PowerStream
YOUR CURRENT CONNECTION

PowerStream Inc.

Conservation and Demand Management Plan

2005 Annual Report

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

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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.

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.

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 and the Board's decision on this application is pending. PowerStream continues to serve customers in Aurora under a separate distribution licence and, therefore, a separate annual CDM report will be filed on Aurora Hydro's CDM activities during 2005.

2. Evaluation of Overall Plan

Refer to Appendix A for an evaluation of PowerStream's CDM activities during 2005.

In reviewing the information provided in both Appendix A and Appendix B, it should be noted that much of the work undertaken by PowerStream during 2005 related to program development. A number of the programs initiated in 2005 will not yield measurable kWh or kW demand savings until 2006 and beyond. Therefore, the cost benefit analysis presented likely underestimates the effectiveness of PowerStream's CDM expenditures.

Furthermore, some components of PowerStream's CDM plan relate to the deployment of Smart meters, which is being undertaken to support provincial government policy direction.

The impact of Smart meters on kWh consumption and kW demand has not been accessed. This further skews the overall cost benefit analysis provided in Appendix A.

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 2005 Activities

powerWISE® Brand

Action

- Hamilton Utilities Corp. (HUC) registered the powerWISE mark prior to CDM activities.
- During CLD CDM plan preparation, it was agreed that the CLD would collectively develop a co-brand. HUC offered powerWISE for joint ownership and the CLD agreed that we would use this mark.
- As HUC owns the mark, the CLD needed to come up with a vehicle to transition the mark that would allow joint ownership. Legal counsel recommended the formation of a Joint Venture (JV) among other options. For expediency, and under the spirit of co-

operation, the team recommended that we start with a memorandum of understanding (MOU) and a sub-license agreement and review the formal arrangements at a later date.
- Weekly conference call meetings are held with the communications sub-committee to coordinate all powerWISE and branding activities.
- The Ministry of Energy (Director of Communications) participates on weekly conference calls.
- Meetings are conducted with the Ontario Power Authority (OPA) on a monthly basis.

Results to Date

- Execution of the powerWISE trademark, MOU and licenses among CLD members
- powerWISE brand was launched April 1st, 2005.
- powerWISE is being used extensively by the CLD to brand CLD conservation programs.
- The powerWISE brand has also been translated to Eco-Consumer for French language purposes
- Interest in the powerWISE/Eco-Consumer brand has been expressed by the Ministry of Energy, the OPA, Hydro One and other utilities.

Next Steps

- Extend the powerWISE brand to the Ministry of Energy, the OPA, Hydro One and other LDC's.

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

- From April 1 to December 31, 2005 the PowerWISE website has received over 37,000 visitors.

Next Steps

- Continue to develop and promote www.powerwise.ca in conjunction with the Ministry of Energy and the OPA.

powerWISE Retail Initiative

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.
- Under the banner "Lighten Your Electricity Load", coupons were distributed in electricity bills between October 1st and December 31st, 2005.
- Six products were selected for promotion including:
  - Compact Fluorescent Lights ($3 off per pack)
  - Seasonal LED lights (SLED's $5 off)
  - Ceiling Fans ($5 off)
  - Programmable Thermostats ($15 off)
  - Light and Appliance Timers ($1 off)
  - Pool and Hot Tub Timers ($4 off)

Results to Date

Product	Units Purchased	Program Totals	
Ceiling Fans	102	**Total Coupons**	6889
Seasonal LED Lights	2249	**Total Cost**	$53,355
Compact Fluorescents	8252	**Total KW**	77.66
Programmable Thermostats	628	**Total kWh**	1,215,823
Light and Appliance Timers	371	**Response Rate**	3%
EnerGuide for Existing Homes	1		

Next Steps

- Conduct post mortem to evaluate program and improve future programs.
- Develop the participation of retail coupon program for fall of 2006.

powerWISE fleet branding

Action

- On November 3rd, 2005 the CLD announced the Fleet Branding Program.
- Conservation messages under the powerWISE brand were applied to LDC vehicles to increase conservation messaging to the mass market.

Results to Date

- Vehicles have been branded across the province, including 56 PowerStream vehicles.

Next Steps

Additional vehicle branding planned for 2006.

Code Green – TV Show

Action

- This initiative consists of sponsoring a six-part educational mini-series featuring the retrofit of 12 homes from across the country. Contestants will be given $15,000 each and will compete against one another to renovate their homes in an effort to create the greatest savings in energy consumption and the greatest reduction in greenhouse gas emissions. PowerStream provided sponsorship funds to this program.

Results to Date

- Production is underway and the program will be aired in 2006.
- There are minimal kW or kWh reductions associated with this project but it is considered to aid in the creation of a conservation culture.

Next Steps

- Winner to be announced in 2006.

powerWISE School Based Education Initiative

Action

- PowerStream, with its partner, the Toronto Region Conservation Authority (TRCA) has reviewed a proposed "Earth Rangers" program for school boards in York Region. This program will now include education on energy conservation.

Results to Date

- Preliminary program assessment completed .

Next Steps

- Program development and implementation commences in 2006.

powerWISE Watt Reader PowerPack

Action

- Provided "PowerPacks" (1 CFL bulbs, LED nightlight, powerWISE Tips brochure and bookmark) to improve energy efficiency in homes, for distribution through local Vaughan libraries
- Provided "Watt Reader" to Vaughan libraries for members to borrow and monitor the amounts of energy used by various appliances in their homes.

Results to Date

- 450 PowerPacks and Tips brochure were distributed.
- 24 Watt Reader were provided to libraries for loan-out.
- This program received significant media attention, including the Weather Network.

Next Steps

- Continue to include the powerWISE Tips brochure in promotional events.
- Review demand for PowerPacks and Watt Reader for potential expansion of program to libraries in Markham and Richmond Hill.

Building a Conservation Culture at Home

Action

- PowerStream began a partnership with the 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.
- The 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.
- Curriculum is being developed by TRCA Education specialists for workshops to engage homeowners in residential energy conservation and renewable energy technology.

Results to Date

- New TRCA energy conservation staff expertise has been hired to facilitate the training workshops.

Next Steps

- Develop marketing and communication strategies that will to increase PowerStream's presence in the residential communities within their jurisdiction.

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 2005 Activities

Action

- To evaluate various Smart Meter technologies and associated communications to help determine their suitability for potential future deployment across PowerStream's service territory.
- To conduct a Pilot of a small number of Smart Meter technologies and associated communications.

Results to Date

- Developed and issued and RFP to pilot and assess different technologies.

Next Steps

- Award RFP contracts.
- Install 1500 meters in 2006 including communication systems that enable gas, water and electricity to be remotely read.

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 2005 Activities

Action

- PowerStream to provide financial and staff support to enable programs to be initiated by the TRCA and Markham Energy Conservation Office (MECO).
- PowerStream has entered a partnership with the TRCA to develop a Sustainable Community Competition that will see the winner construct a highly efficient home on TRCA property as a showcase to demonstrate the effectiveness of designing energy efficient homes.
- A pilot project will target the residential home building market including developers, architects, contractors, and owners by constructing the "next generation" interactive demonstration home and highlight all the newest design principles, materials and processes.

Results to Date

- Initial public announcement of the program was released in 2005.

- The Design Exchange (DX) began hosting the competition for the sustainable house in June, 2005.
- On August 25, 2005 the first public workshop was held to engage community leaders and finalize the criteria for architectural submissions.
- The criteria for house design, sponsorship package and timeline have been finalized, .
- Articles about the competition appeared in the Globe & Mail, the National Post and the Canadian Architect Magazine and Building Magazine.

Next Steps

- Planning is underway to hold the competition in 2006.
- The house will be built at the entrance to the Power Trail at Kortright as part of TRCA's initiative to create the Living City Campus. The Power Trail is currently the largest hands-on alternative energy learning centre in Ontario. One of the challenges of the Power Trail is to remain current and illustrate the latest in energy efficiency.

Energy and Environmental Management System (EEMS)

Action

- With the purchase of the Energy and Environmental Management System (EEMS) from the Region of York, the Town of Markham is now able to measure current consumption patterns and load shedding impacts of energy conservation programs within the Town's own operations. EEMS is a versatile; web based software designed to record and manage energy consumption and expenses of buildings, street lights, and other types of facilities. PowerStream has provided funding to this program.

Results to Date

- Electricity and water data for 2003 to 2005 have been entered for all of the Town's facilities, including street and traffic lighting.

Next Steps

- Consumption patterns will be analyzed with the aim of targeting and shifting peak loads.
- Review the feasibility of expanding EEMS to other municipalities in PowerStream's service area.

MECO@Work and MECO@Home Employee Awareness Program

Action

- MECO launched the MECO@Work and MECO@Home Employee Awareness Program on November 2, 2005. This program promotes MECO's purpose and brand across the Town by encouraging staff to engage in energy conservation at work and at home. While at work, Town of Markham staff will be encouraged to change their

energy consumption patterns and bring the culture of conservation into their homes with the help of new and innovative energy saving tips and products. PowerStream has provided funding for this program.

Results to Date

-
- MECO held three Lunch & Learns between November 2 and December 31, 2005 and brought in an energy consultant to discuss the EnerGuide for Homes Energy Audit Program.

Next Steps

- Many other information and awareness raising activities including the launch of the MECO website, distribution of bi-weekly intranet tips on energy conservation, articles and advertisements have taken place or have been underway since the beginning of January 2006.

- Align the powerWISE and PowerStream websites to MECO website to ensure consistent and efficient messaging.

- Review the feasibility of expanding program to other municipalities in PowerStream's service area.

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 2005 Activities

Action

- PowerStream is participating with other CLD members in the design and implementation of a Load Control program targeting residential and small commercial customers' central air conditioners with outside condensers.

- In addition to central air conditioners, customers with electric water heaters and pool pumps will be encouraged to have controls installed on those devices.

Results to Date

- An RFP to facilitate load control programs with the appropriate technology has been issued for response mid January 2006.

Next Steps

- Award RFP contract in Q1 2006
- Install and operationalize load control devices by July 2006.

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 2005 Activities

Social Housing Services Corporation (SHSC)

Action

- Working with SHSC, PowerStream is considering funding for energy efficiency improvements to social housing units that was identified in a SHSC energy audit. PowerStream is currently considering funding for specific improvements in social housing units such as lighting, and/or refrigerators to clearly segregate energy and load reductions
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Results to Date

- PowerStream helped fund 350 audits.
- SHSC has estimated potential savings of 200 W or 1250 annual kWh per unit.

Next Steps

- Confirm energy efficiency improvements that would qualify to receive incentives.
- PowerStream will begin work with low income groups to develop specific programs.

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 2005 Activities

Interval Metering

Action

- Install interval meters at commercial/industrial customer facilities.

Results to Date

- Approximately 100 interval meters have been installed.
- Provided customers with the option of tracking load profiles and consumption to better manage energy usage and demand.

Next Steps

- Interval meters to be modified to conform with communication protocols of the Smart Meters guidelines once they are released.

Combined Utility Metering

Action

- Conduct a Combined Metering Pilot to bring together data from gas, water, electricity and district energy meters into one presentation format that would be accessible to customers and assist them in making conservation decisions. PowerStream has provided funding to this program.
- Results to Date
- No results to date.
- Next Steps
- Work with MECO and Markham District Energy Inc. to facilitate deployment of meters.

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 2005 Activities

Action

- Partner with MECO and the Clean Air Foundation (Cool Shops) to educate small businesses on energy efficiency opportunities.

Results to Date

- MECO visited 1000 small businesses and offered free lighting assessments, including on-site calculation of potential savings from lighting retrofits.
- Distributed free CFLs to businesses.
- 541 businesses accepted free lighting assessment and calculation.
- 541 CFLs (13W) installed in businesses that accepted assessment (1 CFL per)
- 190 CFLs purchased (132 – 13W and 58 - 23W) by businesses that accepted assessment.
- 6 LED exit lights purchased by businesses that accepted assessment
- In terms of media coverage, three television interviews took place, 5 articles were printed in various newsletters and newspapers, 2 advertisements were published, and one special event held.

Next Steps

- MECO to initiate call backs to see what retrofits are being done based on previous assessments
- MECO to pilot 14 stores to replace all incandescent bulbs with CFLs and assess results.
- Develop freezer coil cleaning pilot to improve energy efficiency in small commercial businesses.

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 2005 Activities

powerWISE Business Incentive Program (PBIP)

Action

- CLD is working to develop 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 ie. 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

- This program was launched in late 2005.
- Application approval process in place.

Next Steps

- Continue with program and monitor results to assess its continuation beyond current completion date.

The Mayors' Megawatt Challenge

Action

- Programming support for The Mayors' Megawatt Challenge was initiated in 2005 to help mayors in urban regions join forces in expanding municipal building retrofit programs to promote energy efficiency and the subsequent reduction of greenhouse gas emissions, all with the added benefit of reducing municipal operations budgets. PowerStream is partnering with TRCA and helping fund this program.

Results to Date

- TRCA held a program planning meeting with municipalities from across the GTA in February. TRCA conducted the first workshop of the Mayors' Megawatt Challenge 2005/2006 session "Energy Performance Targeting" on June 17th at the Mississauga Civic Centre. The second Workshop focused on Energy Management Planning and was held in October at the City of Toronto. To date more than 100 municipal buildings have been enrolled in the program, 12 of these are in PowerStream's jurisdiction (and PowerStream is taking a lead role in ensuring these buildings comply with the program).
- Seventeen arenas have been enrolled by their municipalities in a project, which will involve audits of facilities, documentation of best practices and specification of building automation systems installations.
- In 2005 60% of Richmond Hill's buildings in the program showed savings in consumption for a total savings of over 800,000kWh. 50% of the buildings showed savings in demand, for a total savings of more than 140kW. The program is targeting consumption savings of at least 1 million kWh and 200kW in demand savings by 2007.

Next Steps

- Continue to enroll more municipal buildings in the program.

The Mayors' Green Building Challenge (MGBC)

Action

- The Mayors' Green Building Challenge is a pilot initiative to increase the design, construction or renovation of green buildings in the municipal sector to an international standard of sustainability, the Leadership in Energy and Environmental Design (LEED).

Results to Date

- PowerStream head office design is striving to achieve LEED Silver designation. PowerStream staff and TRCA have worked together to establish a commitment to achieve LEED certification for the new head office to be built near Rutherford Rd. & Hwy 400.
- Vaughan Civic Centre is striving to achieve LEED Silver designation. PowerStream staff and the TRCA participated in a charette process and helped lead the initial application of the LEED rating system.
- Richmond Hill Community Centre is striving for LEED certification. Working with TRCA staff over the course of 2005 has encouraged Richmond Hill to strive for a LEED platinum rating. Staff realize that this might not be possible for this project however, the lessons learned through attempting platinum certification will be applied to future green building projects.

Next Steps

- PowerStream staff will continued with its program support. Other programs will be targeted at school boards working with PowerStream's various partners and leveraging the incentive programs offered from the powerWise Business Incentive Program. PowerStream will also assist in outreach programs through its partnership arrangements to help with educational based energy conservation programs in the schools.

Sustainable Schools

Action

- Sustainable Schools enables and supports the construction and operation of schools through identification and adoption of the best in current green building design, technology and practices through LEED. PowerStream is providing funding to this program through its financial commitment to the TRCA.

Results to Date

- TRCA consulted with Schools Boards from across the GTA to obtain feedback on the design of the preliminary Sustainable Schools program.
- TRCA compiled actual energy use for recently built schools (since 2000) from across Canada and presented the results of its preliminary work at the Ministry of Energy's "Schools for the Future" forum in April.
- Sustainable Schools program was revised to reflect the input from school boards, and funding partners including PowerStream.
- TRCA provided comments to YRDSB on design of Markham High School
- City of Vaughan is working with the York Region District School Board and TRCA will develop two new Green schools in one of its developments.

Next Steps

- Continue PowerStream's support of Sustainable Schools program.

Greening Health Care

Action

- Partner with TRCA and provide financial support for Greening Health Care, a collaborative program among hospitals in greater GTA to achieve energy and cost savings while minimizing air pollution. The program is designed to review new concepts in operations and development, encourage collaborative changes, and reduce costs through economies of scale. Access to government and utility incentive programs will also be facilitated.

Results to Date

- A number of workshops were completed by June 2005 allowing participants to engage in special projects that will help them reduce energy and water consumption within their facilities..

Next Steps

- Work with York Central Hospital in Richmond Hill and Markham Stouffville Hospital in Markham to realize the potential energy.savings.

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 2005 Activities

Action

- To target load Controls for commercial unit air conditioners and other equipment that can be controlled.

Results to Date

- An RFP to facilitate load control programs with the appropriate technology has been issued for response mid January 2006.

Next Steps

- Award RFP contract in Q1 2006
- Install and operationalize load control devices in 2006.
-
- Assess results for expansion of program to larger commercial/industrial customers

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 2005 Activities

Better Building Partnership

Action

- MECO has 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 will involve 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

- Initiation of a pilot study of Milliken Mills Community Centre within the Town of Markham.
- Review of preliminary proposals for conducting an energy audit of this facility and have identified some potential energy savings measures has been completed.

Next Steps

- Proceed with retrofit and renewal opportunities that will achieve the greatest energy savings.

Action

- The Advancing High Performance Buildings (AHPB) Program represents an opportunity for the Town of Markham to create a sustainable community that will lower the overall environmental load through reduced energy consumption. The program focuses on new designs, construction and operating methods that will reduce the energy consumption of new infrastructure. Existing benchmarks will be documented and outputs will be measured from new buildings that participate in the AHPB program. Pre- and post-program performance capabilities will be identified to project future cost avoidances while reducing overall consumption. PowerStream is providing funding to MECO for this initiative.

Results to Date

- MECO contracted with the Canadian Urban Institute (CUI) to prepare a report outlining a Framework for AHPB development. The Draft Report was received in November, 2005.

Next Steps

- Internal discussions for moving forward are underway. (need to talk to James Samll about this)
  Assess for potential synergies with LEED designated programs.

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 2005 Activities

Action

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

Results to Date

- System optimization software updated.
- Conducted internal training on software

Next Steps

- Review cost benefit analysis prior to proceeding with program

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 2005 Activities

Action

- PowerStream partnered with Safety Power (a subsidiary of ESA) and Toromont Energy to implement a demonstration of peak load displacement on the PowerStream system. The generator uses a low-sulphur bio-diesel fuel mixture to reduce emissions and specialized stack scrubbers to reduce environmental impacts.

Results to Date

- Demonstration was carried out in 2005 with approximately 1000 kW of load at Toromont industries transferred to a standby generator and off of the distribution system with no negative effects.

Next Steps

- Review feasibility of other backup generation in the PowerStream service area.
- Evaluate solar and wind projects that will displace load.
- Sponsoring 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. Shared costs for powerWISE program are centrally administered by the CLD member utilities. These shared costs are also factored into the appropriate program.

4. Lessons Learned

Working Together

During the past year, the members of the CLD have worked together on the execution of their individual CDM plans. 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. Our experience in 2005 has provided us with several lessons we have learned. For example:

Purchasing power:

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

Consistent messaging:

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

Cost Sharing:

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

Exchange of Ideas/Approaches:

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

Market Conditions

- The launch of CDM initiatives requires a significant awareness effort within customer segments, and there is a steep learning curve for LDCs to become familiar with retail market timing and practices. The response to co-branded mass market initiatives launched by the CLD group was encouraging in 2005, though it was the first year of the brand and program. The initiative has helped raise awareness of CDM across the Greater Toronto Area and beyond, and has drawn customer attention to LDC programming, which augurs well for 2006.

- Couponing and other consumer-oriented promotions got off to a good start in 2005 and response from the business sector to CDM incentives via the powerWISE Business Incentive Program has been encouraging. Workshops sponsored by PowerStream with the help of Osram Sylvania and wholesaler NEDCO to familiarize business customers with CDM opportunities, incentives and the application process were well attended in 2005, and should help increase CDM in the commercial and industrial sector. By engaging the wholesale and retail sectors it quickly brings a broad spectrum of customers to end use consumers.

- The successful arrangement of a Load Displacement pilot with Safety Power and Toromont Industries demonstrated that cooperation between the private sector, regulatory authority and LDCs can produce mutually beneficial outcome. Each party gained something from the pilot, be it a demonstration of on-demand peak load

displacement, the ability of a customer to continue operations during load displacement, and a reduction of stress on the distribution system. The pilot should encourage other large customers to give serious consideration to the opportunity of load displacement.

- The significant response to the powerWISE Watt Reader PowerPack program showed us that customers have a genuine interest in learning about the energy consumption patterns and the appliances they buy in their homes. While we have not measured customers' willingness to pay, a quick review of sales of energy readers at hardware stores would suggest that customers are beginning to pay for these devices. PowerStream will assess the feasibility of further encouraging these sales and increasing customer awareness through a couponing program.

- The programs that have received the greatest media attention have been those that are community based. While shifting consumer's attitudes is difficult to measure, these programs also appear to have been the most successful. As a result, we will endeavor to engage the media at an early stage in the development of market transformation programs.

- PowerStream underestimated the amount of time and resources (both internal and external) required to engage residential customers. This lesson learned will help us in our development of any 2nd generation CDM plans.

Regulatory Environment

- Much work was done in 2005 to establish partnerships and put planning in place to achieve PowerStream's CDM Plan; however, programs had only just begun to show results by year end. As such, TRC calculations might imply that some programs have not performed well, only because the programs have not been in place long enough to garner a results track record. Therefore, the cost benefit analysis presented does not accurately reflect the effectiveness of PowerStream's CDM expenditures.

- Distributors have been challenged by new OEB requirements related to the delivery of CDM. It was not anticipated in late 2004 that TRC analysis would be a requirement for this annual report, and the issue of whether 'non-incremental' LDC expenses should be deemed as eligible for inclusion in an LDC's spending obligation was not addressed until near the end of the year. Uncertainty continues to persist regarding the application of Shared Savings and Loss Revenue Adjustment mechanisms.

- It should be noted that much of PowerStream's effort in 2005 was targeted at market transformation, to raise critical awareness levels and to motivate behavioural changes in customers to view their energy consumption habits and patterns differently. As such, the results from these important initiatives will not be as apparent in CDM reporting for 2005 as in future years.

- Experience thus far makes a second generation of CDM a positive prospect, pending regulatory certainty. Additionally, to avoid confusion or duplication going forward, there needs to be more clarity in the roles of the OEB, OPA, the Ministry of Energy and LDCs with respect to CDM.

Residential and Commercial <50kW	Successful?	Continue?	Notes
Co-Branded Mass Market	Yes	Yes	Broad acceptance; good base to build customer relationship on
Smart Meter Pilot	Yes	Yes	Full implementation upon technology selection per regulated guidelines
Design Advisory/Audit	Too early to tell	To early to tell	Working with TRCA and Markham ECO on market transformation
Residential Load Control	RFP issued	Yes	Deliver peak reductions in 2006
Social Housing Program	Yes	Yes	SHSC facilitated program will be effective. Individual initiative require more local support in being able to reach low income people and get their active engagement
Commercial Institutional and Industrial >50kW			
Smart Meter Program	To early to tell	Yes	100 meters installed; 300 additional meters to be installed per Ministry guidelines.
Energy Audits Retrofits and Partnerships	Yes	Yes	In conjunction with Markham and TRCA
Leveraging Energy Conservation	Yes	Yes, some changes	Market transformation with Markham ECO and TRCA
Demand Response Initiative	RFP Issued	Yes	Program will deliver peak reductions in 2006
Design Advisory	Too early to tell	Yes some changes	Market transformation with Markham ECO and TRCA
Distribution Loss Reduction			
Distribution Loss Reduction	Too early to tell	Too early to tell	Evaluated system loss opportunities
Distributed Generation			
Standby Generation (Load Displacement)	Yes	Yes	Evaluated peak reduction using backup generation on customer load.

Recommendations by Program Area

5. Conclusion

In 2005 PowerStream undertook significant foundation work to implement its CDM plans across several fronts and customer segments. The collaborative efforts of the CLD have allowed us to launch many initiatives in unison across our collective customer base, while other initiatives are helping us empower employees and begin transforming market attitudes toward CDM. Of significance in 2005 is the establishment of the powerWISE franchise across the CLD, which has netted encouraging results thus far (NTD are we showing this?).

PowerStream' has initiated or planned CDM programs across multiple customer fronts to build a solid CDM foundation moving forward:

- Spent ($1.07 million out of $6.4 million funding for CDM[1])
- Program exposure in all customer segments
- CDM funding has spurred the addition of CDM programming capability at the municipal level
- Co-operative effort among CLD utilities resulted in significant co-ordination minimizing advertising and legal costs
- Initial programming resulted in energy savings in excess of 3 million kWh

Notably, the establishment of the powerWISE brand through advertising, website, newsletters and other vehicles will enhance the success of future consumer programs by the CLD. Similarly, the powerWISE Business Incentives Program, which offers qualifying commercial, industrial and institutional customers cash incentives for energy efficient lighting, electric motor and unitary air conditioner conversions will help commercial and industrial customers embrace CDM more fully in the years ahead.

[1] A portion of the spending earmarked for 2005 was postponed as a result of the delay in the Smart Meter specifications.

Evaluation of the CDM Plan

	Total	Residential and Small Commercial (<50 Kw)	Commercial, Industrial and Institutional
Net TRC value ($):	*$1,554,120*	$792,985	$723,325
Benefit to cost ratio:	*10.37*	10.29	10.94
Number of participants or units delivered:	15,220	14,403	816
Total KWh to be saved over the lifecycle of the plan (kWh)	28,076,052	14,703,030	9,461,022
Total in year kWh saved (kWh):	3,130,723	1,885,316	1,049,806
Total peak demand saved (kW):	1,663	148	543
Total kWh saved as a percentage of total kWh delivered (%):	*0.047%*	*0.029%*	*0.016%*
Peak kW saved as a percentage of LDC peak kW load (%):	*0.119%*	*0.011%*	*0.039%*
Gross in year C&DM expenditures ($):	$ 1,072,567	$ 402,811	$ 477,003
Expenditures per KWh saved ($/kWh)	$ 0.34	$ 0.21	$ 0.45
Expenditures per KW saved ($/kW)	$645	$2,728	$879

Utility discount rate (%):	6.50%

Appendix B - Discussion of the Program

(complete this section for each program)

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

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

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, Multi-Choice, energy audits, hot water heater blanket raps, 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):

	Space Cooling	**Holiday Lights**	**Holiday Lights**
Base case technology:	A/C Base Load	5W Christmas lights C-7 (25)	Incandescent Mini Lights
Efficient technology:	EE Ceiling Fan	SLED	SLED
Number of participants or units deliv	102	1125	1124
Measure life (years):	20	30	30
	Space Cooling	**Space Heating**	**Lighting Controls**
Base case technology:	Static thermostat	Static thermostat	Outdoor lighting
Efficient technology:	Programmable thermostat	Programmable thermostat	Outdoor timer
Number of participants or units deliv	454	174	265
Measure life (years):	18	18	20
	Lighting Controls	**Space Cooling Controls**	**CFL**
	Indoor lighting	A/C Base Load	60 watt incandescent
	Indoor timer	Indoor timer	CFL
	53	53	10252
	20	20	4
	Space Heating		
Base case technology:	Space Heating Base Load		
Efficient technology:	EnerGuide		
Number of participants or units deliv	1		
Measure life (years):	25		

B. **TRC Results:**

TRC Benefits ($):		774,195
TRC Costs ($):		
	Utility program cost (less incentives):	70,110
	Participant cost:	
	Total TRC costs:	70,110
Net TRC (in year CDN $):		$ 704,085
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		$ 11.04

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

Conservation Programs:

Demand savings (kW):	*Summer*		77.66
	Winter	$	312.11
	lifecycle		*in year*
Energy saved (kWh):	$ 12,783,902	$	1,405,534.40
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 begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	7,441.20
	Incremental O&M:	$	99,770.24
	Incentive:		
	Total:	$	107,211.44
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

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

Appendix B - Discussion of the Program

(complete this section for each program)

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

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

Description:

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

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

Target users

Residential and small commercial customers.

Benefits

This program supports the Minister of Energy's commitment to the installation of 800,000 SMART meters across Ontario by 2007. It will provide 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:			
Measure life (years):			

B. **TRC Results:**

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

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	58,262.40
	Incremental O&M:	$	17,427.57
	Incentive:		
	Total:	$	75,689.97
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

There are no results for this program (kw and kwh)

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

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** Design Advisory/Audits Program

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

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

Benefits

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

Measure(s):

	CFL
Base case technology:	60 watt incandescent
Efficient technology:	CFL
Number of participants or units deliv	450
Measure life (years):	4

B. **TRC Results:**

TRC Benefits ($):			10,443.96
TRC Costs ($):			
	Utility program cost (less incentives):		
	Participant cost:	$	800.00
	Total TRC costs:	$	800.00
Net TRC (in year CDN $):		$	9,643.96
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		$	13.05

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

Conservation Programs:

Demand savings (kW):	*Summer*		
	Winter	9.1	
	lifecycle		*in year*
Energy saved (kWh):	169,128	42,282	
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 begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):	

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	167,469.89
	Incentive:	$	-
	Total:	$	167,469.89
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

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

Appendix B - Discussion of the Program

(complete this section for each program)

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

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):

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

B. **TRC Results:**

TRC Benefits ($):

TRC Costs ($):

Utility program cost (less incentives):		
Participant cost:		
Total TRC costs:	$	-
Net TRC (in year CDN $):	$	-

Benefit to Cost Ratio (TRC Benefits/TRC Costs):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	17,469.89
	Incentive:		
	Total:	$	17,469.89
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

1. There were no results for this program (kw and kwh) in 2005

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

Appendix B - Discussion of the Program

(complete this section 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):

	Audits
Base case technology:	Existing Dwellings
Efficient technology:	EE Upgrades
Number of participants or units deliv	350
Measure life (years):	4

B. **TRC Results:**

TRC Benefits ($):			114,225.9
TRC Costs ($):			
	Utility program cost (less incentives):	$	17,469.89
	Participant cost:	$	17,500.00
	Total TRC costs:	$	34,969.89
Net TRC (in year CDN $):		$	79,255.98
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		$	3.27

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

Conservation Programs:

Demand savings (kW):	*Summer*	70	
	Winter	70	
	lifecycle		*in year*
Energy saved (kWh):	1,750,000	437,500	
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 begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):

	lifecycle	*in year*
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	34,969.89
	Incentive:		
	Total:	$	34,969.89
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

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

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** Smart Meter (CI&I)

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

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 Board.

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.

Measure(s):

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

B. **TRC Results:**

TRC Benefits ($):

TRC Costs ($):

Utility program cost (less incentives):		
Participant cost:		
Total TRC costs:	$	-
Net TRC (in year CDN $):	$	-

Benefit to Cost Ratio (TRC Benefits/TRC Costs):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	2,576.37
	Incentive:		
	Total:	$	2,576.37
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

1. There were no results for this program in 2005

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

Appendix B - Discussion of the Program

(complete this section 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):

	Interior Lighting	**Interior Lighting**	**Interior Lighting**
Base case technology:	60W incandescent	100W incandescent	20W incandescent exit sign
Efficient technology:	13W CFL	23W CFL	1.8W LED exit sign
Number of participants or units deliv	673	58	6
Measure life (years):	2	2	25

B. **TRC Results:**

TRC Benefits ($):			*22,439.3*
TRC Costs ($):			
	Utility program cost (less incentives):		
	Participant cost:	$	3,200.00
	Total TRC costs:	$	3,200.00
Net TRC (in year CDN $):		$	19,239.34
Benefit to Cost Ratio (TRC Benefits/TRC Costs):		$	7.01

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

Conservation Programs:

Demand savings (kW):	*Summer*		26.2
	Winter		27.7
		lifecycle	*in year*
Energy saved (kWh):	*284,012*		132,105
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 begining of year (%):
Distribution system power factor at end of year (%):

Line Loss Reduction Programs:

Peak load savings (kW):

	lifecycle	*in year*
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	228,956.07
	Incentive:		
	Total:	$	228,956.07
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

1. Prorated adjustments were assumed using the OEB Assumptions and Measures, correcting TRC for different lighting sizes

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

Appendix B - Discussion of the Program

(complete this section 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):

	Mayor's MW Challenge	Sustainable Schools	Measure 3 (if applicable)
Base case technology:	Existing Municipal Facilities	Existing Schools	
Efficient technology:	EE Upgrades	EE Upgrades	
Number of participants or units deliv	69	10	
Measure life (years):	10	10	

B. **TRC Results:**

TRC Benefits ($):			*774,195*
TRC Costs ($):			
	Utility program cost (less incentives):	$	70,110.09
	Participant cost:		
	Total TRC costs:	$	70,110.09
Net TRC (in year CDN $):		$	704,085.32
Benefit to Cost Ratio (TRC Benefits/TRC Costs):			11.04

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

Conservation Programs:

Demand savings (kW):	*Summer*		517
	Winter		81
	lifecycle		*in year*
Energy saved (kWh):	*9,177,010*	917,701	
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 begining of year (%):
Distribution system power factor at end of year (%):

Line Loss Reduction Programs:

Peak load savings (kW):

lifecycle *in year*

Energy savngs (kWh):

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	210,330.27
	Incentive:		
	Total:	$	210,330.27
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

There were no results for this program (kW/kWh) in 2005

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

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** CI&I Load Control Initiative

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):

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

B. **TRC Results:**

TRC Benefits ($):

TRC Costs ($):

Utility program cost (less incentives):		
Participant cost:		
Total TRC costs:	$	-
Net TRC (in year CDN $):	$	-

Benefit to Cost Ratio (TRC Benefits/TRC Costs):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	200.00
	Incremental O&M:	$	17,469.89
	Incentive:		
	Total:	$	17,669.89
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

1. There were no results for this program in 2005

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

Appendix B - Discussion of the Program

(complete this section for each program)

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

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):

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

B. **TRC Results:**

TRC Benefits ($):

TRC Costs ($):

Utility program cost (less incentives):		
Participant cost:		
Total TRC costs:	$	-
Net TRC (in year CDN $):	$	-

Benefit to Cost Ratio (TRC Benefits/TRC Costs):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	17,469.89
	Incentive:		
	Total:	$	17,469.89
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

Analyses pending

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

Appendix B - Discussion of the Program

(complete this section 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

Measure(s):

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

B. **TRC Results:**

TRC Benefits ($):

TRC Costs ($):

Utility program cost (less incentives):		
Participant cost:		
Total TRC costs:	$	-
Net TRC (in year CDN $):	$	-

Benefit to Cost Ratio (TRC Benefits/TRC Costs):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$	17,469.89
	Incentive:		
	Total:	$	17,469.89
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

1. There were no results for this program in 2005

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

Appendix B - Discussion of the Program

(complete this section 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. Other benefits include improved sys

Measure(s):

	Load Displacement Pilot	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:			
Efficient technology:	EE Bio-diesel generator		
Number of participants or units deliv	1		
Measure life (years):	20		

B. **TRC Results:**

TRC Benefits ($):	$	*213,093.05*
TRC Costs ($):		
Utility program cost (less incentives):	$	175,283.24
Participant cost:		
Total TRC costs:	$	175,283.24
Net TRC (in year CDN $):	$	37,809.81
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	1.22

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

Conservation Programs:

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

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	978
Energy generated (kWh):	3912000
Peak energy generated (kWh):	195600
Fuel type:	Bio-diesel

Other Programs (specify):

Metric (specify):

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	6,680.49
	Incremental O&M:	$	168,602.75
	Incentive:		
	Total:	$	175,283.24
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		

E. **Comments:**

TRC to be developed

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