



PowerStream Inc.

Conservation and Demand Management Plan

Ontario Energy Board File No. RP-2004-0203

November 4th, 2004



TABLE OF CONTENTS

INTRODUCTION 2
PLAN BUDGET AND ASSUMPTIONS 3
OBJECTIVES 4
STRATEGY 4
PROGRAMS 5
 CONSERVATION AND DEMAND MANAGEMENT (CDM)..... 5
 RESIDENTIAL AND SMALL COMMERCIAL (< 50 KWKW)..... 5
 Co-branded Mass Market Program..... 5
 SMART Meter Pilot..... 6
 Design Advisory/Audits Program..... 7
 Residential Load Control Initiative..... 8
 Social Housing Program..... 9
 COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL (> 50 KW) 10
 SMART Meters 10
 Energy Audits, Retrofits and Partnerships..... 11
 Leveraging Energy Conservation and/or Load Management Programs..... 12
 Demand Response Initiative..... 13
 Design Advisory Program 14
 DISTRIBUTION LOSS REDUCTION 15
 Distribution Loss Reduction..... 15
 DISTRIBUTED ENERGY 16
 Load Displacement..... 16
CONCLUSION..... 17
CONTACT INFORMATION 17
PROGRAM BUDGET AND TIMELINE SUMMARY 17

Introduction

Ontario's Minister of Energy has authorized electricity distributors to apply to the Ontario Energy Board (Board) for 2005 rate implementation of their third installment of market adjusted revenue requirement (MARR), on the condition that an equivalent amount of incremental revenue be invested by those distributors in conservation and demand management activities. In a letter dated May 31, 2004 to electricity distributors, the Minister identified some of the activities that might be included in a distributor's Conservation and Demand Management Plan, including:

- ? Energy efficiency;
- ? Behavioural and operational changes, including the application of benchmarking or "SMART" control systems;
- ? Load management measures which facilitate interruptible and dispatchable loads, dual fuel applications, thermal storage, and demand response;
- ? Measures to encourage fuel switching which reduces the total system energy for a given end-use;
- ? Programs and initiatives targeted to low income and other hard to reach consumers; and
- ? Distributed energy options behind a customer's meter such as tri-generation, co-generation, ground source heat pumps, solar, wind, and biomass systems.

On October 5, 2004 the Board issued a procedural order (RP-2004-0203) setting out the process for how distributors may apply for approval of a Conservation and Demand Management Plan. It also set out the filing requirements for a distributor's plan. Distributors were given the option of applying for interim or final approval of their plan.

PowerStream's Conservation and Demand Management (CDM) Plan has been developed within the context of the Minister of Energy's May 31, 2004 letter and the procedural order issued by the Board.

PowerStream hereby requests the Board's approval and final order authorizing its CDM plan, subject to approval of an order for distribution rates including the final tranche of the market adjusted revenue requirement (MARR). PowerStream submits that this plan is appropriate and effective in discharging PowerStream's obligation to make CDM investments in an amount equivalent to its final MARR installment.

PowerStream hereby requests the Board's approval and final order authorizing its CDM plan as being appropriate and effective in discharging its CDM investment obligation, subject to issuance in due course of an order for distribution rates including the final tranche of the market adjusted revenue requirement (MARR).



Plan Budget and Assumptions

PowerStream's third MARR installment is approximately \$6.4 million, exclusive of any payments in lieu of taxes.

Through a letter accompanying its Preliminary Guidelines for Electricity Distributor Conservation and Demand Management Activities, the Board has authorized that distributor conservation and demand management spending may occur until September 30, 2007.

PowerStream's Conservation and Demand Management Plan is therefore based on investing approximately \$6.4 million in a combination of capital and operating expenses during the period from January 1, 2004 to September 30, 2007.

The implementation of this plan will require re-deployment of some existing personnel. Costs associated with the use of existing resources to implement this plan have been allocated to the individual programs and are provided for in the annual budget figures. Administrative and overhead costs have been provided for by incorporating them in the program budgets.

While the current plan is well balanced, it is recognized that the industry and regulatory framework is dynamic. PowerStream will continue to assess and update its plan as new opportunities are presented. If necessary, PowerStream will re-allocate funds between programs to respond to customer demand levels. However, PowerStream will make best efforts to achieve the target levels of capital and operating expenditures by year.

Objectives

The Province of Ontario is facing serious challenges in meeting its future electricity needs. Energy conservation and demand management has been identified as one of the most viable and cost-effective means of meeting the province's energy needs in the short term.

The Minister of Energy has called for the creation of a 'Conservation Culture' in the province, and has established two important objectives for the electricity sector and electricity consumers. First, he has targeted a reduction in Ontario's demand for electricity by 5% by 2007. Second, he has committed to the installation of 800,000 SMART electricity meters by 2007, and the full deployment of SMART meters for all electricity consumers by 2010.

The objective of this plan is to contribute to the emergence of a conservation culture in Ontario and, more specifically, to support the Minister's commitments to peak demand reduction and SMART meter installations.

Strategy

In developing this plan, the following criteria were used to guide the selection of component programs:

- i. Allocation of Benefits – The overall plan should distribute benefits broadly to PowerStream's customers.
- ii. Certainty of Achieving Targeted Benefits – Preference was given to investments that offer more predictable results.
- iii. Leveraging Partnerships – Partnerships will be sought to deliver 'behind the meter' programs that will benefit from greater scale for cost-effective implementation, such as Markham Energy Conservation Office, City of Vaughan, Town of Markham, Town of Richmond Hill, Toronto & Region Conservation Authority, and other LDC's.



Programs

Conservation and Demand Management (CDM)

Residential and Small Commercial (< 50kW)

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, Multi-Choice, energy audits, water heater blanket wraps, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Access to online services such as energy consumption calculators, an energy expert, and personalized energy audit services are contemplated as components of this program.

Target users

Mass-market including residential and small commercial

Benefits

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

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$160	\$224	\$256	\$640
Capital Expenditures	0	0	0	\$0
Totals	\$160	\$224	\$256	\$640



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 a bulk-metered situation (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.

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$72	\$70	\$41	\$142
Capital Expenditures	\$398	278	0	\$676
Totals	\$470	\$348	\$41	\$818



Design Advisory/Audits Program

Description

This initiative helps to create an integrated approach to the design process for new buildings, and involves architects, engineers, building owners and PowerStream design advisors. Through visits or by working through existing service advisors PowerStream will provide conservation information and make specific recommendations for energy savings.

Target users

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.

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$37	\$59	\$52	\$148
Capital Expenditures	\$69	\$110	\$96	\$275
Totals	\$106	\$169	\$148	\$423



Residential Load Control Initiative

Description

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

Target users

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

Benefits

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

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$39	\$62	\$54	\$155
Capital Expenditures	0	\$187	\$101	\$288
Totals	\$39	\$249	\$155	\$443

Social Housing Program

Description

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

A pilot program 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.

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$97.9	\$97.2	\$72.9	\$268
Capital Expenditures	0	0	0	0
Totals	\$97.9	\$97.2	\$72.9	\$268



Commercial, Industrial and Institutional (> 50 kW)

SMART Meter Program

Description

LDC will make an investment to further the use of PowerStream 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

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.

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$17.6	\$28	\$33.4	\$79
Capital Expenditures	\$70.4	\$112	\$97.6	\$280
Totals	\$88	\$140	\$122	\$359

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.

Budget

<u>\$K</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$70	\$112	\$98	\$280
Capital Expenditures	\$132	\$210	\$184	\$526
Totals	\$202	\$322	\$282	\$806

Leveraging Energy Conservation and/or Load Management Programs

Description

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, educational initiatives, conferences and seminars.

Target users

Large consumers over 50 kW, MUSH 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.

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$73	\$143	\$102	\$318
Capital Expenditures	\$135	\$217	\$190	\$542
Totals	\$208	\$164	\$292	\$860



Demand Response Initiative

Description

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

Target Users

Larger commercial, industrial and institutional customers.

Benefit

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

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$26	\$41	\$36	\$103
Capital Expenditures	\$48	\$77	\$67	\$192
Totals	\$74	\$118	\$103	\$295



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 PowerStream 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.

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$33	\$53	\$46	\$132
Capital Expenditures	\$61	\$98	\$86	\$245
Totals	\$94	\$151	\$132	\$377



Distribution Loss Reduction

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 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 of PowerStream's customers.

Benefits

Reduced electricity distribution system delivery losses will reduce system demand, relieve network capacity to accommodate growth, and reduce the requirement for new generating capacity in the Province. Costs associated with distribution system delivery losses are recovered through electricity distribution charges. Reductions in these costs will therefore benefit all customers.

Budget

\$k	2005	2006	2007	Totals
Operating Expense	\$12	\$19.2	\$16.8	\$48
Capital Expenditures	\$108	\$172.8	\$151.2	\$432
Totals	\$120	\$192	\$168	\$480

Distributed Energy

Load Displacement

Description

Distributed generation behind the customer's meter provide 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. This may include technology such as thermal storage systems. Combined with an existing or new district heating/cooling 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, backup power possibilities, education and skills development.

Budget

<u>\$k</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>Totals</u>
Operating Expense	\$128	\$204.8	\$170.2	\$503
Capital Expenditures	\$32	\$51.2	\$44.8	\$128
Totals	\$160	\$256	\$215	\$631

Conclusion

PowerStream believes that the plan set out in this document is a prudent and effective approach in helping to achieve the Province's energy conservation and demand management goals. This plan addresses many of the potential initiatives outlined in the Minister's letter and represents a responsible first step in PowerStream's implementation of CDM programs.

PowerStream looks forward to the Board's approval of this plan and the implementation of these initiatives. PowerStream requests that in the Board's Decision granting approval of PowerStream's Conservation and Demand Management Plan, the Board confirm that the approved plan will discharge PowerStream's obligation to invest an amount equivalent to its third tranche MBRR, subject to ex post review by the Board only with respect to planned versus actual CDM spending.

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Program Budget and Timeline Summary

The following spreadsheet provides an overall summary of funding and timelines for the suite of PowerStream's Conservation and Demand Management Programs.