



Veridian Connections Inc.

Conservation and Demand Management

2006 Annual Report

Veridian Connections - RP-2004-0203\EB-2004-0484

March 30 2007

Table of Contents

Table of Contents	2
1. Introduction	3
2. Evaluation of Overall Plan	5
3. Discussion of the Programs	6
3.1 Residential and Small Commercial (< 50 kW).....	6
Co-branded Mass Market Program	6
Smart Meter Pilot.....	12
3.2 Commercial, Industrial and Institutional (> 50 kW).....	14
Smart Meter Program	14
Leveraging Energy Conservation and Load Management.....	15
3.3. Distribution Loss Reduction.....	17
Distribution Loss Reduction.....	17
3.4 Distributed Energy	19
Load Displacement.....	19
Stand-by Generators	20
Peak Shaving Generator for Municipal Office	21
4. Lessons Learned	22
5. Conclusion.....	25

Appendix A - Evaluation of the CDM Plan

Appendix B - Discussion of the Program

Appendix C - Program and Portfolio Totals

Appendix D – Summary of CDM Plan Revisions



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 Inc. This report is a requirement of that decision. In respect of the application filed by Veridian Connections Inc. (“Veridian”), the Board issued its Final Order on February 3, 2005 under docket number RP-2004-0203 / EB-2004-0484.

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

Veridian’s CDM plan has been updated twice since it was originally approved by the Board:

- Revision 1: In 2005, the plan was amended to incorporate Scugog Hydro Energy Corporation’s (Scugog Hydro) CDM plan into Veridian’s plan, following Veridian’s acquisition of Scugog Hydro and the cancellation of that utility’s electricity distribution licence. At the same time, the plan was amended to reallocate budget amounts between certain programs.
- Revision 2: In 2006, the plan was amended to incorporate Gravenhurst Hydro Electric Inc.’s (Gravenhurst Hydro) CDM plan into Veridian’s plan, following Veridian’s acquisition of Gravenhurst Hydro and the cancellation of that utility’s distribution licence.

A ‘Summary of CDM Plan Revisions’ is provided under appendix D, which details the budget reallocations associated with these revisions. Also included under appendix D is an updated ‘Program Budget and Timeline Summary’, with the revisions incorporated.

The changes referred to under revision 1 were filed with the Board in September 2005 and were accepted as an ‘informational update’. The budget changes associated with revision 2 have been reflected in Veridian’s quarterly Reporting and Record Keeping filings commencing with the second quarter 2006 submission.

The second full year of Conservation and Demand Management program delivery has been very active at Veridian. The collaborative efforts of the Coalition of Large Distributors have allowed us to launch many initiatives across our customer base. Programs and initiatives were developed to engage employees, stakeholders, and all sectors of electricity users within Veridian’s boundaries. The key thrust of our initiatives was to reduce electricity use and help promote a conservation culture in Ontario. Significant progress towards this goal was achieved in 2006. Veridian’s conservation and demand management initiatives delivered a peak demand savings of 787 kW and energy savings of 13,207,308 per year.

In addition, as an active member of the Coalition of Large Distributors (CLD), Veridian contributed to the achievement of significant kilowatt-hours savings through programs developed and implemented in tandem with other CLD members. Collectively, the CLD delivered the following impressive results last year:

462 community events
2,965 energy audits conducted



6,841 electric water heater tune-ups
12,671 old air conditioners removed from service
26,745 *peaksaver* load control customers installed this year
65,000 kW peak load reduction from our 2006 CDM programs
78,936 seasonal incandescent light strings removed from service
85,305 tonnes of CO₂ emissions have been diverted as a result of savings
1,483,249 compact fluorescent light bulbs provided to our residential customers
\$42,490,546 invested in conservation and demand management amongst our 6 utilities
302,501,670 kilowatt-hours of electricity saved – enough electricity to power 33,501 homes for a year

	2005	2006	2006 / 2005
Investment (M)	\$19.4	\$42.5	219%
kWh saved (M)	110.6	302.5	274%



2. Evaluation of Overall Plan

Refer to Appendices A, B and C for a full evaluation of Veridian's CDM activities during 2006.

Some components of Veridian'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 assessed.

3. Discussion of the Programs

3.1 Residential and Small Commercial (< 50 kW)

Co-branded Mass Market Program

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

Target users

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

Benefits

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

Discussion of 2006 Activities

powerWISE® Brand and Website

Action

- Hamilton Utilities Corp. (HUC) registered the powerWISE mark prior to CDM activities.
- During CLD CDM plan preparation, it was agreed that the CLD would collectively develop a co-brand. HUC offered powerWISE for joint ownership and the CLD agreed that we would use this mark.
- Weekly conference call meetings are held with the communications subcommittee to coordinate all powerWISE and branding activities.
- The Ministry of Energy (Director of Communications) participates on weekly conference calls, as does the Ontario Power Authority (Director of Marketing).

Results to Date

- powerWISE is being used extensively by the CLD to brand CLD conservation programs.
- The powerWISE brand has been used by the Ministry of Energy in its 2006 advertising campaign.



- The powerWISE website received 181,701 visits.

Next Steps

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

Ontario Power Authority – Every Kilowatt Counts

Action

- The Conservation Bureau of the OPA developed a major mass-market retail campaign to advance the penetration of energy efficient devices into the marketplace through point of purchase redeemable coupons.
- Coupon and information booklets were distributed through the mail to all Ontario households for each campaign.
- Spring Campaign May 1, 2006 to August 31, 2006
 - Compact Fluorescent Light bulbs (CFL) (\$5.00 off per multi-pack)
 - Indoor/outdoor timers (\$5.00 off)
 - Ceiling fans (\$25.00 off)
 - Programmable thermostats (\$15.00 off)
 - Promoted Keep Cool – a Clean Air Foundation program
 - Promoted Cool Saving Rebate furnace and air conditioner programs
- Fall Campaign October 1, 2006 to November 30, 2006
 - Compact Fluorescent Light bulbs (CFL) (\$3.00 off)
 - Seasonal LED lights (SLEDs) (\$5.00 off string of 50 or more)
 - Motion Sensor Switches (\$5.00 off)
 - Programmable Thermostats (\$15.00 off)
 - Programmable Baseboard Thermostats (\$15.00 off)
 - Dimmer Switches (\$3.00 off)
- Veridian actively supported the program and facilitated the delivery of coupon booklets to customers in both the spring and fall.
- Over 95,526 coupons were redeemed locally
- The Campaigns produced a peak demand reduction of about 129 kW and energy savings of over 8,227,000 kWh per year.

Next Steps

- The Conservation Bureau will continue to operate this program.
- The Spring 2007 EKC program will run April 16 to June 17.
- A Fall 2007 EKC program is being planned.

powerWISE ‘Starter Kit’ and CFL Promotions

Action

- Veridian significantly increased energy efficient lighting promotional activity during 2006. Compact fluorescent lights and accompanying conservation literature were distributed through a range of events and programs such as:
 - Food Bank Program
 - Established partnerships with ten community Food Banks in Ajax, Pickering, Uxbridge, Port Perry, Port Hope, Bowmanville, Newcastle and

Gravenhurst, through which a powerWISE starter kit was distributed to each of almost 2,100 client households. Each kit contained electricity conservation literature and four energy saving compact fluorescent light bulbs.

- Watt Reader Loan Program
 - Introduced a 'Watt Reader Loan Program' in all nine communities served by Veridian through partnerships with libraries in the Cities of Belleville and Pickering, the Municipalities of Clarington and Port Hope, the Town of Gravenhurst, and the Townships of Brock, Scugog and Uxbridge.
 - Each library was provided with a supply of energy recording devices that can be borrowed by library patrons to help them explore how they use energy in their homes, and to identify where to focus conservation efforts. Supporting communications material and a supply of CFL bulbs was also provided to assist in marketing the program.
- Trade Shows and Community Events
 - Distributed CFL bulbs and conservation information through a variety of venues such as:
 - MPP Conservation Forum, Pickering Town Centre
 - Durham Strategic Energy Alliance Breakfast meeting
 - Clarington Board of Trade
 - Pickering East Shore Community Association
 - St. Thomas Anglican Church, Belleville
 - Friends of Second Marsh community event
 - Living Green Fair, Port Hope
 - Ajax Trade Show
 - University of Ontario Institute of Technology, Energy and Environment Day
 - Community Development Council Durham event
 - Ajax Environmental Week event
 - Salvation Army, Belleville
 - Key Account customer employee 'lunch and learn' events

Results to Date

- Through these efforts, a total of 13,966 CFL bulbs and were distributed to a broad cross section of Veridian's customer base, representing annual savings of approximately 1,458,050 kWhs.

Next Steps

- Complete the 3rd tranche program
- Integrate the program into the OPA programs or consider it as one of the Custom Programs for OPA funding

The 'Great Exchange'

Action

- Over three weekends in October and November, six days of 'Great Exchange' events were held at the Home Depot store in Ajax. Customers were encouraged to turn in old energy guzzling halogen torchiere floor lamps, in exchange for discount coupons redeemable on the purchase of energy efficient CFL torchiere lamps. They were also given the opportunity



to bring in incandescent holiday light strings to exchange for \$5 instant EKC discount coupons, redeemable on seasonal light emitting diode (SLED) strings.

- The purpose of the campaign was to augment the OPA's Every Kilowatt Counts (EKC) coupon campaign, by taking the coupon campaign into a retail store environment and engaging customers one-on-one with direct incentives and education.

Results to Date

- 3,000 energy efficient compact fluorescent bulbs were given away
- An additional 4,500 compact fluorescent bulbs were sold due to campaign representatives educating customers about the benefits of CFLs.
- 1,857 incandescent holiday light strings removed from service and recycled
- 323 halogen Torchiere Lights removed from service and recycled
- Energy savings of 991,126 kWhs per year.

Next Steps

- Consider future similar promotions to augment OPA programs.

Code Green

Action

- The television show, entitled "Code Green Canada" was a six-part television series sponsored in part by the CLD members.
- It was broadcast by CBC in May 2006 and provided homeowners across Canada with invaluable information on how to reduce energy consumption and save money.
- Twelve contestants from across the country competed to retrofit their homes in an effort to reduce their energy and water consumption, as well as their greenhouse gas emissions.

Results to Date

- The series aired in May 2006.

Next Steps

- No next steps are planned with Code Green.

Water Heater Tune-up

Action

- Introduced and marketed a 'Tune Up and Save' program for electric water heaters, through which the following services were provided free to eligible customers:
 - Install pipe wrap on hot water pipes
 - Install a water heater insulation blanket
 - Replace old showerheads with energy efficient models
 - Provide two faucet aerators
 - Drop off/install two CFL bulbs
 - Provide literature with energy efficiency tips

Results to Date

- 405 homes were visited
- 379 efficient showerheads and 1303 faucet aerators were installed or provided
- 309 pipe wrap installations
- 391 electric hot water tanks were wrapped with insulation blankets



- A peak demand reduction of 27.4 kW and energy savings of 458,013 kWh per year.

Next Steps

- Continue to market and provide water heater tune-ups services until a target level of 1,000 tune-ups is reached.

'Switch to Cold' Coupon Campaign

Action

- Participated in the fall 2006 'Switch to Cold' coupon campaign, through which discount coupons redeemable on the purchase of cold-water wash detergent were distributed to customers as bill inserts. Switch to Cold is a national consumer awareness campaign, created by the Canadian Energy Efficiency Alliance to educate Canadians about how much energy and money they can save by switching to cold water washing.

Results to Date

- Discount coupons were distributed to Veridian customers, and 1806 coupons were redeemed.
- A peak demand reduction of 38 kW and energy savings of 1,125,138 per year.

Next Steps

- None.

Residential Load Control Program

Action

- Veridian participated 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. The group prepared and issued a joint RFP for hardware and integration services.
- In addition to central air conditioners, customers with electric water heaters and/or pool pumps were encouraged to have controls installed on those devices.
- Veridian marketed a pilot peakSAVER program in the communities of Bowmanville and Port Hope, with the goal of establishing 400 load control points.

Results to Date

- 165 load control relays were installed under the pilot program, providing capacity for a peak demand reduction of 128 kW.

Next Steps

- Continue the program for 2007 to achieve 400 load control points and work with the OPA to expand the program.

Keep Cool Program

Action

- Contracted the Clean Air Foundation to deliver this residential air conditioner turn-in program over 3 weekends in June.



- Radio, print advertising and postal walk distribution were used to advertise the program. Customers were encouraged to bring in their old, working window air conditioners for proper recycling, in exchange for \$25 gift cards redeemable at Home Depot, which could be used to purchase EnergyStar rated replacement units.
- Through an innovative partnership with the Region of Durham, the events were promoted as part of the Region's new Green Bin composting program. Promotional material was included inside 55,220 Green Bins delivered directly to customers' homes.

Results to Date

- 534 room air conditioners were reclaimed through this program, well above the target of 250 units.
- A peak demand reduction of 307 kW and energy savings of 217,552 kWh per year.

Next Steps

- Consider bringing the Keep Cool program to another community served by Veridian in the spring of 2007.

'Generation Conservation' Curriculum Based Education Initiative

Action

- In partnership with Oshawa PUC and Whitby Hydro, Veridian funded and participated in the development of a grade five science curriculum-based pilot program.
- The pilot program was developed in cooperation with the Durham Public and Durham Catholic School Boards, and seventeen teacher volunteers. Comprehensive teacher research material was developed and tested in 16 schools across the Region of Durham.
- The objective of the program is to provide grade five students with the knowledge and tools needed to become 'Generation C' – a generation of dedicated energy conservers.
- As part of the program, students conduct an energy audit of their homes, compiling data, using charts, table and graphs to demonstrate the current level of energy use. After six months the students will be able to demonstrate how much energy they have saved as a result of changing their energy-use behaviour. On Earth Day, the schools will tally up all of the students' conservation efforts so that they can see how quickly these add up when everyone works together.

Results to Date

- Comprehensive teacher resource material has been developed and used in sixteen school classrooms.
- Feedback from participating teachers has been used to update and ready resource material for broader use.

Next Steps

- Finalize teacher resource material and provide to Durham Pubic and Durham Catholic School boards for full roll-out to all grade five students in the fall of 2007.
- Promote program and make resource material available to other school boards interested in adopting 'Generation Conservation'.

Smart Meter Pilot

Program 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 Veridian Connections 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 2006 Activities

Action

- The rural community of Sunderland was chosen as the location for Veridian's Smart meter pilot program. 400 residential and small business customers in the community were equipped with Smart meters in 2005. Evaluation of this pilot continued in 2006.
- Evaluated and implemented a workforce management system to facilitate paperless work processes associated with Smart meter deployment.

Results to Date

- Customers equipped with Smart meters are using the Internet service to review their electricity consumption patterns. Veridian is currently experiencing approximately 30 hits per month on the web site.
- Participants were provided with the capability to view their hourly consumption information online by 8 a.m. of the following day.

Next Steps

- Continue to work with Veridian's Customer Information System vendor to finalize time-of-use billing capabilities.
- Finalize work processes and implement technological solutions to support mass deployment of Smart meters.



- Use the lessons learned from the pilot to deploy 20,000 to 40,000 Smart meters in the communities of Belleville and Bowmanville during 2007.

3.2 Commercial, Industrial and Institutional (> 50 kW)

Smart Meter Program

Program Description

Veridian 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.

Discussion of 2006 Activities

Action

- Continued an interval meter conversion program initiated in 2005 and involving a group of about 120 customers with a peak demand between 200 kW's and 500 kW's.
- Wireless technologies for interval meter communications were evaluated and, where appropriate, are being deployed as part of the conversion program.

Results to Date

- 73 installations have been completed and an additional 21 are in various stages of completion.
- Sought and received approval from the OEB for an RPP TOU pricing pilot for eligible customers with a peak demand greater than 200 kW.
- Introduced the RPP TOU pilot program in early 2007, with 39 accounts participating.

Next Steps

- Complete targeted interval meter conversions.
- Analyze RPP TOU pilot customer response to TOU price signals and submit a report to the OEB.



Leveraging Energy Conservation and Load Management

Program Description

The CLD worked collectively to develop a program (The powerWISE Business Incentive Program) that provides financial incentives to qualified customers that implement energy conservation projects.

The objective of this program is to leverage energy conservation and load management opportunities within the commercial, industrial and institutional sectors. This program will be offered in addition to existing funding (NRCan, Enbridge) to advance market up-take.

The program targets end-users with facility average peak loads of greater than 50 kW. Customers are required to complete a project application and worksheet in order to qualify for pre-determined incentive levels based on custom project or prescriptive technologies like lighting, A/C unitary units, motors, and other energy efficient devices within a company.

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 2006 Activities

Action

- Veridian worked in concert with all six members of the CLD on this program.
- In 2005 Veridian introduced the PBIP with an incentive cap of \$25K per application because of budget considerations. During the year Veridian changed the maximum incentive amount from \$25K to \$50K per customer to try and attract more attention, and then re-publicized the program.
- Two streams of funding are available:
 - Prescriptive
 - This program provides incentives for specific activities, i.e. retrofitting T12 lighting to T8 lighting on a predetermined cost per unit basis.
 - Custom
 - Projects are considered on an individual case basis with incentives starting at \$150 per kW.
- Publicized the program through direct mail and Veridian's website. Also held a customer workshop to help generate interest in the program.

Results to Date

- There have been numerous customer enquiries regarding the program.
- To date, three applications for funding have been received.



- Two projects have been completed and incentives paid, delivering a peak demand reduction of 15 kW and energy savings of almost 74,000 kWh per year.

Next Steps

- Complete the 3rd tranche funded program and transition to the OPA's Business Incentive Program.

3.3. Distribution Loss Reduction

Distribution Loss Reduction

Program Description

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

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

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”. It is estimated that approximately 5% - 10% of system losses could be saved.

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.

Target users

All of Veridian’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.

Discussion of 2006 Activities

Action

- o Acted on recommendations for changes to distribution system open points, as provided in a load balancing study undertaken in 2005 on a number of distribution feeders in Belleville.
- o Deferred action on study recommendations related to the installation of capacitor banks for system power factor correction. These recommendations will be re-visited following the deployment of voltage profile management technology on the Belleville feeders. A decision to review and ultimately proceed with the deployment of this technology was taken following a successful pilot test undertaken by Hydro Ottawa.



- Due to the success of the Belleville feeder study in 2005, a similar analysis was undertaken on nineteen 13.8 kV feeders in the City of Pickering, twenty-four 13.8 kV feeders in the Town of Ajax, ten 13.8 kV feeders in Bowmanville and five 13.8 kV feeders in Newcastle.

Results to Date

- Changes to the configuration of the Belleville distribution network will yield annual savings of approximately 647,915 kWhs and a peak demand reduction of 91 kW.
- Further savings will be achieved with the full deployment of the voltage profile management technology.

Next Steps

- Complete the installation and commissioning of the voltage profile management technology in Belleville in 2007.
- Implement recommendations from the engineering analysis undertaken on the Pickering, Ajax, Bowmanville and Newcastle distribution feeders.
- A new Transformer Station (T.S.) is being commissioned in 2007 for the Pickering and Ajax area. A detailed engineering analysis of electricity consumption and demand savings opportunities available through network reconfiguration and power factor correction on the feeders supplied from this T.S. will be completed and recommendations pursued.

3.4 Distributed Energy

Load Displacement

Program 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 2006 Activities

Action

- The powerWISE Business Incentives Program (PBIP) has been offered to customers and provides financial incentives on a custom application basis for load displacement generating capacity.

Results to Date

- Discussions have taken place with a number of customers interested in pursuing load displacement generating opportunities. Opportunities include solar, wind and combined heat and power generation projects.
- It was recognized towards the end of 2006 that there were not enough funds to allow for a project of substantial size.
- It was decided to investigate using the funds to start a demand response program.

Next Steps

- Work with a number of large customers to install the demand response equipment.
- Test various load aggregation software.

Stand-by Generators

Program Description

This program may provide for the use of customers' existing standby generators when required and/or economical. Environmentally friendly generators will be the primary focus of this initiative, however all generators may be considered if needed during an emergency.

Target Users

Commercial and industrial customers with sufficiently sized standby generators.

Benefits

Reduction of customer and system peak demand and energy costs. This additional supply may be able to bid into the Ontario energy market in the future.

Discussion of 2006 Activities

Action

- Discussions have taken place with a number of customers interested in making back-up generation capacity available for dispatch by Veridian.

Results to Date

- Veridian Corporation, Veridian Connections' parent company, has installed a 100 kW natural gas fired back-up/peak shaving generator.
- Dispatching controls and software will be installed and commissioned early in 2007.

Next Steps

- Work with a number of large customers to promote the use of standby generators for system emergency situations and economic purposes.

Peak Shaving Generator for Municipal Office

Program Description

A Bi-Fuel standby diesel generator will be sited at the Township of Scugog Municipal Building and serve the dual role as a “peak shaver” for demand response and a back-up power supply for the Township Emergency Command Centre in the event of a major emergency.

Target users

The Township of Scugog.

Benefits

Some of the benefits of peak shaving to the utility are:

- Dispatchable peak demand reduction
- Maximum use of standby capacity through safe parallel operation with the utility grid
- Cost-effective solution consistent with least cost planning emphasis
- Improved system load factor
- Enhanced voltage stability and avoided line losses during heavy load conditions

Some of the benefits of peak shaving to the end user are:

Enhanced reliability as standby gensets are tested under real load conditions with “bumpless” power transfers and potential cost savings as separate maintenance testing is no longer required.

Discussion of 2006 Activities

Action

- A 60 kW natural gas fired standby generator was purchased and installed at the Scugog Municipal building. Work is progressing on making it available for operation during periods of supply constraints during the summer of 2007.

Results to Date

- A peak demand reduction of 40 kW and annual energy savings of 8,000 kWhs.

Next Steps

- Install and commission dispatching controls and software to allow for dispatch during periods of supply constraints.



4. Lessons Learned

Veridian is gaining critical conservation and demand management experience and has benefited from unprecedented cooperation between utilities, particularly through the Coalition of Large Distributors and the Electricity Distributors Association.

Veridian continues to develop its CDM capacity and looks forward to applying some of the following lessons learned as it pursues CDM opportunities into its final year of 'third tranche' spending, and transitions to delivery of programs funded by the Ontario Power Authority:

Program Development

CDM program development takes time. In particular, legal and environmental issues must be thoroughly addressed up front in order to ensure long-term sustainable conservation success.

Conservation opportunities exist with residential and small commercial customers but the channel to market has many challenges. These customers are overwhelmed by market information, but lack the appropriate tools or models to accurately assess their options to implement appropriate individual solutions.

Veridian found that simple, low cost incentives like the powerWISE® Power Pack or free CFL bulbs were very well received by residential customers, offered good Total Resource Cost ("TRC") results and proved that customers did not require significant incentives to participate in programs. In fact, ease of participation accompanied by moderate incentives with a perceived high value to customers appear to be the hallmarks of program success.

Our powerWISE® Business Incentive Program showed us that Commercial and Industrial customer timelines for conservation projects are often longer than Veridian expected and have a lower sense of urgency than Veridian would prefer. Incentives have to be very meaningful in order to encourage and speed up conservation projects at this large commercial level.

Education

Public education is a critical element as Veridian builds a culture of conservation, yet under the current reporting format, no reportable benefits can be attributed to this activity. This effectively penalizes Utilities from participating in this type of worthwhile and necessary initiative. As Veridian supports the development of a conservation culture in Ontario, a balance must be sought between short-term results and the need for longer term market transformation.

Residential customers are generally aware of the simple products and initiatives that are available to help them to reduce their energy consumption. However, they have a limited understanding of the dollar impact and quick return provided by simple solutions such as pipe wrap, SLED and CFL bulbs. It is critical to educate customers and to provide a savings comparison in dollars to highlight these impacts.

It is important to offer Commercial and Industrial customers access to information through one-on-one visits and convenient forums such as trade shows. There are many emerging technologies and an explosion of service providers in the marketplace. Veridian needs to concentrate efforts on helping these customers understand not only the technologies but the impact and value these technologies can have on their specific organizations. This will lead to increased participation and adoption of new energy efficient technologies.



Regulatory Issues

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

The evolving regulatory environment for CDM has created some challenges as the rules for both third tranche funding and future programs continue to evolve. A stable framework is essential to the effective involvement of LDCs in CDM.

Finally, it will be important to explore all opportunities to streamline the LDC's administrative reporting efforts wherever possible.

Recommendations by Program Area

Residential and Commercial <50kW	Successful / H/M/L	Continue	Notes
Co-Branded Mass Market	Yes – High	Yes	Identify credits for softer measures such as education programs that will encourage CLD to implement further.
Smart Meter Pilot	Yes – High	Yes	Smart Meter deployment is underway.

Commercial Institutional and Industrial >50kW	Successful / H/M/L	Continue	Notes
Smart Meter Program	Yes - High	Yes	Smart Meter deployment is underway.
Leveraging Energy Conservation or Load Mgmt	Yes – High	Yes	The Business Incentive Program will be offered province wide in 2007.
Distribution Loss Reduction			
Distribution Loss Reduction	Yes – High	Yes	Voltage profile management, system load balancing and power factor correction savings are very encouraging and show that projects can have solid TRC results.

Distributed Generation			
Load Displacement	Too early to tell	Planned for 2007	These programs have considerable potential to encourage new distributed generation as well as to utilize existing generators.
Standby Generators	Too early to tell	Planned for 2007	
Peak Shaving Generator for Municipal Office	Too early to tell	N/A	



5. Conclusion

While this was another discovery and development year for Veridian's CDM program, it was extremely successful with a more than sixteen-fold increase in energy savings compared to 2005. Veridian developed and ramped up an effective Conservation and Demand Management program and generated impressive and cost effective results.

Veridian was out of the gate in 2006 with a few very successful programs. The original pilots were extended and expanded to meet the requirements of the customer base. The regulatory environment continued to evolve. Veridian continued to forge ahead, developed unprecedented alliances within the industry and built a diversified program.

CDM Program development is a complex and time-consuming process. Procurement and legal processes were more costly and time consuming than originally expected. Veridian was able to maximize its results by working with the Coalition of Large Distributors, which provided a significant advantage in knowledge and resource sharing, efficiency and cost effectiveness. As we gained market experience, we were able to fine-tune our individual CDM plans as well.

The constraints facing the Provincial electricity distribution system are well known and have created a heightened sense of urgency for all users to contribute to better management of our electricity resource. Veridian's customers are recognizing the value of conserving electricity and the utility's role in delivering CDM programs locally is now well established. Veridian is committed to helping lead the evolution to a culture of conservation in this Province and will work with the regulator, the Ontario Power Authority and other members of the Coalition of Large Distributors to make this happen.

Appendix A - Evaluation of the CDM Plan

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

	⁵ Cumulative Totals Life-to-date	Total for 2006	Res. & Comm. < 50kW	CI & I > 50 kW	Distribution Loss Reduction	⁴ Smart Meters	Distributed Energy
Net TRC value (\$):	\$3,541,733	\$ 3,267,604	\$ 3,493,051	\$ 7,970	\$ (72,769)		\$ (159,347)
Benefit to cost ratio:	3.04	2.97	6.61	1.31	0.91		0.00
Number of participants or units delivered:	124,027	115,272	114,549	721	1		1
Lifecycle (kWh) Savings:	101,646,166	94,245,053	77,285,048	562,130	16,197,875		200,000
Report Year Total kWh saved (kWh):	14,032,483	13,207,308	12,477,690	73,703	647,915		8,000
Total peak demand saved (kW):	831	787	640	16	91		40
Total kWh saved as a percentage of total kWh delivered (%):	0.29%	0.52%	0.49%	0.00%	0.03%		0.00%
Peak kW saved as a percentage of LDC peak kW load (%):	0.09%	0.15%	0.13%	0.00%	0.02%		0.01%
¹ Report Year Gross C&DM expenditures (\$):	\$1,806,603.07	\$ 1,470,740	\$ 398,774	\$ 5,374	\$ 634,965	\$ 324,251	\$ 106,075
² Expenditures per kWh saved (\$/kWh):	0.02	\$ 0.02	\$ 0.01	\$ 0.01	\$ 0.04		\$ 0.53
³ Expenditures per kW saved (\$/kW):	\$ 2,174.47	\$ 1,869.21	\$ 623.16	\$ 337.97	\$ 6,977.64		\$ 2,651.89
			2006	2005			
Utility discount rate (%):	6.55	Total kWh delivered:	2,532,414,193	2,544,843,878			
		Peak kW load:	508,443	461,900			

¹ Expenditures are reported on accrual basis.

² Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings

³ Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

⁴ Please report spending related to 3rd tranche of MARR funding only. TRC calculations are not required for Smart Meters. Only actual expenditures for the year need to

⁵ Includes total for the reporting year, plus prior year, if any (for example, 2006 CDM Annual report for third tranche will include 2005 and 2004 numbers, if any).

Appendix B - Discussion of the Program

(complete this Appendix for each program)

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

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

This flagship co-branded mass-market program (e.g. powerWISE®) is a multifaceted approach to fostering the conservation culture in Ontario. Through development of a significant cooperative effort amongst six of the largest municipal LDCs, 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 wraps, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Access to online services such as energy consumption calculators, an energy expert, and personalized energy audit services are contemplated as components of this program.

Target users

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

Benefits

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

Measure(s):

	CFL Distribution	Keep Cool - RAC Energy Star	Keep Cool RAC Retirement
<i>Base case technology:</i>	60W Incandescent	Current standard for room air conditioner	Current standard for room air conditioner
<i>Efficient technology:</i>	CFL Screw-In 15W	Energy Star Room Air Conditioner	Air Conditioner Retirement
<i>Number of participants or units delivered for reporting year:</i>	22,169	214	320
<i>Measure life (years):</i>	4	12	12
<i>Number of Participants or units delivered life to date</i>	28298	214	320

	EKC-CFL's	EKC-Timers	EKC-P Stats
<i>Base case technology:</i>	Incandescent	Indoor/Outdoor Composite	Static thermostat
<i>Efficient technology:</i>	CFL's	Timers	Programmable Thermostats
<i>Number of participants or units delivered for reporting year:</i>	65331	964.6	1292
<i>Measure life (years):</i>	4	20	18
<i>Number of Participants or units delivered life to date</i>	65331	964.6	1292

	EKC-Ceiling Fans	EKC-SLED	EKC-SLED
<i>Base case technology:</i>	Non Energy Star/Incandescent	5W Christmas lights C-7 (25)	Incandescent Mini Lights
<i>Efficient technology:</i>	Energy Star Ceiling Fan	LED Christmas Lights (Indoor	Christmas Lights (Indoor and Out
<i>Number of participants or units delivered for reporting year:</i>	421	7928	7928
<i>Measure life (years):</i>	20	30	30
<i>Number of Participants or units delivered life to date</i>	421	7928	7928

	EKC-pStat Baseboard	EKC-Dimmer	EKC-Motion Sensor
<i>Base case technology:</i>	pStat Baseboard	Base Load	Base Load
<i>Efficient technology:</i>	pStat Baseboard	Dimmer	Motion Sensor
<i>Number of participants or units delivered for reporting year:</i>	38	593	194
<i>Measure life (years):</i>	18	10	20
<i>Number of Participants or units delivered life to date</i>	38	593	194

Peak Saver

Switch to Cold

GE Torchiere Lights

Base case technology:	Average existing stock	Average existing stock	Flood Light, 300W Incandescent
Efficient technology:	Utility Controlled Relay	Cold Water Washing (Detergent)	Flood Light, 55W Fluorescent
Number of participants or units delivered for reporting year:	165	1806	323
Measure life (years):	12	1	5

Number of Participants or units delivered life to date	165	1806	323
--	-----	------	-----

	GE SLED (5 watt string replacements)	GE SLED (mini string replacements)	GE Pstats
Base case technology:	5 WATT Christmas lights C-7(64 lights)	Incandescent Mini Lights	Average existing stock
Efficient technology:	LED Christmas Lights (indoor or outdoor)	LED Christmas Lights (indoor or outdoor)	Programmable Thermostat
Number of participants or units delivered for reporting year:	974	883	62
Measure life (years):	30	30	18

Number of Participants or units delivered life to date	1755	1664	157
--	------	------	-----

	GE Dimmer Switches	GE Motion Sensors	WH Tuneup - Tank Wrap
Base case technology:	2 100 Watt incandescent bulbs	3 100 Watt incandescent bulbs	Average existing stock
Efficient technology:	Dimmer Switch	Motion Detector	Tank Wrap
Number of participants or units delivered for reporting year:	521	39	391
Measure life (years):	10	20	6

Number of Participants or units delivered life to date	521	39	391
--	-----	----	-----

	WH Tune Up - Faucet Aerators	WH Tuneup - Pipe Wrap	WH Tuneup Showerheads
Base case technology:	Average existing stock	Average existing stock	Average existing stock
Efficient technology:	Faucet Aerator	Pipe Insulation (6-10')	Efficient Showerhead
Number of participants or units delivered for reporting year:	1303	309	379
Measure life (years):	12	6	12

Number of Participants or units delivered life to date	1303	309	379
--	------	-----	-----

B. TRC Results:		Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):		\$ 4,115,962	\$ 4,463,915
² TRC Costs (\$):			
Utility program cost (excluding incentives):	-\$ 239,986	-\$ 274,397	
Incremental Measure Costs (Equipment Costs)	-\$ 382,924	-\$ 422,337	
Total TRC costs:	-\$ 622,910	-\$ 696,734	
Net TRC (in year CDN \$):	\$ 3,493,051	\$ 3,767,180	
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	6.61	6.41	

C. Results: (one or more category may apply)			Cumulative Results:
Conservation Programs:			
Demand savings (kW):	Summer	640	684
	Winter	2,236	2,420
	lifecycle	in year	Cumulative Lifecycle
Energy saved (kWh):	77,285,048	12,477,690	84,686,161
Other resources saved :			13,302,866

Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):			
	<i>lifecycle</i>	<i>in year</i>	
Energy savings (kWh):			

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
-------------------	--	--

D. Actual Program Costs:

		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>	\$ 239,985.71	\$ 295,161.71
	<i>Incentive:</i>	\$ 158,788.67	\$ 158,788.67
	<i>Total:</i>	\$ 398,774.38	\$ 453,950.38
Utility indirect costs (\$):	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

E. Assumptions & Comments:

Unless otherwise indicated, OEB published assumptions and measures lists were applied in TRC analyses. Keep Cool - retired operational units assumed to result in energy savings from the elimination of their energy consumption per OEB tables. All EKC assumptions, measures and TRC results per Final OPA Program Report. 80% of program results were assumed for municipalities where program participants could be customers of a neighbouring LDC (ie., Hydro One). 100% program results were assumed for Ajax and Pickering. Great Exchange (GE) 55 W torchieres energy savings were assessed by prorating other outdoor lighting assumptions and measures from OEB tables.

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

² For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Residential and Small Commercial SMART Meter

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

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

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

Target users

Residential and small commercial customers.

Benefits

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

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

Measure(s):

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

B. **TRC Results:**

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

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

Conservation Programs:

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

Demand Management Programs:

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

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):			
	<i>lifecycle</i>	<i>in year</i>	
Energy savings (kWh):			

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
-------------------	--	--

D. Actual Program Costs:

		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:	\$ 116,959	\$ 252,819
	Incremental O&M:	\$ 7,285	\$ 28,789
	Incentive:		
	Total:	\$ 124,244	\$ 281,608
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

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

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

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Commercial, Industrial and Institutional (>50 kW) SMART Meter Program

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

Veridian 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 for reporting year:			
Measure life (years):			
Number of Participants or units delivered life to date			

B. **TRC Results:**

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

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

Conservation Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):			
	<i>lifecycle</i>	<i>in year</i>	
Energy savings (kWh):			

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
-------------------	--	--

D. Actual Program Costs:

		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:	\$ 111,963	\$ 190,106
	Incremental O&M:	\$ 88,045	\$ 105,476
	Incentive:		
	Total:	\$ 200,007	\$ 295,581
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

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

² For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Over 50 kW Leveraging Energy Conservation and Load Management

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

Existing energy conservation and/or load management programs such as NRCan's Energy Innovators Initiative, Enbridge initiatives etc. will be promoted and incentives may be provided to advance market uptake of these programs and implementation of the recommendations. The LDC's are well positioned to introduce such programs to their customer base. Work will be conducted with the existing program providers to maximize leverage opportunities. Promotion will potentially include face-to-face meetings, conferences and seminars.

Target users

Large consumers over 50 kW including schools, large commercial facilities, institutional facilities, industrial, and municipal facilities.

Benefits

Customer awareness and additional incentives will help advance market uptake of audit services, feasibility studies and retrofit opportunities already established within the government program framework.

Measure(s):

	Lighting Project - Single T8	Lighting Project - Dual T8	Lighting Project - 4 Lamp T8
<i>Base case technology:</i>	Single-lamp Std. T12 Fixtures	Two-lamp Std. T-12 Fixtures	Four-lamp Std. T-12 Fixtures
<i>Efficient technology:</i>	Single-lamp Std. T8 Fixtures	Two-lamp Std. T-8 Fixtures	Four-lamp Std. T-8 Fixtures
<i>Number of participants or units delivered for reporting year:</i>	68	533	115
<i>Measure life (years):</i>	5	5	5
<i>Number of Participants or units delivered life to date</i>	68	533	115
<i>Base case technology:</i>	Motor Replacement - 3 Hp 3 HP, (1800 RPM) Energy Efficient	Motor Replacement - 15 Hp 15 HP, (1800 RPM) Energy Efficient	Motor Replacement - 60 Hp 60 HP, (1800 RPM) Energy Efficient
<i>Efficient technology:</i>	3 HP, (1800 RPM) Premium Efficiency	15 HP, (1800 RPM) Premium Efficiency	60 HP, (1800 RPM) Premium Efficiency
<i>Number of participants or units delivered for reporting year:</i>	1	1	1
<i>Measure life (years):</i>	18	18	18
<i>Number of Participants or units delivered life to date</i>	1	1	1
<i>Base case technology:</i>	Customer Transformer Replacement 112.5 kVA 3 Phase kVA - 112.5 Standard	Customer Transformer Replacement 150 kVA 3 Phase kVA - 150 Standard	
<i>Efficient technology:</i>	3 Phase kVA - 112.5 Energy	3 Phase kVA - 150 Energy Star	
<i>Number of participants or units delivered for reporting year:</i>	1	1	
<i>Measure life (years):</i>	30	30	
<i>Number of Participants or units delivered life to date</i>	1	1	

B. **TRC Results:**

	Reporting Year	Life-to-date TRC Results:
¹ TRC Benefits (\$):	\$ 34,034.70	\$ 34,034.70
² TRC Costs (\$):		
Utility program cost (excluding incentives):	\$ -	-\$ 1,391.00
Incremental Measure Costs (Equipment Costs)	-\$ 26,064.90	-\$ 26,064.90
Total TRC costs:	-\$ 26,064.90	-\$ 27,455.90

<i>Net TRC (in year CDN \$):</i>	\$	7,969.80	\$	6,578.80
<i>Benefit to Cost Ratio (TRC Benefits/TRC Costs):</i>	\$	1.31	\$	1.24

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

Cumulative Results:

Conservation Programs:

<i>Demand savings (kW):</i>	<i>Summer</i>	15.90		15.90
	<i>Winter</i>	16.40		16.40

	<i>lifecycle</i>	<i>in year</i>	<i>Cumulative Lifecycle</i>	<i>Cumulative Annual Savings</i>
<i>Energy saved (kWh):</i>	562,130	73,703	562,130	73,703
<i>Other resources saved :</i>				
<i>Natural Gas (m3):</i>				
<i>Other (specify):</i>				

Demand Management Programs:

<i>Controlled load (kW)</i>		
<i>Energy shifted On-peak to Mid-peak (kWh):</i>		
<i>Energy shifted On-peak to Off-peak (kWh):</i>		
<i>Energy shifted Mid-peak to Off-peak (kWh):</i>		

Demand Response Programs:

<i>Dispatchable load (kW):</i>		
<i>Peak hours dispatched in year (hours):</i>		

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):			
	<i>lifecycle</i>	<i>in year</i>	
Energy savings (kWh):			

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
-------------------	--	--

<u>Actual Program Costs:</u>		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:		
	Incremental O&M:		
	Incentive:	\$ 5,373.66	\$ 6,764.66
	Total:	\$ 5,373.66	\$ 6,764.66
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

Revisions to commercial assumptions and measures prepared by Marbek were applied to derive energy and peak savings used in TRC analysis.



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

² For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Energy saved (kWh):	16,197,875	647,915	16,197,875	647,915
Other resources saved :				
Natural Gas (m3):				
Other (specify):				

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):			
	<i>lifecycle</i>	<i>in year</i>	
Energy savings (kWh):			

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		
-------------------	--	--

D. Actual Program Costs:

		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
Utility direct costs (\$):	Incremental capital:	\$ 632,720	\$ 647,135
	Incremental O&M:	\$ 2,245	\$ 5,715
	Incentive:		
	Total:	\$ 634,965	\$ 652,850
Utility indirect costs (\$):	Incremental capital:		
	Incremental O&M:		
	Total:		

E. Assumptions & Comments:

TRC results are for 2006 completed switch optimization analysis and implementation. Expenditures on other loss reduction work which will be completed in 2007 and included in TRC analysis and report at that time. An overall positive program NPV is anticipated once implementation is complete. Completed analysis and results will be included in the final CDM annual report.

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

² For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix B - Discussion of the Program

(complete this Appendix for each program)

A. **Name of the Program:** Distributed Energy - Stand-by Generator Program

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

This program may provide for the use of customers' existing standby generators when required and/or economical. Environmentally friendly generators will be the primary focus of this initiative however all generators may be considered if needed during an emergency.

Target Users

Commercial and industrial customers with sufficiently sized standby generators.

Benefits

Reduction of customer and system peak demand and energy costs. This additional supply may be able to bid into the Ontario energy market in the future.

Measure(s):

	Peak Shaver Generator	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:			
Efficient technology:	Peak Shaving Generator		
Number of participants or units delivered for reporting year:	1		
Measure life (years):	25		
Number of Participants or units delivered life to date	1		

	Reporting Year	Life-to-date TRC Results:
B. TRC Results:		
¹ TRC Benefits (\$):	\$ 100.18	\$ 100.18
² TRC Costs (\$):		
Utility program cost (excluding incentives):	-\$ 106,075.44	-\$ 107,993.44
Incremental Measure Costs (Equipment Costs)	-\$ 53,372.00	-\$ 53,372.00
Total TRC costs:	-\$ 159,447.44	-\$ 161,365.44
Net TRC (in year CDN \$):	-\$ 159,347.26	-\$ 161,265.26
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	0.00	0.00

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

Conservation Programs:

Demand savings (kW):					
	Summer	40.00		40.00	
	Winter	0.00		0.00	

		lifecycle	in year	Cumulative Lifecycle	Cumulative Annual Savings
Energy saved (kWh):		200000	8,000	200000	8,000
Other resources saved :					
Natural Gas (m3):					
Other (specify):					

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

Amount of KVar installed (KVar):

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

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

Line Loss Reduction Programs:

<i>Peak load savings (kW):</i>			
	<i>lifecycle</i>	<i>in year</i>	
<i>Energy savings (kWh):</i>			

Distributed Generation and Load Displacement Programs:

<i>Amount of DG installed (kW):</i>		
<i>Energy generated (kWh):</i>		
<i>Peak energy generated (kWh):</i>		
<i>Fuel type:</i>		

Other Programs (specify):

<i>Metric (specify):</i>		
--------------------------	--	--

D. Actual Program Costs:

		<u>Reporting Year</u>	<u>Cumulative Life to Date</u>
<i>Utility direct costs (\$):</i>	<i>Incremental capital:</i>	\$ 53,372.00	\$ 53,372.00
	<i>Incremental O&M:</i>	\$ 52,703.44	\$ 61,176.44
	<i>Incentive:</i>		
	<i>Total:</i>	\$ 106,075.44	\$ 114,548.44
<i>Utility indirect costs (\$):</i>	<i>Incremental capital:</i>		
	<i>Incremental O&M:</i>		
	<i>Total:</i>		

E. Assumptions & Comments:

Scugog peak shaving generator savings assumption based on 50% of expected 200 hours annual operating time at summer peak and 50% at summer mid peak.

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

² For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

Appendix C - Program and Portfolio Totals

Report Year:

1. Res. & Comm. < 50kW Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Co-Branded Mass Market	\$ 4,115,962	\$ 622,910	\$ 3,493,051	6.61	12,477,690	77,285,048	640	\$ 398,774
Name of Program B			-	0.00				
Name of Program C			-	0.00				
Name of Program D			-	0.00				
Name of Program E			-	0.00				
Name of Program F			-	0.00				
Name of Program G			-	0.00				
Name of Program H			-	0.00				
Name of Program I			-	0.00				
Name of Program J			-	0.00				
*Totals App. B - Res. & Comm. < 50k	\$ 4,115,962	\$ 622,910	\$ 3,493,051	6.61	12,477,690	77,285,048	640	\$ 398,774
<i>Res. & Comm. < 50kW Indirect Costs not attributable to any specific program</i>								
Total Res. & Comm. < 50kW TRC Costs		\$ 622,910						
**Totals TRC - Res. & Comm. < 50k	\$ 4,115,962	\$ 622,910	\$ 3,493,051	6.61				

2. CI & I > 50 kW Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Over 50 kW Leveraging	\$ 34,035	\$ 26,065	\$ 7,970	1.31	73,703	562,130	16	\$ 5,374
Name of Program B			-	0.00				
Name of Program C			-	0.00				
Name of Program D			-	0.00				
Name of Program E			-	0.00				
Name of Program F			-	0.00				
Name of Program G			-	0.00				
Name of Program H			-	0.00				
Name of Program I			-	0.00				
Name of Program J			-	0.00				
*Totals App. B - CI & I > 50 kW	\$ 34,035	\$ 26,065	\$ 7,970	1.31	73,703	562,130	16	\$ 5,374

CI & I > 50 kW Indirect Costs not attributable to any specific program



Total TRC Costs		\$ 26,065		
**Totals TRC - CI & I > 50 kW	\$ 34,035	\$ 26,065	\$ 7,970	1.31

6. Distribution Loss Reduction Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
<i>Distribution Loss Reduciton</i>	\$ 776,090	\$ 848,860	-\$ 72,769	0.91	647,915	16,197,875	91	\$ 634,965
<i>Name of Program B</i>			\$ -	0.00				

Veridian Connections				Appendices			
Name of Program C			\$ -	0.00			
Name of Program D			\$ -	0.00			
Name of Program E			\$ -	0.00			
Name of Program F			\$ -	0.00			
Name of Program G			\$ -	0.00			
Name of Program H			\$ -	0.00			
Name of Program I			\$ -	0.00			
Name of Program C			\$ -	0.00			
*Totals App. B - Distribution Loss Reduction	\$ 776,090	\$ 848,860	-\$ 72,769	0.91	647,915	16,197,875	91 \$ 634,965
<i>Distribution Loss Reduction Indirect Costs not attributable to any specific program</i>	→						
Total TRC Costs		\$ 848,860					
**Totals TRC - Distribution Loss Reduction	\$ 776,090	\$ 848,860	-\$ 72,769	0.91			

7. Smart Meters Program

Only spending information that was authorized under the 3rd tranche of MARR is required to be reported for Smart Meters.

Report Year Gross C&DM Expenditures (\$) → 324,251

8. Distributed Energy Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
Peak Shaving Generator	\$ 100	\$ 159,447	-\$ 159,347	0.00	8,000	200,000	40	\$ 106,075
Name of Program B			\$ -	0.00				
Name of Program C			\$ -	0.00				
Name of Program D			\$ -	0.00				
Name of Program E			\$ -	0.00				
Name of Program F			\$ -	0.00				
Name of Program G			\$ -	0.00				
Name of Program H			\$ -	0.00				
Name of Program I			\$ -	0.00				
Name of Program J			\$ -	0.00				
*Totals App. B - Distributed Energy	\$ 100	\$ 159,447	-\$ 159,347	0.00	8,000	200,000	40	\$ 106,075
<i>Distributed Energy Indirect Costs not attributable to any specific program</i>	→							
Total TRC Costs		\$ 159,447						
**Totals TRC - Distributed Energy	\$ 100	\$ 159,447	-\$ 159,347	0.00				

LDC's CDM PORTFOLIO TOTALS

	TRC Benefits (PV)	TRC Costs (PV)	\$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures (\$)
*TOTALS FOR ALL APPENDIX B	\$ 4,926,187	\$ 1,657,282	\$ 3,268,904	2.97	\$ 13,207,308	\$ 94,245,053	\$ 787	\$ 1,470,740
<i>Any other Indirect Costs not attributable to any specific program</i>		\$ 1,300						
TOTAL ALL LDC COSTS		\$ 1,658,582						
**LDC' PORTFOLIO TRC	\$ 4,926,187	\$ 1,658,582	\$ 3,267,604	2.97				

* The savings and spending information from this row is to be carried forward to Appendix A.

** The TRC information from this row is to be carried forward to Appendix A.

Summary of CDM Plan Revisions

Revision No.	Date	Description	Budget Reallocation			Cumulative Budget Reallocation *	Reallocation as Percent of Total Current Budget **
			Amount	From	To		
1	Sept. 15 2005	Incorporate 'Customer Education' and 'Peak Shaving Generator' programs from Scugog Hydro's CDM plan	\$5,000	Scugog Hydro's CDM plan	Co-branded Mass Market Program	0	0
			\$58,000	Scugog Hydro's CDM plan	Peak Shaving Generator, Scugog Municipal Bldg.	0	0
		Add 'Leveraging Energy Conservation and Load Mgmt. Programs'	\$126,000	Distribution Loss Reduction	Leveraging Energy Conservation and Load Mgmt. Programs	\$126,000	3.5%
			\$120,000	Distributed Energy Load Displacement	Leveraging Energy Conservation and Load Mgmt. Programs	\$246,000	6.9%
Update Distribution Loss Reduction Program description (addition of voltage profile mgmt.)	0	Not applicable	Not applicable	\$246,000	6.9%		
2	June 1 2006	Incorporate 3 rd Tranche spending obligation from Gravenhurst Hydro Electric Inc.'s CDM plan	\$178,000	Gravenhurst Hydro Electric Inc.'s CDM plan	Co-branded Mass Market Program	\$246,000	6.6%

* It is assumed that Incorporation of CDM budget amounts from acquired electricity distributors does not constitute a budget reallocation.

** Cumulative reallocation to date as a percent of the total budget at the time of revision.



Program Budget and Timeline Summary

		Annual Budget (\$ '000)			Total Budget (\$ '000)
		2004-05	2006	2007	
CONSERVATION AND DEMAND MANAGEMENT					
Residential and Small Commercial (< 50 kW)					
- Co-branded Mass Market Program	OPEX	92	212	229	533
	CAPEX	0	0	0	0
- Smart Meter Pilot	OPEX	28	32	32	92
	CAPEX	217	0	0	217
Commercial, Industrial & Institutional Market (> 50 kW)					
- Smart Meter Program	OPEX	91	149	135	375
	CAPEX	128	349	349	826
- Leveraging Energy Conservation and/or Load Mgmt. Programs	OPEX	20	20	20	60
	CAPEX	62	62	62	186
Sub-Total, Conservation & Demand Management:		638	824	827	2289
DISTRIBUTION LOSS REDUCTION					
- Distribution Loss Reduction	OPEX	12	22	22	56
	CAPEX	286	666	166	1118
Sub-Total, Distribution Loss Reduction:		298	688	188	1174
DISTRIBUTED ENERGY					
- Load Displacement	OPEX	12	12	12	36
	CAPEX	28	28	28	84
-Standby Generators	OPEX	10	5	5	20
	CAPEX	40	20	20	80
-Peak Shaving Generator, Scugog Municipal Bldg.	OPEX	0	58	0	58
	CAPEX	0	0	0	0
Sub-Total, Distributed Energy:		90	123	65	278
Total Budget, All Programs		1026	1635	1080	3741