NORTH BAY HYDRO

74 Commerce Crescent
P.O. Box 3240
North Bay, Ontario
P1B 8Y5

Tel. (705) 474-8100
Fax: (705) 495-2756 Administration
Fax: (705) 474-3138 Engineering / Purchasing
Fax: (705) 474-8579 Customer Services / Accounting
Fax: (705) 474-4634 Operations

EB-2005-0204

January 25, 2005

Mr. John Zych, Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge St. 26th Floor
Toronto, ON, M4P 1E4

Dear Mr. Zych:

Please find attached 6 copies and an electronic copy of the revised Conservation & Demand Management Plan that was previously filed for North Bay Hydro Distribution Limited on January 17, 2005. The program summary on page 6 of our plan has been corrected to reflect the actual detailed cost for each program.

Please do not hesitate to contact me should you have any questions.

Sincerely,

Elizabeth Chirico C.A.
Manager Finance

North Bay Hydro Distribution Limited

Conservation and Demand Management Plan

Ontario Energy Board File No. RP-2004-0203

January 14, 2005

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INTRODUCTION

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

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

October 5, 2004 the Board issued procedural order RP-2004-0203 establishing the process for how distributors may apply for approval of a Conservation and Demand Management Plan. This order also set out the filing requirements for a distributor's plan.

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

North Bay Hydro hereby requests the Board's approval and final order authorizing its CDM plan as being appropriate and effective in discharging its CDM investment obligation, subject to issuance in due course of an order for distribution rates including the final instalment of MARR.

The final instalment of MARR for North Bay Hydro represents ½ MARR as opposed to the 1/3 MARR that is typical for most electric utilities. This CDM plan is submitted for the full final instalment. More information is included regarding the difference between the final installment and 1/3 MARR in the 2005 rate submission.

Plan Budget and Assumptions

North Bay Hydro's third MARR instalment is approximately $1,275,000, exclusive of any payments in lieu of taxes.

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

North Bay Hydro's CDM plan is therefore based on spending approximately $1,275,000 in a combination of capital and operating expenses during the period from January 1, 2004 to September 30, 2007.

While the current plan is well balanced in terms of spending on different customer classes with various measures and distribution system improvements, the industry and regulatory framework is dynamic.

Consequently North Bay Hydro will continue to assess and update its plan and re-allocate resources between programs in response to capture emerging opportunities, customer needs and experience with pilot programs that do not deliver the desired results.

North Bay Hydro plans to implement a series of core programs to drive the majority of energy reductions. North Bay Hydro plans to develop various information-based activities directed at changing the culture of North Bay residents to be more energy efficient. Energy savings for these activities are most difficult if not impossible to assess. Optional programs will be developed for quick implementation as required.

North Bay Hydro is committed to customer service and sees an important role that it can assume to help customers use electricity wisely in order to reduce costs and the environmental and health impacts associated with electricity use. There are also opportunities to save electricity through a more efficient distribution and delivery system.

North Bay Hydro will make every effort to implement its CDM plan as currently designed. To this end, North Bay Hydro is proposing a number of elements to its CDM Plan.

Plan Principles

North Bay Hydro's CDM Plan is based on the premise that both the utility and the customer can use electricity more efficiently. Programs have been designed to address both of these areas. North Bay Hydro has a role to help customers overcome barriers preventing broader participation in conservation and demand management initiatives. These barriers can be financial, a lack of awareness or institutional in nature. The Plan is designed to help customers overcome these barriers. It should be recognized however that customers must take ultimate responsibility for how they use energy.

The North Bay Hydro CDM Plan has been developed based on the following principles:

- The Plan should include a mix of conservation programs for both customers and the utility;
- The Plan should address all customer classes, including hard to reach customers such as non-profit housing;
- The Plan should leverage existing programs available from other sources including Union Gas and Natural Resources Canada;
- The programs must be easy to implement and delivered where possible, through existing channels and community groups such as Greening Nipissing;
- Where appropriate, partnerships will be developed to provide specific behind the meter services to leverage existing expertise and systems and processes;
- Preference was given to investments that result in more predictable results; and,
- The Plan should be flexible in nature with a series of both core and optional programs.

In summary, these principles should help the development of a plan that contributes to the emergence of a conservation culture in Ontario and support the Minister's commitment to peak demand reduction and SMART meter installations. Specifically the Minister has targeted a 5% reduction in Ontario's demand for electricity by 2007.

North Bay Hydro Program Summary

Program	Cost
Water Heater Tune Up	$61,500
Refrigerator Buy Back	$67,500
EnerGuide for Houses	$90,000
Information Based	$172,000
Sub Total Res/Small GS	$391,000
Renewable Energy	$75,000
Large C&I	$545,000
Sub Total	$620,000
System Optimization	$110,000
Optional Programs	$154,000
Total	$1,275,000

Budget

	2004	2005	2006	2007	Total
Operating Expense	5,000	288,000	397,500	446,000	1,136,500
Capital Expenditures	-	92,000	39,500	7,000	138,500
Totals	$5,000	$380,000	$437,000	$453,000	$1,275,000

Water Heater Tune Up

Overview

The City of North Bay has approximately 5,000 electric water heaters situated in residences and small businesses. Electric water heaters are a major component of a customers total electricity costs. This program involves "tuning up" electric water heaters and includes wrapping the tank with an additional layer of insulation, wrapping the first 3 feet of hot water supply pipe with insulating tape or foam, installing a low flow showerhead, and installing aerators at main faucets. This program will be delivered by Greening Nipissing as part of their Green Home Visit Program. The Green Home Visit helps increase awareness of major opportunities for energy savings and includes installing a compact fluorescent light bulb in a main lighting fixture. The customer receives an information package on a number of energy and environmental issues.

Target Market

Residential and small general service customers with electric water heaters.

Implementation Partner

Greening Nipissing.

Budget

	2004	2005	2006	2007	Total
Operating Expense	-	9,000	15,000	9,000	33,000
Capital Expenditures	-	7,000	14,500	7,000	28,500
Totals	-	$16,000	$29,500	$16,000	$61,500

Refrigerator Buy Back Program

Overview

Many homes have a second fridge located in basements, garages etc. These secondary units tend to contain few items and given their age and design, are very inefficient. This program is targeted at removing this second fridge, evacuating refrigerant by a licensed technician, and tagging and recycling the unit. These actions will ensure that these inefficient units are permanently removed from the electrical grid. The participating customer does not have to move the fridge; it will be picked up where it is currently situated. The fridge must be in working order. The technician will record motor sizing and kwh consumption on each individual unit to ensure accurate energy saving calculations. Customers will receive a rebate of $50 to motivate them to participate, in addition to the energy savings.

Target Market

Residential and small general service customers.

Implementation Partner

Local Used Appliance Dealer, Greening Nipissing.

Budget

	2004	2005	2006	2007	Total
Operating Expense	-	18,000	31,500	18,000	67,500
Capital Expenditures	-	-	-	-	-
Totals	-	$18,000	$31,500	$18,000	$67,500

EnerGuide for Houses

Overview

Greening Nipissing has just introduced the EnerGuide for Houses (EGH) program to the City of North Bay and surrounding areas. Participation in this program has been limited at this point. EGH is actually sponsored by the Federal Government, Natural Resources Canada. EGH is delivered as an expert advice service to homeowners. This service provides qualified energy advisors to visit a customer's home. The advisor uses a systematic methodology to assess a home's energy use characteristics and performs a pre-retrofit assessment including a report with energy upgrade recommendations and a rating label for the house in its pre-retrofit state. A blower door is temporarily installed to help create the rating level. It is then incumbent on the customer to implement the retrofit measures identified in the report. The customers can perform the work themselves or hire a contractor. Following completion of energy efficiency upgrades by the customer (or the customers contractor), the energy advisor returns and performs a post audit retrofit evaluation and an upgraded energy efficiency rating for the home. The blower door is re-installed to help determine the new rating.

Natural Resources Canada provides incentives to help reduce the cost of the measures implemented by the customer. The incentive is dependent on the gain in efficiency rating. The incentive varies from $116- $3348. The customer is required to pay for the costs of the initial blower door installation test, currently a cost of $200. The second blower door test costs $100. This is currently covered by Natural Resources Canada, however is being phased out. This $300 cost is a barrier for participation.

As part of this program, North Bay Hydro would rebate the $300 back to the customer for achieving a minimum threshold improvement in efficiency rating. This threshold will be established at a future date.

Target Market

Electrically heated residential homes

Implementation Partner

The primary partner for this program is Greening Nipissing. Greening Nipissing has Natural Resources Canada approved energy advisors under contract.

Budget

	2004	2005	2006	2007	Total
Operating Expense	-	24,000	42,000	24,000	90,000
Capital Expenditures	-	-	-	-	-
Totals	-	$24,000	$42,000	$24,000	$90,000

Information Based Programs

Overview
North Bay Hydro will assist all customers to use electricity more efficiently by making them more aware of measures they can take to reduce consumption. It is also critical to increase the awareness of the specific, unique programs that are being developed and delivered by North Bay Hydro. A variety of channels will be utilized to ensure maximum coverage and exposure. Channels to be utilized include on-bill messages, billing stuffers, and web-based North Bay Hydro home page, and radio and newspaper advertisements. For residential customers, the messages are intended to be relevant to the season. Information based programs are intended to increase awareness, create interest and program participation and change to a more conservation based culture. For larger customers, the messages will focus on technology improvements and benefits of real time energy monitoring.

Target Market
Residential and General Service customers

Implementation Partners
Local media outlets, Greening Nipissing

Budget

	2004	2005	2006	2007	Total
Operating Expense	5,000	67,000	50,000	50,000	172,000
Capital Expenditures	-	-	-	-	-
Totals	$5,000	$67,000	$50,000	$50,000	$172,000

Renewable Energy Opportunities

Overview

Some larger commercial and institutional customers have expressed interest in developing renewable energy sources to displace grid purchased electricity. Not only could these projects reduce local demand for electricity, they would offer environmental benefits by offsetting the current provincial generation mix and dispatch. Implementing a renewable energy option can represent a long-term cost effective source of stable priced electricity.

Funding is required by customers to encourage them to pursue these opportunities and determine project feasibility from a technical and economic perspective. Potential local renewable opportunities include landfill gas, wind, and biomass.

With this program, interested customers would approach North Bay Hydro and apply for funding in order to determine project feasibility. Each application would be reviewed an assessed on an individual basis. When project feasibility is established, North Bay Hydro would work with the customer to help with project implementation.

Target Market
Larger commercial and institutional customers.

Implementation Partners
Implementation partners will be developed on each specific project.

Budget

	2004	2005	2006	2007	Total
Operating Expense	-	25,000	25,000	25,000	75,000
Capital Expenditures	-	-	-	-	-
Totals	-	$25,000	$25,000	$25,000	$75,000

Large Commercial and Industrial Energy Efficiency/Demand Reduction

Overview

The largest 25 commercial and industrial customers represent approximately 35% of North Bay Hydro's total demand and energy consumption. Many of these customers, including the local community-housing group, have expressed interest in participating in an energy efficiency/demand reduction program. Some have completed energy audits; yet have not implemented identified measures. In general, these customers are an essential part of the city, their efficiency and competitiveness is critical to the economic health and development of the region. This program will focus on reducing their electrical energy costs.

The larger customers will be approached on a voluntary basis to determine their initial interest in the program. If interested, a scoping or walk through audit will be completed on the customer's facilities. All qualifying demand reduction measures established by the Ontario Energy Board will be considered for implementation. Qualifying measures to be considered include energy efficiency opportunities (new lighting systems, HVAC improvements, new motors, etc), operational changes, interruptible loads, dual fuel applications, thermal storage, demand response (load control and back-up generator dispatch), fuel switching, distributed generation, ground source heat pumps, and smart metering. A basic summary report will be produced on the facility outlining major opportunities for savings. If the customer continues to be interested in further development of the targeted opportunities, an investment grade audit or feasibility study will be completed. Part of this process will be to establish a customer energy consumption baseline before any measures are introduced. Interval meter readings will help create this baseline.

The next step will be to design the project and implement the measures. A monitoring and verification protocol, to be developed (by the OEB or Ministry of Energy), will track actual performance results. Project financing could be provided from existing institutions for those customers that require financing and qualify.

An external service provider, experienced delivering these types of services, will help deliver this program to the targeted customer base. Customers are also free to use their own service provider.

North Bay Hydro would provide incentives to help reduce the payback and costs associated with implementation of measures. Each customer application would be assessed on an individual basis to determine an appropriate incentive level. The intent would also be to work with other programs offered by Union Gas and Natural Resources Canada in order to maximize all available funding sources for the customer.
This program must be delivered to customers in early 2005 as it will take between 18-24 months before measures are actually implemented.

Target Market
Larger commercial, institutional and industrial general service customers

Implementation Partners
To be determined

Budget

	2004	2005	2006	2007	Total
Operating Expense	-	145,000	200,000	200,000	545,000
Capital Expenditures	-	-	-	-	-
Totals	-	$145,000	$200,000	$200,000	$545,000

System Optimization Study

Overview

North Bay Hydro owns and operates over 500 km of distribution line at voltages from 4,160 volts to 44,000 volts. The system has over 4,000 transformers and 17 electrical substations. There are opportunities to obtain demand and energy savings by optimizing and balancing the system. A study is required to develop a strategic plan for realizing these savings. This system analysis will include a review of load flow, phase balancing, optimization, system review and short and long term planning. A model of the distribution system will be created to establish savings potential. The results of this study will help develop future capital spending programs. This CDM submission is not intended to cover the costs associated with realizing these savings. These costs will be covered through traditional processes. Energy savings realized from these initiatives would be included in North Bay Hydro's CDM Plan results.

Target Market

North Bay Hydro Distribution System

Implementation Partners

To be determined

Budget

	2004	2005	2006	2007	Total
Operating Expense	-	-	-	-	-
Capital Expenditures	-	85,000	25,000	-	110,000
Totals	-	$85,000	$25,000	-	$110,000

Optional Programs

A series of optional programs will be researched, developed and implemented to complement core programs if required. Following is a summary of the programs that could be developed:

Program	Background
Street lighting	The City of North Bay has over 5,000 street lighting fixtures. While retrofitted back in the 1990's, new electronic ballasts are now available to increase savings. Research into feasibility is required.
Sentinel Light Replacement	There are hundreds of sentinel lights located at homes and businesses across the City. Some of these lighting fixtures have never been upgraded and are the original mercury vapour type. Research is required to establish quantities, replacement fixtures and costs.
LED Traffic Lights	There could be potential to replace some existing traffic light fixtures with the new LED design. This new design uses approximately 10% of the electricity of the existing lights. Research is required to determine source, product support and implementation issues.
Thermal Energy Storage	In the early 1990's, North Bay Hydro implemented a pilot thermal energy storage heating program with 26 residential customers. This program was never expanded beyond the pilot phase. There could be potential to re-introduce this program and introduce smart meters to help the customer and system achieve true load shifting.
Domestic Hot Water Load Control	North Bay Hydro operated a residential hot water heater load control program up until 2002. It could be feasible to install new control hardware and software and re-introduce the program. There could be difficulty finding the replacement equipment, as local product support might not be available.
Distribution System Optimization	The System Optimization Study may establish improvements that could be made to the distribution system resulting in demand/energy savings. This will not be known until after the Study has been completed and accessed.

Budget

	2004	2005	2006	2007	Total
Operating Expense	-	-	34,000	120,000	154,000
Capital Expenditures	-	-	-	-	-
Totals	-	-	$34,000	$120,000	$154,000