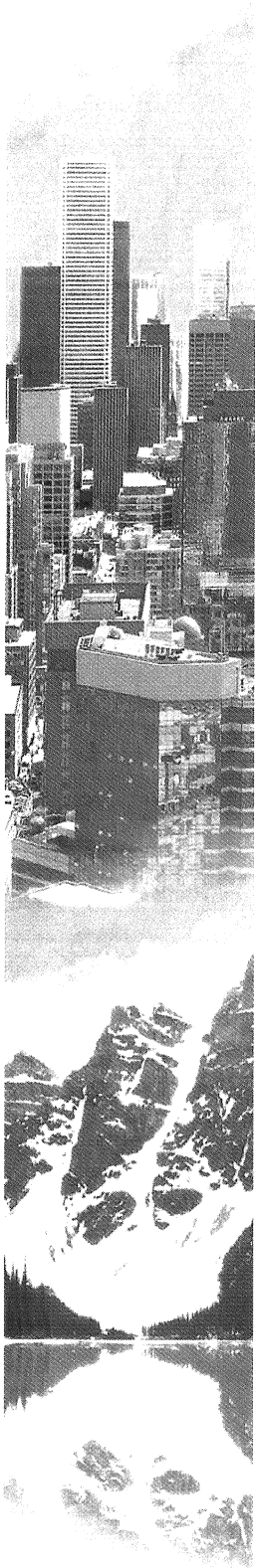


Milton Hydro 2004 DSM Plan



Milton Hydro 2004 Demand Side Management Plan



INDÉCO

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

For additional information about this document, please contact:

IndEco Strategic Consulting Inc.
2 Pardee Avenue, Suite 302
Toronto, ON, Canada
M6K 3H5

Tel: 416 532-4333
Fax: 416 532-5485
E-mail: **info@indeco.com**

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1 The context for Milton Hydro's 2004 DSM plan

In January 2003, Milton Hydro Distribution Inc. published a plan to act on its commitment to energy efficiency in order to assist its customers in achieving higher levels of energy efficiency and energy conservation (IndEco, Fraser & Company, Milton Hydro. 2003). That plan defined DSM, identified the benefits of a DSM plan, reviewed how to capture effectively the benefits of LDC driven DSM, and identified a set of initial programs. These initial programs were designed to support, enhance and expand on Milton Hydro's efforts in interval metering, and introduce other DSM programs including rate proposals, public education and outreach initiatives, and others.

Because of the uncertain regulatory environment at that time, the DSM plan did not move forward. Since that time, however, many things have changed:

- The then Minister of Energy directed the Ontario Energy Board (OEB) to consult with stakeholders to identify and review options for the delivery of demand side management and demand response (DSM/DR) within the electricity sector. The OEB presented its response to this Directive.
- A provincial election was held, and there was a change in government.
- The Task Force on Conservation and Supply released its report calling for a 'Conservation Culture'.
- The Minister announced the government's intention to permit local distribution companies (LDCs) to apply to the Ontario Energy Board (OEB) for the next instalment of their allowable return on equity beginning March 1, 2005. He indicated that the OEB's approval in regard to the final instalment should be conditional on a financial commitment to reinvest an amount equal to one year's incremental returns in conservation and demand management initiatives.
- The Minister wrote Milton Hydro (and other LDCs) pursuant to section 79.6 of the Ontario Energy Board Act, 1998 to allow the LDC to proceed to the OEB with an application to establish a deferral account – in advance of Milton Hydro's ability to recover such costs through the next instalment of the allowable return on equity in March 2005 – within which to track expenditures on conservation and demand management initiatives.

In his letter of 31 May 2004, the Minister indicated his expectation of expedited short-term actions, and identified some of the areas for which prudent expenditures could be recovered:

- energy efficiency;
- behavioural and operational changes, including the application of benchmarking or “smart” control systems;
- load management measures which facilitate interruptible and dispatchable loads, dual fuel applications, thermal storage, and demand response;
- measures to encourage fuel switching which reduces the total system energy for a given end-use;
- programs and initiatives targeted to low income and other hard to reach consumers; and
- distributed energy options behind a customer’s meter such as tri-generation, co-generation, ground source heat pumps, solar, wind, and biomass systems.
- The Minister tabled new legislation (Bill 100) in June 2004, which would establish an Ontario Power Authority that would include a Conservation Bureau. The OPA would, among other things, engage in activities that promote electricity conservation and the efficient use of electricity, and would be permitted to enter into contracts with LDCs for these services. The Conservation Bureau would provide leadership in planning and coordination of measures for electricity conservation and load management.

This document outlines Milton Hydro’s demand side management plan for 2004.¹ It builds on its 2003 plan, taking into account the new policy directions for DSM that have occurred in the last 18 months.

¹ Milton Hydro is committed to moving aggressively on implementing DSM, and the 2004 Plan is premised on this objective, however, it is recognized that actual timing will be influenced by the availability of financial resources and equipment, supplier and partner schedules and other factors. Realistically, some of the initiatives outlined in this document will extend into 2005.

2 Milton Hydro's 2004 DSM portfolio – the programs

This chapter includes a description of the proposed programs of Milton Hydro's 2004 DSM Plan. For each program, the following information is provided:

- A brief **description** of the program, its key measures, major objectives and outcomes, and the rationale behind the program.
- The **implications** of the program for Milton Hydro, its customers, retailers, and the marketplace.
- The proposed **budget** for the program in 2004, including budget assumptions.

2.1. *Price response program design*

Interval meters have been a key component of Milton Hydro's initiatives in recent years. To fully capture the demand reduction and energy savings opportunities that interval meters can offer, they must be part of an overall system that includes:

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

New rate structures will not be available until after March 2005, but Milton Hydro wants to prepare itself and its customers for these new rate structures. Therefore, during 2004 the focus of the DSM initiative will be on the first and third system components identified above: availability of the technology, and customer information and education.

Design of "Meter Retrofit Program"

Milton Hydro has already moved more aggressively on interval meters than other Ontario distribution companies. Interval meters are required for all new residential and commercial construction in the town, and in all buildings with loads in excess of 50 kW.

Over 2004, Milton Hydro will continue to install interval meters in new buildings.

In addition, Milton Hydro will develop a retrofit program to install interval meters in existing buildings that use less than 50 kW.

Steps in the development of the meter retrofit program include:

- On-going evaluation of technologies appropriate for retrofit applications. This will include an on-going review of the literature, meetings with potential suppliers, and assessing the technical and economic merits of retrofit technologies commercially available. A particular concern will be to minimize the likelihood of stranded assets resulting from too early commitment to technologies, when these technologies are rapidly evolving.
- development of an implementation plan. This will include sequencing, scheduling, staff training needs, and other details of the program. The program will address both small commercial/industrial and residential retrofit applications. In the case of small commercial/industrial (i.e. <50 kW), this could include replacing meters with interval meters when they come due for recalibration, accelerated replacement, or both. In the case of residential retrofits, this could include pilots, possibly in the more rural areas where the risks of stranded technologies are likely to be lower because the lower densities in these areas limit some of the newer options being developed, such as wireless communication, powerline carriers, mesh networks, etc.

Customer information

Programs to assist customers in understanding how to use their interval meters to reduce their energy costs will be developed. These will be immediately relevant to customers who are paying the market rates, and will be relevant to other customers once time-of-use or market rates are available to smaller users. The programs 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. Milton Hydro now has a program which enables large customers to log into their personal account, and review their usage and costs. This program will be expanded to all customers using 'smart' meters. Appropriate software will be purchased and maintained.
- 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.

- Development of a notification procedure. This procedure would be used to advise customers when prices have exceeded or are forecast to exceed certain thresholds or when supply conditions are constrained, and enable them to take actions when they will be most effective. This is anticipated to be an automated system that would auto-dial, fax, page, or e-mail participants who sign-up for notifications. Such a service allows them to respond to price signals, without having to regularly visit the website of the IMO (referred to as the Independent Electricity System Operator in Bill 100). The program development includes the evaluation, purchase, and installation of appropriate equipment, and the development of supporting management procedures to enable notifications. The program will also include purchase of notification software, installation, and testing. The notification procedures are a necessary prelude to participation in the IMO's Transitional DR program.
- Customer education. In order to ensure that customers make the best use of the customer consumption tracking software that will be available to them over the internet, customers need to become more aware of and receive training on the use of the software. The better the understanding of how to use the software the greater the likelihood that customers will alter their behaviours or implement energy efficiency measures to reduce their electricity consumption. The utility has already held one small workshop last year to introduce customers to the web-based consumption tracking for the large commercial/industrial customers. More workshops are needed. Milton Hydro proposes to offer up to three workshops to all of its commercial and industrial customers to introduce them to these tools, and Milton Hydro's plans for DSM/DR programs that will help them to better manage their energy use and their energy costs.

The overall cost of the Price Response Program design through March 2005 is estimated at \$121,000.

Looking ahead to March 2005

In March 2005, the Milton Hydro plans to expand its DSM program to include time-of-use rates, market rates, or both, and the implementation of the interval meter retrofit program.

2.2. *Aggregator development program*

Milton Hydro will be examining the feasibility of offering aggregator services to its customers or their Retailers as well as providing services to eligible parties active in Milton to enable them to act as aggregators. This will involve purchasing of the appropriate settlement hardware and testing of the software. The cost of this is estimated at \$35,000.

2.3. *The Energy Drill Program*^{TM 2}

Milton Hydro will develop The Energy Drill ProgramTM. This program, modeled after fire drills, will designate building “Energy Marshals” who will be responsible for taking actions to reduce demand during periods when it will be particularly important to reduce demand, e.g. periods of anticipated constrained supply or elevated prices.

During 2004, the program will be developed and piloted in three different types of buildings. Components of the development plan include:

- Developing standard protocols and procedures appropriate to different sectors (e.g. institutional, educational or commercial).
- Developing notification procedures to trigger the Drill
- Implementing the pilot program in three buildings, representing three different sectors. This would include an initial audit, training for relevant staff, and occasional follow-up once the program is in place, to ensure smooth operation. The pilot program will include test drills, and evaluation of energy savings that resulted.
- Evaluation and refinement of protocols, procedures and notification procedures, based on the results of the pilot, for broader roll-out in 2005.

Two additional funding sources, which could be accessed to offset the costs of developing and piloting the Energy Drill Program, have been identified. Applications to these funds for grants to assist with the Energy Drill Program will be developed in 2004 to meet the upcoming deadlines for these programs.

The Federation of Canadian Municipalities’ (FCM) Green Municipal Funds (GMF) 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 community development, water services, transportation services and waste management. The municipal building pilot and the school building pilot are both eligible projects under this program (the commercial building pilot is not). Preliminary discussions with FCM staff suggest that they would be interested in receiving a grant application for the Energy Drill Program for both the municipal building and school building pilots.

² The Energy Drill ProgramTM is a trademark of Milton Hydro

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. While Milton Hydro cannot apply directly for his funding, it will work in partnership with the commercial business whose building will be used for the commercial building pilot of the Energy Drill Program. Preliminary discussions with NRCan about this commercial pilot have been positive.

Overall, the cost of developing and piloting The Energy Drill™ program, based on the tasks described and budgeted above, is estimated at \$116,000.

2.4. Program development research

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

Milton 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 hot-water heaters or air conditioners by putting these under the control of the utility. The research might 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 customers, etc.)
- Distribution system standards, and how these might contribute to reducing electricity losses. This could include consideration of how to optimize the power system, using load flow software, or investigating standards for low-loss transformers.
- Net energy billing systems, the technology available for these, and implications for the distribution system. This could include a consideration of where these have been implemented, and how the experience in other jurisdictions can instruct Milton Hydro on proceeding down this avenue.

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

The research study for the 2004 DSM Plan is budgeted at \$25,000.

2.5. *Partnership building*

There are numerous organizations already offering energy efficiency services, or with the potential to offer these. Milton Hydro wishes to build on these opportunities by forging partnerships with retailers, existing program deliverers, professionals, and others.

In 2004, Milton Hydro will undertake five outreach initiatives to help to develop partnerships:

- **Retailer consultations** – Milton Hydro will consult with electricity retailers to explore how retailers can improve customer choice in Milton, and enhance system efficiency. For example, Milton Hydro might explore how retailers could aggregate customer loads for the purpose of selling services to the wholesale market, and how the analytical tools available may support this initiative. These include the customer consumption tracking tools, and the tools being proposed for calculating baselines and settlement. This initiative is supportive of enabling retailers to aggregate their customer loads to sell DR capacity to the IMO, possibly as part of its Transitional Demand Response Program.
- **Leverage existing programs** – Milton Hydro will explore how it might enhance its customers' knowledge of and access to energy efficiency programs already operating in Ontario. For example, Milton Hydro might use its relationships with its customers to encourage their participation in existing programs to replace air conditioners, refrigerators or lawn mowers with more efficient models, or to take advantage of federal programs for energy audits. The initiative involves identification of existing programs accessible by Milton residents and businesses, and discussions with operators of these programs on collaboration opportunities. Where suitable within the timeframe and resources of the 2004 plan, specific actions will be undertaken to advise customers on how to participate in these programs (e.g. possibly bill inserts or other promotional activities).
- **Design charette for the building community** – one of the impediments to the construction of more efficient buildings is the lack of familiarity of the building community with the opportunities available to make buildings more efficient, and the costs that are associated with these changes. To address this impediment, Milton Hydro proposes to offer a design charette for building industry professionals active in Milton. To this end, we will collaborate with Sustainable Buildings Canada who has developed a program to address this need, involving design teams

developing alternative designs for a building to a particular standard, and evaluating the designs with evaluation software. Collaborating with Sustainable Buildings Canada will enable Milton Hydro to take advantage of this existing program, which is funded in part by Natural Resources Canada through a contribution agreement it has with Sustainable Buildings Canada. Milton Hydro will identify a candidate building, invite professionals who are active in Milton to participate in the charette, and work with Sustainable Buildings Canada to deliver the charette. Offering this type of charette is important to ensure that design and development professionals appreciate the energy efficiency opportunities available, and thereby can design new buildings to minimize their long-term loads. It is particularly important in Milton, which is a rapidly growing community.

- **A potential net zero energy homes pilot**—Milton Hydro is a member of the Net Zero Energy Home Coalition, and has had preliminary discussions with innovative technology manufacturers who are designing technologies that would allow homes to be net zero electricity consumers. Milton Hydro will pursue these opportunities, along with discussing with potential sub-division developers the possibility of developing a net zero energy home pilot program in Milton.

The cost of these four partnership development programs is estimated at \$67,000.

2.6. Conservation asset program

This program will involve the development and documentation of a strategy for the purchase and installation of conservation assets in Milton Hydro. The strategy will be staged, with the first stage taking place during the period for the 2004 DSM Plan.

During 2004, conservation assets to be acquired and put in place include Interval meters for the purpose of retrofitting approximately one-third of existing rural residential and commercial customers with demands less than 50 kW. Technologies that reduce distribution losses, such as capacitor banks, or voltage conversion, will also be considered for the conservation asset program, where analysis indicates these are economic.

2.7. Program planning, coordination and administration

Milton Hydro will undertake three activities related to program planning, coordination and administration:

- Elaboration of the 2004 DSM Plan, and development of a DSM plan for 2005, for submission to the OEB. The plan outlines program initiatives and costs.
- Project management of the 2004 DSM Plan. This activity involves coordination of all the initiatives described above, and ensuring they are proceeding according to plan. Where necessary, it also involves refining the plan to reflect new information, or changed circumstances that arise. Monthly progress reports will be developed and reviewed with the responsible persons within Milton Hydro.
- Monitoring and evaluation of the 2004 DSM Plan, and preparation of a DSM report describing the programs and the results of them.

The cost of program planning, coordination and administration is estimated at \$65,000.

3 DSM budget summary

Table 1 presents a summary of the total Milton Hydro DSM budget for 2004. A total of \$1,129,000 is proposed, of which \$700,000 will be for the 2004 conservation assets program (capital expenditures), and \$429,000 will be for the DSM program design and delivery (O & M expenditures).

The value of the DSM program design and delivery components of the plan is greater than the budget requested, since additional funds will be provided directly or indirectly by other programs, including programs offered by Natural Resources Canada, the Federation of Canadian Municipalities, and through the in-kind contribution of various program participants.

Table 1 -- Milton Hydro 2004 DSM budget

1 Price response program design	\$ 121 000
2 Aggregator development program	\$ 35 000
3 Energy Drill Program	\$ 116 000
4 Program development research	\$ 25 000
5 Partnership building	\$ 67 000
6 Conservation assets program	\$ 700 000
7 Program planning, management & coordination	\$ 65 000
Total	\$ 1 129 000



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IndEco Strategic Consulting Inc

2 Pardee Avenue Suite 302 Toronto ON M6K 3H5

416 532 4333 fax: 416 532 5485 info@indeco.com indeco.com