PowerStream Inc.

Conservation and Demand Management Plan

2007 Annual Report

Ontario Energy Board File No. RP-2004-0203 / EB-2004-0486

March 31, 2008

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1. Introduction

On December 10, 2004 the Ontario Energy Board ("Board") issued its oral decision in the RP-2004-0203 proceeding, with respect to six (6) applications filed by the Coalition of Large Distributors ("CLD") comprising Enersource Hydro Mississauga, Horizon Utilities Corporation, Hydro Ottawa Limited, PowerStream Inc., Toronto Hydro-Electric System Limited and Veridian Connections. This report is a requirement of that decision. In respect of the application filed by PowerStream Inc., the Board issued its Final Order on February 3, 2005 under docket number RP-2004-0203 / EB-2004-0486.

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 Conservation and Demand Management (CDM) Initiatives that explained more fully the requirements. This report has been prepared in accordance with those guidelines.

On November 1, 2005, PowerStream acquired Aurora Hydro Connections Ltd. ("Aurora Hydro") with the closing of the purchase and sale. At that time, PowerStream assumed an obligation to execute Aurora Hydro's approved CDM plan. In March 2006, PowerStream submitted an application to the Board for an amendment to its electricity distribution licence to consolidate this acquired service territory under one licence. Since that time, PowerStream has folded Aurora Hydro's CDM activities into its own corporate plan, the results of which are described in this report.

PowerStream believes that CDM in the years ahead is vital to its success as a distribution company. As one of the fastest growing utilities in the country in terms of customer and load growth, PowerStream sees CDM as an essential instrument in managing load growth such that every new kilowatt of demand that the distribution system meets is an efficiently used kilowatt. For that important reason, many of the CDM programs discussed in this report are targeted at influencing market attitudes toward CDM and influencing design practices and approaches that bring new loads to the PowerStream system. In the long run, this is the surest way to sustainable load and economic growth.

In 2007, PowerStream's CDM goal was to continue leveraging the strong community partnerships that it began building in 2005 in an effort to help these partners deliver sustainable kilowatt-hour savings and promote the importance of energy conservation practices to stakeholders and the community at large. Through a variety of custom, OEB-funded and OPA-funded programs, PowerStream achieved annual energy savings of 33.2 million kilowatt-hours – an increase of 42 percent over 2006. In total, PowerStream has achieved kilowatt-hour savings of 59.7 million since 2005.

As a final note, peak demand in PowerStream's service area dropped last year by 3.7% at a time when load growth for PowerStream was one of the highest in Ontario.

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	2005	2006	2007
Investment (M)	$1.1	$2.6	$2.8
kWh saved (M)	3.1	23.4	33.2

2. Evaluation of Overall Plan

Refer to Appendix A for an evaluation of PowerStream's CDM activities during 2007.

In reviewing the information provided in Appendices A, B and C, it should be noted that PowerStream's primary focus in 2007 was program refinement, new program implementation, and new program development.

In addition, PowerStream continued its smart meter installation plan, which saw 82,000 units installed by year-end 2007.

3. Discussion of the Programs

Residential and Small Commercial (< 50 kW)

Co-branded Mass Market Program

Description

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 amongst six of the largest municipal LDC's, this program will become synonymous with specific initiatives such as Compact Fluorescent Lighting (CFL) change out programs, LED Christmas Lights, Energy Star, energy audits, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Access to online services such as energy consumption calculators, an energy expert, and personalized energy audit services are contemplated as components of this program.

Target users

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

Benefits

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

Discussion of 2007 Activities

powerWISE® Brand

Action

- In early 2007, the Ministry of Energy began contractual negotiations with Hamilton Utilities Corporation to acquire the rights for the powerWISE® brand. These negotiations are ongoing. As a result, the Coalition of Large Distributors has stopped using the brand in its marketing communications.

Results to Date

- The CLD team continued to hold regular conference calls to coordinate shared CDM activities and programs, some of which were in the development stage when the powerWISE® brand was a shared CLD property.
- Quarterly joint press releases were issued in conjunction with CLD founding members to highlight progress and major milestones. The CLD members also produced a joint annual report, branded powerWISE®, to update the Minister, government agencies and industry stakeholders on progress to date.

Next Steps

- PowerStream does not envisage any further usage of the powerWISE® brand at this time.

powerWISE® Website

Action

- The powerWISE® website -- www.powerwise.ca -- was jointly developed and announced on April 1st, 2005.
- This website provides one common location for general electricity conservation information and useful industry links.
- Links have also been provided for customers to reach their CLD member's home website for specific local program information.

Results to Date

- Since negotiations between Hamilton Utilities Corporation and the Ministry of Energy began in relation to ownership of the powerWISE® brand, PowerStream has used www.powerstream.ca and a new publication called ***City Styles – Going Green*** to update its customers about energy conservation tips and programs.

Next Steps

- PowerStream will continue to update its conservation messaging on www.powerstream.ca, through *City Styles* and via myriad community grass-roots events.

Retail Initiatives

Action

- PowerStream, Enersource, Horizon, Hydro Ottawa, and Veridian developed a major mass-market retail campaign to advance energy efficient devices into the marketplace through point of purchase redeemable coupons.

Results to Date

- In 2007, PowerStream continued its retail strategy; however, rather than branding this initiative powerWISE®, PowerStream provided advertising support in Spring and Fall 2007 for the OPA's **Every Kilowatt Counts** program. At time of printing, the total number of coupons redeemed in PowerStream's service territory was not available.
- Under the PowerStream brand, the utility also continued to enable market transformation by distributing compact fluorescent light bulbs (CFLs). In 2007, a total of 9,374 CFLs were distributed to schools, food banks and social housing, bringing the total number of CFLs distributed since 2005 to 30,000 -- equivalent to just over 2 million kWhs saved.
- PowerStream also worked in partnership with The Home Depot on the launch of a national in-store event to help customers learn about solar energy. The program dovetailed with the Ministry of Energy's announcement of rebates and incentives for various solar heating products. PowerStream also provided expertise to The Home Depot on the installation of photovoltaic panels on the roof its Woodbridge store. The panels provide the facility with up to 20 kilowatts of clean energy.

Next Steps

- PowerStream will continue to work with the OPA to facilitate delivery of the **Every Kilowatt Counts** program in PowerStream's service territory.

School Based Education Initiatives

Action

- PowerStream's **Energy Education Program** is a unique pilot project involving PowerStream, Toronto and Region Conservation, York Region District School Board, York Catholic District School Board, Ontario EcoSchools, the Clean Air Partnership and York Region Health Services.
- The program's objective is to educate children about energy conservation within Ministry of Education curriculum guidelines.

Results to Date

- In 2007, the program helped to transport more than 1,100 Grade 5 school children from 19 elementary schools in 41 different classes to the Kortright Centre for Conservation where TRCA staff taught them about energy conservation and renewable energy.

Next Steps

- PowerStream is considering expanding the program through a pilot with the York Catholic District School Board. The **EcoChampion** pilot is a demand response program and education awareness program designed to promote energy conservation at select schools through the use of Save Energy signs and a special YCDSB Eco website. Program implementation would begin in Fall 2008.
- PowerStream is also waiting for an announcement about the OPA's Education Initiative in order to determine what its involvement might be going forward.

Watt Reader Program

Action

- Provide **Watt Readers** for library members to borrow and monitor the amounts of energy used by various appliances in their homes.
- Provide **PowerPacks** (1 CFL bulb, LED nightlight, conservation tips brochure and bookmark) to improve energy efficiency in homes, for distribution through local municipal libraries.

Results to Date

- In 2006, PowerStream expanded the pilot **Watt Reader** program to include all Vaughan and Markham Library System libraries; and in 2007, the program was further expanded to include Aurora and Richmond Hill public libraries.
- In total, Watt Readers have been signed out of public libraries in PowerStream's service territory 1,850 times since 2005.
- PowerStream also leveraged its partnerships with municipal public libraries by introducing a new adult education class devoted to home energy savings and 'environmentally conscious' cooking. Four workshops were organized in June 2007 and five more classes were added in the Fall. In all, 600 guests participated in these sessions and the feedback received was overwhelmingly positive.

Next Steps

- Run the Watt Reader/public workshops as a custom program in conjunction with the OPA.

Building a Conservation Culture at Home

Action

- Building sustainability into every aspect of civic life is the motivation behind PowerStream's annual investment in programs spearheaded by Toronto and Region Conservation (TRCA). PowerStream's CDM investment in TRCA's energy management programming is spread over three years.
- PowerStream also began a partnership with TRCA for Conservation to develop a series of training workshops and displays on energy efficiency that satisfy the goals under co-branding, smart metering, and residential load control and load displacement.
- TRCA is also conducting "design charettes" with building consultants and designers to encourage efficient building practices. This includes the Leadership in Energy and Environmental Design (LEED) -- a rating system with reduced environmental impacts for highly efficient building practices.
- Leading by example, PowerStream's Board of Directors committed to construction of the utility's new corporate office building for which LEED gold certification will be sought.

Results to Date

- PowerStream opened its new head office in February 2008 and is targeting LEED gold certification so that the building can become a showcase of energy efficiency for the community.
- The new head office building will house nine solar photovoltaic towers capable of producing 17 kilowatts of electricity – enough to save 28,396 kWhs annually. A 1.8 kilowatt Skystream wind turbine was installed in March 2008.
- PowerStream invested expertise towards the development of Vellore Village – the largest energy efficient community in Ontario. The community contains 1,600 Energy Star® rated homes.
- PowerStream also launched the **Build for Savings** program – a pilot program that builds conservation and peak load shifting features into the blueprints for new homes.

Next Steps

- Move forward with the Build for Savings program, as a custom program funded by the OPA.

Smart Meter Pilot

Description

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

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

Target users

Residential and small commercial customers.

Benefits

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

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

Discussion of 2007 Activities

Action

- Continue installation of Smart Meters in support of provincial targets for 2010.

Results to Date

- 82,000 meters installed to year-end 2007
- PowerStream began educating its customers about time-of-use (TOU) rates.
- PowerStream also began a ***peaksaver***® pilot program that includes in-home displays (on programmable thermostats) combined with a connection interface.

Next Steps

- Continue to hire and train call centre and internal resources to deal with the projected increase in consumer calls once TOU rates are introduced.
- Continue TOU consumer communications.

Design Advisory Program/Audit Programs (<50 kW)

Description

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

Target users

Developers and designers who deal with residential and small commercial customers.

Benefits

This program results in cost effective improvements to the energy efficiency of a building without adversely affecting other performance requirements stipulated by the owner. More specifically, developers and designers 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 reducing energy bills and avoiding stranded costs incurred with future equipment upgrades.

Discussion of 2007 Activities

Action

- PowerStream provided financial and staff support for programs already initiated by the Toronto and Region Conservation (TRCA) and Markham Energy Conservation Office (MECO).

Results to Date

- A pilot project has targeted the residential home building market including developers, architects, contractors, and owners by constructing the "next generation" interactive demonstration home and highlighting all the newest design principles, materials and processes.

Next Steps

- Construction of the winning sustainable house (called 'Building Blocks') will begin on Kortright Centre's Energy Trail in June 2008. The house will be built by the Greater Toronto Homebuilders Association and will target LEED gold and Energy Star® for New Homes certification.

MECO@Work and MECO@Home Employee Awareness Program

Action

- MECO continues to promote awareness about energy conservation in a variety forms, i.e., through the internet or intranet, the MECO newsletter, and by hosting Lunch and Learn sessions for staff. The MECO webpage on the Markham website (www.markham.ca) is regularly updated to feature various initiatives or new programs.

Results

- MECO continued to circulate a 'Watt Reader' to Town Staff that they can take home with them to monitor the energy consumption of various appliances.
- MECO and Waste Management partnered to promote the environmentally responsible disposal of end-of-life compact fluorescent lamps (CFLs). The purpose of this initiative is to encourage investment in energy efficient products and technologies and also to ensure that the appropriate recycling infrastructure is in place to handle the proper disposal of CFLs that contain trace elements of mercury.

Next Steps

- Launch the program with an incentive to encourage people to return burned out CFLs to one of the four Markham recycling depots. The first 1,000 people to return one or more CFLs will receive a new bulb (or one per family).

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

Residential and small commercial (< 50 kW) customers.

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.

Discussion of 2007 Activities

Action

- PowerStream is participating with other CLD members in the implementation of a Load Control program targeting residential and small commercial customers' central air conditioners with outside condensers.
- In December 2006, the ***peaksaver*** program was selected by the Premier of Ontario and the Minister of Energy to be rolled out across the province.

Results to Date

- Under the ***peaksaver*** banner, PowerStream installed 1,700 load control devices on customers' thermostats last year. The vendor of record for the thermostats, Honeywell, was selected in late 2006.

Next Steps

- PowerStream will continue to sign up residential customers and will merge its ***peaksaver*** program with the OPA's residential load control program.

Social Housing Program

Description

A province wide centralized energy management service for the social housing sector will be assessed in collaboration with the Provincial Government, utilities (Enbridge) and others.

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

Target users

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

Benefits

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

Discussion of 2007 Activities

Social Housing Services Corporation (SHSC)

Action

- PowerStream partnered with Social Housing Services Corporation on two energy conservation projects. These projects include #25 and #35 Marshall Street (2 buildings, both electrically heated) and #39 and #41 Crosby Avenue. Upgrades will include complete lighting retrofits, air sealing and thermostat replacements. Refrigerators will also be replaced in the Marshall Street buildings.

Results to Date

- PowerStream engaged Energy Shop to coordinate the removal and decommissioning of the 234 fridges at #25 and #35 Marshall Street locations. The fridges are currently being removed and will be replaced with Energy Star units.

- Savings were 985,589 kilowatt-hours and $98,559 in electricity costs per year.

Next Steps

- Complete all retrofits and decommissioning by year-end 2008.
- Extend the program into 2008, as approved from the Ontario Energy Board.

Commercial, Industrial and Institutional (> 50 kW)

Smart Meter Program

Description:

PowerStream will make an investment to further the use of Smart or interval meters by commercial, industrial and institutional customers.

This program will commence upon the release of a formal definition of a Smart Meter by the Ministry of Energy.

Target users

Commercial, Industrial and Institutional customers larger than 50 kW's.

Benefits

This program supports the Minister of Energy's commitment to the installation of 800,000 Smart meters across Ontario by 2007. These meters are seen as an important means of establishing a 'conservation culture' in Ontario. In conjunction with appropriate rate structures, they will encourage customers to conserve or shift energy use.

Discussion of 2007 Activities

Interval Metering

Action

- Provide advice on interval meters at commercial/industrial customer facilities.

Results to Date

- Provided customers with the option of tracking load profiles and consumption to better manage energy usage and demand.

Next Steps

- Continue installation for large customers.
- Integrate into smart meter network.

Energy Audits, Retrofits and Partnerships

Description

A standard energy audit will be used to assist customers in reducing their loads. As well, a training program may be implemented to allow companies with a certified employee or outside consultants to perform the audit. Any cross-linkages with the residential audit project will be accessed where feasible.
Strategic partnerships will be analyzed for incentives or other synergies. These audits could lead to retrofits. Existing audit/retrofit programs will be evaluated.

Target users

Large consumers over 50 kW including schools, large commercial facilities, institutional facilities, industrial, and municipal facilities like recreation centres, arenas, and libraries.

Benefits

Include increased awareness, skills development, benchmarking energy data, establishing best practices, fostering the conservation culture within this sector and significant reductions in demand and energy consumption.

Discussion of 2007 Activities

Action

- PowerStream partnered with MECO, Green$aver, Enbridge Gas Distribution and the Ontario Power Authority on the development of a energy audit/ direct install retrofit program for small businesses (with billed demand less than 50 kilowatts), called **No Catch to Conserve**.

Results to Date

- Under 'Parterships', PowerStream partnered with MECO on the **Haul Away Your Energy Hog** refrigerator program, which was piloted by PowerStream in 2006 and became a program of the OPA in 2007.
- MECO coordinated this program, and by the end of December, over 1,300 fridges, freezers and window air conditioners had been removed from local homes, with annual energy savings amounting to 1.4 million kWhs.
- Under the 'Energy Audits' and 'Retrofits' pilots, PowerStream introduced No Catch to Conserve as a project for the Town of Aurora and Town of Markham.

- A total of 90 energy assessments were completed by year-end.
- Annual energy saving for this program in 2007 was 250,000 kilowatt-hours.
- Media event held in February 2008 to promote the program.
- No Catch to Conserve has been accepted by the OPA as a province-wide program that will run in 2008.

Next Steps

- Continue to support and promote No Catch to Conserve; and expand to full PowerStream service territory.

Leveraging Energy Conservation and Load Management

Description

Existing energy conservation and/or load management programs such as NRCan's Energy Innovators Initiative, Enbridge initiatives etc. will be promoted and incentives may be provided to advance market uptake of these programs and implementation of the recommendations. The 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.

Discussion of 2007 Activities

Business Incentive Program

Action

- CLD developed a program to provide incentives up to $50K per customer to advance energy conservation projects.
- Two streams of funding are available:

- Prescriptive: This program provides dollar incentives for specific activities i.e. retrofitting T12 lighting to T8 lighting on a predetermined cost per unit basis.
- Custom: Projects will be considered on an individual case basis with incentives starting at $150 per kW.

- Savings from these projects are expected to reduce up to 1 MW of load reduction and millions of kWh.

Results to Date

- PowerStream received 13 applications and in 2007 13 projects were completed.
- **Business Incentive Program** customers and **Electricity Retrofit Incentive Program** customers in PowerStream's service territory achieved over 30 million kilowatt-hours in annual energy savings – more than 45% of total energy savings in PowerStream's service area since 2005.
- Demand reduction through this program was 125.6 kW.

Next Steps

- PowerStream will continue to work with the OPA in order to deliver the Electricity Retrofit Incentive Program in 2008.

Demand Response Initiative (Load Control)

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

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.

Discussion of 2007 Activities

Action

- Target load controls for small commercial unit air conditioners and other equipment that can be controlled, as well as develop a DR program for large users to create a capacity market for payment to those customers.

Results to Date

- Honeywell was selected as vendor of choice for small commercial customers; Rodan Energy and Metering Solutions was selected for large users.
- Rodan worked in collaboration with the Town of Markham to identify energy savings opportunities at the Thornhill Community Centre.
- Strategies are now in place to turn off or significantly reduce the Centre's lighting load during peak times. Strategies were also established to manage heating, air condition and ventilation during peak times.
- No small commercial customers signed up in 2007.

Next Steps

- Continue operationalizing this program in 2008. There is a steep learning curve with some customers. To be successful, extensive marketing and field staff will be required to increase customer participation.

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 design advisors.

Target users

Commercial, Industrial and Institutional customers.

Benefits

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

Discussion of 2007 Activities

Better Building Partnership

Action

- MECO initiated a Better Buildings Partnership (BBP) to promote and implement energy efficiency, water conservation and building renewal enhancement across the Town of Markham's municipal facilities including street and traffic lighting, while reducing $C0_2$ emissions. The program involves identifying energy conservation opportunities that may include energy efficient retrofits and building renewal initiatives that will consist of a mix of short and long-term paybacks but will reduce energy demand on the grid and reduce energy bills to the Town of Markham. PowerStream is providing funding to MECO for this initiative.

Results to Date

- Lighting retrofit at the Town of Markham's Civic Centre's parking garage is saving 25,000 kWhs of electricity annually. In addition, 175-watt metal halide downlight fixtures are being converted to 55-watt compact fluorescents for an estimated annual savings of over 16,000 kWhs.

- Town of Markham began a comprehensive retrofit of Milliken Mills Community Centre including: a drain water heat recovery unit; a solar thermal heating system for the pool; installation of a Building Automation System; and an upgrade of the heating system with more efficient condensing boilers. This initiative is expected to save 200,000 kWhs of electricity per year. In addition, 60,000 kWhs of annual electricity savings have already been achieved through a lighting retrofit and installation of a sensor control in the main corridor of the facility.

Next Steps

- Continue to provide MECO with CDM expertise.
- Funding for this program has run out.
- Work with municipalities as building retrofit programs emerge. Act as an enabler as opportunities arise.

Distribution Loss Reduction

Description

The Distribution Loss 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, selected and implemented 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.
Voltage Conversion - Voltage upgrades can save up to 90% of the losses associated with a feeder as higher voltages and lower current results in lower losses. This study will ascertain the locations and value of voltage conversions. 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 PowerStream customers.
Benefits
Reduced electricity distribution system delivery losses will reduce system demand, relieve network capacity to accommodate growth, and help 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.

Discussion of 2007 Activities

Action

- Identify opportunities for system enhancements and complete the engineering analysis and feasibility studies for load balancing.
- Prioritize projects, select and implement based on the most attractive investment to results ratio.

Results

- Installed 3 new capacitor banks on PowerStream's distribution system.

Next Steps

- PowerStream will continue to evaluate energy efficiency opportunities on its distribution system.
- Will review these efficiencies as part of a rate application.

Distributed Energy Load Displacement

Description

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

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

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

Target users

Commercial, industrial, and residential, schools, colleges and universities.

Benefits

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

Discussion of 2007 Activities

Action

- In 2007, York Region initiated a pilot project to upgrade the existing three standby generators at the Aurora Sewage Pumping Station, allowing them to be used for demand response purposes. The initiative will relieve the strain on the Armitage Transformer Station located in Newmarket during peak electrical demand periods.
- PowerStream was asked to provide recommendations on the implementation of this initiative.

Results

- PowerStream partnered with Safety Power (a subsidiary of the Electrical Standards Association) to determine the feasibility of York Region's proposal.
- PowerStream concluded that the existing 1.5 MW Caterpillar engine is suitable for participation at this time in the DR initiative. Two older Mitsubishi engines are not suitable.
- PowerStream funded the cost of providing and installing the necessary upgrades to ready the emergency generator for peak demand management. In exchange for funding, York Region will make the generation asset available to PowerStream for a maximum of 200 hours per year for a minimum three year period.
- PowerStream has registered Aurora Pumping Station in the IESO's Emergency Load Reduction Program (ELRP).
- As noted in the 'Retail Initiatives' section of this filing, PowerStream also provided DR expertise to The Home Depot (Woodbridge location) on the installation of a 20 KW solar array on the building's Garden Centre.

Next Steps

- Sign up additional customers to develop a capacity program.
- Continue to review feasibility of other backup generation in PowerStream's service area.
- Review solar panel installations by customers in conjunction with OPA Standard Offer for Renewables.
- Continue to sponsor distributed energy forums with PowerStream stakeholders.

Program Support and Costs

All administrative support costs associated with developing and implementing PowerStream's CDM plan have been attributed by program.

4. Lessons Learned

Working Together

During the past year, PowerStream worked independently and with the members of the Coalition of Large Distributors (CLD) on the execution of its CDM plans. On CLD-related programs, a Steering Committee was established to oversee and coordinate joint actions, and program-specific working committees were constituted to promote the sharing of ideas, experiences and costs. PowerStream's experience in both contexts provided several important lessons, including:

Cost Sharing:

- In 2005-2007, CLD members worked together to develop and pilot innovative conservation and demand management programs, sharing costs and resources as required to ensure programs were delivered cost effectively. Once these programs demonstrated they were able to achieve measurable kilowatt-hour savings, they were transferred to the OPA as turnkey programs. The OPA benefits from this arrangement by not having to reinvent the wheel and not having to invest in program development. The lesson learned is that it can be cost effective to pilot programs in several key markets to test their ability to deliver results, rather than roll them out untested across the province.

Exchange of Ideas/Approaches:

- The CLD's track-record of developing, piloting and implementing successful CDM programs stems partly from its members' willingness to work in partnership and to experiment with varied and diverse approaches. The coalition model provided members with the opportunity to learn from each other's successes and setbacks. For example, one of the key lessons learned from the powerWISE® Business Incentive Program (now ERIP) is that it often takes significant, and direct, interaction with customers in order for this type of program to flourish. Because customers are directly engaged in the delivery of this program, they may require ongoing assistance and guidance from their LDCs in order to achieve their proposed kilowatt-hour savings goals. A strong service focus and a commitment to relationship building are key factors in the success of this type of program.

Market Conditions:

- In 2007, there was a period of time when the powerWISE® Business Incentive Program and the Electricity Retrofit Incentive Program were available to customers at the same time. The content, objectives and guidelines for each program were identical, only the program names were different. This duplication was confusing for customers. A key lesson is the need for consistent ownership of programs, consistent labeling of programs and consistent delivery agents for such programs. Without these key ingredients, the credibility of good programs – and of the organization offering them – may be undermined and with it consumers' willingness to engage in conservation and demand management programs in future.

- Another key lesson is that a ratepayer and a customer are often one and the same person. Instead of treating them as separate entities, it makes sense to work as closely as possible with municipalities and to leverage their existing

infrastructure in an effort to communicate directly with ratepayers. There is no point in duplicating resources or reinventing the wheel. Equally, in PowerStream's experience, it is important to understand that working with municipalities and the social housing sector can require long lead-times. Therefore, programs involving these partners should be developed with a long view, as approvals, implementation and results can take time.

- The CLD members were asked to create CDM programs at a time when public awareness for conservation was relatively low. If changing customers' behavior is the ultimate goal, then it helps to be in sync with the times. Reading the public's mindset, testing their tolerance for change and/or their resistance to it and benchmarking the extent to which the conservation culture is catching on, must be top priorities going forward.

- Ontario may be one province, but it is also a province of distinct communities. Creating 'one size fits all' programs and expecting them to work in all communities may be ill-advised. The preferred approach, given Ontario's diversity, is to acknowledge the existence of market niches and respond accordingly. Providing communities with a range of 'one size fits all' OPA programs, in conjunction with custom LDC programs, makes good strategic sense.

Marketing & Communications:

- As indicated in our last report to the OEB, the need for additional resources in marketing and communications will continue to grow as new CDM programs are developed and piloted. Marketing these types of programs requires specialized skill sets. Going forward, the industry will have to work hard to attract candidates with the right type of skills.

- CLD members were diligent in their efforts to foster solid relationships with media because they recognized the media's role in disseminating credible energy conservation messages to the public. CLD members are committed to continuing to build these relationships as a key part of their CDM strategy.

Internal CDM Resources:

- With the introduction of TOU rates, more and more internal resources will be required to help consumers understand how the rates work and how to make the rates work in their favour. Call centres will become increasingly busy; and

there will be a growing need to hire specialized talent capable of delivering accurate and timely information about conservation and CDM programs.

- Increasingly, the energy sector will be competing for talent with Canada's broader labour market in the search for skilled knowledge workers, this at a time when a significant percentage of Canada's labour force is making plans for retirement. In order to continue building momentum, PowerStream recognizes the importance of finding the right workers, training them and keeping them. In addition, based on their work of the past three years, PowerStream has identified a need for full-time dedicated CDM staff, not part-time people, to continue promoting and building Ontario's conservation culture.

Customer Care:

- In 2007, PowerStream continued to experience an increase in call volumes and with it, the opportunity to speak directly with customers about energy saving strategies that could result in lower electricity bills. PowerStream's challenge will be to continue to respond to calls quickly and efficiently, in keeping with regulatory requirements, while passing more customized conservation information on to callers.

Information Technology:

- Smart meters and call centres will provide PowerStream with a wealth of information about customers and their electricity use, as well as the types of CDM programs that are appropriate for different market segments. The key challenge is to learn how to leverage this information, how to mine it effectively, how to share it with the appropriate government agencies and how to develop timely and relevant programs. This will require a new type of IT worker – people who understand how to use customer relationship management (CRM) tools and how to interpret CRM data.

Regulatory Environment:

- The energy industry must coordinate the individual efforts of its many organizations to ensure that program delivery is efficient, readily available and understood by all customers. Most customers don't understand the relationship among the various organizations within the hydro industry, so an attempt to deliver programs to the end customer by different groups only confuses the customer and suggests a lack of industry coordination. Clarity regarding the roles of the LDC, EDA, OEB, OPA and the IESO would be beneficial in this regard.

- Programs involving use of new technologies would benefit from project management phasing of R&D and pilot trials. The OEB's new proposed structure deals with pilots and it is recommended that it should also consider adding a separate R&D process to support program development. This would encourage development of new ideas and control any potential risks involving new technologies.

- TRC analysis has become more complicated with the introduction of new TRC Analysis tools and measures lists. There are two sets of standards, one from the OEB and one from the OPA. We recommend the use of a single financial standard set by the OEB.

- Commercial Load Control and Distributed Energy programs piloted as part of the CDM plan show great promise as a means of reducing electricity system demand but require considerable time and effort to overcome customer implementation barriers.

- All programs that we develop must balance the needs of market transformation and sustainability with the expectations our shareholders have for a consistent rate of return.

Residential and Commercial <50kW	Successful?	Continue?	Notes
Co-Branded Mass Market	Yes	Yes	Blend into OPA programs.
Smart Meter Pilot	Yes	No	Pilot is completed; full implementation in 2007 per regulated guidelines
Design Advisory/Audit	Yes	No	OPA to continue.
Residential Load Control	Yes	Yes	OPA to continue.
Social Housing Program	Yes	Yes	Program implementation will continue until completion in 2008.
Commercial Institutional and Industrial >50kW			
Smart Meter Pilot	Yes	No	Will continue to install as per guidelines.
Energy Audits Retrofits and Partnerships	Yes	Yes	Will continue to consolidate the partnership; no new investment.
Leveraging Energy Conservation	Yes	Yes	Will continue partnerships.
Demand Response Initiative	Yes	Yes	Program will continue with OPA funding.
Design Advisory	Yes	No	
Distribution Loss Reduction			
Distribution Loss Reduction	Yes	Yes	Evaluation continues; part of rate application process.
Distributed Generation			
Standby Generation (Load Displacement)	Yes	Yes	Possibility for OPA funding.

Recommendations by Program Area

5. Conclusion

In 2007, PowerStream spent $2.8 million out of a total of $7.2 million CDM funding to implement its CDM plans across several fronts and customer segments. The collaborative efforts of the CLD afforded opportunities to launch many initiatives in unison across our collective customer base, while other initiatives were implemented in PowerStream's service area alone.

In 2007, PowerStream achieved energy savings of 33.2 million kilowatt-hours, bringing its total for the 2005-2007 reporting period to 59.7 million kWhs.

Of special note are the following significant achievements:

- Success of **No Catch to Conserve** program, piloted in PowerStream's service territory and accepted as a program of the OPA in December 2007.
- Success of the **powerWISE® Business Incentive Program**, which contributed more than 45% of annual kWh savings in PowerStream's service area.
- Success of the **Build for Savings** program which attracted 3 builders within the first 4 months of launch.
- Positive media response to PowerStream's CDM programs, with local media giving consistent positive media coverage.
- PowerStream received 49,527 visits to the 'Conservation' part of its website, including microsites. The ***peaksaver®*** site received the most visitors, with over 14,101 hits.

Appendix A - Evaluation of the CDM Plan

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

	[5] Cumulative Totals Life-to-date	Total for 2007	Residential & Commercial <50 kW	CI&I >50 kW	LDC System	[4] Smart Meters	Distibuted Energy
Net TRC value ($):	*$ 12,387,692*	**$ 3,922,758**	**$ 554,911**	**$ 3,483,411**	**$ 243,252**		**$ (358,815)**
Benefit to cost ratio:	*2.22*	1.57	1.43	1.68	2.90		0.00
Number of participants or units delivered:	*166,701*	*13,517*	11,738	1,779	0		0
Lifecycle (kWh) Savings:	*424,992,938*	184,445,688	14,030,586	163,508,722	6,906,380		0
Report Year Total kWh saved (kWh):	*59,680,087*	33,168,427	1,863,191	30,959,917	345,319		0
Total peak demand saved (kW):	*17,131*	13,041	1,628	11,329	84		0
Total kWh saved as a percentage of total kWh delivered (%):	0.83%	0.46%	0.03%	0.43%	0.00%		0.00%
Peak kW saved as a percentage of LDC peak kW load (%):		0.86%	0.11%	0.75%	0.01%		0.00%
[1] *Report Year Gross C&DM expenditures ($):*	*$ 6,568,977*	$ 2,791,437	$ 1,140,893	$ 1,080,144	$ 23,080	$ 130,655	$ 416,664
[2] *Expenditures per KWh saved ($/kWh):*	*0.02*	$ 0.02	$ 0.08	$ 0.01	$ 0.00		$ -
[3] *Expenditures per KW saved ($/kW):*	*383.46*	$ 214.05	$ 700.76	$ 95.34	$ 274.76		$ -

			2007	2006
Utility discount rate (%):	7.3	Total kWh delivered:	7,174,400,000	6,801,000,000
		Peak kW load:	1,518,593	1,577,000

[1] Expenditures are reported on accrual basis.
[2] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.
[3] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.
[4] Please report spending related to 3rd tranche of MARR funding only. TRC calculations are not required for Smart Meters. Only actual expenditures for the year need
[5] Includes total for the reporting year, plus prior year, if any (for example, 2007 CDM Annual report for third tranche will include 2006, 2005 and 2004 numbers, if any.

** Cumulative Life To Date Totals include minor adjustments made to 2006 filed results

Appendix B - Discussion of the Program

(complete this Appendix for each program)

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

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 amongst six of the largest municipal LDC's, this program will become synonymous with specific initiatives such as Compact Fluorescent Lighting (CFL) change out programs, energy audits, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Access to online services such as energy consumption calculators, an energy expert, and personalized energy audit services are contemplated as components of this program

Target users
▪Mass-market including residential and small commercial <50 kW of monthly demand

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

Measure(s):

	CFL Distribution	
Base case technology:	60W Incandescent	
Efficient technology:	CFL Screw-In 15W	
Number of participants or units delivered for reporting year:	9046	
Measure life (years):	4	
Number of Participants or units delivered life to date	27659	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 206,961	$ 5,599,151
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	-$ *353,146*	-$ 720,520
Incremental Measure Costs (Equipment Costs)	-$ 16,283	-$ 422,201
Total TRC costs:	-$ 369,429	-$ 1,142,721
Net TRC (in year CDN $):	-$ 162,468	$ 4,456,429.73
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	0.56	4.90

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

Conservation Programs:

		Reporting Year	Cumulative Results:
Demand savings (kW):	*Summer*	0	233
	Winter	183	2,345

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*3,777,610*	944,402	117,475,998	16,599,108
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

Dispatchable load (kW):		

Peak hours dispatched in year (hours):			
Power Factor Correction Programs:			
Amount of KVar installed (KVar):			
Distribution system power factor at beginning of year (%):			
Distribution system power factor at end of year (%):			
Line Loss Reduction Programs:			
Peak load savings (kW):			
	lifecycle	*in year*	
Energy savings (kWh):			
Distributed Generation and Load Displacement Programs			
Amount of DG installed (kW):			
Energy generated (kWh):			
Peak energy generated (kWh):			
Fuel type:			
Other Programs (specify):			
Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	**Cumulative Life to Date**
Utility direct costs ($):	*Incremental capital:*	$ 22,138	$ 59,976
	Incremental O&M:	$ 331,008	$ 693,301
	Incentive:	$ 22,615	$ 97,798
	Total:	$ 375,761	$ 851,075
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

- Unless otherwise indicated, OEB published assumptions and measures lists were applied in all TRC calculations.
- 15 W CFL's replacing 60W incandescent assumed for all CFL distributions

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Smart Meter Residential

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

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

This initiative will commence upon the release of a formal definition of a SMART meter by the Board.

Target users
- Residential and small commercial customers.

Benefits
- This program supports the Minister of Energy's commitment to the installation of 800,000 SMART meters across Ontario by 2007. It will provide PowerStream with the experience and knowledge needed to efficiently expand the use of SMART meters over the next several years.

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

Measure(s):

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

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*		
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):		
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:		
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*			
	Winter			
	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):				
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

Amount of KVar installed (KVar):		

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	-$ 1,816	$ 407,521
	Incremental O&M:	$ 23,262	$ 115,802
	Incentive:		
	Total:	$ 21,445	$ 523,323
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Design Advisory < 50kW (Green Saver)

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

Description
▪ No Catch to Conserve pilot program, which provided free energy efficiency assessments and upgrades to local small businesses.

Target users
▪ Small Businesses

Benefits
▪ Eligible businesses received up to $1,000 in upgrades to help reduce their electricity costs, energy demand in their community and help contribute to a cleaner environment.

Measure(s):

	Fluorescent Fixtures	Programmable Thermostats	Water Heaters
Base case technology:	4 - T12 34W (156W) 4' Lamps w/2 magnetic ballasts	Average existing stock	Water Heater (119 USG) Tank Insulation Blanket R-24.9
Efficient technology:	2 - T8 32W (58 W) reflectorized	Programmable Thermostat	Upgrade tank insulation
Number of participants or units delivered for reporting year:	1001	45.5	45.5
Measure life (years):	5	18	10
Number of Participants or units delivered life to date	1001	45.5	45.5

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	*$ 195,645*	$ 195,645
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*-$ 75,030*	-$ 75,030
Incremental Measure Costs (Equipment Costs)	-$ 66,407	-$ 66,407
Total TRC costs:	-$ 141,438	-$ 141,438
Net TRC (in year CDN $):	$ 54,207	$ 54,207
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	1.38	1.38

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*	133	133
	Winter	103	103

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*2,276,183*	418,024	2,276,183	418,024
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):		

		lifecycle	in year	
Energy savings (kWh):				

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ -	$ -
	Incremental O&M:	$ 75,030	$ 283,404
	Incentive:	$ 61,000	$ 61,000
	Total:	$ 136,030	$ 344,404
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

▪The number of Fluorescent Fixtures sourced from report entitled Ontario Power Authority Direct Install Small Commercial Program Pilot Section 7.8

▪1001 Fluorescent Fixtures four foot T12's from OEB tables were used.

▪The number of Programmable Thermostats sourced from report entitled Ontario Power Authority Direct Install Small Commercial Program Pilot Section 7.8

▪46 Programmable Thermostats from OEB tables were used.

▪The number of Water Heaters was taken from report entitled Ontario Power Authority Direct Install Small Commercial Program Pilot Section 7.8

▪46 upgrade tank insulation from OEB tables were used.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Load Control <50kW

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

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

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

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

Measure(s):

	Programmable Thermostats		
Base case technology:	Average existing stock		
Efficient technology:	Programmable Thermostat		
Number of participants or units delivered for reporting year:	1700		
Measure life (years):	18		
Number of Participants or units delivered life to date	1950		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 1,190,053	$ 1,417,755
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	-$ 511,398	-$ 688,594
Incremental Measure Costs (Equipment Costs)	-$ 102,000	-$ 139,500
Total TRC costs:	-$ 613,398	-$ 828,094
Net TRC (in year CDN $):	$ 576,655	$ 589,661
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$ 1.94	1.71

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*		
	Winter		

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

Demand Management Programs:

Controlled load (kW)	1360	1485
Energy shifted On-peak to Mid-peak (kWh):	72321	114821
Energy shifted On-peak to Off-peak (kWh):	149907	171157
Energy shifted Mid-peak to Off-peak (kWh):		

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 488,150	$ 625,871
	Incremental O&M:	$ 23,248	$ 62,723
	Incentive:		
	Total:	$ 511,398	$ 688,594
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

** Life to date TRC results include minor adjustments made to 2006 filed results.

▪ Assumptions consistent with those applied at Toronto Hydro

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

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

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

Description
▪A province wide centralized energy management service for the social housing sector may be developed in collaboration with the Provincial Government, utilities (e.g. Enbridge, Union Gas) and others.
▪A pilot program will be conducted to determine feasibility with an expectation that a full-scale provincial program would follow.

Target users
▪Local social housing corporations, non-profit homes and co-op housing.

Benefits
▪Synergies will be created though the combined initiatives of the various agencies.

Measure(s):

	Air Conditioner Retirement	Fridge Replacement	Low Flow Shower Heads
Base case technology:	Current standard for room air conditioner	Current standard for refridgerator	Average existing stock
Efficient technology:	Energy Star Room Air Conditioner	Energy Star Refrigerators	Efficient Showerhead
Number of participants or units delivered for reporting year:	54	450	350
Measure life (years):	12	19	12
Number of Participants or units delivered life to date	54	450	350

	Smart Thermostats
Base case technology:	Average existing stock
Efficient technology:	Programmable Thermostat
Number of participants or units delivered for reporting year:	138
Measure life (years):	18
Number of Participants or units delivered life to date	138

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ *244,804*	$ 244,804
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	-$ *117,703*	-$ 117,703
Incremental Measure Costs (Equipment Costs)	-$ 40,585	-$ 40,585
Total TRC costs:	-$ 158,288	-$ 158,288
Net TRC (in year CDN $):	$ 86,516	$ 86,516
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$ 1.55	1.55

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*	135	135
	Winter	38	38

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	3,108,823	*230,322*	3,108,823	230,322
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

Dispatchable load (kW):			
Peak hours dispatched in year (hours):			
Power Factor Correction Programs:			
Amount of KVar installed (KVar):			
Distribution system power factor at beginning of year (%):			
Distribution system power factor at end of year (%):			
Line Loss Reduction Programs:			
Peak load savings (kW):			
	lifecycle	*in year*	
Energy savings (kWh):			
Distributed Generation and Load Displacement Programs:			
Amount of DG installed (kW):			
Energy generated (kWh):			
Peak energy generated (kWh):			
Fuel type:			
Other Programs (specify):			
Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ -	$ -
	Incremental O&M:	$ 117,703	$ 174,678
	Incentive:		
	Total:	$ 117,703	$ 174,678
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

- CFL's from York Region Food Network Distribution are included in CFL Distribution numbers.
- The number of Air Conditioners was taken from PowerStream Incentive Program for Social Housing, 54 air conditioners were used.
- The number of Fridges was taken from PowerStream Incentive Program for Social Housing, 450 fridges were used.
- The number of Low Flow Shower Heads was taken from PowerStream Incentive Program for Social Housing, 350 Low Flow Shower Heads were used.
- The number of Smart Thermostats was taken from PowerStream Incentive Program for Social Housing, 138 Smart Thermostats were used.
- FreeRidership rates constant with Toronto Hydro

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Smart Meters Gen Service >50kW

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

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

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

Target users
▪Local social housing corporations, non-profit homes and co-op housing.

Benefits
▪Synergies will be created though the combined initiatives of the various agencies.

Measure(s):

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

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*		
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):		
Incremental Measure Costs (Equipment Costs)		
Total TRC costs:		
Net TRC (in year CDN $):		
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*			
	Winter			
	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):				
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):		

		lifecycle	in year	
Energy savings (kWh):				

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 109,210	$ 110,135
	Incremental O&M:	$ -	$ 2,576
	Incentive:		
	Total:	$ 109,210	$ 112,712
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Energy Audits, Retrofits and Partnerships

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

Description
▪A standard energy audit will be used to assist customers in reducing their loads.
▪As well, a training program may be implemented to allow companies with a certified employee or outside consultants to perform the audit. Any crosslinkages with the residential audit project will be accessed where feasible.
▪Strategic partnerships will be analyzed for incentives or other synergies. These audits could led to retrofits. Existing audit/retrofit programs will be evaluated.

Target users
▪Large consumers over 50 kW including schools, large commercial facilities, institutional facilities, industrial, and municipal facilities like recreation centres, arenas, and libraries.

Benefits
▪Include increased awareness, skills development, benchmarking energy data, establishing best practices, fostering the conservation culture within this sector and significant reductions in demand and energy consumption.

Measure(s):

	TRCA - Cold Water Washing	TRCA - Full Dryer	
Base case technology:	Average existing stock	Average existing stock	
Efficient technology:	Cold Water Washing (Detergent)	Clothes Line Kit	
Number of participants or units delivered for reporting year:	240	280	
Measure life (years):	1	10	
Number of Participants or units delivered life to date	240	280	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 42,055	$ 838,863
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	-$ 263,437	-$ 620,195
Incremental Measure Costs (Equipment Costs)	-$ 18,180	-$ 18,180
Total TRC costs:	-$ 281,617	-$ 638,375
Net TRC (in year CDN $):	-$ 239,562	$ 200,488
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	0.15	1.31

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*	14	14
	Winter	6	6

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*955,600*	213,640	955,600	213,640
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 94,150	$ 94,150
	Incremental O&M:	$ 169,287	$ 892,021
	Incentive:		
	Total:	$ 263,437	$ 986,171
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

▪ Number of participants taken from PowerStream Energy Education Pilot Project: Analysis of 20/20 The Way to Clean Air Stage One Forms and Stage Two Pledge Forms, May 25th, 2007 (page 4)

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Leveraging Energy Conservation & Load Management

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

Description
▪Existing energy conservation and/or load management programs such as NRCan's Energy Innovators Initiative, Enbridge initiatives etc. will be promoted and incentives may be provided to advance market uptake of these programs and implementation of the recommendations. The 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):

	MECO - Building Automation	MECO - Gas Fired Dehumidifier	MECO - Lighting Retrofits
Base case technology:	Original Stock	Original Stock	T12 Lighting
Efficient technology:	Efficient Technology	Efficient Technology	T8 Lighting
Number of participants or units delivered for reporting year:	1	1	
Measure life (years):	15	15	5
Number of Participants or units delivered life to date			

	MECO - Retirement Program	Home Depot PV	
Base case technology:	Original Stock	Original Stock	
Efficient technology:	Efficient Technology	PV Cells	
Number of participants or units delivered for reporting year:		144	
Measure life (years):	6	30	
Number of Participants or units delivered life to date		144	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	*$ 1,058,670*	$ 1,517,682
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	*-$ 314,468*	-$ 836,472
Incremental Measure Costs (Equipment Costs)	-$ 630,473	-$ 732,434
Total TRC costs:	-$ 944,941	-$ 1,568,906
Net TRC (in year CDN $):	$ 113,729	-$ 51,224
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	1.12	0.97

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*	391	718
	Winter	391	673

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*21,235,530*	2,380,095	28,464,843	3,588,629
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ -	$ -
	Incremental O&M:	$ 314,468	$ 836,472
	Incentive:		
	Total:	$ 314,468	$ 836,472
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

Building Automation:
- Energy Savings and project costs taken from Summary of EEMS & MECO @ Work Employee Awareness Programs
- Prorated to coincide with Elec. Res. Heating, DX cooling type technology

Gas Fired Dehumidifier:
- Energy Savings and project costs taken from Summary of EEMS & MECO @ Work Employee Awareness Programs
- Prorated to coincide with Humidistat Anti-sweat heater Control of commercial table

Lighting Retrofits:
- Energy Savings and project costs taken from Summary of EEMS & MECO @ Work Employee Awareness Programs
- Prorated to coincide with 2 T8 lighting fixtures from commercial table

Retirement Program:
- Energy Savings and project costs taken from Summary of EEMS & MECO @ Work Employee Awareness Programs
- Prorated to coincide with retirement if fridges in the residential tab

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Load Control (DR) > 50kW

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

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.

Measure(s):

	EnerShift	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Original Stock		
Efficient technology:	Generator		
Number of participants or units delivered for reporting year:	1		
Measure life (years):	30		
Number of Participants or units delivered life to date	1		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 1,185,371	$ 1,185,371
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	-$ 297,715	-$ 297,715
Incremental Measure Costs (Equipment Costs)	-$ 425,000	-$ 425,000
Total TRC costs:	-$ 722,715	-$ 722,715
Net TRC (in year CDN $):	$ 462,656	$ 462,656
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$ 1.64	1.64

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

			Cumulative Results:	
Conservation Programs:				
Demand savings (kW):	*Summer*			
	Winter			
	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):				
Other resources saved :				
Natural Gas (m3):				
Other (specify):				
Demand Management Programs:				
Controlled load (kW)				
Energy shifted On-peak to Mid-peak (kWh):				
Energy shifted On-peak to Off-peak (kWh):				
Energy shifted Mid-peak to Off-peak (kWh):				
Demand Response Programs:				
Dispatchable load (kW):		5000	5000	
Peak hours dispatched in year (hours):		200	200	
Power Factor Correction Programs:				
Amount of KVar installed (KVar):				
Distribution system power factor at beginning of year (%):				
Distribution system power factor at end of year (%):				
Line Loss Reduction Programs:				
Peak load savings (kW):				

		lifecycle	in year	
Energy savings (kWh):				

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 40,599	$ 40,799
	Incremental O&M:	$ 257,116	$ 299,238
	Incentive:		
	Total:	$ 297,715	$ 340,038
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

- 200 hours of operation based on similar assumptions of distributed energy 2005
- The average kWs taken from EnerShift Program sheet
- Incremental equipment costs identified as $85,000 per MW from PowerStream staff

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Design Advisory >50kW

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

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

Target users
▪Commercial, Industrial and Institutional customers.

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

Measure(s):

	PBIP	ERIP	Measure 3 (if applicable)
Base case technology:	Average Existing Stock	Average Existing Stock	
Efficient technology:	Retrofits	Retrofits	
Number of participants or units delivered for reporting year:	12	8	
Measure life (years):	5	5	
Number of Participants or units delivered life to date	25	8	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 6,302,162	$ 8,419,792
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	-$ 26,524	-$ 26,523
Incremental Measure Costs (Equipment Costs)	-$ 3,129,049	-$ 4,113,246
Total TRC costs:	-$ 3,155,573	-$ 4,139,770
Net TRC (in year CDN $):	$ 3,146,589	$ 4,280,022
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	2.00	2.03

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*	3,781	4,743
	Winter	3,784	4,746

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):	*134,603,306*	26,937,611	163,955,836	31,171,392
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 18,459	$ 18,876
	Incremental O&M:	$ 7,389	$ 16,125
	Incentive:	$ 178,675	$ 305,276
	Total:	$ 204,524	$ 340,278
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

ERIP retrofits taken from individual project worksheets
- The incremental project costs were taken from ERIP worksheets
- Incentive costs taken from ERIP worksheets is included in overall LDC costs

PBIP retrofits taken from individual project worksheets
- The incremental project costs were taken from Incentive Update spreadsheet
- Incentive costs taken from Incentive Update spreadsheet is included in overall LDC costs
- Free ridership rates are constant with Toronto Hydro

- Crown Metal Packaging Canada LP, Sears Canada Inc., and The Toronto Star are taken under PBIP with only the incentives being paid from the ERIP program

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

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

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

Description
The Distribution Loss 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, selected and implemented 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.

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

	Aurora Capacitor	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	Original Stock		
Efficient technology:	Capacitors		
Number of participants or units delivered for reporting year:	3		
Measure life (years):	19		
Number of Participants or units delivered life to date	4		

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*	$ 371,331	$ 456,162
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	-$ 23,079	-$ 23,079
Incremental Measure Costs (Equipment Costs)	-$ 105,000	-$ 385,080
Total TRC costs:	-$ 128,079	-$ 408,160
Net TRC (in year CDN $):	$ 243,252	$ 48,003
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$ 2.90	1.12

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*			
	Winter			
	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy saved (kWh):				
Other resources saved :				

Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

Amount of KVar installed (KVar):	4500	4500
Distribution system power factor at beginning of year (%):		
Distribution system power factor at end of year (%):		

Line Loss Reduction Programs:

Peak load savings (kW):	84	96

	lifecycle	*in year*	*Cumulative Lifecycle*	Cumulative Annual Savings
Energy savings (kWh):	6,906,380	345,319	9,453,052	447,186

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		

D. **Actual Program Costs:**

		Reporting Year	**Cumulative Life to Date**
Utility direct costs ($):	*Incremental capital:*	$ -	$ 280,080
	Incremental O&M:	$ 23,080	$ 62,554
	Incentive:		
	Total:	$ 23,080	$ 342,634
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

TRC Calculations and assumptions provided by PowerStream engineering staff.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

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

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

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

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

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

Target users
▪ Commercial, industrial, and residential, schools, colleges and universities.

Benefits
▪ Benefits include additional capacity within the grid. Cleaner technologies result in reductions in Green House Gas (GHG) emissions.

Measure(s):

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

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*		$ 3,934,326
[2] *TRC Costs ($):*		
Utility program cost (excluding incentives):	$ 358,815	-$ 164,927
Incremental Measure Costs (Equipment Costs)		-$ 800,000
Total TRC costs:	$ 358,815	-$ 964,927
Net TRC (in year CDN $):		$ 2,969,399
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		4.08

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

Cumulative Results:

Conservation Programs:

Demand savings (kW):	*Summer*		
	Winter		

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

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):			1,746
Energy generated (kWh):			7,541,866
Peak energy generated (kWh):			541,587
Fuel type:			

Other Programs (specify):

Metric (specify):			

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 57,849	$ 142,329
	Incremental O&M:	$ 358,815	$ 798,076
	Incentive:		
	Total:	$ 416,664	$ 940,406
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the number of units times the net present value per unit benefit specified in the TRC Guide.

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

Appendix C - Program and Portfolio Totals

Report Year:

1. Residential & Commercial <50 kW Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Co-Branded Mass Market	$ 206,961	$ 369,429	-$ 162,468	0.56	944,402	3,777,610	0	$ 375,761
Load Control < 50kW	$ 1,190,053	$ 613,398	$ 576,655	1.94	270,443	4,867,970	1,360	$ 511,398
Social Housing	$ 244,804	$ 158,288	$ 86,516	1.55	230,322	3,108,823	135	$ 117,703
Design Advisory < 50 kW	$ 195,645	$ 141,438	$ 54,207	1.38	418,024	2,276,183	133	$ 136,030
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
***Totals App. B - Residential & Com**	$ 1,837,463	$ 1,282,553	$ 554,911	1.43	1,863,191	14,030,586	1,628	$ 1,140,893
Residential & Commercial <50 kW Indirect Costs not attributable to any specific program →								
Total Residential & Commercial <50 kW TRC Costs		$ 1,282,553						
****Totals TRC - Residential & Comm**	**$ 1,837,463**	**$ 1,282,553**	**$ 554,911**	**1.43**				

2. CI&I >50 kW Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Energy AR&P	$ 42,055	$ 281,617	-$ 239,562	0.15	213,640	955,600	14	$ 263,437
Lev. En. Cons & Load Mgt	$ 1,058,670	$ 944,941	$ 113,729	1.12	2,380,095	21,235,530	391	$ 314,468
Load Control (DR) >50kW	$ 1,185,371	$ 722,715	$ 462,656	1.64	1,428,571	6,714,286	7,143	$ 297,715
Design Advisory > 50kW	$ 6,302,162	$ 3,155,573	$ 3,146,589	2.00	26,937,611	134,603,306	3,781	$ 204,524
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
***Totals App. B - CI&I >50 kW**	$ 8,588,258	$ 5,104,846	$ 3,483,411	1.68	30,959,917	163,508,722	11,329	$ 1,080,144
CI&I >50 kW Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ 5,104,846						
****Totals TRC - CI&I >50 kW**	**$ 8,588,258**	**$ 5,104,846**	**$ 3,483,411**	**1.68**				

→

3. LDC System Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Distributed Loss Reduction	$ 371,331	$ 128,079	$ 243,252	2.90	345,319	6,906,380	84	$ 23,080
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
***Totals App. B - LDC System**	$ 371,331	$ 128,079	$ 243,252	2.90	345,319	6,906,380	84	$ 23,080
LDC System Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ 128,079						
****Totals TRC - LDC System**	**$ 371,331**	**$ 128,079**	**$ 243,252**	**2.90**				

4. 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 ($) →	130,655

5. Distibuted Energy Programs

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

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

	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 ($)
Distributed Energy	$ -	$ 358,815	-$ 358,815	0.00				$ 416,664
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
			$ -	0.00				
***Totals App. B - Distibuted Energy**	$ -	$ 358,815	-$ 358,815	0.00	0	0	0	$ 416,664
Distibuted Energy Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ 358,815						
****Totals TRC - Distibuted Energy**	**$ -**	**$ 358,815**	**-$ 358,815**	**0.00**				

→

LDC's CDM PORTFOLIO TOTALS

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
***TOTALS FOR ALL APPENDIX B**	$ 10,797,052	$ 6,874,294	$ 3,922,758	1.57	$ 33,168,427	$ 184,445,688	$ 13,041	$ 2,791,437
*Any **other** Indirect Costs not attributable to any specific program* →								
TOTAL ALL LDC COSTS		$ 6,874,294						
****LDC' PORTFOLIO TRC**	$ 10,797,052	$ 6,874,294	$ 3,922,758	1.57				

* 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.