CONSERVATION AND DEMAND MANAGEMENT 2006 Annual Return

1 Introduction

Chatham-Kent Hydro Inc. is committed to the initiatives undertaken by the Ontario Government to reduce the consumption and demand of electricity in Ontario. The goal is not only to reduce consumption or shift demand but also to assist our customers in achieving higher levels of energy efficiency and energy conservation.

Our plan is defined as the CDM Plan and includes initial programs designed to support, enhance and expand on Chatham-Kent Hydro's efforts in public education and interval metering. The plan will also introduce other CDM programs including smart metering, real time monitoring and load control, line loss improvements, power factor correction, and load displacement.

The energy efficiency programs will use education and financial incentives to help consumers save energy. Educational programs explain the benefits of energy efficiency to consumers and service providers. These programs will also provide consumers with the information necessary to pursue energy efficiency measures, and train service providers to increase their ability to provide efficiency services. Financial incentives will be used to make the purchase of efficient technologies more economically feasible, and to encourage consumers to pursue energy efficiency measures.

Before implementation, CDM programs will be evaluated on the following criteria:

• Clearly defined project or initiative.
• Calculated annual energy savings for each project.
• Projected future energy costs and calculated annual financial savings.
• Estimated project costs.
• Evaluated merit of each project.
• Prioritized projects.
• Monitored and evaluated the performance.

The plan will include programs that implement or support:

- Energy efficiency initiatives that are economically beneficial and good for the environment
- Demand (load) Shifting
- Customer behavioural and operational changes, including the application of smart control and monitoring systems
- Smart Metering systems to encourage consumers to manage demand and energy
- Programs and initiatives targeted to low and fixed income consumers
- Education programs targeting students in local elementary and secondary schools

- Distributed energy options behind a customer's meter such as tri-generation, co-generation, ground source heat pumps, solar, wind, and biomass systems.

- Building partnerships and alliances to develop and deliver CDM programs

2 Chatham-Kent Hydro's 2006 CDM Portfolio – The Programs

This section includes a description of the proposed programs of Chatham-Kent Hydro's 2006 CDM Plan.

For each program, the following information is provided:

- A brief **description** of the program, its key measure, major objectives and outcomes, and the rationale behind the program.

- The **implication** of the program for Chatham-Kent Hydro, its customers, and the marketplace.

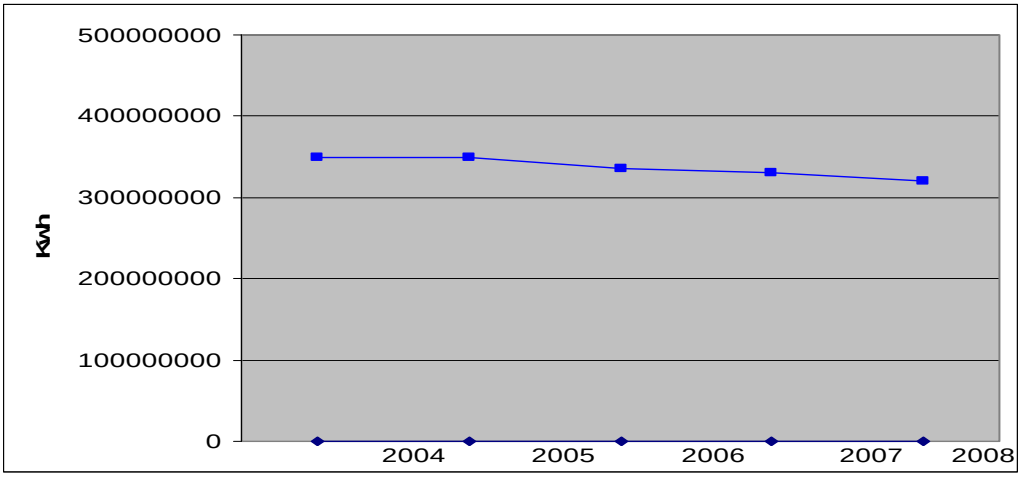
- The proposed **budget** for the program, including budget assumptions.

2.1. *Customer Awareness Program*

Chatham-Kent Hydro distributes electricity to 32,000 customers, and as a local LDC has the ability to communicate to a population of 110,000. There are several studies completed over the years including the "Sarah Darby Study with the University of Oxford". These studies have proven that simply educating customers about their electricity consumption habits will cause them to reduce their energy consumption. Several methods of feedback were analyzed in the studies with direct feedback achieving the highest results. This involves using tabletop interactive cost and power display units etc. that will provide real-time feedback. This should be followed by educational material that will assist customers in making wise energy choices. The energy savings from this type of program will be in the 5%-20% range.

In Chatham-Kent the overall annual residential consumption is approximately 350,000,000 KWH. The graph below identifies the reduction in KWH, should an effective customer awareness program be implemented.

GRAPH



The customer awareness program includes the following components:

Public Awareness Conservation Program; (See attachment 1)
A conservation campaign was kicked off in June 2004 with a theme and a slogan. It is a made-in-Chatham-Kent Program called "The three T's of Hydro Conservation"

- **T**urn if off
- **T**urn it down
- **T**rade it in

The program focuses on wise energy use in the home and on taking advantage of energy saving tips and government programs aimed at replacing appliances with more energy-efficient models. Chatham-Kent Hydro staff members are heard live on the local radio stations (which reach 65% of the homes in Chatham-Kent) twice a month during the morning drive-time audience. Conservation tips and the latest industry news are provided to listeners. This program is becoming well known in Chatham-Kent. The goal is to increase awareness through the print media and signs and attendance at local trade and home shows.

Other Public awareness campaigns and promotions include:

- Signs and billboards located throughout the community including the C-K Hydro main office with conservation messages promoting C-K Hydro's three T's of conservation.

- A conservation kick-off event on November 8, 2004 with a live broadcast by the local radio stations from our main office and promotions during the day to encourage conservation activities

- Participation at local community trade shows promoting energy conservation and demonstrating programs available to C-K Hydro customers

The Public awareness program will not provide immediate results, but will be designed to change the culture of energy use, primarily focussing on the residential market. Measuring the results of the program will be achieved over a long-term trend of declining energy consumption, and by surveying customers. The target of a reduction in energy consumption of 5% by 2007 is achievable, but will require a continuous public awareness program.

The costs of the program for Year 2006 is $11,925 and cumulative cost is $ 63,713.

School Conservation Program
CKH has developed an education program that is targeting all grade 5 students in the Chatham Kent area, to illustrate the importance of energy conservation. The program includes an educational booklet which provides energy tips, games and activities. In addition there is a website feature that contains a number of cartoon personalities known as the Power Saving Team. The objective of the team is to promote the 3 T's of conservation, Turn it off, Turn it down and Trade it in. The website, Ckenergykids.com, provides an education on what is electricity, energy saving tips and series of games and activities.

The costs of the program will be in year 2006 is $10,536 and the cumulative cost is $11,256.

Code Green TV

A local Chatham-Kent Hydro customer was one of the participants in the program which was a cross Canada contest to see which family could reduce their energy use the most over a one month period. They were given $15,000 to spend on energy efficient appliances, or furnace or windows etc. and after completing upgrades their energy use was measured to calculate their reduction. This was a nation wide contest that was broadcast on CBC and articles were written in many local papers including the Chatham Daily news and it was also covered on the local radio station. Our estimate is that the message reached 60% of the CKH customers in Chatham.

The cost of the Code Green TV in year 2006 is $19,966 and the cumulative cost is $49,966, and the program will not be continuing in year 2007.

2.2. *Price Response Program Design*

2.2.1 Smart or Interval/Time of Use Meters

Interval meters have been a component of Chatham-Kent Hydro's initiatives in recent years. The above 500 kW demand group has previously been the target for interval metering. Chatham-Kent Hydro is participating in the Smart meter working group with the OEB and intends to proceed with a smart meter program that is consistent with the Minister's Initiatives and the OEB's recommendations. To fully capture the demand reduction and energy savings opportunities that smart meters can offer, they must be part of an overall system that includes:

- A supportive rate structure
- Availability and testing of the technology
- Information for customers to help them to understand how they can benefit by reducing or shifting their electricity loads.

New rate structures will not be available until after March 2005, however Chatham-Kent Hydro wants to prepare itself and its customers for these new rate structures. Therefore, during 2004 and 2005, the focus of the CDM initiative will be on two of the components identified above: availability of the technology, and customer information and education.

"The Smart Meter Pilot program"

Chatham-Kent Hydro has been researching Smart meter technology for the residential market since January 2004. The initiatives announced by the Government to install smart meters in every home by 2010 has been taken seriously, and research has led C-K Hydro to some basic principles, which are;

1. That we are in step with the Ontario Energy board regarding the technical specifications of the Interval or Time of use meters
2. That we consider the existing metering assets and reduce the potential to strand significant metering assets
3. That the meter will support a time of use rate structure
4. That we search for opportunities to partner with other LDC's and/or companies
5. That our preference is for non-proprietary systems
6. That the communication infrastructure to support smart meters may be used for other applications, such as: load control, AMR, outage management and/or revenue generating systems.
7. That we establish ongoing cost efficiency and flexibility as a priority

Our research involved in-depth reviews of various product lines and communication protocols including: power line carrier, radio, cell and landline communication. Chatham-Kent Hydro has significant experience and expertise in the area of radio communication as we have operated our SCADA system using a 900 MHZ frequency communications for many years.

Based on our metering and communications experience, and in consideration of the above 7 principles, we believe the Tantalus Inc. Smart Meter system technology closely meets the intent of the Minister of Energy.

The Tantalus Technology is a retrofit option to convert our existing watt-hour meters to smart interval meters. The communication protocol is wireless radio technology using a hybrid 900/220 MHZ system. The infrastructure technology is more economical for Chatham-Kent than power line carrier systems and provides two-way communications with the customer.

Tantalus has been selected by C-K Hydro as the provider and partner in a pilot program to retrofit 1000 of Chatham-Kent Hydro's 30,000 residential meters to interval meters with a wireless communication backbone. The pilot will also test the Automated Meter Reading (AMR) and outage management capabilities of this system.

The infrastructure costs of the Tantalus system are relatively low when the potential customer benefits are considered. In addition to providing interval data to residential consumers and assisting them in developing new consumption habits, the pilot will also be used to identify system-wide operational savings. The system has the potential of significantly reducing meter reading and other customer support functions.

The cost of the Smart Meter Pilot program for year 2006 is nil and cumulative cost is $ 357,780 and this program is considered completed in year 2006.

2.3 Customer Price Alert Information

Chatham-Kent Hydro has offered next business day load and price information to our interval customers since market opening via the Internet. Though several of our larger customers have taken advantage of this, our goal now is to provide real time price information.

Programs to assist customers in understanding how to use their interval meters to reduce their energy costs will be offered. These programs will be immediately relevant to customers who are paying the market rates, and will benefit other customers as soon as time-of-use or market rates are available to smaller users.

A pilot program to provide price alert and encourage demand response will be implemented. The pilot will be in partnership with **NRGen Inc**. Chatham-Kent Hydro will leverage NRGen's price alert technology to raise customer awareness to the wholesale market, and to engage customers in demand response activities that will see decreased demand particularly during price peak periods. It will also enable Chatham-Kent Hydro to exploit new revenue opportunities, based on participation in programs such as the IMO's Transitional Demand Response Program.

The Price Alert pilot will include:

- Customer tracking of electricity consumption over the Internet. This will enable customers to see how much electricity they are using and how much it is costing them.

- An alert system, which will signal the customers up to 3 hours before the price, exceeds a predetermined amount.

- A help-line for customers to assist with understanding and using the tracking service. This service would cover telephone queries about the customer consumption tracking system, ranging from usage (e.g. what is my password?) to interpretation of the information provided.

- Provide customers who take part in the price alert with an energy audit and advice on what loads can be shifted when a price alert signal is received.

- Provide Chatham-Kent hydro with the customer support required to participate in the IMO's transitional demand response initiative.

The number of participants and the comparison of the customers' load profiles and demand response will measure the effectiveness of the price alert pilot during the trial period.

The overall cost of the Price Response Program design for year 2006 is $ 16,441 and the cumulative cost is $77,182, this is a continuous program for 2007.

2.4 The Commercial/Industrial Energy Efficiency Program

Chatham-Kent Hydro will develop an Energy Efficiency Program targeting Commercial and Industrial customers who have a greater impact on the overall efficiency of the C-K Hydro distribution system. Improving energy efficiency of the larger customers will translate into a more efficient distribution system with a higher power factor and lower system losses. This program will include:

- Initiating energy audits of a few selected customers. Soliciting volunteers to participate in the audits with a commitment to address deficiencies and provide feedback to measure the success of the programs.

- Developing protocols and procedures appropriate to different sectors (e.g. institutional, educational or commercial).

- Implementing a program that will include an initial audit; training for involved staff members, and occasional follow-up once the program is in place, to ensure smooth operation. The program will include an evaluation of power factor improvement and energy savings that resulted.

- Evaluation and refinement of protocols, procedures and notification procedures, based on the results of the program, for broader rollout in 2006.

Chatham-Kent Hydro will search for additional funding sources, which could be accessed to offset the costs of developing and piloting the Energy Efficiency Program.
Though grant funds are not available directly for Chatham-Kent Hydro, there are programs such as the Green Municipal Funds (GMF) which provide grants of up to $350,000 for planning, feasibility studies and/or field tests related to environmental infrastructure projects in six service areas: buildings/facilities, energy services, sustainable in community development, water services, transportation services and waste management. Natural Resources Canada, through its Energy Innovators Initiative (EII), provides grants of up to $25,000 and $250,000 for the energy retrofit planning and implementation, respectively. This Energy Retrofit Assistance (ERA) program is available only to commercial businesses and public institutions that are EII members.

There was no cost contributed to this program because none of the customers in the area had taken the audit. This program is considered complete and will not continue for 2007.

2.5 Distribution System Optimization and Line Loss Reduction

Reducing distribution system line losses will make the system more efficient and will contribute to demand and energy conservation. Some initial evaluation has concluded that a reduction in line losses of approximately 1% will reduce Chatham-Kent Hydro's

monthly demand by approximately 2,000 KW. A more efficient distribution system will also translate to lower costs to customers.

A Voltage conversion program is one initiative that will reduce distribution system line losses. This involves eliminating the 4000-volt distribution stations and supplying customers directly from the 27,600-volt system. This eliminates the transformer losses of the substations. In order to quantify this loss reduction, more studies will be required on this program. Once completed, Chatham-Kent Hydro will be able to produce a guide that can quantify the loss saving by conversion dollar spent and/or kVA converted.

The study will progress as follows:

1. Choose 3 or 4 existing 4 kV Feeders.
2. Calculate existing losses based on loading data from meter read information from Harris.
3. Re-design the system as if a conversion were about to take place.
4. Calculate new losses based on the new design.
5. Perform the study for individual feeders and for one whole substation and feeder system.

To complete the study, the data from the Automated Mapping Facilities Management (AM/FM) information will need to be exported into the analysis software that will calculate the loss values. As the export features from AM/FM are limited, it will require an upgrade to permit the exporting to the analysis software.

Until the vendor is selected and the upgrade of the AM/FM system is completed, some preliminary studies will be undertaken to gather an approximate answer. This will involve some expenditure in software to help in data conversion from the CIS system.

The cost to upgrade the existing AM/FM system and analysis software and to complete the analysis is:

Based on the assumption that the analysis will justify voltage conversion projects, a strategy will be developed to accelerate voltage conversions in Chatham Kent Hydro.

The initial expenses will be to complete the analysis identified above. Should the analysis demonstrate significant reduction in demand and consumption, C-K Hydro will accelerate the voltage conversion program, by approximately 10% annually.
Other loss reduction initiatives will involve an analysis of the power factor of our larger customers. If our customer's power factor is improved, it translates to a more efficient distribution system. The audits referred to in item # 2.4 of this plan will also focus on power factor status and improvement recommendations. Incentives will be provided to customers to make power factor corrections either through higher penalties for poor power factor or a contribution by Chatham-Kent Hydro to install power factor improvement equipment.

Overall costs of the Line loss Improvement program cost in year 2006 was $ 104,436 and the cumulative cost is $282,662, the program is continuous for year 2007.

2.6 Distributed Generation and Renewable Energy Program

In the OEB preliminary guidelines for Electricity Distributor Conservation and Demand Management activities, distributed energy options like co-gen, wind and biomass systems are the type of new expenditures the Minister of Energy is encouraging to help meet the energy conservation targets. Chatham-Kent Hydro is in an area of the province that has been targeted as a prime area for investment in wind energy.

Chatham-Kent Hydro is considering renewable energy sources that would fit with Chatham-Kent's environment and economy. We have had discussions with America's Wing Energy Inc. (AWE) who offers low cost wind turbines that can be used for small load displacement uses up to 80 KW.

In order to determine the value of or the most effective location a wind generation program will require wind propagation studies and location analysis. Chatham-Kent Hydro is considering the installation of one of the small units provided by AWE as a load displacement unit in partnership with our Municipality. The data from this installation may be used in lieu of an expensive propagation study to assist C-K Hydro in the decision to move forward with larger wind generation projects.

Chatham-Kent Hydro will also analyze other renewable energy sources including the use of solar panels on our substations.

The program cost for Year 2006 was $37,798 and cumulative cost was $37,798, the program was discontinued due to the inability to install the equipment from our supplier, the program will not continue for 2007.

2.7 Low and Fixed Income Customer Program

Initially this program will focus on identifying "all electric" customers in this group and develop programs to reduce energy consumption costs. Programs will include building retrofits and fuel switching.

Low and Fixed Income Customers can reduce energy consumption if they utilize the information and incentives available for:

1. Taking no cost, energy-saving actions. (**Turn it off)**
2. Installing low-cost, energy-saving measures. (**Turn it Down)**
3. Investing in energy-efficient equipment, appliances and building shell retrofits. (**Trade it in)**

2.8 Program Development Research

Research will be required to assist in the design of new CDM programs for 2005 and beyond. The research program will involve identification of priority research areas, investigation of these areas, and documentation of findings.

Chatham-Kent Hydro has identified three areas where it may wish to research opportunities in the short term:

- Technologies for automatic load shedding from appliances, such as pool filters or air conditioners by putting these under the control of the utility. The research will include a review of where they have been implemented, and the associated programs that have been designed around them (e.g. whether or how customers can override thermostat adjustments, financial incentives offered to customer, etc.)

- Identification of distribution system standards and determination of how these might contribute to reducing electricity losses. These could include consideration of how to optimize the power system, using load flow software, or investigating standards for low-loss transformers.

These, and possibly other, research areas will be considered and the specific work to be undertaken will be selected.

The research study for the CDM Plan there was no funds contributed to this program and the program was cancelled and will not be in place for year 2007.

2.9 All Sector Programs

2.9.1 Municipal Street lighting

The Municipality has over 10,000 streetlights that our all maintained by Chatham-Kent Hydro via a Service Level agreement. An analysis of the lights has concluded that 13% of them are the less efficient Mercury vapour lights.

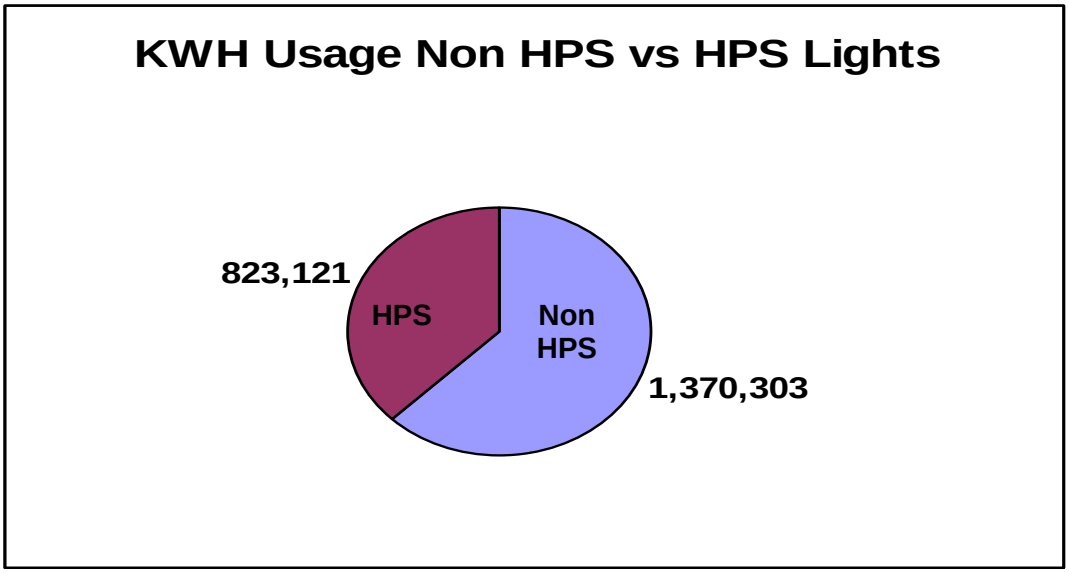
There are primarily 3 types of streetlights used by Municipalities. They are:

Mercury Vapour – (least efficient) 25 – 50 lumens per watt
Metal Halide – (moderately efficient) 50 –115 lumens per watt
High pressure Sodium (most efficient) – 40-140 lumens per watt

In C-K Hydro's analysis a conversion of the lights to high-pressure sodium can be completed at a cost of approximately $180,000. The energy savings will provide a return on this investment in 5 years. The energy consumed by the existing non-efficient lighting will be reduced by 40% if they are converted to high-pressure sodium lights.

C-K Hydro has proposed to the Municipality a 1-year conversion program of all these lights.

GRAPH



Chatham-Kent Hydro will also work with the Municipality on a conversion of the traffic light fixtures to high efficient LED lighting. The Municipality currently installs LED traffic lights in new installations but has not considered replacement the existing fixtures. Chatham-Kent Hydro plans to complete a study on the benefits of converting these fixtures.

Overall costs of the Municipal Street lighting program cost for year 2006 is $21,203 and the cumulative cost is $21,203, and will not be in the 2007 Conservation Program.

2.9.2 Lighting & Appliances

The lighting and appliance programs will be designed to (1) improve consumer awareness of the energy and non-energy benefits of efficient lighting and appliances, (2) increase the availability and demand for these products, and (3) promote emerging technologies. The programs will include:

- Promoting ENERGY-STAR rated products
- Offering direct rebates (financial incentives) to consumers to purchase energy efficient products
- Educating consumers and distributors of energy efficient products using web-sites, bill inserts, newsletters, educational workshops, and on site auditing
- Showcasing new technologies at consumer locations and events

There was no funds contributed to this program and the program is considered cancelled and will not be in the 2007 Conservation Program.

2.9.3 Heating, Ventilation and Air Conditioning (HVAC) Systems

HVAC programs will be designed to: (1) encourage the replacement of inefficient systems with efficient ones, (2) increase consumer recognition of ENERGY-STAR products, (3) increase training of trade professionals in efficient HVAC systems, (4) support the improvement of efficiency standards. These programs will include:

- Educating consumers through web-sites, bill inserts, newsletters, educational workshops, on site auditing and call centre
- Providing efficiency information to HVAC contractors and distributors,
- Offering direct rebates (financial incentives) to residential customers for energy efficient HVAC projects

There was no funds contributed to this program and the program is considered cancelled and will not be in the 2007 Conservation Program.

2.9.4 High Efficiency Motors

The High Efficiency Motor program will be designed to: (1) promote optimal motor system design and sizing, (2) facilitate consumer purchase of efficient motors and (3) increase the understanding of motor life-cycle costs. These programs will include:

- Educating consumers through web-sites, bill inserts, newsletters, educational workshops, on site auditing and call centre
- Providing efficiency information to motor contractors and distributors,
- Offering direct rebates (financial incentives) to residential customers for energy efficient HVAC projects
- Offering information and assistance to encourage optimal system design and life-cycle cost analysis

There was no funds contributed to this program and the program is considered cancelled and will not be in the 2007 Conservation Program.

2.9.5 Building Retrofits and Renovations

The Retrofit and Renovation program will be designed to: (1) increase energy efficient investments at the time of retrofit, renovation, or sale, (2) link interested customers with providers of energy retrofit services and (3) increase the knowledge of professionals who perform energy efficient retrofits.

Many different market participants can increase the likelihood of an energy efficiency retrofit. These programs not only target residential and commercial customers who either own or are buying a building (including multifamily houses, large energy customers, and governments) but also trade professionals (including engineers, designers, contractors, and energy consultants), real estate agents, mortgage professionals, and home inspectors. These programs will include:

- Providing energy efficiency information to customers planning to buy, sell or renovate a building. Efficiency information on windows, equipment, motors, lighting, appliances, etc.
- Making energy audits available to customers to assist them in determining their efficiency retrofit needs.
- Providing product energy efficiency information and assistance for trade professionals through workshops, libraries, and trade shows.
- Offering direct rebates (financial incentives) customers for energy efficient retrofit/renovation projects.

There was no funds contributed to this program and the program is considered cancelled and will not be in the 2007 Conservation Program.

2.9.6 New Construction

The New Construction program will be designed to (1) increase the number of energy efficient new homes and buildings being built, (2) promote construction exceeding the R2000 home design, (3) raise awareness and benefits of energy efficient home when applying for a mortgage, (4) promote energy efficiency in the professions of architecture and engineering

Market participants include consumers looking to buy new homes and decision makers in new construction projects; builders, contractors, and manufacturers; real estate agents and mortgage professionals; and architects, engineers and students. Programs include:

- Targeting information to customers to promote energy efficient homes and buildings
- Recognizing new developments that include exemplary energy efficient homes.
- Offering energy efficiency information to trade professionals.
- Offering energy efficiency information sales agents to enable them to more effectively sell efficiency upgrades to home-buyers

There was no funds contributed to this program and the program is considered cancelled and will not be in the 2007 Conservation Program.

3.0 Customer Energy Specialist

To ensure Chatham-Kent Hydro's commitment to deliver CDM programs, Chatham-Kent Hydro will put in place a full time Energy Specialist to:

- Develop, implement, manage and measure results of the CDM programs undertaken by C-K Hydro
- Evaluate new and existing energy efficiency technologies
- Provide energy efficiency training and educational programs
- Provide customers technical advice and guidance with respect to energy technologies
- Monitor and evaluate CDM programs

There was no funds contributed to this program and the program is considered cancelled and will not be in the 2007 Conservation Program.

3. Lesson Learned

Distribution System Optimization and Line Loss Reduction

Measuring effective loss reduction through voltage conversion is theoretically possible but difficult to demonstrate.

Due to the nature of these types of projects (i.e. multi year, high initial capital cost) loss savings for one year may not be indicative of total savings possible from the project.

A large proportion of the savings is garnered from the elimination of stations which usually doesn't occur until the very end of the project.

We have updated our GIS and acquired

Customer Price Alert

Meeting with each participant and evaluating their planned response to demand events was a very important tool to encourage involvement and achieve the maximum demand response. Simply offering the program without active customer consultation would have been significantly less effective.

The technology to inform participants of upcoming demand response hours must be easy and ubiquitous (email, fax, pagers…)

The financial incentives as currently exist in the program are effective in encouraging cooperation.

2006 electrical market prices were well below the highs seen in 2005. As a result, TDRP rebates in actual dollars transferred to customers, was substantially lower.

4. Conclusion

Distribution System Optimization and Line Loss Reduction

Can be excellent tool to reduce system losses for both on-peak and off-peak.

Current distribution rate structures do not effectively encourage voltage conversion projects as losses are simply factored in and passed on to the customer. There is no clear financial argument to justify these projects based on loss reduction alone.

Customer Price Alert

The current TDRP program as structured is an excellent inducement to customers to find ways to shift demand away from on-peak critical hours.

Customer awareness and involvement in the program often leads to other improvements at customer facilities and helps justify expenditures for other energy conservation programs.

Customers pay far more attention to their usage and bill and become more involved in the way they use and are billed for electrical usage.

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	Residential	Commercial	Institutional	Industrial	Agricultural	LDC System	[4] Smart Meters	Other #1	Other #2
Net TRC value ($):	*-$ 40,177.58*	**-$ 22,877**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**		**$ (22,877)**	**$ -**
Benefit to cost ratio:	*0.84*	0.78	0.00	0.00	0.00	0.00	0.00	0.00		0.78	0.00
Number of participants or units delivered:	*500*	*250*								$250	
Lifecycle (kWh) Savings:	*5908500*	2,847,000	0	0	0	0	0	0		2,847,000	0
Report Year Total kWh saved (kWh):	*113,880*	113,880	0	0	0	0	0	0		113,880	0
Total peak demand saved (kW):	*50*	20	0	0	0	0	0	0		20	0
Total kWh saved as a percentage of total kWh delivered (%):	*4%*									4%	
Peak kW saved as a percentage of LDC peak kW load (%):										0.03%	
[1] *Report Year Gross C&DM expenditures ($):*	*$ 244,076*	$ 104,436	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 104,436	$ -
[2] *Expenditures per KWh saved ($/kWh):*	*$ 0.04*	$ 0.04	$ -	$ -	$ -	$ -	$ -	$ -		$ 0.04	$ -
[3] *Expenditures per KW saved ($/kW):*	*$ 4,881.52*	$ 5,221.82	$ -	$ -	$ -	$ -	$ -	$ -		$ 5,221.82	$ -

Utility discount rate (%):	

[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 be reported.
[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:** Voltage Conversiion Program

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

Convert portion of a 4kV feeder to 27.6kV

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:	250		
Measure life (years):	25		
Number of Participants or units delivered life to date	500		

B. **TRC Results:**

		Reporting Year	Life-to-date TRC Results:
[1] *TRC Benefits ($):*		81,559.40	203898.5
[2] *TRC Costs ($):*			
Utility program cost (excluding incentives):	$	*104,436.34*	244076.08
Incremental Measure Costs (Equipment Costs)			
Total TRC costs:	$	104,436.34	244076.08
Net TRC (in year CDN $):	-$	22,876.94	-$ 40,177.58
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	0.78	0.84

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

Cumulative Results:

Conservation Programs:

Demand savings (kW): *Summer*

Winter

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

Demand Management Programs:

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

Demand Response Programs:

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

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

Peak load savings (kW):		20	50
	lifecycle	*in year*	
Energy savings (kWh):	2847000	113880	236340

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*	$ 104,436.34	$ 244,076.08
	Incremental O&M:		
	Incentive:		
	Total:		
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:** Demand Response

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

Participate in the IESO's Program of the TDRP

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):	0		
Number of Participants or units delivered life to date	6		

B. **TRC Results:**

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

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

Cumulative Results:

Conservation Programs:

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

Demand Management Programs:

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

Demand Response Programs:

Dispatchable load (kW):	3312	
Peak hours dispatched in year (hours):	152	

Power Factor Correction Programs:

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

Line Loss Reduction Programs:

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

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

Metric (specify):		

D. **Actual Program Costs:**

		Reporting Year	Cumulative Life to Date
Utility direct costs ($):	*Incremental capital:*		
	Incremental O&M:	$ 14,667.52	$ 28,073.35
	Incentive:		
	Total:	$ 14,667.52	$ 28,073.35
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 C - Program and Portfolio Totals

Report Year: **2006**

1. Residential 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 ($)
Name of Program A			$ -	0.00				
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 - Residential**	$ -	$ -	$ -	0.00	0	0	0	$ -
Residential Indirect Costs not attributable to any specific program →								
Total Residential TRC Costs		$ -						
****Totals TRC - Residential**	**$ -**	**$ -**	**$ -**	**0.00**				

2. Commercial 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 ($)
Name of Program A			$ -	0.00				
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 - Commercial**	$ -	$ -	$ -	0.00	0	0	0	$ -

Commercial Indirect Costs not attributable to any specific program →				
Total TRC Costs		$ -		
****Totals TRC - Commercial**	**$ -**	**$ -**	**$ -**	**0.00**

3. Institutional 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 ($)
Name of Program A			$ -	0.00				
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 C			$ -	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 - Institutional**	$ -	$ -	$ -	0.00	0	0	0	$ -
Institutional Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Institutional**	**$ -**	**$ -**	**$ -**	**0.00**				

4. Industrial 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 ($)
Name of Program A			$ -	0.00				
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 - Industrial**	$ -	$ -	$ -	0.00	0	0	0	$ -
Industrial Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Industrial**	**$ -**	**$ -**	**$ -**	**0.00**				

5. Agricultural 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 ($)
Name of Program A			$ -	0.00				
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 - Agricultural**	$ -	$ -	$ -	0.00	0	0	0	$ -
Agricultural Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Agricultural**	**$ -**	**$ -**	**$ -**	**0.00**				

6. LDC System Programs

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

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

	TRC Benefits (PV)	TRC Costs (PV)	$ Net TRC Benefits	Benefit/Cost Ratio	Report Year Total kWh Saved	Lifecycle (kWh) Savings	Total Peak Demand (kW) Saved	Report Year Gross C&DM Expenditures ($)
Name of Program A			$ -	0.00				
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 C			$ -	0.00					
***Totals App. B - LDC System**	$ -	$ -	$ -	0.00	0	0	0	$ -	
LDC System Indirect Costs not attributable to any specific program →									
Total TRC Costs		$ -							
****Totals TRC - LDC System**	**$ -**	**$ -**	**$ -**	**0.00**					

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 ($) →

8. Other #1 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 ($)
Line Loss Program	$ 81,559	$ 104,436	-$ 22,877	0.78	113,880	2,847,000	20	$ 104,436
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 - Other #1**	$ 81,559	$ 104,436	-$ 22,877	0.78	113,880	2,847,000	20	$ 104,436
Other #1 Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ 104,436						
****Totals TRC - Other #1**	**$ 81,559**	**$ 104,436**	**-$ 22,877**	**0.78**				

9. Other #2 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 ($)
Name of Program A			$ -	0.00				
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 C			$ -	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 - Other #2**	$ -	$ -	$ -	0.00	0	0	0	$ -
Other #2 Indirect Costs not attributable to any specific program →								
Total TRC Costs		$ -						
****Totals TRC - Other #2**	**$ -**	**$ -**	**$ -**	**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**	$ 81,559	$ 104,436	-$ 22,877	0.78	$ 113,880	$ 2,847,000	$ 20	$ 104,436
*Any **other** Indirect Costs not attributable to any specific program* →								
TOTAL ALL LDC COSTS		$ 104,436						
****LDC' PORTFOLIO TRC**	$ 81,559	$ 104,436	-$ 22,877	0.78				

* 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.