take energy conservation measures, it is important that the organization "*practices what it preaches*".

Note: This program is described in Section 14, *Putting Our Own House in Order Program* , of London Hydro's CDM Program.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | T12 fluorescent lamps | | |
| *Efficient technology:* | LED arrays & light-pipes | | |
| *Number of participants or units delive* | 1 | | |
| *Measure life (years):* | 100,000 hrs | | |

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$* - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ - |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 0 |
| | *Winter* | | 0 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| | *Natural Gas (m3):* | | |
| | *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ - |
| | *Incentive:* | $ - |
| | *Total:* | $ - |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

This project has not yet started - it is awaiting CSA certification and availability of next generation office lighting technology that will replace fluorescent lights and their associated ballasts (while retaining the in-ceiling fixture). Basically, the replacement light consists of a light pipe (a tube of plastic with special optical properties) and arrays of high output light-emitting diodes at each end to form a very energy efficient "light pipe" with the same form factor as the fluorescent tube it is replacing. TRC values are premature and will be provided in the 2006 annual report.

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

# Appendix B.13 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Community One-Tonne Challenge Plus Program (Project Scaled Back & Monies Transferred)

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

The City of London's *One-Tonne Challenge (OTC) Community Demonstration Project* was developed as a result of funding from the federal One-Tonne Challenge Program. While the overall project encompasses many issues, London Hydro's CDM initiative piggy-backed on the City initiative and focused on electrical energy. As a result of very disappointing community participation (17% of target participation levels), London Hydro's participation has been significantly scaled back.

Note: The program is described in Section 15, *Community One-Tonne Challenge Plus Program* , of London Hydro's CDM Plan.

**Measure(s):**

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

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$* - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ - |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | 0 | |
| | *Winter* | 0 | |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| | *Natural Gas (m3):* | | |
| | *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | |
|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ - |
| | *Incremental O&M:* | $ 1,289.00 |
| | *Incentive:* | $ - |
| | *Total:* | $ 1,289.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | 0 |
| | *Incremental O&M:* | 0 |
| | *Total:* | 0 |
| *Participant costs ($):* | *Incremental equipment:* | 0 |
| | *Incremental O&M:* | *0* |
| | *Total:* | 0 |

**E. Comments:**

The City of London is reformulating portions of its *Community One-Tonne Challenge* program, and London Hydro is discussing methods of continued participation that would be effective.

It isn't clear whether the underlying problem is program design or simply the well-established paradox of the psychology of environmentalism (... *citizens generally hold pro-preservation attitudes but routinely engage in environmentally unfriendly actions*). London Hydro has observed in other conservation initiatives that the "environmental message" is not an effective driver for program participation. We suspect that the same is true with this program. As a result, a TRC value on this limited spending is not available. This program is not expected to have any significant spending or benefits until Q1 2007. The 2007 annual report will contain a TRC value for this program.

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

# Appendix B.14 - Discussion of the Program

**(complete this section for each program)**

A. **Name of the Program:** Public Education Campaign

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

The public education campaign spans a portfolio of different initiatives, many of which complement and augment other conservation programs (e.g. Energy Awareness in the Classroom, Community One-Tonne Challenge, etc.).

Note: The program is described in Section 16, *Public Education Campaign* , of London Hydro's CDM Plan.

**Measure(s):**

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

B. **TRC Results:**

| | | |
|---|---|---|
| *TRC Benefits ($):* | | *$* - |
| *TRC Costs ($):* | | |
| | *Utility program cost (less incentives):* | $ - |
| | *Participant cost:* | $ - |
| | *Total TRC costs:* | $ - |
| *Net TRC (in year CDN $):* | | $ - |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ - |

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

**Conservation Programs:**

| | | | |
|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | 0 |
| | *Winter* | | 0 |
| | | *lifecycle* | *in year* |
| *Energy saved (kWh):* | | *0* | 0 |
| *Other resources saved :* | | | |
| | *Natural Gas (m3):* | | |
| | *Other (specify):* | | |

**Demand Management Programs:**

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

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

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

**Line Loss Reduction Programs:**

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

**Distributed Generation and Load Displacement Programs:**

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

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Program Costs*:**

| | | | |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ | - |
| | *Incremental O&M:* | $ | 4,141.00 |
| | *Incentive:* | $ | - |
| | *Total:* | $ | 4,141.00 |
| *Utility indirect costs ($):* | *Incremental capital:* | | 0 |
| | *Incremental O&M:* | | 0 |
| | *Total:* | | 0 |
| *Participant costs ($):* | *Incremental equipment:* | | 0 |
| | *Incremental O&M:* | | *0* |
| | *Total:* | | 0 |

**E. Comments:**

Little money has been spent in this area to date, but this is expected to change significantly in the forthcoming months as the focus of London Hydro's conservation programs changes from the commercial segment (where it is possible to achieve significant conservation results with little promotion) to the homeowner segment. TRC values are premature. The 2006 annual report will contain a TRC value for this program.

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