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BURLINGTON HYDRO INC.

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November 30, 2004

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OEB BOARD SECRETARY	
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Licensing	ZC, SM, AFo, ML
Other	
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John Zych,
Board Secretary,
Ontario Energy Board,
2300 Yonge Street, 26th Floor,
Toronto Ontario.
M4P 1E4

Dear Sir:

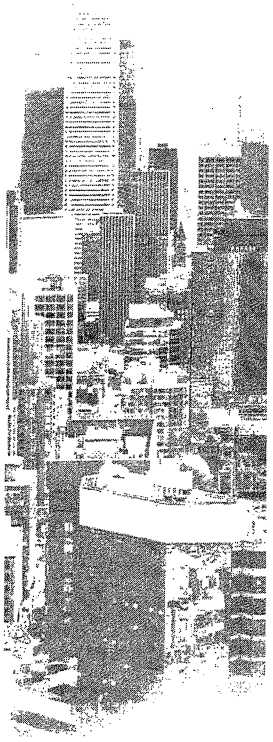
Re: RP-2004-0203 and Submission of Burlington Hydro Inc. CDM Plan for Interim OEB approval

On behalf of Burlington Hydro Inc., I am pleased to submit the *Burlington Hydro Inc. 2005 - 2007 Conservation and Demand Management Plan* for approval. Pursuant to the Ontario Energy Board's Procedural Order No. 1 of October 5, 2004 (RP-2004-0203), Burlington Hydro Inc. is seeking an order from the Board granting interim approval of our CDM Plan.

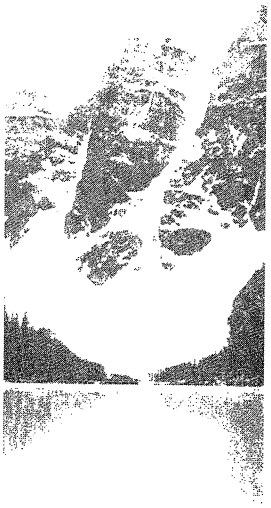
Yours truly,

David Collie, FCMA, MBA
President and CEO

Enc.



Burlington Hydro 2005 - 2007 CDM Plan



INDEC & Burlington Hydro Inc.

Burlington Hydro Inc. 2005 - 2007
Conservation and Demand Management Plan

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This document was prepared for Burlington Hydro Inc. by IndEco Strategic Consulting Inc.

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1 December 2004

Contents

1 Introduction

Burlington Hydro Inc. is a local distribution company serving the City of Burlington, Ontario. It has 52,000 residential customers and 5,000 general service customers.

Burlington Hydro's mission statement consists of five components:

- To efficiently deliver reliable electrical energy to our customers in the City of Burlington.
- To provide a safe and rewarding work environment for our employees.
- To assure that future supply is available to meet Burlington's growing needs.
- To provide our shareholder with a superior rate of return.
- To be a community partner.

Conservation and Demand Management (CDM) programs are consistent with all of these and directly relate to several of them, in particular efficient delivery of reliable energy, and assuring future supply.

1.1 Principles

The CDM program Burlington Hydro Inc. is proposing is guided by several key principles:

- CDM programs should build on the Corporation's mission statement
- CDM programs should address the priorities of the Province as these relate to Burlington Hydro's customers
- CDM programs funded with the third tranche are transitional programs
- CDM programs must make sense for Burlington Hydro Inc.'s customers.

Building on the mission statement

It is key that Burlington Hydro's operations incorporate efficient use of energy, both in the distribution system itself, and in support operations. To this end, a central component of the CDM program will be to ensure that new, additional steps are taken to enhance the efficiency of Burlington Hydro's own operations, or that the schedule for already planned steps is accelerated. This approach addresses Burlington Hydro's commitment to efficient operations, and also to shareholder returns: it decreases costs of distributing electricity, and will enhance shareholder returns (to the extent that the CDM program invests in 'conservation assets').

The commitment to being a community partner also influences the CDM program. It encourages components of the program to be targeted at community facilities, and it encourages collaborating with other members of the community in delivering programs.

Provincial priorities and Burlington

The Province of Ontario has announced a number of goals and targets related to the provincial electricity system, including:

- A target to reduce peak demand by 5% by 2007, and by 10% by 2010
- A target to phase-out coal-fired generation by 2007
- Increase the capacity of renewable energy to 5% of total electricity capacity by 2007, 10% by 2010

In addition, the Minister of Energy requested local distribution companies (LDCs) in a letter dated 31 May 2004: "to pursue a broad range of programs that support the more efficient use of electricity in Ontario, including those that were discontinued on the opening of the electricity market, to reduce customers' overall energy demand and/or demand for purchased energy."

The letter included a list of possible programs:

- Energy efficiency
- Behavioural and operational changes, including the application of benchmarking or 'smart' control systems

- Load management measures which facilitate interruptible and dispatchable loads, dual fuel applications, thermal storage and demand response

- Measures to encourage fuel switching which reduce the total system energy for a given end-use

- Programs and initiatives targeted to low income and other hard to reach consumers, and

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

Burlington Hydro Inc. is committed to supporting and realizing these initiatives, where it is possible and appropriate.

Transitional programs

LDCs have been invited to apply to spend the equivalent of one year's third tranche on CDM programs. In the case of Burlington Hydro, this amounts to $2,157,862. Longer-term structures for realizing CDM are still being put in place by the Province. Within the next year, the Conservation Bureau of the Ontario Power Authority is expected to be established to develop provincial scale conservation initiatives, and the longer term role of LDCs in conservation is a matter under discussion before the Ontario Energy Board (OEB) as part of the proceeding on 2006 Electricity Distribution Rates. Consequently, the current plan, based on funding arising out of the third tranche, can only be seen as a transitional initiative, and as such it ought to do the following:

- Keep options open

- Avoid lost opportunities

- Build on existing programs

- Provide guidance or assistance in the development of longer term initiatives.

Make sense for Burlington customers

The CDM programs proposed for the transitional program need to make sense for Burlington Hydro's customers. Investments in improving the

efficiency of Burlington Hydro's own operations will benefit all customers. Where programs are available to directly affect customers' use of electricity, the objective is to ensure that all customers have access to one or more programs to assist them in reducing their electricity use and their energy bills.

2 Components of the plan

Burlington Hydro Inc. has identified a number of programs that will make up the CDM portfolio. A description of each program including estimated costs and anticipated benefits is provided below. Because the costing provided is based on estimates and priorities may shift due to changing circumstances, it may be necessary as the CDM plan is implemented to shift dollars among conservation asset programs and among O&M programs with the balance between assets and O&M remaining essentially the same.

2.1 Distribution system improvements and 'house in order'

Burlington Hydro is committed to improving the overall efficiency of its distribution system and will be taking steps to extract savings wherever possible. Through detailed analysis of their system, opportunities will be investigated for system optimization, improved phase balancing, installation of capacitor banks and voltage conversions. An initial review has recognized the status of several older municipal substations which distribute electricity at 4.16 kV which is less energy efficient that the current practice of 27.6 kV. Upgrading the voltage, in the areas served by these substations, would reduce energy losses and increase system efficiency. Preliminary analysis has identified Bridgeview M.S. as a possible candidate for the program, although others such as Mount Forest M.S. or Brant M.S. may also be considered.

The results of the investigations will place a priority on the most cost effective projects that would optimize the savings and overall benefits to the distribution system, from a budget allocation of $1.2 million.

Accelerated installation of Interval meters

On 9 November 2004, the Ontario Energy Board released a draft *Smart Meter Implementation Plan*, which was prepared in response to a July 16, 2004, request from the Minister of Energy to develop an implementation plan to achieve the Government of Ontario's smart meter targets for electricity: installation of 800,000 smart meters by December 31, 2007 and installation of smart meters for all Ontario customers by December 31, 2010. Smart meters will allow customers to manage their demand for electricity to make more efficient use of Ontario's existing supply of electricity and reduce reliance on external sources.

Burlington Hydro already has approximately 300 customers with demands of greater than 200 kW using interval meters which report electricity use at 15 minute intervals. More than one third of these have also signed up to be able to access their usage data on a secure website, and thereby to have access to information that may help them to reduce both their demand and their overall energy use.

Measurement Canada requires that meters used by general service (larger) customers be recalibrated every six years to ensure they are accurately recording use, and it is prudent to replace non-interval meters coming up for recalibration in the near term with interval meters, since much of the cost of meter replacement is associated with the labour, so the incremental cost of upgrading these meters to interval meters is substantially reduced.

The number of non-interval meters for customers with demands in excess of 200 kW coming up for recalibration in 2005, 2006 and 2007 are 28, 9 and 7 respectively. Burlington Hydro plans to replace these meters with interval meters, at an estimated cost of $700 per meter.

Under the draft *Smart Meter Implementation Plan*, eventually all customers will have their electricity use measured hourly or more frequently, and the first priority for replacement is customers with peak demands greater than 200 kW. In addition to the meters coming up for recalibration, Burlington Hydro proposes to replace meters of the ten customers with the largest estimated demand greater than 200 kW who are not currently using interval meters. The cost of these replacements is estimated at about $2000 each. Burlington Hydro may consider accelerating the implementation of the next priority group of customers as identified in the OEB's *Smart Meter Implementation Plan*.

The overall budget for accelerated installation of interval meters is thus approximately $50,000, but may be as high as $60,000.

Smart meter pilots

Burlington Hydro will conduct one or more pilot studies of smart metering technology. One pilot option that has been developed will include about 500 meter points, mostly residential with the possibility of including a few small commercial customers. Another pilot study option, is a joint effort with Oakville Hydro on the installation of sub-metering technology in multi-unit residential buildings that are currently bulk metered. Up to two condominium buildings, each with 75 to 100 units per building, are under consideration for this pilot.

The smart meters used in the pilot will be consistent with the OEB's draft *Smart Meter Implementation Plan*. The pilot studies will provide Burlington Hydro with an opportunity to gain a technical and operational understanding of smart meter systems and to assess the feasibility and desirability of rolling out the technology across its residential customer class and to its small commercial customers. Burlington Hydro will share its experience in the pilot with other LDCs that are exploring smart metering options, particularly those piloting alternative technologies.

The cost of the smart meter pilot(s) is estimated at up to $300,000.

Lighting retrofit

Burlington Hydro plans to lead by example by improving the energy efficiency of its own buildings, starting with a lighting retrofit program. Up to $85,000 has been budgeted for this program. Burlington Hydro has already received a proposal for the first lighting retrofit project and is currently exploring additional lighting retrofit opportunities.

The first lighting retrofit will be of the garage and storage areas at Burlington Hydro. The existing High Intensity Discharge fixtures will be replaced with High Intensity Fluorescent Luminaires and the existing 4 foot T12 fixtures will be replaced with energy efficient ballasts and fluorescent lamps. The High Intensity Fluorescent Luminaires offer several benefits in addition to energy savings, including reduced maintenance costs, more efficient light spread, improved colour rendering and instant strike and re-strike capability.

This first retrofit will cost approximately $24,000 and will produce about 130 MWh annually in energy savings and 15 kW in demand reduction.

2.2 *Municipal programs*

There are two municipal programs – new building opportunities and building retrofit opportunities. Depending on the results of further work on program design and implementation, in consultation with the City of Burlington, the allocation of funds between these programs may need to be adjusted. Burlington Hydro is exploring the opportunity for the City of Burlington to act as the delivery agent for these programs.

New building opportunities

New municipal buildings represent a significant opportunity for energy efficiency initiatives:

- New buildings represent a long-term investment, and may be a real lost opportunity if efficiency is given insufficient attention in the design stage

- Municipal buildings are generally there to address the needs of all residents and taxpayers in the community, so the benefits of energy savings in these buildings are broadly distributed

- Where they are public access buildings, they can serve as important demonstrations of what is possible and act as models for others in the community to emulate.

The City of Burlington has several new building initiatives underway, particularly the Waterfront Centre that is planned as part of the *Downtown Waterfront Implementation Plan*. Burlington Hydro proposes to assist in special design studies to address how this, or other buildings planned by the City, could be made more energy-efficient, while maintaining or enhancing functional and aesthetic requirements of the building(s).

Burlington Hydro will encourage the City – through financial assistance and consultation – to review and alter proposed designs. Burlington Hydro may also provide direct financial assistance to cover the incremental cost of these energy efficient measures or innovative technologies. This assistance will help to realize a systematic, cost-effective reduction in peak demand, energy use or both. The design process, innovative technology or approaches employed, and anticipated savings will be documented.

Burlington Hydro has allocated up to $120,000 to this fund.

Building retrofit opportunities

Much of the electricity use in buildings over the next decade will be associated with existing buildings, not new buildings. It will be important to make improvements to existing buildings, and again municipal buildings are an important target because they serve the community as a whole, and can act as showcases for what is possible.

From preliminary discussions with staff responsible for facilities at the City, it appears there are many opportunities for improving the energy performance of City buildings, such as City Hall itself, arenas, community centres, pools and meeting halls.

Burlington Hydro proposes to assist the City in realizing earlier or deeper savings than the City would otherwise be able to achieve through a

municipal buildings fund. This fund could support, for example, earlier upgrading of lighting systems than would otherwise be undertaken, or assist with the incremental costs to upgrade a replacement chiller to one with a higher efficiency.

In particular, we would encourage the City to identify specific projects that realize significant savings that are highly visible to the public, that can be documented as case studies, and that are cost-effective, but beyond what the City would be able to do on its own during the period of this plan.

A budget of up to $120,000 has been allocated for this fund.

2.3 *Residential programs*

Appliance/equipment replacement program

Over the last decade, there have been remarkable improvements in the efficiency of residential appliances and equipment, most notably appliances with compressors (e.g. air conditioners and fridges), and lighting. If customers can be encouraged to turn over old stock in these more rapidly than they otherwise would, substantial savings can be realized. In addition, because some of these devices are used during peak times (e.g. air conditioners), their replacement may be helpful in reducing the system peak as well.

Appliance and equipment programs have been operating in British Columbia and other jurisdictions for several years, and have achieved notable results.

Burlington Hydro is investigating existing programs that can be leveraged to assist its customers.

Among the options that may be possible are two programs offered by the Clean Air Foundation (CAF): KeepCool and SLED.

The KeepCool program provides rebates to customers who turn in an old room air conditioner and replace it with an EnergyStar® model. The program has been offered in Toronto and Montreal in recent years, and Burlington Hydro is discussing with CAF bringing the program to Burlington. It is anticipated that a Burlington program could replace between 300 and 350 room air conditioners in a year at a cost of about $35,000 and would realize a peak reduction of about 0.25 to 0.30 MW, and energy savings of 700 to 800 MWh.

The Seasonal LED program encourages customers to trade in incandescent Christmas light strings for LED strings, which use about one-twentieth as much electricity (LED versus mini-lights). A Burlington program might realize a trade-in of 2000 strings in a year, realizing 4000 replacements from a two-for-one program. Replacing this many strings would realize energy savings in the order of 280 MWh at a cost to Burlington Hydro in the order of 0.03 $/kWh.

Other jurisdictions have operated programs to draw out basement refrigerators ("beer fridges"). The Regional Municipality of Halton is responsible for waste management in Burlington, and has an existing program for white goods collection, including fridges. It may be possible to build on this existing program to encourage removal of secondary fridges, or accelerated turnover of older fridges.

Similarly, programs to increase the penetration of compact fluorescent lights have been offered in other jurisdictions, and are being designed for Ontario. Burlington Hydro will investigate whether these programs would work for its customers.

Burlington Hydro has allocated up to $140,000 for residential appliance and equipment replacement programs.

Education & outreach

Burlington Hydro will develop a collaborative public education and outreach program with the City of Burlington. The program will aim to increase the energy efficiency and conservation awareness of residents of the City of Burlington. While the program will focus on residential and personal energy use, many aspects of the program may be applicable and of use to commercial business and industry. The specific initiatives that may be implemented as part of this program with the City include, but are not limited to,

- a portable display booth on energy efficiency and conservation that can be set up at various events in the City, such as homeshows, Canada Day celebrations at the waterfront, in City Hall etc.

- enhancements to Burlington Hydro's and the City's website to provide additional tools, information, and links related to energy efficiency resources, ideas and existing programs that may be of use to Burlington residents

- materials and events to improve the awareness of existing City initiatives related to energy efficiency, such as the City's $25

subsidy to residents who participate in the Energuide for Houses Program.

Burlington Hydro has allocated up to $50,000 for this initiative.

Home developers program

Approximately 1400 new homes are built in Burlington each year. Given that developers' primary concern is the upfront cost of building a home and not its operating cost, which is paid by the homebuyer over time, there is little incentive for developers to install energy efficient lighting and appliances that may have a higher purchase price, but which will save money over the life of the product. The installation of standard efficiency lighting and appliances in new homes represents a lost opportunity for energy conservation. For example, installation of compact fluorescent light bulbs (CFL), which use 75% less electricity than incandescent light bulbs, could save up to 1420 MWh of electricity per year in these 1400 new homes[1].

Burlington Hydro is investigating options for a home developers program. Under such a program, Burlington Hydro would consult and work one-on-one with program partners or developers to establish financial incentives that encourage the installation of Energy Star® products in new homes built in the City of Burlington. This program could be modeled after BC Hydro's successful New Home Program which influences approximately 25% of new homes built in the province annually. In addition to receiving financial incentives, developers would be able to post signs at their development in recognition of their participation in the program.

Burlington Hydro is exploring partnership opportunities, including with the City of Burlington, for the design and delivery of this program. It is estimated that this program will cost up to $120,000.

2.4 General service customer programs

Voluntary demand response

In the voluntary demand response program, Burlington Hydro will send program participants a notification when the spot market electricity price exceeds a pre-set threshold and/or when a regional smog alert is issued,

[1] An average Canadian household consumes 1350 kWh of electricity per year for lighting. Source: Office of Energy Efficiency http://oee.nrcan.gc.ca/neud/dpa/data_e/Handbook04/Datahandbook2004.pdf.

so that they may choose to voluntarily reduce their electricity demand. Burlington Hydro will target promotion of this program primarily to its general service customers, however residential customers will be allowed to participate as well. The impact of the voluntary demand response program will be assessed by analyzing the load profiles of program participants before and after notifications as well as by directly contacting a sample of participants after a notification in order to gather information such as:

- Whether or not participants tried to reduce their usage after receiving the notification, and why
- What measures participants undertook to reduce their consumption
- Whether participants think they will voluntarily reduce their demand again when they receive the next notification

The TVD Avalanche system will be used to automate the notification procedure. The purchase and operating cost of this system for one year is just under $30,000. Additional costs associated with this program include: development and production of promotional materials, quantitative analysis of participant load profiles, development and implementation of surveys with participants and the development of a program evaluation report. The total budget for this program is $75,000.

Education & outreach

Burlington Hydro will undertake education and outreach initiatives targeted at its general service customers. The first initiative will be an information seminar, which will be planned and delivered in cooperation with the Burlington Economic Development Corporation (BEDC). Two possible topics have been identified to date through consultation with BEDC:

- Introduction and demonstration of the on-line electricity consumption analysis tool available to Burlington Hydro's interval metered customers and introduction to Burlington Hydro's voluntary demand response program
- Introduction to federal programs available to assist commercial/industrial customers under the Energy Innovators (EI) Program, including the possibility of a case study in Burlington to showcase under the EI program.

The estimated cost for this program is $20,000.

Energy efficiency showcase with CCIW

Burlington Hydro has developed a partnership with the Canada Centre for Inland Waters (CCIW) to showcase the energy efficiency successes of CCIW to Burlington Hydro's customers. The energy efficiency features of the building, most notably the new 10 kW installation of photovoltaic solar panels and the 800 kW natural gas fired cogeneration facility, will be highlighted.

Showcasing the CCIW facility is proposed to include, but not be limited to, the following program elements:

- A partnership launch event with Burlington Hydro, the City of Burlington, Environment Canada, CCIW, and the Ontario Ministry of Energy
- Inviting Burlington Hydro's larger customers to attend a site tour to learn about the efforts of CCIW over the years to increase the energy efficiency of the building
- A display in the lobbies of CCIW and Burlington City Hall that tracks the electricity savings and GHG emission reductions from CCIW's PV and cogeneration facilities
- A case study about CCIW on Burlington Hydro's website.

Burlington Hydro has allocated up to $30,000 for this program.

2.5 *Burlington Hydro staff development*

CDM is a new activity for Burlington Hydro. It is essential that its staff becomes familiar with programs offered by other jurisdictions, technologies available to be deployed and best practices for conservation and demand management. An effective and efficient way for this to happen is to provide staff the opportunity to participate in related conferences, workshops and seminars. The staff development program would cover out-of-pocket costs to participate in these events, such as registration fees and travel expenses.

The cost of this is estimated at up to $25,000.

2.6 *Program administration and planning*

An allocation of resources is required for external assistance in developing the CDM plan, input related to CDM into relevant rates

applications, and design and implementation of monitoring and evaluation systems over the course of the implementation of the plan. Total resources required for this work are estimated at $50,000.

3 Program summary and anticipated results

Table 1 summarizes the proposed programs, their costs, and their anticipated results. It is anticipated that by September 2007, Burlington Hydro Inc. will have invested $2,157,862 in CDM, this being the amount of money associated with its third tranche. Burlington Hydro anticipates spending 20% of its third tranche in 2005, 40% in 2006, and 40% in 2007. The program costs in Table 1 add up to more than $2,157,862, as these costs are estimates which will be refined as the programs are further developed and implemented.

Table 1 – Programs and anticipated costs, benefits and results

Program	Cost up to	Benefits/Anticipated results
Distribution system improvements	1,200,000	Identification and implementation of the most cost effective projects that would optimize the savings and overall benefits to the distribution system, based on a detailed system analysis.
General services smart metering	50,000	Additional customers with access to information on their energy use, and an incentive to reduce demand. Realization of conversions at reduced cost by taking advantage of scheduled recalibrations.
Smart meter pilots	300,000	Technical and operational understanding of smart meter systems and feasibility and desirability of rolling out the technology across residential and small commercial customers. Sharing of experience with other LDCs.
BHI Lighting retrofit	85,000	132 MWh and 15 kW annual reduction from retrofit of lighting in garage & storage areas. Additional energy and demand savings from lighting retrofit of other BHI buildings.
Municipal new construction	120,000	Increased efficiency of new buildings designed in, resulting in reduced energy use and cost. Demonstration to others in

		the community of possibilities.
Municipal building retrofit	120,000	Cost-effective savings of energy and documentation of these savings as case studies.
Appliance replacement	140,000	Accelerated turn-over of inefficient appliances, realizing cost-effective energy savings and peak reduction.
Public education & outreach	50,000	Burlington residents increase their awareness of energy efficiency and conservation issues, resources and programs.
Home developers program	120,000	Developers install energy efficient lighting and appliances in new housing development in Burlington, avoiding lost opportunities.
Education and outreach – general service accounts	20,000	Participating general service customers informed of voluntary demand response program, load profile analysis software and existing federal and other programs available to help them reduce their energy use and increase energy efficiency.
CCIW showcase	30,000	Increased awareness and understanding of opportunities for energy efficiency and embedded generation.
Voluntary demand response	75,000	Reduced energy consumption by program participants during periods of system constraint and/or smog alerts.
Staff development program	25,000	Increased capacity of Burlington Hydro staff to provide cost-efficient, state-of-the-art efficiency programs for its customers.
Planning, administration and monitoring	50,000	Coordinated plan for moving forward, and traceable results.