Manitoba Hydro's TREE Rebuttal

1. INVERTED RATES – Document A – Final Argument Status Update Filing (2002)

As part of its evidence before the CEC, TREE/RCM has filed the Final Argument it made before the Public Utilities Board hearings into Manitoba Hydro's Status Update Filing in 2002. During the review of that filing, TREE/RCM filed testimony on the concept and applicability of inverted rates to Manitoba Hydro residential customers. Manitoba Hydro filed rebuttal to that testimony and both parties were subject to direct and cross examination during the proceedings.

TREE/RCM's Final Argument at these proceedings (and its filed evidence at the current proceeding) in respect of inverted rates is briefly summarized as follows.

The PUB should order Manitoba Hydro to implement an inverted rate structure to Residential customers to signal to them, for their marginal consumption, the real value of electricity and to provide a positive further inducement to conservation. TREE/RCM also urged the PUB to adopt its specific "proposal to implement inverted rates on the Manitoba Hydro system, starting with an initial rate inversion based on the low cost power on the Manitoba Hydro system, and then enhanced by additional rate inversion based on the relative load factors of different size residential consumers."

TREE/RCM's "initial inversion" would see the Residential rate for consumption in excess of 250 kW.h per month increase from 5.16 cents to 5.9 cents per kW.h., an increase of about 14%. (Over 85% of Residential bills issued in Manitoba are for consumption in excess of 250 kW.h per month.) Such action would bring the Residential "tail block" price closer to the marginal cost of energy, but would also increase the bill to a Manitoba electric heating customer by as much as 10% during a cold winter month. Further inversion, based on TREE/RCM's belief that high volume residential customers cause increasing distribution system costs, would increase the impact on the tail block and on residential electric heat customers.

TREE/NCN's opinion is that this type of rate restructuring would reduce Manitoba Hydro's Residential customer load by about five per cent over time; about 300 GW.h per year at current levels of Residential consumption.

Manitoba Hydro summarized its position on this matter in its own Final Argument submitted before the PUB, September 30, 2002. Manitoba Hydro is not opposed to inverted rates in principle, but did take issue with some of the specific aspects of TREE/RCM's position. Manitoba Hydro was concerned that any movement toward such a rate structure should consider issues of rate continuity and stability and fair treatment of Residential electric heating customers who comprise some 35% of total Manitoba

Residential customers, who are concentrated in regions of the province that do not have access to natural gas.

Manitoba Hydro also took issue with some of TREE/RCM's evidence that Residential customers with higher usage imposed more than proportionate demands (and, hence, costs) on the Distribution systems and noted that, in fact, there may be economies of scale in the Distribution systems that at least partially offset some of the rationale for inverted rates.

Overall, Manitoba Hydro argued that inverted rates merit further study but that there is no urgency to implement them immediately, a position with which the PUB, in its Order 7/03, concurred:

> *"While the Board is not prepared at this time to support an inverted rate structure, the Board accepts that certain concepts of an inverted rate structure for residential customers may have merit for consideration in the future. The Board believes that more study is required before an inverted rate structure can be considered for any customer class. The Board will direct Hydro to prepare a study on the merits of an inverted rate structure across all rate classes, including transition and implementation issues. As part of this study, Hydro should evaluate the impact of an inverted rate structure on electric heat customers and residential customers with higher than average loads."*

The PUB directed that Manitoba Hydro file this study by December 31, 2003, but subsequently, in Order 154/03, amended the filing date to December 31, 2004. Manitoba Hydro intends to file by that date.

The Clean Environment Commission should be aware that Manitoba Hydro currently has a General Rate Application before the Public Utilities Board. If this Application is approved, the Residential declining block rate structure will be eliminated and replaced with a single energy charge by April 1, 2005. All increases proposed for the Residential class will be in the tail block (the price for most marginal usage). Currently the Residential rate structure consists of: a Basic Monthly Charge of $6.25; a charge per kW.h for the first 175 kW.h per month of 5.78 cents; and a charge for all remaining kW.h of 5.16 cents. By April 1, 2005, the rate structure will consist of the Basic Charge (still $6.25 per month) and a charge for all kW.h of usage of 5.69 cents. This represents an overall tail block rate increase of 10% over two successive rate changes (April 1, 2004 and April 1, 2005). The impact on a peak winter bill for an electric heat customer will be to increase it by 9.6 per cent (compared to the increase of 6.6 per cent for the average Residential bill for a customer without electric heat).

Manitoba Hydro believes that these changes will move considerably in the direction of providing appropriate price signals at the margin. This rate structure will be further reviewed once the study on inverted rates has been completed.

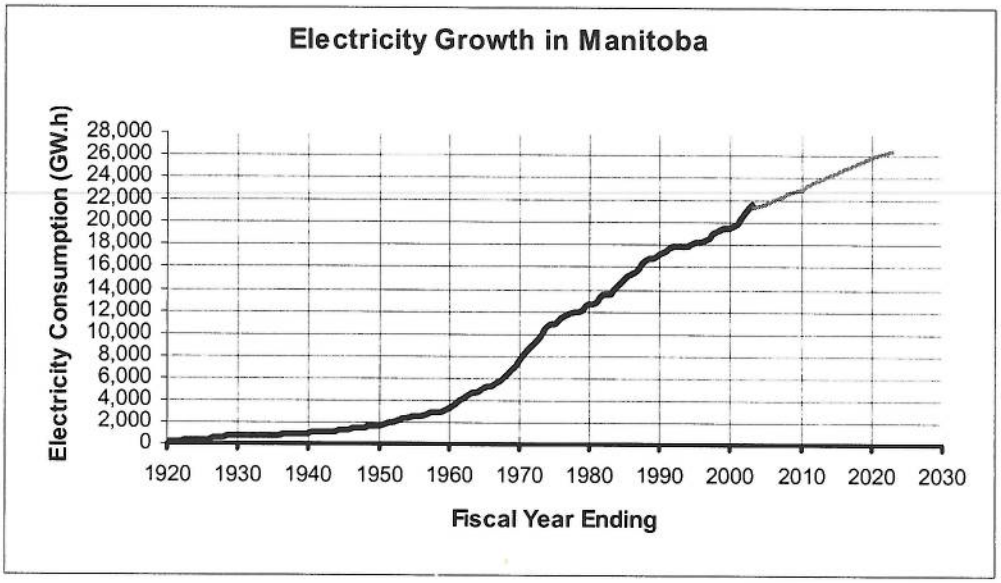
2. LOAD FORECASTING – Document B – *Alternatives to the Advancement of Wuskwatim GS*

1. Mr. Torrie comments "the forecast of never-ending growth in domestic electricity consumption that underpins Manitoba Hydro's view of the future." (page 6 of 21)

The graph below illustrates the historical growth of electricity consumption in Manitoba. Since the depression, weather-adjusted electricity consumption in Manitoba has grown in 67 of the last 69 years. It would seem reasonable to expect that the load should continue to grow over the next twenty years.

Unlike Mr. Torrie's belief that "forecasting is like driving a car with only the rear view as a guide", it is more analogous to say that forecasting utilizes the driving skills and experience developed in the past to assist in navigating the road ahead. Analysis of the past is important to understand the future.

The graph also shows our projection for future load growth in Manitoba. The load is forecast to grow at a slow, steady and somewhat conservative rate.



In 2002/03, the actual, weather-adjusted Net Firm Energy was 21,668 GW.h. which exceeded the 2002/03 forecast load by 408 GW.h (Appendix 8, page 3). In fact, the one year of actual load growth experienced since the preparation of the May, 2002 System Load Forecast is equivalent to three years of forecasted load growth contained in the report. The most current information available suggests that the load forecast is low and that actual electricity consumption will exceed forecasted electricity consumption in the near future.

2. ***Mr. Torrie comments "The mathematics of the forecasting method contains very little information and detail about the fine structure of these highly aggregate ratios (with the already noted exceptions of a part of the Residential forecast and the Top Customer portion of the General Service Class)." (page 12 of 21)***

It seems that Mr. Torrie is reasonably satisfied with the end use methodology used in preparing the Residential Forecast and with the customer-specific methodology used in preparing the Top Customers portion of the General Service Forecast. Criticism is focused on the econometric methodology used in preparation of the General Service Mass Market Forecast.

It should be noted that the General Service Mass Market represents only one-quarter of Net Firm Energy. Although the General Service Mass Market econometric methodology has only been used for three years, the model has produced reasonable results to date. The three, two and one year forecasts are 0.04% low, 0.96% low and 0.77% high, respectively.

3. ***Mr. Torrie comments "These aggregate ratios exhibit and have exhibited significant variation in the past, leading to wildly inaccurate load forecasts and poor utility investment decisions." (page 12-13 of 21)***

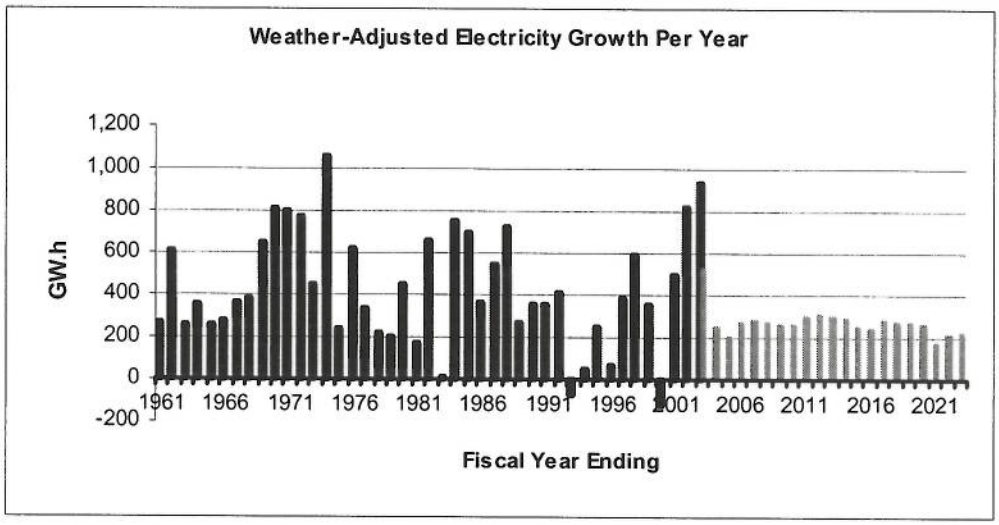
It is unclear as to whether Mr. Torrie's comment regarding "wildly inaccurate forecasts" was directed towards Manitoba Hydro or electric utilities, in general. Analysis of forecast accuracy (Appendix 8, page 55) reveals that Manitoba Hydro's forecasting methods of the early to mid 1970's needed to improve. Resources were allocated to develop skills and expertise in the areas of data collection, analysis and model development. This investment resulted in the development of better load forecasts and an improvement in forecast accuracy.

In any case, Manitoba Hydro conducts a sensitivity analysis to measure the risk associated with potentially inaccurate load forecasts in an effort to avoid "poor utility investment decisions". For example, in TREE/RCM/MH/NCN I-NFAAT-006c, Manitoba Hydro/NCN provided results of a sensitivity analysis to medium-low load growth demonstrating that the impact on the Wuskwatim IRR was only 0.3%.

4. ***Mr. Torrie comments "The type of load forecasting practiced by Manitoba Hydro tends to predict a future that looks like the past" (page 13 of 21)***

Throughout the 1959/60 to 2001/02 period, Net Firm Energy grew 4.5% or 415 GW.h per year. The load forecast predicts that future load will grow at a rate of 1.2% or 269 GW.h per year. A growth rate of 1.2% is significantly lower than a growth rate of 4.5%. Net Firm Energy growth of 269 GW.h per year is substantially less than 415 GW.h per year.

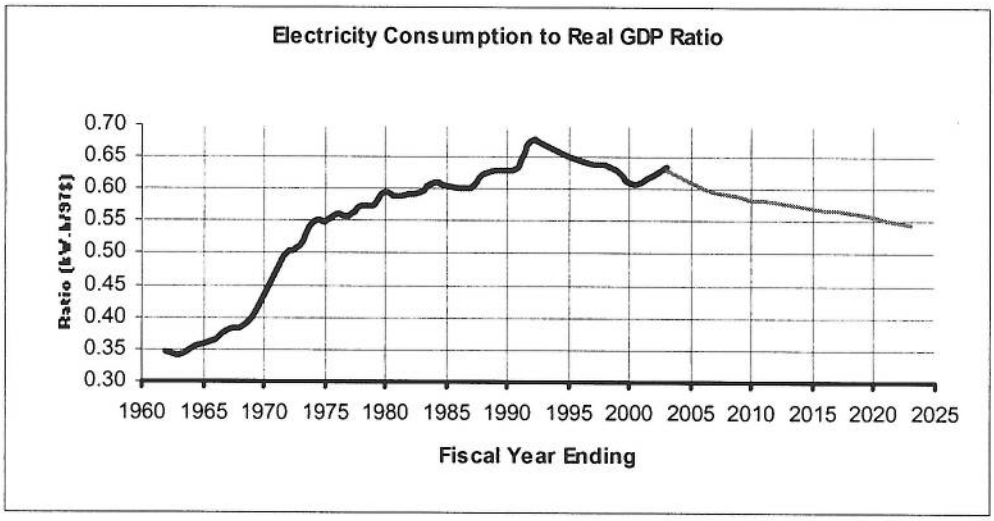
The type of forecasting practiced by Manitoba Hydro tends to predict a future that is significantly different than the past. This is illustrated in the following graph that compares historical and forecast year-to-year, weather-adjusted, electricity growth.



5. ***Mr. Torrie comments "the forecast will turn out to be accurate when these highly aggregate ratios are stable or changing only slowly and smoothly" (page 13 of 21)***

The graph below shows that the electricity consumption to real GDP ratio in Manitoba is changing at a slow and steady rate. The ratio increased from 0.34 to 0.67 during the 1962 to 1992 time period and proceeded to drop to 0.62 by 2002. The ratio increased during a period of mining development and electric space heat conversion in the province. The ratio decreased as mining development and conversion activities slowed.

The forecast assumes that this ratio will continue to decline slowly and smoothly throughout the load forecast period. Based on Mr. Torrie's above statement, it seems that there is a reasonable probability that the forecast will turn out to be "accurate".



6. ***Mr. Torrie comments "Not possible to calibrate an end use model to Load Forecast total without making unrealistic assumptions about …..commercial sector floor areas or……energy utilization intensities." (page 14 of 21)***

The General Service Mass Market forecast is contained in the System Load Forecast (Appendix 8, page 22). The majority of this sector consists of commercial buildings. This sector has grown 93 GW.h per year since 1992/93, representing an annual growth of 1.9%. During the 2002/03 to 2017/18 period, this sector is forecast to grow 95 GW.h per year, representing an annual growth rate of 1.6%.

Since forecasted growth is similar to the historical growth in GW.h's and less than historical growth in percentage terms, calibration of the end use model should not be too difficult. Historical growth in commercial floor space and energy utilization intensities should be used to calibrate the end use model.

7. ***Mr. Torrie comments "floor area growth is considerably faster than economic output for this sector." (page 14 of 21)***

During the 2002/03 to 2017/18 period, the General Service Mass Market is forecast to grow 1.6% per year (Appendix 8, page 22). This corresponds to the 1.6% growth forecast for electricity consumption in the commercial sector (Manitoba Hydro DSM Market Potential Study 2003 – Commercial Sector, page viii). During the same period, Manitoba Real GDP is forecast to grow 1.9% per year in the Economic Outlook (Appendix 7, page 3).

All of the commercial floor space segments are forecast to grow at a rate less than 1.9% per year, except for the Hotel/Motel and Medium School segments (Manitoba Hydro DSM Market Potential Study 2003 – Commercial Sector, page 33). The load forecast

projects that commercial energy use and floor space growth will occur at a slower rate than growth in the overall provincial economy.

8. ***Mr. Torrie comments " a calibration of our end use model that adopts the economic and demographic growth from the Load Forecast, but substitutes lower values for activity variables or energy utilization intensities…but totals considerably less electricity demand by the year 2018." (page 15 of 21)***

As Mr. Torrie pointed out on page 11 of his evidence, assumptions are the foundation of a forecast. It is no surprise that a lower forecast can be created, if all the forecast assumptions are lowered. Manitoba Hydro does prepare a low growth forecast – it's called the Medium Low Scenario. Although the Medium Low Scenario is plausible, the Base Forecast represents Manitoba Hydro's best estimate of future load growth in the province.

3. Demand Side Management – Document B – *Alternatives to the Advancement of Wuskwatim GS*

In TREE/RCM's submission, "Alternatives to Advancement of the Wuskwatim Generating Station", prepared by Torrie Smith Associates, Torrie Smith maintains that Manitoba Hydro's Power Smart Program is a "reasonably good example of second-generation DSM programs as practiced in the late 1980's and early 1990's but has fallen behind current best practice." (page 19, lines 16-18). Torrie Smith also references ACEEE's (American Council For An Energy-Efficient Economy) report "America's Best: Profiles of American's Leading Energy Efficiency Programs" by Dan York and Martin Kushler's (page 19, lines 1-2).

Manitoba Hydro's position is that this statement is a misrepresentation of the Corporation's Power Smart program. Manitoba Hydro's Power Smart program is one of the most aggressive DSM initiatives in North America, and exhibits exemplary design and best practices for energy efficiency programs in today's markets. This position is supported by the following information which is structured along four lines of discussion:

1. A comparison of Manitoba Hydro' Power Smart initiative with other energy efficient programs in Canada. Manitoba Hydro offers one of the most aggressive and long-standing commitment to DSM in Canada.

2. A comparison of Manitoba Hydro' Power Smart initiative with other energy efficient programs in the United States. Manitoba Hydro places within the top 10% of utilities with respect to DSM savings when compared to a recent study completed by the US Department of Energy - Energy Information Administration Station.

3. An evaluation of Manitoba Hydro's Power Smart program compared to ACEEE's "Best Practices". Using these observations and common traits, Manitoba Hydro's Power Smart program consistently exhibits exemplary design and best practices for energy efficiency programs in today's markets.

4. Manitoba Hydro's Power Smart program is in a state of "continuous improvement", whereby significant enhancements have been made to the initiative since its inception, and with plans for further enhancement through the addition of strategically chosen programs and redesigns of existing programs.

Manitoba Hydro's Power Smart Program – A Canadian Comparison

In Canada, Manitoba Hydro is one of the few utilities to have maintained its aggressive commitment to DSM during the industry restructuring in the late 1990s. The Corporation is currently in the process of revising its long-term DSM targets and budgets as part of its 2004 Integrated Resource Planning process. In addition to redesigning current successful programs to reflect a more aggressive approach, Manitoba Hydro is also in various phases of research and design for a wide array of new programs.

In Canada, two utilities in addition to Manitoba Hydro are generally recognized as having substantive energy conservation efforts: BC Hydro and Hydro Quebec.

Hydro Quebec is now embarking on a substantial increase in their DSM program. Their recently approved energy efficiency program targets energy savings of 750 GWh with a budget of $109 million over the next five years. As Hydro Quebec is approximately seven times larger than Manitoba Hydro, this is not as aggressive as the additional 290 GWh of savings and expenditures of $87.2 million forecasted over the next five years under Manitoba Hydro's existing DSM plan.

BC Hydro recently undertook a market potential study in their region and have embarked on an aggressive three-year $300 million DSM Program. Although more aggressive over the three year period than Manitoba Hydro, a more appropriate comparison would take into account the long-term efforts of both utilities over the past decade, as well as the long-term investment in lasting market transformation rather than aggressive incentive-based short-term bursts of activity. For example, BC Hydro's DSM budget prior to this three year period was substantially lower and in the future, its budget drops by 50% during the six years immediately following the three year period. Although one might debate which utility is the leader in Canada from year to year, there usually isn't much discussion with regard to both BC Hydro and Manitoba Hydro's Power Smart efforts being in the forefront of energy conservation in Canada.

The table below outlines the DSM market achievable potential for BC Hydro and Manitoba Hydro over the next ten years.

Table 1-2 ~ DSM Market Achievable Potential by Sector (10 Year Forecast)

Sector	Manitoba Hydro		BC Hydro	
	GWh Savings	% of Domestic Sales	GWh Savings	% of Domestic Sales
Residential	255	4.1%	719	4.7%
Commercial	334	6.9%	585	4.6%
Industrial	67	0.7%	2151	11.2%

In comparing the results of Manitoba Hydro's DSM Market Potential Study to that of BC Hydro's study, Manitoba Hydro projections of market achievable DSM savings are in the same range for the residential market and more aggressive for the commercial market. There is, however, a substantial difference in the industrial achievable potential, requiring some explanation regarding the "pulp and paper" effect in BC. This industry, comprised of nine pulp and paper mills, is responsible for 1568 GWh of savings estimated for the 10 ten year forecast. Focus on this one industry and three opportunities; customer load displacement, refiner optimization and pump efficiency improvements, account for more than 70% of BC's industrial DSM potential. These three opportunities, unique to BC, require some additional explanation.

The first opportunity, customer-load displacement, delivers up to 1/3 of the ten year savings potential or 520 GWh per year. Efficiency improvements to existing customer-based generation or installing new systems "behind the customer meter" represent a large

DSM potential for the co-generation installations using waste wood,. Secondly, the nature of process electricity use lends a marked advantage to BC. BC Hydro estimates that more than 25% or 550 GWh/yr is resident in large mechanical refiner optimization projects. Industry-based technical and economic assessments have been conducted and the projects are considered highly viable. By contrast, 65% of Manitoba's process-based electricity consumption is electrochemical in nature and the efficiency improvement potential is low and at relatively high cost. Finally, BC's report indicates that 82% of the total estimated pumping energy savings in industry, or another 463 GWh, is achievable in BC's pulp and paper industry. Given these differences, BC industry is not a suitable benchmark for DSM potential in Manitoba's industrial sector.

Other utilities, such as SaskPower, ENMAX (AB), EPCOR (AB), and ATCO Electric (AB), offer some customer service-based energy efficiency programs; however, the primary objective of their programs is customer service with no formalized DSM strategy or targets. In Ontario, with the industry restructuring and the current provincial price cap, very few utilities are offering aggressive DSM programs. A few city-based utilities offer incentive-based DSM programs.

Manitoba Hydro's Power Smart Program – A US Comparison

Although Manitoba Hydro has not undertaken a comprehensive comparison of how the Corporation's Power Smart program compares to DSM programs in the United States, a general indication can be drawn from a study conducted by the Energy Information Association – US Department of Energy. As presented in TREE/RCM/MH/NCN1-NFAAT-002a, Manitoba Hydro has been successful in DSM activities to date, placing within the study in the top 10% of US utilities for DSM savings in 2001.

In the United States, while a few utilities maintained existing DSM programs during the industry restructuring during the 1990s, many utilities abandoned their efforts in an attempt to keep rates low and maintain their competitive position. Within the last two to three years some utilities have re-established DSM initiatives as part of their overall product offering and, in other regions, the Public Utilities Commission has established a non-profit body to deliver energy efficient programs and initiatives.

In comparing the success of Manitoba Hydro's Power Smart program to those Programs in the United States, consideration should also be given to regional differences, specifically, the higher electric rates being charged in the United States. This rate differential would enhance customer participation rates in energy conservation initiatives.

Manitoba Hydro's Power Smart Program – A Comparison to ACEEE's "Best Practices"

In March 2003, ACEEE released a report which identified energy efficiency programs from across the United States that represented exemplary design and best practises for energy efficiency programs in today's markets. From this study, the ACEEE identified a number of observations and common traits among leading programs in the United States.

In looking at these observations and common traits, Manitoba Hydro consistently measures in the top rankings of utilities providing energy efficiency programs.

1. Comprehensive

Manitoba Hydro has long taken a comprehensive approach to programs and services offered to commercial and industrial customers; more recently Manitoba Hydro has also incorporated this approach into its residential offerings.

Residential Market:
The recently announced *Power Smart New Home Program* was designed with a focus on the "whole home". The *Power Smart New Home Standard* is based upon an overall approach to the operation of the home, including ventilation, lighting, water heating, building envelope and appliances. To qualify as a Power Smart Home, all measures must be in place.

The *Home Comfort and Energy Savings Program* (HCESP) is a comprehensive DSM initiative that assists homeowners in developing a plan of action to improve the overall energy performance of their home. This is supported by a series of Power Smart home renovation booklets, an on-line or mail-in self-audit, and a low-interest loan that can be conveniently paid on a customer's Manitoba Hydro bill.

Another component of the HCESP is the *In-Home Energy/EnerGuide for Houses Assessment* service. This initiative uses a comprehensive approach (including a blower door test to determine air leakage) which results in a home being assigned an energy rating. Partnering with the Federal Government, Manitoba Hydro provides recommendations to homeowners based on the comprehensive analysis to make the entire home more efficient and comfortable.

Manitoba Hydro's *WISE Program* is also geared to assist Manitoba Seniors in identifying low cost/no cost opportunities to reduce their energy bills. Specially trained students visit their homes, at no charge, to assist in the completion of a mail-in home evaluation. Customers also receive energy saving products such as pipe insulation, compact fluorescent lamps, draft stoppers, energy-efficient showerheads and faucet aerators at the time of their visit.

Commercial/Institutional Market:
The *Power Smart Design Standard* is probably the best example of a comprehensive service for Commercial and Institutional customers. The standards were developed to help business owners, engineers and architects develop building designs that qualify their proposed new or renovated buildings for designation as Power Smart. Prescriptive measures by building type, eligible products and systems, as well as recommended good practices are all included in the standards.

Other examples of programs/services that promote a comprehensive approach to energy efficiency improvements include: the *Power Smart Energy Manager Program*

which promotes resource efficiency and sustainability improvements in all aspects of a School Division's operations; the *Commercial Custom Incentive Program* which provides financial assistance to support feasibility studies and equipment installation; the *Religious Building Initiative* which offers audits and a low-interest loan; and the *Recreational Facility Survey* that includes a self-administered facility survey and audit report.

Industrial Market:
The *Power Smart Performance Optimization Program* follows a comprehensive strategy. This program is based on a systems approach that first focuses a significant amount of effort and resources on identifying and eliminating wasteful utilization of the commodity delivered (heat, cooling, light, compressed air, steam, water, etc.) and then continues to identify opportunities for the optimized production of the required amount of the commodity. Program eligibility includes almost all techniques and measures for motive and non-motive facility processes and building infrastructures.

2. Customized Services & Customer-Oriented Programs

Numerous and diverse programs are offered through Manitoba Hydro's Power Smart initiative to address the unique needs and challenges of specific customer segments. Through Manitoba Hydro's program design process, customer needs are identified through industry and stakeholder participation in Manitoba Hydro's program design teams.

Residential Market:
Manitoba Hydro's *Wise Program* recognizes the unique needs of seniors in Manitoba. This Program was designed recognizing that the majority of these consumers are on a fixed income, can't afford high bills or the cost of retrofits and require some additional assistance in evaluating the performance of their homes. Staff receive customized training from the Manitoba Society of Seniors on the unique traits and needs of this customer segment.

The *In-Home Energy/EnerGuide for Houses Assessment* service is a prime example of Manitoba Hydro's efforts to offer customized recommendations to all Manitobans. Manitoba Hydro provides recommendations to homeowners based on a comprehensive analysis to make the entire home more efficient and comfortable.

Manitoba Hydro provides various levels of customer service in order to meet the diverse needs of individual customers, as well as to aggressively promote all Power Smart initiatives:

- *Manitoba Hydro's Retail Energy Service Representatives (1st tier sales)*: Through 30 representatives located throughout the Province, Manitobans and industry allies are informed about Manitoba Hydro's Power Smart programs, joint NRCan/Manitoba Hydro programs, and the NRCan Retrofit Grant program. When customers require in-depth or complex information on a program or energy

efficient measure, these customers are referred to specific program or engineering specialists (3rd tier sales and customer service).

- *Energy Auditors (1st tier sales)*: Through 30 auditors located throughout the Province, Manitobans are provided with customized service and advice regarding opportunities for energy efficiency improvements to their home.

- *Manitoba Hydro's District Offices (2nd tier sales)*: Through 73 district offices located throughout the Province, Manitobans are informed, and have access to, information about Manitoba Hydro's Power Smart programs, joint NRCan/Manitoba Hydro programs, and the *NRCan Retrofit Grant Program.* When customers require in-depth or complex information on a program or energy efficient measure, these customers are referred to specific programs or engineering specialists (3rd tier sales and customer service).

- *Manitoba Hydro's Web Site (1st tier Internet sales)*: Through Manitoba Hydro's website, information on the *EnerGuide Retrofit Grant Initiative* is made available and is an integral component of all Power Smart-related information, including general energy efficient information, Manitoba Hydro's Loan Program, and the joint NRCan/Manitoba Hydro audit program. A link is also provided to the NRCan website.

- *Manitoba Hydro's Customer Contact Centre (1st tier telephone sales):* Through Manitoba Hydro's CustomerContact Centre, Manitobans are informed about all of Manitoba Hydro's Power Smart programs, joint NRCan/Manitoba Hydro programs, and the NRCan Retrofit Grant program. This information can be obtained by either talking to a Customer Service Representative or by listening to a prerecorded script. In the latter case, information is currently available on Manitoba Hydro's Loan Program, NRCan/Manitoba Hydro's audit program, and on the NRCan's Retrofit Grant program. More scripts are planned for the near future. When customers require in-depth or complex information on a program or energy-efficient measure, these customers are referred to specific program or engineering specialists.

- *Manitoba Hydro's Energy Expert (3rd tier sales)*: Through Manitoba Hydro's "Energy Expert" service (via e-mail or internal referrals from 1st or 2nd level sales staff), consumers can obtain more detailed information on all of Manitoba Hydro's Power Smart programs, joint NRCan/Manitoba Hydro programs, and the NRCan Retrofit Grant program.

Further dedicated to the unique needs of specific customer groups, Manitoba Hydro in partnership with Nelson House Cree Nation will develop a *"Community Energy Efficiency Action Plan"* for local residents, as well as a "Training Action Plan" for Housing Authority personnel. In concert with the Nelson House Housing Authority, Manitoba Hydro will assist with the training of Housing Authority personnel to establish local expertise in energy-efficient construction, efficient use of energy and

the proper care and maintenance of heating and ventilation systems. In cooperation with the local education authorities, Manitoba Hydro staff and NCN Housing Authority personnel will conduct presentations to students on the efficient and safe use of electricity in the community.

Commercial/Institutional Market:
Power Smart for Business programs have been developed to address the commercial customer's needs for assistance in adopting energy-efficient technologies and practices. Throughout the course of a program's existence, increased market knowledge is used to adjust program design in order to meet the unique needs of different customer segments.

The *Manitoba Municipal Efficiency Project* (MMEP) originated as a pilot project intended to enable smaller Manitoba municipal governments to reduce operation and maintenance costs by assisting them with identifying and implementing energy and water efficiency measures, and to improve their environmental and economic sustainability. Following the success of the pilot, there are plans to expand this concept to 30 municipalities over two years.

Over the past three years Manitoba Hydro has expanded its relationship with public building managers through the *Power Smart Public Buildings Initiative*. This significantly positive and active relationship involves developing a customized approach for new building and retrofit projects. Efforts in these sectors have achieved annual electricity savings of over 16 GW.h and 5 MW under Power Smart programs.

A strong example of Manitoba Hydro's dedication to incorporating market feedback is the *Power Smart Chiller Program*. Chillers were eligible for incentives under the custom option of the *Commercial Construction and Renovation Program*. However, discussions with customers and vendors identified that the program guideline requiring feasibility studies prior to being eligible for custom incentives and the prescriptive nature of the technology led to a large number of customers not installing efficient chillers. To address this concern, an independent prescriptive program was designed to promote energy-efficient chillers.

Manitoba Hydro's *Religious Building Initiative*, which offers low-cost audit and low-interest financing, arose from the recognition that most facilities did not meet incentive eligibility requirements due to their limited hours of operation and their use of natural gas as a primary heat source. The program has once again evolved from its original launch to include a Guide for low cost/no cost efficiency measures and low-interest financing recognizing the propensity for churches to be financially constrained.

Industrial Market:
The *Performance Optimization Program* utilizes a progressive customer relationship management delivery plan that recognizes the uniqueness of each customer's

operation and requires an individualized approach to identifying conservation potential. Nineteen Key and Major Account representatives coordinate these services.

3. Marketing of Co-Benefits

Manitoba Hydro recognizes that one of the key success factors of its Power Smart initiative is the marketing of the multiple benefits of energy efficiency.

Residential Market:
All promotion and advertising for the *Home Comfort & Energy Savings Program* focuses on both the improved comfort of the consumer's home and the energy savings. Manitoba Hydro also promotes the various environmental benefits associated with the success of this program.

The *Power Smart Earth Power Program* and the *Power Smart New Home Program* marketing strategies focus on improved comfort, energy savings and environmental benefits.

Commercial/Institutional Market:
Manitoba Hydro's commercial/institutional programs are being marketed under the new umbrella of *Power Smart for Business* which promotes additional benefits to commercial customers such as increased occupant comfort, improved productivity, more aesthetically pleasing building appearance, environmental responsibility, and a better competitive advantage through reinvestment of energy savings into core business operations.

In the agricultural market, the *Agricultural Heat Pad Program* promotes the benefits of reduced operating and maintenance costs, improved comfort for piglets, lower piglet mortality rate, improved safety, and environmental sensitivity in addition to energy savings.

Industrial Market:
The *Performance Optimization Program* includes: the quantification of all benefits related to reduced, per unit production and operating costs during the facility audit; the end use feasibility study; the project economic analysis; and the incentive determination. These benefits stem from reduced input of raw materials, reduced downtime and lower maintenance, improved product quality and value, and increased productivity and production capacity.

In addition to assessing the opportunities from all thermal and electrical energy sources, the program extends its scope with the *Eco-efficiency Initiative* to include aspects of water, wastewater, emissions and solid wastes. This is a leading-edge offering among Canadian utilities.

4. **Technology Specific with Comprehensive/Integrated Marketing Strategies**

The success of Manitoba Hydro's technology-based energy efficiency programs rely upon a comprehensive marketing strategy which includes marketing across channels to wholesalers, distributors, retailers, and consumers.

Residential Market:
The HCESP promotes a collection of single select technologies, building envelope or mechanical systems that, when combined, improve the overall energy performance of a customer's home. The Program is designed to provide the customer with renovation choices, and is promoted through a combination of contractors, retailers and internal sales staff.

The *Power Smart Residential Insulation Program* is designed to focus residential consumers directly to the benefits of increased levels of insulation, while supporting the comprehensive approach of the current residential programs.

Commercial/Institutional Market:
A number of commercial/institutional Power Smart programs have been initiated due to the lack of customer acceptance of specific energy-efficient technologies. These include occupancy sensors, fluorescent lighting (T5, T8, and compact), LED exit signs, metal halide, high pressure sodium, parking lot controllers, air barriers, windows, air conditioning units (rooftop and split system), and chillers. Given that the targeted sectors for many of these technologies are the same customer groups which face the same barriers to implementation, joint integrated marketing strategies have been implemented to promote these programs.

The recently developed *Power Smart Design Standards* incorporate a number of these technologies, along with energy-efficient practices, to provide an overall integrated approach to energy efficiency in new commercial buildings. Manitoba Health, Government Services, and the Public Education Finance Board have each committed to this standard for the construction of new facilities.

Industrial Market:
Within the *Performance Optimization Program*, emphasis is placed on several target end uses in addition to the customized offering. For example, optimization of compressed air systems has proven to be an efficiency measure that has been successfully targeted through incentives, training courses for both customers and suppliers, and promotional activities. Other targeted end uses include pumps and fans, industrial refrigeration systems and plant-wide energy management systems.

5. **Priority on Program Marketing and Support Services**

Manitoba Hydro's overall efforts to encourage energy efficiency are supported by an overall Power Smart marketing campaign to increase customer awareness and understanding of the Power Smart message. This, in combination with the sector

specific campaigns, has led to high customer awareness of, and participation in, Manitoba Hydro's Power Smart initiatives. Manitoba Hydro's DSM is also strongly supported by 20 fulltime technical staff who provide product testing, review and assessments with extensive experience in energy efficiency technologies.

Residential Market:
Consumer response to Manitoba Hydro's *Home Comfort & Energy Savings Program* has exceeded all expectations for supplier and customer participation. The success of the Program is demonstrated through customer satisfaction surveys, supplier satisfaction surveys, and Program participation of over $41 million in energy efficient renovation activity.

Commercial/Institutional Market:
Manitoba Hydro engages in a number of marketing strategies to ensure that Power Smart programs accomplish their goals. Customer-directed, or "pull" marketing strategies include sector-specific direct mail campaigns, print advertising in targeted publications, tradeshow displays, association presentations, and direct sales calls through the Power Smart Sales Team. Power Smart is also marketed to industry members including engineers, architects, contractors, manufacturers, wholesalers, and retailers in an effort to "push" the efficiency message through the construction and renovation delivery channels to the end customer. These marketing activities include targeted direct mail campaigns, training seminars, tradeshows, and taskforce and association membership participation.

All of the programs offered to commercial and institutional customers are fully supported by technical assistance. The Power Smart Sales team has also taken customer assistance to another level by having direct face-to-face contact while walking customers through the entire DSM process to ensure that they are maximizing their efficiency opportunities.

Industrial Market:
The technical assistance and training seminars provided by the *Performance Optimization Program* are keys to its success. Using compressed air as an example, seminars to industry have resulted in a wave of interest and subsequent compressed air system optimization activities. As a result of these efforts, all major distributors in Manitoba carry variable speed compressors, and one major equipment supplier now promotes scoping studies as an additional service. Other marketing support includes best practices information, web-based energy consumption and usage profiles, walk-through facility and end-use scoping assessments and case studies.

6. Financial Incentives

Manitoba Hydro has long taken a broader approach to incentives having offered, in the past, consumer and vendor incentives (High efficiency Motor Program), and having partnered with manufacturers to offer product rebates. Within the last few years, Manitoba Hydro has focused their approach on customer financing and

incentives to assist with the increased capital investment costs of energy efficiency measures, as well as incentives supporting feasibility studies.

Residential Market:
Along with direct incentives for customers of up to $1000 per home, the *Power Smart New Home Program* will provide financial support for those builders constructing to the *Power Smart New Home Standard* on the "Power Smart Street" of the Fall Parade of Homes.

In partnership with NRCan, Manitoba Hydro delivers the *R-2000 Home Program*. The participation in this Program (home registration, analysis and testing) is provided at no cost to consumers or to builders, which represents an incentive value of approximately $800 per home.

Manitoba Hydro has further invested into the *In-Home Energy/EnerGuide for Houses Assessment* service. As a joint initiative with the Federal Government, Manitoba Hydro subsidizes approximately $125 per each comprehensive residential audit.

Commercial/Institutional Market:
The higher capital cost of energy-efficient technologies is a common barrier to achieving higher efficiency levels amongst commercial organizations. Financial incentives have become a key strategy for overcoming this barrier and marketing Power Smart improvements.

The following programs offer a financial incentive to the customer for the purchase and installation of qualifying energy efficient products:

- Commercial Lighting Program
- Commercial Construction Program
  i. Air barriers
  ii. Windows
  iii. Parking Lot Controllers
  iv. Rooftop and Split System Air Conditioners
  v. Custom Efficiency Measures including Geothermal Heat Pumps
  vi. Feasibility Studies
- Chiller Program
- Agricultural Heat Pad Program

Industrial Market:
The *Performance Optimization Program* provides custom calculated financial incentives for both technical feasibility studies and project implementation.

The highly successful *Curtailable Rates Program* encourages large industrial customers to curtail electricity supplied to them by offering credits on the customer's monthly bill.

7. Non-Utility programs

Non-Utility Programs are increasing in the United States and in some areas of Canada. In most cases, the rationale behind the creation of an "efficiency agency" is to provide a coordinated approach to energy efficiency across the state or a collection of states. This coordinated approach allows for the delivery of a consistent marketing message and support for energy efficiency activities, including incentive-based programs, resulting in a greater overall impact within the marketplace. *Efficiency Vermont*, one of the organizations noted in the ACEEE report, was created to provide one consistent energy efficiency message across Vermont. Prior to the creation of *Efficiency Vermont*, the 22 separate electric utilities serving Vermont offered separate efficiency programs. These programs varied in intensity with services ranging from information only to incentive-based programs.

The overall driver for agencies such as *Efficiency Vermont* differs from the overall driver for creating *Efficiency Manitoba*. Prior to the acquisition of Winnipeg Hydro, DSM programming in the two service territories in Manitoba was vastly different. Now, however, Manitoba's electricity needs are served by one utility. *Efficiency Manitoba* is being created to help Manitobans cut their energy and water bills and decrease the amount of waste destined for landfills. The new agency will be a "one-stop shop" building on the success of Manitoba Hydro's Power Smart initiative and will integrate conservation in electricity, natural gas, water and waste.

8. Utilities Are Still Major Providers of Energy Efficiency Services

The ACEEE report acknowledges that electric and natural gas energy utilities continue to be the largest delivery mechanism for energy efficiency programs in the United States. This is the case in Canada as well.

9. Partnerships and Collaborations

Power Smart programs offered by Manitoba Hydro are designed in consultation with industry partners to determine the most effective strategies for increasing the sale and installation of energy-efficient products. These industry representatives can include trade allies, alliances, associations, and both provincial and federal governments. This collaboration continues throughout the life of the program to ensure that program staff are kept abreast of changes in the industry and, in turn, remain market experts, adjusting program designs and keeping the industry informed and trained in new or improved Power Smart initiatives.

Manitoba Hydro has always worked closely and energetically with external agencies to promote DSM programs and technologies. Relationships have included suppliers, retailers, government and various private enterprises. Recent successful promotions include the *Power Smart Residential Loan* "Symbol of Comfort" appearing in supplier advertisements, the support of R2000 builder advertising, and collaboration during the pilot of the heat pump demonstration project.

Manitoba Hydro is also active at the provincial and national levels to influence changes to codes and standards in efficient products and practices.

Some of the partnerships and associations to which Manitoba Hydro belongs and participates in are:

- CSA Strategic Steering Committee on Performance, Energy Efficiency, and Renewables (SCOPEER) and various sub-groups including:
    - C368.1-M90 -Performance Standard for Room Air Conditioners
    - C402-Technical Committee For Industrial Equipment
    - C745-00 -Technical Subcommittee on Water Heaters
    - C828-99 -Performance Requirements for Thermostats Used with Individual Room Electric Space Heating Devices
    - C746-93 -Technical Committee on the Performance of Air Conditioning
    - C273.3-M91 -and Heat Pump Equipment
    - C22.2-110 -Construction and Test of Electric Storage Tank Water Heaters
    - C191-00 -Performance of Electric Storage Tank Water Heaters for household Service
    - CSA C820 Small Pumps Performance Standard
    - CSA Fan and Blower Performance Standards (to start in Spring 2004)
    - CSA Air Compressor Performance Standards (to start in Spring 2004)
    - CSA C390 Energy Efficiency Test Methods For Three Phase Induction Motors – Chair
    - CSA C747 Energy Efficiency Test Methods for Single– and Three Phase Small Motors
- Energy Management Task Group (Joint initiative of NRCan & CEA)
- Canadian Council for Electrotechnologies - Board
- American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) – Technical Committee 7.6, Energy Systems Utilization – Voting Member
- Canadian Lighting Industry Collaborative
- Illuminating Engineering Society of North America (IESNA)
- National Steering Committee on Energy Efficient Lighting
- Association of Energy Service Professionals
- Canadian Energy Efficiency Alliance - Board
- E-Source
- Manitoba Energy Management Task Force - Board
- Canadian GeoExchange Coalition – Board
- Climate Change Connection - Board
- International Ground Source Heat Pump Association (IGSHPA)
- Earth Energy Society of Canada (EESC)

- Manitoba Home Builders Association (MHBA)- Renovation Council Sub-Committee
- Manitoba Home Builders Association (MHBA)- Education Sub-Committee
- Construction Association of Rural Manitoba
- Heating, Refrigeration, and Air Conditioning Association (HRAC) - Manitoba Associate Member
- Heating, Refrigeration and Air Conditioning Institute (HRAI) of Canada - Utility Member
- Bioenergy Opportunities 2004 - Organizing Committee

Residential Market:
The design team for the recently launched *Power Smart New Home Program* included members of the Manitoba Home Builders Association (MHBA), the Construction Association of Rural Manitoba (CARM), Natural Resources Canada (NRCan), and the Manitoba Housing Department. Through this program, Manitoba Hydro will be partnering with NRCan to deliver the *EnerGuide for New Homes Program.*

The *Home Comfort & Energy Savings Program* has strategically enlisted the support of industry to deliver the Program. A network of over 700 suppliers are actively promoting the ongoing delivery of the Program and ensuring the message of energy efficiency and improved comfort is delivered to the end user - the residential customer. Furthermore, detailed information on home renovations and installation techniques improves the technical knowledge and capabilities of the installer, adding to the overall betterment of the home renovation industry.

Under the *Power Smart Earth Power Program*, Manitoba Hydro partnered with the Wheat Belt Community Futures Development Corporation (Wheat Belt CFDC) to develop the first geothermal subdivision in Manitoba. Since the official sod turning ceremony on June 24, 2003 two of the eleven lots have been sold, and the first home began construction in October, 2003. Manitoba Hydro has also partnered with the International Ground Source Heat Pump Association (IGSHPA) to provide training and certification for contractors installing geothermal heat pumps and with HRAI to provide residential heat loss and heat gain courses to ensure proper equipment sizing for heat pumps.

Commercial/Institutional Market:
The *Manitoba Municipal Efficiency Program* is an excellent example of a partnership between Manitoba Hydro, the Association of Manitoba Municipalities, and the Provincial Government's Water Conservation Branch. It will bring efficiency in energy, water and wastewater systems to smaller municipalities throughout the province. Manitoba Hydro has played a critical role in assisting with the design of the pilot program, including baseline energy analysis, and will also be fundamental in the implementation phase through its Power Smart programs.

Manitoba Hydro is a member of the Canadian Lighting Industry Collaborative (CLIC) that was created to achieve market transformation in the lighting market across Canada. Members of the collaboration include manufacturers, distributors, agents, retailers, utilities and the Federal Government.

Industrial Market:
In the design and delivery of the *Performance Optimization Program* many collaborative relationships have been key to the success of this Program. They include: customers, such as initiation of energy management committees; engineering consultants; equipment suppliers; trade associations in a variety of sectors such as manufacturing, mining, foundry, pulp and paper; other utilities for projects such as the Motor Master development and programs such as High Efficiency Motors; Canadian Electricity Association; federal and provincial governments and municipalities. Manitoba Hydro is now pursuing a partnership with Natural Resources Canada (NRCan) for the delivery of the *Federal Industrial Energy Audit Incentive Program* so that customers can take advantage of both incentive offerings to encourage implementation of efficiency measures.

10. Supporting Programs and Services

Manitoba Hydro has long supported energy efficiency education through the K – 12 schools, post-secondary education and industry associations. Programs such as "Electrosaurus" have been used for years to educate school children about energy efficiency.

In addition to the education initiatives, Manitoba Hydro supports research, development and demonstration projects through its Research & Development Initiative. Manitoba Hydro has funded a variety of new technology research studies and demonstration projects, including greywater heat recovery systems, effective optimization of fan blades, optimization of lighting conditions in dairy barns, slab on grade foundation heat loss study, greenhouse root zone heating, alternative building technologies in Northern Manitoba, energy efficient fluorescent lighting for growth chambers, the eco-Komfort combined heating/cooling/water heating system, healthy housing in West Broadway (Winnipeg), geothermal heat pump systems, ECM furnace fan study, and micro combined heat and power technology assessment capability.

Residential Market:
In the area of promoting energy efficiency education, Manitoba Hydro partnered with National Resources Canada (NRCan) to provide advanced building practices training (R-2000) for home builders and HVAC installers. Manitoba Hydro is working with Red River College and has incorporated R-2000 building techniques into the College's Building Technologies curriculum. This training is being delivered as part of the *Architectural/Engineering Technology* stream in the *Thermal Energy Systems* course. The course will demonstrate to students the effects of energy reductions in buildings by making them more efficient. In addition to these activities, Manitoba Hydro offers free consumer workshops for new home buyers and for existing

homeowners. These workshops promote energy efficiency and provide demonstrations of energy efficiency measures.

Manitoba Hydro, in partnership with NRCan, delivers the "Energy and Environment Calendar" contest to all the schools in Manitoba.

Commercial/Institutional Market:
Educating customers, contractors and industry professionals is a critical element in the marketing strategy for Power Smart. Manitoba Hydro works closely with the Illuminating Engineering Society to provide lighting courses and educational seminars to customers, contractors, and consultants. With input from the Federal Office of Energy Efficiency, Manitoba Hydro played the lead role in delivering training to engineers and architects on designing and building to both Power Smart and CBIP standards.

11. Energy Star

Manitoba Hydro has long promoted Power Smart to Manitobans, successfully achieving significant brand awareness by Manitobans. In September 2003, Manitoba Hydro agreed to partner with NRCan to promote Energy Star Products in Manitoba.

Residential Market:
Manitoba Hydro has adjusted its strategy to fully utilize the strength of the Power Smart brand to encourage customers to "Be Power Smart – Buy Energy Star Products".

Also under the *Power Smart New Home Program*, Manitoba Hydro requires the installation of Energy Star products (e.g. compact fluorescent lamps) and encourages participation through the primary incentive of a $1000 credit towards a front-loading Energy Star clothes washer.

Commercial/Institutional Market:
Although Energy Star in Canada has emerged primarily as a residential consumer branding campaign thus far, Manitoba Hydro does have commercial representation on the National Committee to establish product specifications. This will be important for the brand's commercial launch in Manitoba as the specifications for the products promoted by the Power Smart Lighting Program are actually more stringent than the Energy Star criteria as they also incorporate total harmonic distortion as a requirement.

Industrial Market:
Manitoba Hydro efforts, combined with that of other Canadian utilities in the 1990s, led to the development of the high-efficiency motor standards being adopted in 1996. EPACT followed later in the United States.

The small pump standard at CSA Energy Star has not yet made its way into the industrial sector that is the domain of the *Performance Optimization Program*. As Energy Star moves into the industrial product market; specifically with regard to products such as motors, pumps, fans; Energy Star will become part of the Performance Optimization Program's overall marketing strategy.

Manitoba Hydro's Power Smart Program – A "Continuous Improvement" Initiative

This section is intended to provide supporting information on Manitoba Hydro's commitment to continually enhance its overall Power Smart initiative. As such, it is not intended to identify a full and comprehensive list of all of Manitoba Hydro's Power Smart initiatives, traits and attributes. Rather, some of the significant historical milestones and future enhancements are outlined below. The discussion is focused more on recent milestones to emphasize the aggressive and broad state of Manitoba Hydro's existing and future DSM program initiative.

- During the 1970's and 1980's, Manitoba Hydro provided consumer information on energy and provided home audits and loans in conjunction with the provincial government.

- In 1989 Manitoba Hydro launched the first residential *Outdoor Timer Rebate Program*. In five years the Program successfully transformed the outdoor timer market; increasing annual sales of a "mature" product from approximately 3500/yaer to approximately 20, 000 per year.

- During the early 1990s, Manitoba Hydro piloted a "low flow" shower head program that promoted both water and electricity conservation. In addition, a refrigerator buy-back pilot program served to not only improve recycling of appliances and reduce energy consumption.

- Through the mid 1990s, Manitoba Hydro broadened its Power Smart portfolio with commercial and industrial programs targeting lighting and motors, in addition to residential programs focusing on energy-efficient information and advice.

- In 1998, as part of building the essential foundation for a long-term DSM program, Manitoba Hydro's Industrial & Commercial Solutions Division was created to work with industrial and large commercial customers to improve their electrical and gas energy efficiency and business processes, through Power Smart and Customer Relationship Management (CRM) initiatives. CRM provided goes beyond providing electric and natural gas service, or responding to requests for information. The CRM approach involves developing and strengthening relationships with industrial and commercial customers to create new business value. This strategic group strives to be proactive in anticipating the needs of customer operations and in finding energy-efficient solutions that benefit their business.

- In 1999, Manitoba Hydro purchased Centra Gas, which allowed the Corporation to expand its energy product base to include natural gas. Since then, this commodity has been integrated into Manitoba Hydro's customer service and conservation programs. The level of success in integrating both commodities into DSM is evident in the following participation rates for each commodity:

- Home Comfort Loan and Information Program:	85% Gas, 15% Electricity
- EnerGuide Home Energy Assessment Service:	91% Gas, 9% Electricity
- New & Existing Home Energy Workshops:	90% Gas, 10% Electricity
- Energy Finance Plan:	84% Gas, 16% Electricity
- Religious Building Initiative:	85% Gas, 15% Electricity
- WISE Program:	73% Gas, 27% Electricity
- Power Smart R2000 Program:	46% Gas, 54% Electricity
- Power Smart Energy Manager Pilot Program:	11% Gas, 62% Electricity 26%Water, 1% Waste

  The list of programs also reflect Manitoba Hydro's move to offering more residential programs since 2001.

- In 2000, a sector sales group was formed to focus on targeted customer sectors, including municipalities and other commercial business groups such as the Manitoba Hotel Association, the Manitoba Association of School Business Officials and the Manitoba Association of School Trustees. This improved the effectiveness of Manitoba Hydro's Power Smart efforts in these sectors as customer communications were with key decision makers.

- In 2000, Manitoba Hydro embarked on a pilot energy management program that targeted conservation in a broader perspective. The *Power Smart Energy Manager* (PSEM) Program was designed to assist customers with all of their energy management needs, including electricity, gas, water and solid waste. The pilot was undertaken in partnership with Assiniboine South School Division. During the second year of the pilot, significant dollar savings were achieved in all resources (11% gas, 62% electricity, 26% water, 1% waste).

- In 2001, Manitoba Hydro reorganized its Power Smart Program Design group into three distinct sections: Residential, Commercial and Special Projects. The intent of this organizational structure change was to ensure each sector maintained a focus on the unique challenges of conservation efforts in the respective sectors.

- In 2001, Manitoba Hydro launched an aggressive *Home Comfort& Energy Savings Program* which specifically targeted the residential market. The design of the Program consisted of an aggressive marketing/promotion campaign, coupled with a convenient low-interest loan. The Program's success is exemplified by over 12,000

customers participating in the programs and undertaking over $41 million in energy conservation renovations.

- In 2001, Manitoba Hydro took steps toward becoming NRCan's primary delivery agent for conservation programs in Manitoba by performing residential energy audits. Since taking over this Program, which was previously offered in Manitoba by a private company, the Corporation has conducted over 4000 audits. The success and momentum of this Program is exemplified through the exponential growth of the audits; 2400 audits have been conducted since October, 2003. The audits are performed through 28 trained auditors located throughout the province. The price of the audit to the homeowner is $75 per audit; the lowest in Canada (compared to a range of $150 to $200 per audit).

- In 2001, Manitoba Hydro supported the creation of the Climate Change Connection in Manitoba. Since then, the Corporation has worked in partnership with this organization to achieve mutual objectives. For example, Manitoba Hydro and the Climate Change Connection provided a number of workshops in several communities throughout Manitoba and promoted community-based efforts to support greenhouse gas emission reductions and energy conservation.

- In 2001, Manitoba Hydro partnered with the Manitoba Society of Seniors to launch the *Wisdom in Energy Saving Program* (WISE). In addition to providing seniors with electricity and natural gas conservation advice, seniors were also provided with a package of energy-efficient products including low-flow showerheads, faucet aerators, water pipe insulation and outlet gasket covers.

- In 2002, Manitoba Hydro purchased Winnipeg Hydro, which broadened the Corporation's ability to offer Power Smart programs to all Manitobans.

- In 2002, Manitoba Hydro developed the *Power Smart Design Standards* to assist owners and engineering/architectural teams in developing energy-efficient commercial/institutional building designs with operating cost savings, lower electricity bills, and improved facility comfort. To achieve a Power Smart building designation, the new or renovated facility must:
  - meet or exceed all mandatory and prescriptive provisions of the Model National Energy Code for Buildings (MNECB), and
  - have an energy performance that is at least 25% more efficient than a building built to the minimum MNECB.

  The most significant indicator of acceptance of this initiative is in the public sector. In 2002 and 2003, Manitoba Health and the Public Schools Finance Board adopted Power Smart Design Standards as the minimum requirement for all new capital projects. To date, health care facilities receiving a "Power Smart" designation include: Gimli Community Health Centre, East Borderland Primary Health Care Centre and Swan River Valley Health Centre. Manitoba Hydro is also currently

participating in the design phase of several other Manitoba Health Care projects including Neepawa Chemotherapy Centre, Neepawa Personal Care Home, St. Boniface Cardiac Enhancement Services addition, Thompson Personal Care Home, Foyer Valade addition, and Wabowden Primary Care Centre. In addition, Manitoba Hydro is also participating in various design teams for new school construction projects, including Falcon Beach School, Complex Scholaire et Communautaire de Saint Vital, East Selkirk Middles Years School.

- In 2002, Manitoba Hydro initiated a comprehensive market potential study to determine the maximum attainable DSM potential for electricity in Manitoba. The study was undertaken with consulting companies Demand Side Energy Consultants, Marbek Resource Consultants, and Kraftur Engineering. To ensure environmental concerns were adequately addressed in the study, Manitoba Hydro invited a number of individuals that belonged to environmental non-government organizations (ENGO) to participate in the process. Barry Wild, Natalie Seaba, Michelle Forrest and Valerie Woods participated in the scoping of the project, the preparation of the Request for Proposal and in determining the list of consultants who would be approached to submit proposals. Prior to the review of the consultants' proposal, Michelle Forrest and Valerie Woods withdrew from the project. Barry Wild and Natalie Seaba maintained their involvement and actively participated in the selection of the consultant, project review, and consultations leading up to the final findings by the consultant.

- In 2003, Manitoba Hydro enhanced its sector marketing effort through the addition of a dedicated sales group focused exclusively on Power Smart sales to small commercial businesses. Working with over 300 customers in the first five months, the Power Smart sales staff has made significant steps towards achieving aggressive conservations results.

- In 2003, Manitoba Hydro launched an aggressive $28 million redesign of its *Power Smart Commercial/Industrial Lighting Program* targeting 31 MW/109 GWh. of energy savings and a reduction of 330,772 tonnes of CO2 emissions. The aggressive nature of the Program is also demonstrated through the incentives offered to customers to achieve simple paybacks as low as 0.7 years and averaging 7 years (labour and material cost).

- In 2003, Manitoba Hydro launched an aggressive $1.4 million *Power Smart Chiller Program* targeting 3 MW/4 GWh of energy savings. The aggressive nature of the Program is demonstrated through incentives geared to assist customers achieve simple payback periods of less than 1.5 years.

- In 2003, Manitoba Hydro partnered with NRCan to jointly promote the Energy Star brand in Manitoba. Similar to other leading energy-efficient US companies like New York Energy Research and Development Authority (NYSERDA) and Northwest Energy Efficiency Alliance (NWEEA), Manitoba Hydro has some concerns with

Energy Star's efficiency level for some products as they are below the level being promoted as Power Smart.

- During 2003, Manitoba Hydro and the City of Winnipeg have embarked on an aggressive conservation effort involving over $10 million of retrofit work to their existing city-owned buildings and other facilities, including traffic, pedestrian, and street lights.

- In 2004, Manitoba Hydro and Manitoba Conservation initiated a pilot project to incorporate water conservation into the residential home audits.

- In 2004, Manitoba Hydro launched an aggressive $14 million *Power Smart New Home Program,* which targets the mass new home market and incorporates electricity, gas, water and greenhouse gas emission reductions. The Program is expected to achieve electric savings of 8 MW/21 GWh. The Program is also expected to have a direct cumulative reduction in greenhouse gas emissions of 22,122 tonnes of CO_2 due to a reduction in natural gas use for space heating and domestic water heating, as well as an equivalent reduction of 37,629 tonnes through the reduction of electric consumption. NRCan's new home EnerGuide program is also integrated into this Program. The targeted penetration rate of 65% is expected to be achieved in five years for electrically-heated homes, further demonstrating the aggressive nature of the Program.

- In 2004, Manitoba Hydro is launching a $10 million *Power Smart Insulation Program* for electrically-heated homes intended to achieve 8 MW/24 GWh of energy savings and 67 258 tonnes of CO2 emission reductions in the residential retrofit market. The aggressive nature of this Program is demonstrated by the targeted insulation levels (R24 for basements and R50 for attics) and through the extremely low paybacks offered to customers (0.7 years for material cost).

- In 2004, Manitoba Hydro will be reorganizing the utilization of the Corporation's Customer Contact Centre for identifying and pursuing energy-efficient opportunities primarily in the residential sector. Currently the Contact Centre responds to Power Smart inquiries; however, substantially more energy efficient sales leads can be captured as a result of process improvement initiatives, such as specialized training.

- The Power Smart Campaign, as distinct from marketing/promotional activities associated with individual Power Smart/DSM activities, is a mass communications campaign undertaken to raise public awareness of the Power Smart brand and its association with energy efficiency, low electricity rates, environmental benefits and increased system reliability. Elements include: multimedia exposure; including television/radio commercials and closed captioning billboards; print materials such as direct mail, brochures, bill stuffers etc; and high-visibility building paint. An evaluation of the Manitoba Hydro Power Smart brand indicates that:

- 94% of all Manitoba Hydro customers are aware of the Manitoba Hydro Power Smart brand;
- 85% of all Manitoba Hydro customers correctly understand that Power Smart means "saving electricity"; and
- 77% of all Manitoba Hydro customers believe that Manitoba Hydro encourages or strongly encourages energy efficiency.

- Since 1999, Manitoba Hydro significantly increased its Power Smart design and support staff from 11 to 24, which also reflects the Corporation's aggressive conservation efforts and intentions to achieve substantive energy conservation.

- During the balance of 2004 and beyond, Manitoba Hydro intends to continue launching more Power Smart programs and redesigning existing programs in an even more aggressive manner. For example, in the residential sector, the following programs are in the late design stage:

  - Refrigerator Buy Back Program
  - Compact Fluorescent Program
  - Thermostat Program
  - Water Saver Package (showerheads, aerators)
  - Infill Housing Program (customized version of the New Home Program)
  - LED Holiday Lighting Program.