

March 28th, 2014

Power Smart Plan

2014 to 2017



Manitoba Hydro's energy efficiency initiatives
for the next three years.



2014-2017 Power Smart Plan

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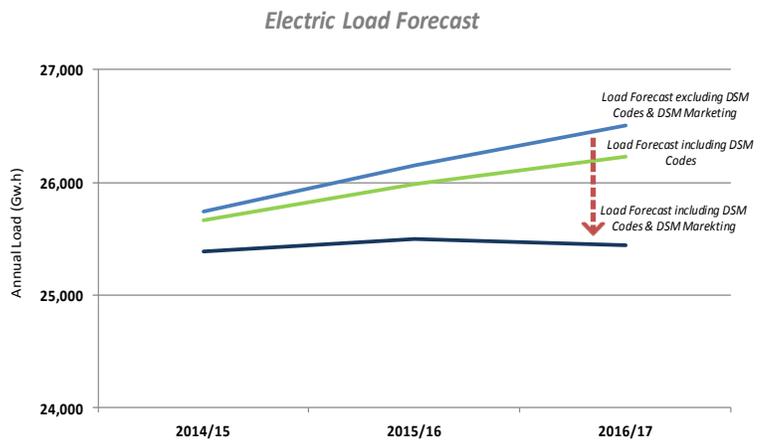
Highlights

Manitoba Hydro has been successfully delivering demand side management (DSM) for over 20 years in an effort to meet the energy needs of Manitoba in a more economic and sustainable manner while assisting customers to use energy more efficiently and to reduce their energy bills. Manitoba Hydro has a strong commitment to DSM with a focus on pursuing all cost effective energy efficiency opportunities and continually monitoring the market for emerging trends and additional opportunities.

To ensure all economic opportunities are being pursued, Manitoba Hydro updates its DSM plan every year. With this year's update, Manitoba Hydro is doubling the targeted electric energy savings to be achieved over the next three years relative to last year's three year plan. These targets will be accomplished by taking a more aggressive approach with existing opportunities and by pursuing some emerging opportunities with new technology developments such as LED lighting. Combined with energy savings achieved to date, these energy savings represent more than the firm generating capability of the proposed new Keyask Generation Station and equivalent to about double the natural gas needs of Brandon's commercial and residential customers.

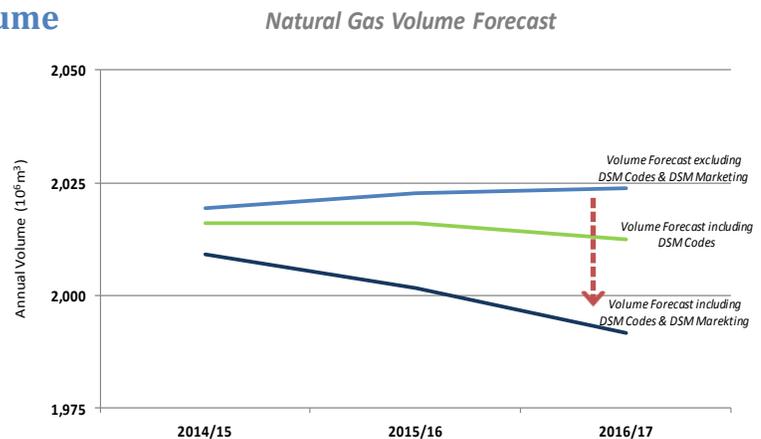
DSM Impacts on Electric Load

Over the next 3 years, the plan sets out to capture electricity savings of 411 MW and 1064 GW.h. This activity represents 4.0% of the estimated load forecast by 2016/17, offsetting 86% of projected load growth during this period.



DSM Impacts on Natural Gas Volume

Over the next 3 years, the plan sets out to capture natural gas savings of 32 million cubic meters. This activity represents 1.6% of the estimated volume forecast by 2016/17, further reducing natural gas consumption in Manitoba.



Neighbourhood Power Smart Projects

Building on the success of the Neighbourhood Power Smart Project in William Whyte and Brandon, Manitoba Hydro is committed to further increase participation to 100 homes each year for the next 3 years. Working with communities like the North End Community Renewal Corporation, lower income customers can benefit from energy efficient upgrades with the assistance of a Community Coordinator and Social Enterprise Contractors completing the retrofits. This community-led initiative helps to reduce barriers to participate through a door-to-door approach and provides employment opportunities to members of the community.



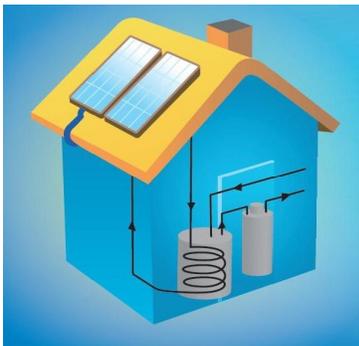
LED Roadway Lighting Conversion Program



Under Manitoba Hydro's new LED Roadway Lighting Conversion Program, the corporation, in working with Manitoba municipalities and local governments, will be converting all High Pressure Sodium (HPS) roadway lighting (less than 1000 W) to energy efficient LED technologies over the next 7 years. This initiative is anticipated to achieve 35 GW.h in electricity savings and 5 MW in winter peak demand savings through a utility investment of \$40 million. In addition to energy savings, LED roadway lighting has a longer life than HPS lighting, quick turn on and off, and improved performance in colder temperature settings. LED roadway lighting also provides the added benefit of reduced glare.

Community Geothermal Program

Manitoba Hydro recently launched a Community Geothermal Program and expects to build on the successes achieved to date. The program was launched in June 2013 based on a pilot conducted in partnership with AKI Energy, an Aboriginal social enterprise group focused on building a green economy in First Nations communities. Through the program, Manitoba Hydro works with AKI Energy to coordinate multiple geothermal heat pump installations within a community. Through this approach, installation costs have been substantially reduced and employment opportunities have been created with the participating First Nation community. Manitoba Hydro provides technical guidance, energy bills assessments, and financial support with the Power Smart PAYS Financing Program enabling community members to pay for the majority of the geothermal system through the energy savings that are realized by converting to a geothermal system. Building on the success of installing 108 geothermal systems during 2013 at Fisher River and Peguis First Nation communities, Manitoba Hydro is targeting installing a minimum of 250 geothermal systems during 2014. The target will be accomplished by expanding the number of installations in existing participating communities and broadening the participation to other First Nations communities.



Residential Solar Domestic Water Heating

Water heating is the second largest energy consumer in a home next to space heating. Building upon the partnership with AKI Energy and in an effort to further reduce energy costs for First Nations communities, Manitoba Hydro plans to explore opportunities with AKI Energy for solar domestic water heating applications. During 2014, Manitoba Hydro plans to proceed with a pilot project that involves installing 20 solar water heating systems in homes within a First Nations Community.

Bioenergy District System Feasibility Study

Bioenergy district heating is an alternative method of supplying heat to buildings and communities. In a district heating system, heat is generated at a central location and distributed to customers in the form of hot water via a network of underground insulated pipes. When combined with renewable fuels such as biomass and combined heat and power, district heating may represent an effective method of reducing energy consumption in a community and keeping money in the local economy.

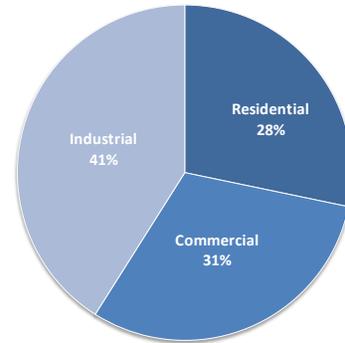
During 2014, Manitoba Hydro intends to undertake a feasibility study to assess the potential for a Bioenergy district system within a First Nation Community.



Electric DSM

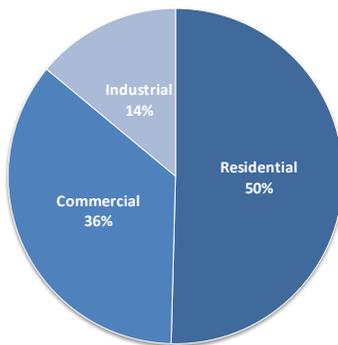
- Targeted electric savings of 411 MW and 1064 GW.h over the next 3 years.
- This activity represents 4.0% of the estimated load forecast by 2016/17.
- Combined with savings achieved to date, total electrical savings of 905 MW and 3,358 GW.h are expected to be achieved to 2016/17.
- These energy savings are equivalent to 1/2 of the electrical energy needs of Winnipeg (excluding industrial customers).
- Over the next 3 years, including other program support and contingency costs, Manitoba Hydro will invest \$188 million in electric Power Smart incentive-based programs with an expected cumulative utility investment of \$649 million by 2016/17.

*Electric Energy Savings
(cumulative to 2016/17)*



Natural Gas DSM

*Natural Gas Energy Savings
(cumulative to 2016/17)*

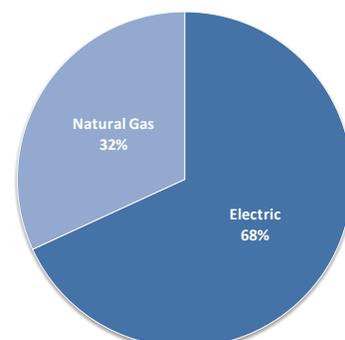


- Targeted natural gas savings of 32 million cubic meters over the next 3 years.
- This activity represents 1.6% of the estimated load forecast by 2016/17.
- Combined with savings achieved to date, total natural gas savings of 133 million cubic meters are expected to be achieved to 2016/17.
- These energy savings are equivalent to about 2 times the natural gas needs of Brandon (excluding industrial customers) or enough natural gas to serve over 56 000 homes.
- Over the next 3 years, including other program support and contingency costs, Manitoba Hydro will invest \$47 million in natural gas Power Smart incentive-based programs with an expected cumulative utility investment of \$171 million by 2016/17.

Codes & Standards

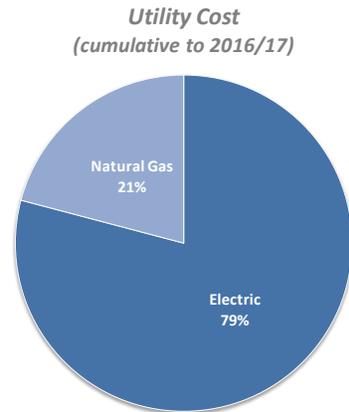
- Included in the DSM targets are electric savings of 81 MW and 284 GW.h and natural gas savings of 11 million cubic meters over the next 3 years.
- These energy savings result from codes and standards currently in place along with new codes and standards in the areas of lighting and new construction which will come into effect over the next 3 years.
- Combined with past efforts, electric savings of 247 MW and 978 GW.h and natural gas savings of 27 million cubic meters are expected to be achieved by 2016/17.

*Codes & Standards Energy Savings
(cumulative to 2016/17)*



Investment in DSM

- Over the next 3 years, Manitoba Hydro will invest \$194 million in Power Smart incentive-based programs with an expected cumulative utility investment of \$586 million by 2016/17.
- Including other program support and contingency costs, Manitoba Hydro will invest \$235 million in Power Smart initiatives, with an expected cumulative utility investment of \$820 million by 2016/17.
- Including participating customer costs, an investment of \$400 million (only incentive-based programs) is forecasted, and a total investment of \$1.1 billion is expected by 2016/17 – an investment of less than 20% of the proposed Keeyask Generation Station. Customer investments through codes and standards, financing services, and other Power Smart initiatives have not been estimated.

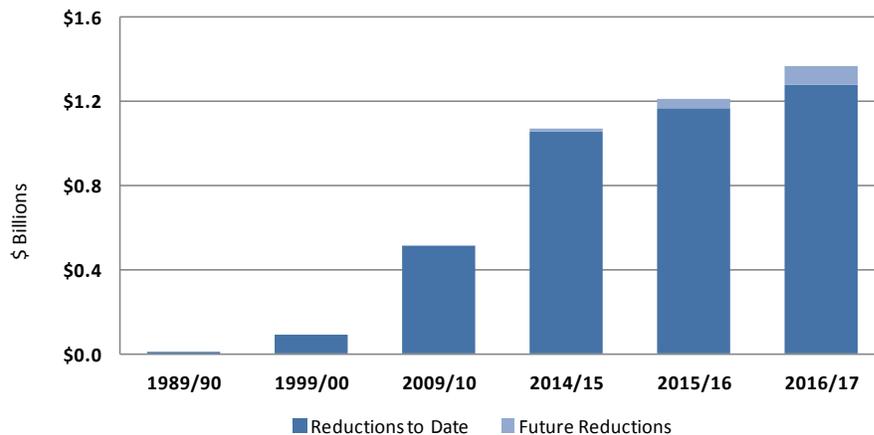


Greenhouse Gas Emission Reductions

- Targeted greenhouse gas emission reductions of 780,000 tonnes over the next 3 years.
- Including reductions achieved to date, 2.5 million tonnes are forecast to be achieved by 2016/17 which is equivalent to taking 500 000 cars off the road for one year.

Customer Bill Reductions

- Power Smart programs will save participating customers an additional \$88 million in electricity and natural gas bills during 2016/17.
- Including bill reductions achieved to date, participating customers will save a cumulative \$1.4 billion on electric and natural gas bills during 2016/17.



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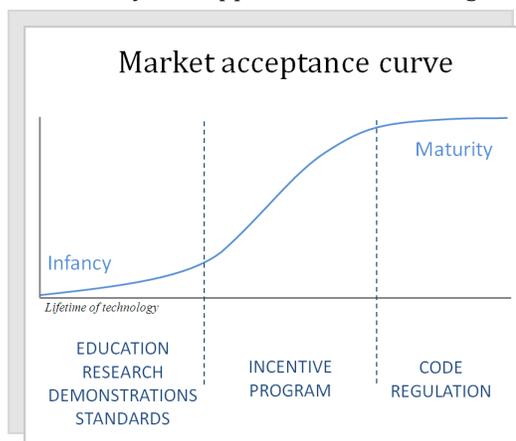
DSM Strategy

Manitoba Hydro's DSM strategy is to aggressively pursue all cost-effective energy efficiency opportunities and continually monitor the market to identify emerging trends and opportunities that may become viable and cost-effective DSM initiatives within the planning horizon.

Manitoba Hydro's DSM initiative, marketed under the Power Smart brand, is designed to encourage the efficient use of energy in residential, commercial, and industrial customer sectors. Manitoba Hydro's overall DSM strategy involves taking a broad approach to capturing energy efficiency opportunities: education to build awareness and understanding, creating foundations through the support of standards, motivating customers with the aid of financial tools, and entrenching energy savings through the support of federal and provincial codes and regulations.

In assessing options for pursuing a DSM opportunity, Manitoba Hydro uses a number of metrics as guidelines to assess energy efficient opportunities. These metrics assist in determining whether to pursue an opportunity, how aggressive an opportunity will be pursued, the effectiveness of program design options, and the relative investment sharing between ratepayers and participating customers. These metrics include the Total Resource Cost, Societal Cost, Rate Impact Measure, Levelized Utility Cost, and Customer Simple Payback. In addition to quantitative assessments, Manitoba Hydro also considers various qualitative factors including equity (i.e. reasonable participation by various ratepayer sectors such as lower income) and overall contribution towards having a balanced energy conservation strategy and plan.

As outlined in the following graph, Manitoba Hydro takes a three stage approach to achieving market transformation. In the infancy stage of emerging opportunities, Manitoba Hydro supports these technologies by building customer awareness, demonstrations, and/or through investments in research and development. As market acceptance increases and the opportunity becomes cost-effective, financial incentives and/or other market intervention strategies are pursued to encourage customers to install the technology. As the product matures and market adoption grows, incentive-based programming generally becomes uneconomic. During this phase, Manitoba Hydro's strategy involves pursuing the remaining opportunities through the adoption of codes and regulations. This latter strategy also ensures permanent market transformation for the specific energy efficiency opportunity.



An Example: Changing Furnace Efficiencies in Manitoba

In 2001, only 30% of all natural gas furnaces being installed in Manitoba were high-efficient models and customer awareness of higher efficiency options was low. In response to this market situation, Manitoba Hydro launched the Power Smart Residential Loan and supporting Home Comfort and Energy Savings campaign to educate and promote the installation of high efficient natural gas furnaces. This approach laid the foundation for customers to consider the energy efficient alternative, and provided a tool for contractors to promote this technology.

In 2005, to further increase market acceptance, a \$245 incentive was introduced to encourage customers to choose high efficient natural gas furnaces over the less efficient alternative. By 2007, high efficiency furnaces had grown to represent 76% of all furnaces being replaced in Manitoba homes. In 2008, to accelerate the number of customers upgrading their furnaces, Manitoba Hydro increased their rebate to \$500 for a limited time offering and aggressively promoted the financial and comfort benefits of upgrading a furnace.

As market acceptance increased, Manitoba Hydro worked with the Province of Manitoba to develop the framework to regulate the minimum efficiency of all natural gas furnaces installed in Manitoba. On December 30, 2009, with market penetration of 86%, the Power Smart incentive ended and the Provincial regulation took effect requiring a minimum 92% AFUE for natural gas furnaces installed in Manitoba.

Power Smart Plan

Manitoba Hydro's Power Smart Plan is a roadmap for the future direction of the Corporation's energy conservation program. It was developed through an intensive planning process that builds on the Corporation's experience and continuous involvement in energy conservation since 1989. The Power Smart portfolio offers programs and initiatives to pursue opportunities in all market sectors; residential, commercial, and industrial. These programs are designed based on in-depth knowledge of the technology and the market environment. An in-depth understanding is essential to ensure that the program design is adequately and effectively addressing the appropriate target market and contains the tools and strategies to address market barriers.



The following table outlines the forecasted achievements of this 3-year plan:

	1989/90 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
Capacity Savings (MW)	495	243	319	411	905
Energy Savings (GW.h)	2,294	363	660	1,064	3,358
Natural Gas Savings (million m ³)	101	10	21	32	133
Electric Utility Investment (Millions, 2014\$)	\$461	\$54	\$60	\$74	\$649
Natural Gas Utility Investment (Millions, 2014\$)	\$124	\$16	\$16	\$15	\$171
Total Utility Investment (Millions, 2014\$)	\$585	\$70	\$76	\$89	\$820
Customer Investment (Millions, 2014\$)	\$162	\$35	\$50	\$80	\$327
Total DSM Investment (Millions, 2014\$)	\$746	\$105	\$126	\$169	\$1,147

*Includes estimates for 2013/14

Residential

Manitoba Hydro offers a number of incentive-based and financial support programs to address opportunities in the residential market.

Incentive-Based Programs

Home Insulation Program

The Home Insulation Program was launched in May 2004 and is scheduled to run until March 31, 2027. The program was designed to encourage homeowners to upgrade insulation levels and air sealing in their homes' attics, walls, and foundations. Upgrading insulation offers significant energy savings, reduces customers' monthly utility bills, and provides a more comfortable living space.

The program targets existing electric and natural gas heated homes with fair or poor insulation levels. Approximately 35 000 electric homes and 129 000 natural gas homes were identified as the overall target market for the program (excluding homes targeted by the Affordable Energy Program). The program has been designed to address barriers to the adoption of energy efficient insulation including the lack of customer awareness regarding the financial and comfort benefits of increased insulation levels, the upfront capital cost of the upgrade, and the lack of priority when compared to more aesthetic and visible renovation projects. These market barriers are addressed through a comprehensive strategy that includes financial incentives to reduce the cost of the upgrade, informational materials in the form of advertising campaigns, and renovation "how to" booklets that provide technical guidance for upgrading insulation to Power Smart levels. Also, in 2014, Manitoba Hydro will be implementing a targeted outreach initiative in electric heated communities, offering in-home energy assessments to assist customers in identifying the highest potential energy efficiency upgrades. Power Smart on-bill financing programs are also promoted to provide additional encouragement for customers that are reluctant to consider allocating their renovation budget towards adding insulation to their home. Homeowners with technical barriers to upgrading insulation, such as finished basements, landscaping, and existing wall configurations, are encouraged to consider an upgrade as a component to an already planned renovation, for example, adding insulation to an exterior wall as part of a re-siding project.



To date, approximately 11 324 electric and 22 709 natural gas homes have undertaken insulation upgrades. The program is forecast to reach 73% of targeted electric customers and 34% of targeted natural gas customers by program end in 2026/27.

	2004/05 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Houses (annual)	34,033	2,664	2,521	2,384	41,602
Capacity Savings (MW)	27.3	2.9	5.5	7.8	35.2
Energy Savings (GW.h)	55.5	5.4	10.3	14.6	70.1
Natural Gas Savings (million m ³)	12.0	0.8	1.5	2.3	14.2
Utility Investment (Millions, 2014\$)	\$35.8	\$3.5	\$3.4	\$3.2	\$45.9
Customer Investment (Millions, 2014\$)	\$22.7	\$1.1	\$1.1	\$1.0	\$25.8
Total DSM Investment (Millions, 2014\$)	\$58.5	\$4.6	\$4.4	\$4.2	\$71.7

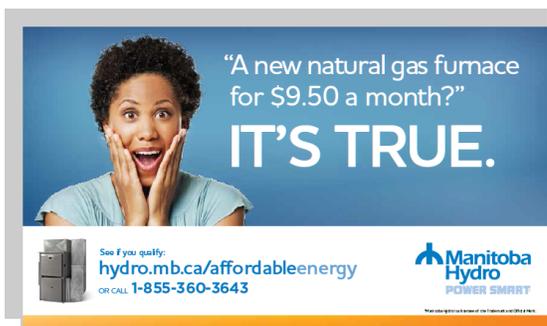
Estimated Average Annual Bill Reduction per Customer (Electric): \$320

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$151

*Includes estimates for 2013/14

Affordable Energy Program

The Affordable Energy Program (AEP) was launched in December 2007. The program's objective is to assist lower income homeowners in implementing energy efficiency upgrades, such as improved insulation, high efficiency natural gas furnaces, and various low cost measures. These upgrades can provide significant energy savings, decreasing the customer's monthly energy bills while increasing the comfort of their home. The criteria for determining program eligibility are the Low Income Cut-Off (LICO) thresholds set by Statistics Canada; customers' total household income must fall below 125% of the LICO thresholds for inclusion in the program. There are approximately 115 000 homes in Manitoba, excluding multi-unit residential buildings, that fall below the LICO 125% threshold; 105 000 customers own their home, while 10 000 customers rent. The primary targets within this market are homes with poor or fair insulation levels and standard efficient furnaces. They make up 22% (25 298) and 18% (20 525) of the market, respectively.



The program was designed recognizing the unique barriers lower income customers face in completing energy efficiency retrofits. Manitoba Hydro assists and encourages participation in this market by minimizing the financial burden with free insulation upgrades and provision of a low cost high efficiency natural gas furnace replacement, along with free low cost items (e.g. CFLs, caulking, faucet aerators). To further encourage participation, the furnace copayment was reduced to \$9.50/month from \$19, the boiler rebate was increased to \$3 000 from \$2 500, and the program was expanded to landlords renting to lower income Manitobans. The program is delivered through a number of approaches including direct participation with individual customers or through community groups (e.g. First Nations', Neighbourhood communities, social enterprises). Through these approaches, customers are made aware of the value of energy efficiency retrofits, along with the benefits of participating in the program. Customers are targeted through advertising and community-based campaigns, customized information sessions, and community networks. A community-led initiative, the Neighbourhood Approach, began in fall 2012 with the goal of completing energy efficiency upgrades on a block-by-block basis in lower income neighbourhoods. Under this approach, North End Community Renewal Corporation and Brandon Neighbourhood Renewal Corporation employ local residents and social enterprises, Building Urban Industries for Local Development (BUILD), Brandon Energy Efficiency Program (BEEP), and Inner City Renovation, to bring energy efficiency upgrade opportunities direct to the customer's door.

To date, an estimated 8 072 energy efficiency retrofits have been completed. Of the total retrofits, 5 683 insulation projects have been completed and 3 009 furnaces have been replaced. The program is forecast to reach 66% (16 615) of the targeted homes with poor or fair insulation levels and 50% (10 301) of standard furnaces within the total LICO 125% market by 2026/27.

	2007/08 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
Total Participation (annual)	8,072	2,155	2,180	2,093	14,500
No. of Insulation Projects (annual)	5,683	1,249	1,141	1,049	9,122
No. of Furnaces Installed (annual)	3,009	680	690	700	5,079
No. of Boilers Installed (annual)	75	15	15	15	120
Capacity Savings (MW)	6.8	2.1	4.1	6.0	12.8
Energy Savings (GW.h)	13.7	3.9	7.6	11.2	24.9
Natural Gas Savings (million m ³)	5.7	1.3	2.6	3.8	9.5
Utility Investment (Millions, 2014\$)	\$32.1	\$7.5	\$7.3	\$7.4	\$54.3
Customer Investment (Millions, 2014\$)	\$1.0	\$3.8	\$3.5	\$3.2	\$11.5
Total DSM Investment (Millions, 2014\$)	\$33.1	\$11.3	\$10.8	\$10.6	\$65.8

Estimated Average Annual Bill Reduction per Customer - Basic Measures (Electric): \$93

Estimated Average Annual Bill Reduction per Customer - Basic Measures (Natural Gas): \$25

Estimated Average Annual Bill Reduction per Customer (Electric) - Insulation: \$582

Estimated Average Annual Bill Reduction per Customer (Natural Gas) - Insulation: \$218

Estimated Average Annual Bill Reduction per Customer (Natural Gas) - Furnace: \$231

**Includes estimates for 2013/14*

Water and Energy Saver Program

The Water and Energy Saver Program was launched in September 2010. Its primary objective is to reduce residential water heating energy consumption through the use of low flow, energy efficient plumbing fixtures. Customers are offered a free water and energy saver kit with program messaging focused on the energy and water benefits of energy efficient plumbing fixtures. The program offers three channels of participation: mail, targeted direct installation, and a bulk mail option for property managers of multi-unit residential facilities.

The target market includes all residential dwellings that use electricity or natural gas to heat water, totaling 515 000 customers. A lack of awareness of the benefits of energy efficient plumbing fixtures and, for some customers, a perception that their fixtures are already energy efficient, combined with limited availability of Power Smart qualifying products at local retailers, will limit customer adoption of the higher efficiency fixtures. Through advertising and the free kit offering, market acceptance of Power Smart plumbing fixtures will increase.

To date, over 120 000 residential dwellings have participated in the program. The program is on target to reach 40% of targeted homes by program end.

	2010/11 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Houses (annual)	121,367	28,798	28,798	28,798	207,761
Capacity Savings (MW)	2.4	0.7	1.3	2.0	4.3
Energy Savings (GW.h)	19.2	3.3	6.6	10.0	29.2
Natural Gas Savings (million m ³)	3.8	0.8	1.6	2.5	6.3
Utility Investment (Millions, 2014\$)	\$6.8	\$1.8	\$1.8	\$1.8	\$12.3
Customer Investment (Millions, 2014\$)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total DSM Investment (Millions, 2014\$)	\$6.8	\$1.8	\$1.8	\$1.8	\$12.3

Estimated Average Annual Bill Reduction per Kit (Electric): \$25

Estimated Average Annual Bill Reduction per Kit (Natural Gas): \$14

**Includes estimates for 2013/14*



Reduce the flow and save.
Small changes add up.



Refrigerator Retirement Program

The Refrigerator Retirement Program was launched in June 2011 with the objective of reducing residential energy consumption through the removal of old, inefficient, and often nearly empty refrigerators and freezers. The program offers free in-home pickup of qualifying working units plus an incentive for the unit.

The target market is residential homes representing approximately 224 000 older second fridges and 222 000 freezers. Customers can save over \$100 per year in electricity costs by removing these units. The program encourages customers to retire their secondary appliance and not replace it in order to maximize savings.

Most customers do not know the costs of operating an underutilized refrigerator or freezer, and many lack assistance in removing the appliance from the home. Through the program, customers are made aware of the costs of their second appliance and the benefits of “retiring” it. The program makes “retiring” easy by providing a convenient in-home pickup service.

To date, over 25 000 units have been retired. The program is forecast to retire 20% of these older fridges and 5% of these freezers by program end.

	2011/12 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
Total Participation (annual)	25,715	11,000	11,000	9,000	56,715
No. of Fridges (annual)	21,675	8,000	8,000	7,000	44,675
No. of Freezers (annual)	4,040	3,000	3,000	2,000	12,040
Capacity Savings (MW)	3.5	1.4	2.8	4.0	7.5
Energy Savings (GW.h)	35.9	12.7	25.4	36.0	71.8
Utility Investment (Millions, 2014\$)	\$4.9	\$2.3	\$2.3	\$2.0	\$11.5
Customer Investment (Millions, 2014\$)	\$2.7	\$1.6	\$1.6	\$1.3	\$7.1
Total DSM Investment (Millions, 2014\$)	\$7.6	\$3.9	\$3.8	\$3.2	\$18.6

Estimated Average Annual Bill Reduction per Customer (Electric) without fridge replacement: \$100

Estimated Average Annual Bill Reduction per Customer (Electric) without freezer replacement: \$70

*Includes estimates for 2013/14



Save over \$100 a year
by retiring your inefficient
freezer or second fridge.

We'll do all the work by picking up the appliances and recycling them for you, and even give you \$40 for each unit. Contact us to arrange for free removal of up to three older units from your home.

It's easy and free to participate. You'll save energy and money along the way.
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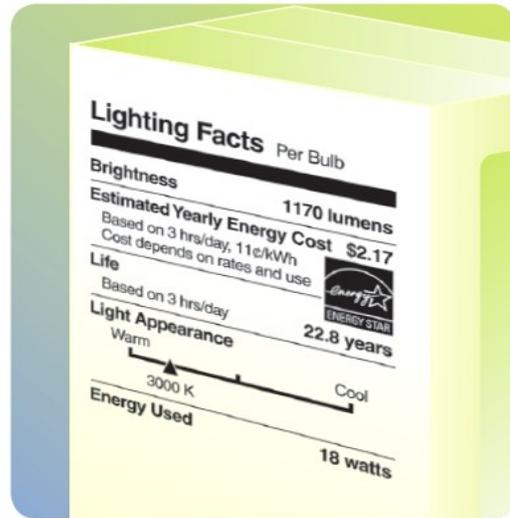
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Residential LED Lighting Program

The Residential LED Lighting Program is a proposed 5-year program designed to encourage residential customers to choose the most energy efficient lighting technology for each application within their home. The program will aim directly at increasing market adoption of Light Emitting Diode (LED) technologies as a replacement for incandescent and halogen screw-in light bulbs.

The target market includes 530 000 residential dwellings and nearly 17 million screw-based sockets in which LED and other energy efficient lamps can be used. Although consumers are slowly moving toward replacing existing incandescent and halogen bulbs with LEDs as LED prices continue to decrease, the lack of awareness of the benefits and available variety of LED products remain significant barriers to widespread adoption. The proposed program is expected to create a net increase in sales of screw-in LED bulbs in Manitoba by approximately 13% during the course of the campaign.



	2014/15	2015/16	2016/17	Total to 2016/17
No. of Bulbs (annual)	59,939	11,750	56,085	127,774
Capacity Savings (MW)	0.6	0.7	1.1	1.1
Energy Savings (GW.h)	2.6	2.9	4.4	4.4
Utility Investment (Millions, 2014\$)	\$1.0	\$0.2	\$0.2	\$1.5
Customer Investment (Millions, 2014\$)	\$0.1	\$0.0	\$0.1	\$0.2
Total DSM Investment (Millions, 2014\$)	\$1.1	\$0.3	\$0.4	\$1.7

Estimated Average Annual Bill Reduction per Bulb (Electric): \$3



Community Geothermal Program

The Community Geothermal Program aims to reduce customers' electric space heating costs through the adoption of geothermal heat pump systems in First Nations communities. The program is designed to offer a customized approach for each community, with the assistance of AKI Energy, a non-profit social enterprise. To help mitigate the high capital cost barrier, a third-party provider is contracted to conduct a feasibility study and



to provide a quote on the bulk purchase of the heat pump units, including installation, resulting in a much lower per unit price than the current market average. Another component of the program includes creating job opportunities and training for First Nations to take part in the installation and the ongoing maintenance of the geothermal systems, with training funded by the First Nation. Manitoba Hydro provides technical guidance, assesses the energy bills to determine which homes would be the most suitable for economic geothermal installations, and explores opportunities to further maximize the number of geothermal installations. Manitoba Hydro's PAYS Financing Program is utilized to enable community members to pay for

the majority of the geothermal system through the energy savings that are realized by converting their heating/air conditioning systems to a geothermal system. For some homes that are close to being able to realize enough energy savings to finance the cost of the geothermal system through the PAYS Financing Program, Manitoba Hydro will provide financial support in order to ensure the energy and financing costs aren't expected to be higher than prior to the geothermal system installation.

It is anticipated that the Community Geothermal Program will increase the adoption of heat pumps in First Nations communities as the total cost of the system will be substantially reduced and the loan will be paid through the energy savings.

	2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Geothermal Systems (annual)	101	300	425	500	1,326
Capacity Savings (MW)	0.4	1.2	2.9	5.0	5.4
Energy Savings (GW.h)	1.6	4.6	11.1	18.8	20.4
Utility Investment (Millions, 2014\$)	\$0.4	\$1.6	\$2.0	\$2.4	\$6.3
Customer Investment (Millions, 2014\$)	\$0.0	\$3.1	\$4.4	\$5.2	\$12.8
Total DSM Investment (Millions, 2014\$)	\$0.4	\$4.7	\$6.5	\$7.6	\$19.1

Estimated Average Annual Bill Reduction per Customer (Electric): \$1,005

**Includes estimates for 2013/14*

Support Programs

Manitoba Hydro offers the following convenient financing programs to support the incentive-based programs by allowing customers to finance initial Power Smart project costs and pay the costs back on their monthly Manitoba Hydro bill.

Power Smart Residential Loan

The Power Smart Residential Loan (PSRL) was launched in March 2001 to provide customers with convenient on-bill financing to assist them in making their home more energy efficient. Under the PSRL, the following energy efficiency improvements can be made to the home: insulation, ventilation equipment, air leakage sealing, windows and doors, and space and water heating equipment.

The target market consists of all electric and natural gas customers in Manitoba. Participants can borrow up to \$7 500 (\$5 500 for natural gas furnaces) and repay the amount on their energy bill over a term of up to 5 years (up to 15 years for natural gas furnaces and boilers).

	2001/02 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Loans (annual)	75,858	6,000	6,000	6,000	93,858
Capacity Savings (MW)	5.6	0.3	0.6	0.9	6.5
Energy Savings (GW.h)	10.1	0.6	1.1	1.7	11.8
Natural Gas Savings (million m ³)	15.2	0.3	0.6	0.9	16.1
Average Loan Amount: \$4,666					

*Includes estimates for 2013/14



Power Smart PAYS Financing

The Power Smart PAYS (Pay As You Save) Financing Program was launched in November 2012 and offers low interest on-bill financing over a term of up to 25 years, depending on the technology financed, with a fixed interest rate for up to 5 years. Energy efficient upgrades that may qualify for financing are:

- Space heating equipment:
 - High efficiency natural gas furnaces;
 - Natural gas boilers (minimum AFUE of 85%);
 - Geothermal heat pump systems;
- Insulation upgrades;
- Drainwater heat recovery systems;
- WaterSense toilets (in conjunction with energy efficient equipment).

The target market consists of all electric and natural gas customers in Manitoba. This offering complements and supports existing incentive-based programs by assisting customers in managing the installation cost of their upgrade. To qualify, upgrades must have sufficient estimated annual utility bill savings to offset the monthly financing payment, thereby resulting in an energy bill that is less than or equal to the total bill prior to the retrofit. PAYS Financing also differs from Manitoba Hydro’s other financing programs in that the loan is transferable between homeowners when a property is sold, and is transferable from a landlord to a tenant where the tenant is responsible for paying the energy bill.



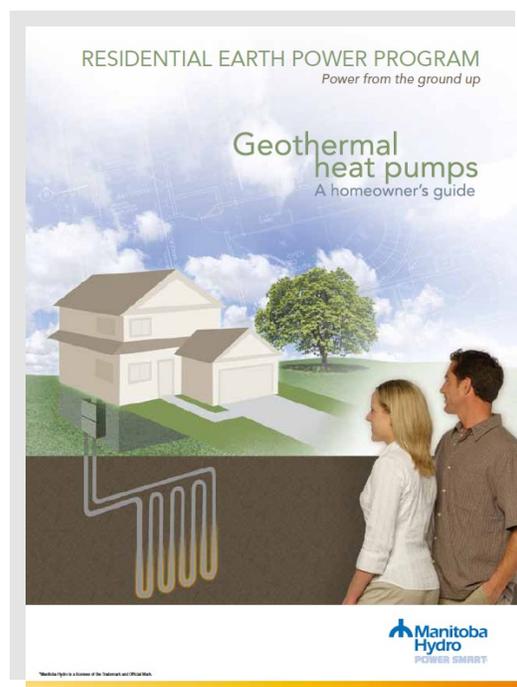
	2012/13 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Loans (annual)	295	553	811	1,157	2,816
Capacity Savings (MW)	0.1	0.1	0.3	0.4	0.5
Energy Savings (GW.h)	0.4	0.5	0.9	1.4	1.7
Natural Gas Savings (million m ³)	0.0	0.0	0.0	0.0	0.0
Average Loan Amount: \$6,930					

*Includes estimates for 2013/14

Residential Earth Power Loan

The Residential Earth Power Loan (REPL) was launched in April 2002 to support the adoption of geothermal heat pump technology. Although more expensive to install, geothermal heat pump systems offer significant electricity savings, thereby reducing customers' monthly utility bills. The convenience and flexibility of the on-bill REPL reduces the financial barrier that exists when installing a geothermal heat pump system. The program was also designed to build awareness of emerging technologies and foster new, growing industries that utilize these technologies through educational materials, technical support, and training workshops. Solar hot water systems were added as an eligible technology in 2010.

Customers are eligible for up to \$20 000 in financing for installing geothermal heat pump systems or \$7 500 in financing for installing solar domestic water heating systems. The financial terms include a 5-year fixed interest rate over a 15-year maximum amortization term. The interest rate for the balance of the financing period is established at Manitoba Hydro's cost of borrowing at the time the fixed interest rate term expires.



	2002/03 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Loans (annual)	1,237	26	26	27	1,316
Capacity Savings (MW)	4.4	0.3	0.6	1.0	5.4
Energy Savings (GW.h)	14.8	1.3	2.6	4.1	18.9
Natural Gas Savings (million m ³)	2.4	0.2	0.4	0.6	3.0
Average Loan Amount: \$18,728					

*Includes estimates for 2013/14

Commercial

Manitoba Hydro offers a number of incentive-based programs and one financial support program to address opportunities in the commercial market.

Incentive-Based Programs

Commercial Lighting Program

The Commercial Lighting Program was launched in May 1992 to reduce electricity consumption by accelerating the acceptance and adoption of energy efficient lighting technologies in Manitoba. Commercial, industrial, and agricultural customers are encouraged to install qualifying energy efficient lighting technologies in their facilities to reduce energy bills, improve the quality of lighting, as well as increase safety, security, and productivity. The program offers support through the use of educational materials, information seminars, and financial incentives.

The target market consists of all existing commercial, industrial, and agricultural buildings with inefficient lighting installations in Manitoba, where lighting systems operate a minimum of 2 000 hours per year. New construction projects that do not meet the New Buildings Program eligibility criteria may qualify. The estimated market size is 52 500 lighting projects. Many energy efficient lighting options have higher initial capital costs, and oftentimes customers lack awareness of the technologies available and the non-energy related benefits of energy efficient lighting, thereby creating a barrier to the adoption of higher efficiency systems. In addition, many customers operate in commercial lease space where the person making decisions related to lighting upgrades may not pay the utility bill and therefore, does not realize the direct financial return. Strategies in place to address these market barriers include financial incentives, education and training, as well as hands on technical and customer service support.

To date, over 13 000 energy efficient lighting projects have been completed. The program is forecast to reach 30% of the target market by the end of 2016/17.

	1992/93 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Projects (annual)	13,183	820	860	869	15,732
Capacity Savings (MW)	71.2	10.4	21.3	31.5	102.7
Energy Savings (GW.h)	389.6	37.4	76.6	113.4	503.0
Utility Investment (Millions, 2014\$)	\$95.4	\$8.6	\$8.7	\$8.4	\$121.1
Customer Investment (Millions, 2014\$)	\$37.6	\$4.8	\$4.9	\$5.4	\$52.6
Total DSM Investment (Millions, 2014\$)	\$132.9	\$13.4	\$13.6	\$13.7	\$173.7

Estimated Average Annual Bill Reduction per Customer (Electric): \$264

**Includes estimates for 2013/14*



LED Roadway Lighting Conversion Program

Working with local municipal governments, Manitoba Hydro will convert existing High Pressure Sodium (HPS) roadway lights to Light Emitting Diode (LED) lights over a 7-year period. Manitoba Hydro provides energy and maintenance services to over 130 000 roadway lights across the Province of Manitoba.

The current roadway lighting technology is High Pressure Sodium (HPS), which produces a yellow/orange light and has a 5-year lamp life. The wattages range from 70 to 1 000 and were originally installed in 1991 under a past Power Smart Roadway Lighting Conversion Program to replace Mercury Vapour and Incandescent lighting.



In addition to energy savings, LED roadway lighting has a longer life than HPS lighting, quick turn on and off, and improved performance in colder temperature settings. LED also provides the added benefit of reduced glare as directing the light downward onto the roadway reduces the amount of light that is directed into drivers' eyes.

	2014/15	2015/16	2016/17	Total to 2016/17
No. of Conversions (annual)	18,591	18,150	16,138	52,879
Capacity Savings (MW)	0.8	1.7	2.4	2.4
Energy Savings (GW.h)	5.8	11.4	16.4	16.4
Utility Investment (Millions, 2014\$)	\$6.2	\$6.1	\$5.2	\$17.4
Customer Investment (Millions, 2014\$)	\$0.0	\$0.0	\$0.0	\$0.0
Total DSM Investment (Millions, 2014\$)	\$6.2	\$6.1	\$5.2	\$17.4

Commercial Building Envelope - Windows Program

The Commercial Building Envelope (Windows) Program has been promoting the benefits of energy efficient windows to commercial customers since 1995. The program's primary objective is to improve building envelope performance and reduce energy consumption through the installation of high performance windows in existing buildings.

The target market consists of all existing commercial customers, primarily focused on sectors such as multi-unit residential facilities, schools, hotels/motels, personal care homes, and health care facilities. The program targets facilities planning to replace existing windows, thus presenting an economic opportunity to install higher efficiency Power Smart qualifying windows at the time of replacement.

Market barriers include the incremental product cost of high performance windows, along with a lack of awareness of the significant potential energy savings and other non-energy benefits. Providing financial incentives to help offset incremental material costs, working closely with local fabricators and window suppliers and contractors, while promoting the benefits of high performance windows is effectively addressing these barriers.



It is estimated that there are approximately 750 potential window replacement projects in Manitoba each year, of a total market of 27 000 potential projects. To date, over 1 300 energy efficient window projects have been completed. The program is forecast to reach 8% of the target market by the end of 2016/17.

	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Projects (annual)	1,326	234	237	240	2,037
Capacity Savings (MW)	6.9	1.1	2.1	3.1	10.0
Energy Savings (GW.h)	17.1	2.8	5.4	7.7	24.8
Natural Gas Savings (million m ³)	1.9	0.4	0.7	1.0	2.9
Utility Investment (Millions, 2014\$)	\$13.7	\$1.8	\$1.4	\$1.1	\$18.1
Customer Investment (Millions, 2014\$)	\$0.1	\$0.4	\$0.5	\$0.5	\$1.5
Total DSM Investment (Millions, 2014\$)	\$13.8	\$2.3	\$1.9	\$1.6	\$19.6

Estimated Average Annual Bill Reduction per Customer (Electric): \$895

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$643

**Includes estimates for 2013/14*

Commercial Building Envelope - Insulation Program

The Commercial Building Envelope (Insulation) Program was launched in April 2006. Its primary objective is to improve building envelope performance and reduce energy consumption by upgrading insulation levels in roof and wall areas of existing buildings.

Strengthen your business with a better building envelope.

Help your facility perform its best. Upgrade your windows and insulation levels to:

- Use less energy for heating and cooling
- Create a comfortable, draft-free environment
- Control condensation and moisture
- Improve your building's appearance, life and durability
- Reduce harmful effects on the environment

Financial incentives are available.

Manitoba Hydro's Commercial Building Envelope Program
 In Winnipeg: 360-3676
 Toll-free: 1 888 MB HYDRO
 (1-888-624-9376)
www.hydro.mb.ca/psfb

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The target market is comprised of all commercial customers with insulation levels that do not meet Power Smart levels. The program targets facilities planning to undergo extensive repairs to existing roofs and walls, presenting an economic opportunity to improve existing insulation levels at the time of renovation.

Market barriers include the incremental product cost of insulation upgrades and a lack of awareness of the significant potential energy savings and other non-energy benefits associated with upgraded insulation levels.

Providing financial incentives to help offset incremental material costs and promoting the benefits of better insulated buildings is effectively addressing these barriers.

It is estimated that there are approximately 400 potential insulation replacement projects in Manitoba each year, of a total market of 15 000 potential projects. To date, over 1 300 insulation projects have been completed. The program is forecast to reach 15% of the target market by the end of 2016/17.

	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Projects (annual)	1,336	308	313	316	2,273
Capacity Savings (MW)	12.5	1.1	2.2	3.0	15.6
Energy Savings (GW.h)	25.0	2.8	5.5	7.7	32.7
Natural Gas Savings (million m ³)	9.0	0.9	1.8	2.6	11.7
Utility Investment (Millions, 2014\$)	\$13.5	\$2.5	\$2.5	\$2.2	\$20.6
Customer Investment (Millions, 2014\$)	\$8.2	\$0.6	\$0.6	\$0.5	\$9.9
Total DSM Investment (Millions, 2014\$)	\$21.8	\$3.1	\$3.1	\$2.7	\$30.5

Estimated Average Annual Bill Reduction per Customer (Electric): \$145

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$197

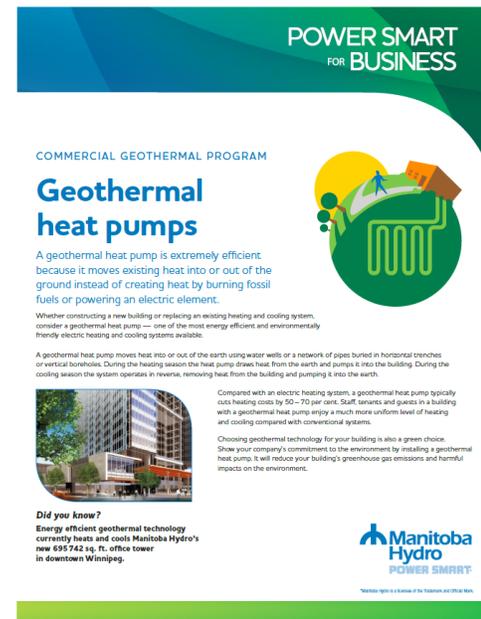
**Includes estimates for 2013/14*

Commercial Geothermal Program

The Commercial Geothermal Program was launched in 2007 with the primary objective to encourage the installation of geothermal heat pumps in electrically heated commercial buildings.

The target market consists of new and existing commercial buildings that use conventional electric technologies for space heating. There are approximately 6 084 existing electrically heated facilities using more than 30 000 kW.h per year in Manitoba. There are approximately 200 new commercial buildings constructed each year of which approximately 10% are located in electric heat only territory. It is assumed 243 existing buildings will replace their electric heating systems and 20 new buildings in electric heat only territory will be constructed for a total of 263 potential participants annually. The high capital cost of installing a geothermal heat pump system, combined with the available supply of qualified installers and contractors in some regions of the province; challenging drilling and trenching conditions due to varying geological conditions; limited land area of many properties to accommodate the loop installation; and the proximity to the ground loop of underground facilities and services (water and sewer lines that may freeze, etc.) can make choosing geothermal as a heating/cooling option more challenging for the customer. Through the program, customers are provided with information on how the geothermal heat pump technology works, the energy savings available, and other benefits to increase understanding and acceptance of the technology. Financial incentives are offered to help offset the higher capital costs of the system. Incentives are also available to support feasibility studies to ensure the project meets the heating and cooling needs of the building while achieving the necessary electrical savings that make installing a geothermal heat pump an economic option for the customer. Benefits of geothermal systems and program opportunities are communicated through the broad network of engineers, architects, consultants, contractors, and trade allies in Manitoba who have established relationships with the commercial and industrial customer base.

To date, approximately 131 commercial buildings have installed geothermal systems. The program is forecast to achieve 50% of annual heating systems upgrades being geothermal by 2028/29.



	2007/08 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Buildings (annual)	131	33	39	47	250
Capacity Savings (MW)	14.7	0.4	1.4	2.7	17.4
Energy Savings (GW.h)	35.4	1.8	6.0	11.1	46.5
Utility Investment (Millions, 2014\$)	\$5.7	\$1.0	\$2.0	\$2.4	\$11.1
Customer Investment (Millions, 2014\$)	\$17.7	\$0.4	\$0.9	\$1.1	\$20.0
Total DSM Investment (Millions, 2014\$)	\$23.4	\$1.4	\$2.9	\$3.4	\$31.1

Estimated Average Annual Bill Reduction per Customer (Electric): \$5,145

*Includes estimates for 2013/14

Commercial HVAC Program - Boilers

The Commercial HVAC Program for Boilers is a 10-year program launched in April 2006. The program's primary objective is to transform the commercial boiler market in Manitoba by increasing awareness and adoption of energy efficient condensing and near-condensing boilers. Energy efficient boilers offer significant natural gas savings, reducing customers' monthly utility bills. The program focuses on educating building owners and operators about the benefits of energy efficient equipment and works with industry contractors, engineers, consultants, designers, and equipment dealers to promote these systems. Financial incentives ranging from \$2/MBH (thousands of BTUs per hour) to \$8/MBH are provided for qualifying systems.

The program is designed to build market acceptance prior to, thereby ensuring the successful adoption of, Natural Resources Canada's (NRCan) minimum efficiency regulations for commercial boilers, which are currently under development.

The primary target market consists of commercial buildings with existing heating equipment at or approaching end of life. On average, 282 commercial boilers are installed annually in existing buildings. Boiler replacements are not likely to occur until existing equipment is near the end of its life and are often completed in an emergency situation during the heating season. Therefore, purchase decisions are made with limited lead time and primarily based on the initial capital cost, not considering the annual operating costs of the system over its 25-year life. Condensing or near-condensing natural gas boilers are also more expensive to install than conventional boilers, and require modifications to the ventilation system. Financial incentives combined with information on the lifecycle cost-advantage of energy efficient systems are in place to address these market barriers.



The program is forecast to achieve 42% of the target market being energy efficient by the planned program end date of March 31, 2016. The program will pursue provincial regulations requiring all boilers installed in new buildings in Manitoba to be condensing by April 1, 2016.

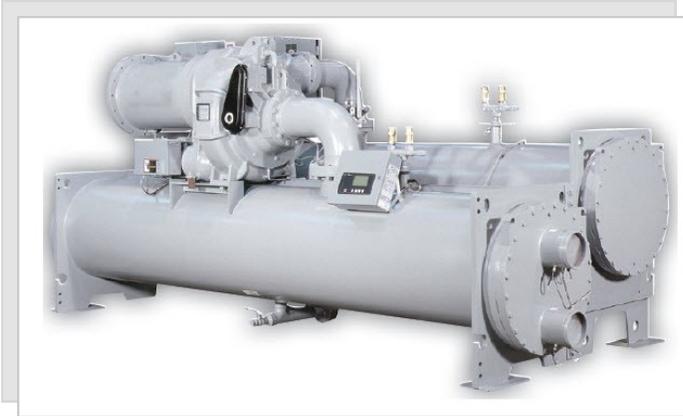
	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Boilers (annual)	929	126	133	0	1,188
Natural Gas Savings (million m ³)	9.2	1.0	2.1	2.3	11.5
Utility Investment (Millions, 2014\$)	\$9.7	\$1.1	\$1.2	\$0.0	\$12.0
Customer Investment (Millions, 2014\$)	\$6.6	\$0.6	\$0.4	\$0.2	\$7.8
Total DSM Investment (Millions, 2014\$)	\$16.3	\$1.7	\$1.6	\$0.2	\$19.8

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$2,088

**Includes estimates for 2013/14*

Commercial HVAC Program - Chillers

The Commercial HVAC Program for Chillers is a 16-year program launched in April 2006. Its primary objective is to transform the commercial chiller market in Manitoba by increasing awareness and adoption of energy efficient water-cooled chillers and variable speed drive retrofits. Energy efficient chillers offer significant electricity savings, reducing customers' utility bills. The program focuses on educating building owners and operators about the benefits of energy efficient equipment and works with industry contractors, engineers, consultants, designers, and equipment dealers to promote these systems. Financial incentives are provided for qualifying units.



The primary target market for chillers are large, older, commercial buildings, consisting primarily of large offices, large multi-unit residential facilities, hospitals, and large educational facilities. The high initial cost of chiller systems combined with the tendency of customers to emphasize the initial investment cost over operating efficiency or lifecycle costs when making their purchase decision, have created a barrier for the higher efficiency systems. Offering aggressive financial incentives and promoting the lifecycle cost-advantage are

effectively addressing these barriers and ensuring that efficient chillers are chosen at the time of existing equipment replacement.

Typically, chillers have a 30-year life and are replaced when the refrigerant must be changed or when the equipment is reaching the end of its life. On average, 14 chillers, representing approximately 4 300 tons of cooling capacity, are replaced annually. The program is forecast to achieve 66% of chiller sales being energy efficient by the end of 2016/17.

	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Chillers (annual)	70	10	10	11	101
Capacity Savings (MW)	0.0	0.0	0.0	0.0	0.0
Energy Savings (GW.h)	12.2	2.5	4.0	5.6	17.7
Utility Investment (Millions, 2014\$)	\$1.9	\$0.3	\$0.3	\$0.3	\$2.8
Customer Investment (Millions, 2014\$)	\$2.0	\$0.1	\$0.1	\$0.2	\$2.4
Total DSM Investment (Millions, 2014\$)	\$3.8	\$0.5	\$0.4	\$0.5	\$5.2

Estimated Average Annual Bill Reduction per Customer (Electric): \$11,400

**Includes estimates for 2013/14*

Commercial HVAC Program - CO₂ Sensors

The Commercial HVAC Program for CO₂ Sensors is a 15-year program launched in April 2009. Its primary objective is to increase the awareness and adoption of CO₂ sensors in commercial facilities. CO₂ sensors reduce energy consumption by matching ventilation supply to occupant demand, thereby reducing customers' monthly utility bills. CO₂ sensors also improve occupant comfort by providing more consistent air quality and can extend the life of heating and cooling equipment by putting less demand on these systems.

The target market for CO₂ sensors consists of over-ventilated commercial facilities with variable occupancy and that have, or are considering installing, Direct Digital Control systems or rooftop units to control heating, cooling, and ventilation. Installations typically occur when other major renovations are being made to the ventilation system. It is estimated that a total of 277 potential sensor installations in Manitoba exist each year.

CO₂ sensors are not required in commercial building operation and therefore are often one of the first retrofit measures to be discarded in the event of budgetary constraints. Customers also tend to be unfamiliar with the operation of their ventilation systems and may be unaware of when a building is over-ventilated. Offering aggressive financial incentives combined with the promotion of the lifecycle cost-advantage and improved ventilation benefits, is effectively addressing these barriers.



	2009/10 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Sensors (annual)	241	152	199	238	830
Capacity Savings (MW)	0.0	0.1	0.2	0.3	0.3
Energy Savings (GW.h)	0.3	0.1	0.2	0.4	0.7
Natural Gas Savings (million m ³)	0.8	0.1	0.3	0.5	1.3
Utility Investment (Millions, 2014\$)	\$0.1	\$0.2	\$0.2	\$0.2	\$0.6
Customer Investment (Millions, 2014\$)	\$0.2	\$0.0	\$0.0	\$0.0	\$0.3
Total DSM Investment (Millions, 2014\$)	\$0.3	\$0.2	\$0.2	\$0.2	\$1.0

Estimated Average Annual Bill Reduction per Customer (Electric): \$40

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$463

**Includes estimates for 2013/14*

Commercial HVAC Program - Water Heaters

The Commercial HVAC Program for Water Heaters is a 10-year program targeted to be launched in spring 2015. The program's primary objective is to advance transformation of the commercial water heater market in Manitoba prior to federal regulations taking effect by increasing awareness and adoption of energy efficient condensing water heaters. Water heating typically represents 11% of a commercial building's energy consumption, but can be as high as 40% for high-use sectors such as car washes and laundromats. Upgrading to a condensing water heater can reduce water heating energy use by up to 28%. The proposed program will focus on educating building owners and operators about the benefits of energy efficient equipment and will work with industry contractors, engineers, consultants, designers, and equipment dealers to promote these systems.



Water heating typically represents 11% of a commercial building's energy consumption, but can be as high as 40% for high-use sectors such as car washes and laundromats. Upgrading to a condensing water heater can reduce water heating energy use by up to 28%. The proposed program will focus on educating building owners and operators about the benefits of energy efficient equipment and will work with industry contractors, engineers, consultants, designers, and equipment dealers to promote these systems.

The program is designed to build market acceptance prior to, and thereby ensuring the successful adoption of, Natural Resources Canada's (NRCAN) minimum efficiency regulations for commercial water heaters, which are currently under development.

The primary target market consists of commercial buildings with high levels of water usage with existing water heating equipment at or approaching end of life. On average, 286 commercial water heaters are installed annually in existing buildings. Water heater replacements most often only occur when existing equipment is near its end of life and are often completed in an emergency situation. Purchase decisions are therefore made with limited lead time and primarily based upon the initial capital cost, not considering the annual operating costs of the system over the product lifecycle. Condensing water heaters are also more expensive to install than conventional water heaters because they typically require modifications to the ventilation system. Financial support combined with information on the lifecycle cost advantage of energy efficient systems are proposed to address these market barriers.

The primary target market consists of commercial buildings with high levels of water usage with existing water heating equipment at or



The program is forecast to achieve 80% of annual water heater sales being energy efficient in the final year of the program. The program will pursue provincial regulations requiring all water heaters, including tankless systems, installed in new buildings within Manitoba to be condensing by April 1, 2025.

	2014/15	2015/16	2016/17	Total to 2016/17
No. of Water Heaters (annual)	0	19	31	50
Natural Gas Savings (million m ³)	0.0	0.0	0.1	0.1
Utility Investment (Millions, 2014\$)	\$0.0	\$0.1	\$0.1	\$0.2
Customer Investment (Millions, 2014\$)	\$0.0	\$0.1	\$0.1	\$0.1
Total DSM Investment (Millions, 2014\$)	\$0.0	\$0.1	\$0.2	\$0.3
<i>Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$207</i>				

Commercial Custom Measures Program

The Commercial Custom Measures Program was launched in 2006 to encourage commercial customers to explore and implement energy efficient upgrades to their operations or facilities. This program offers the opportunity to explore customer-specific and unique projects or newer technologies that are not currently eligible under the other Power Smart for Business Program offerings. Technologies and projects may include digital control systems, hot water and space heating equipment, waste energy recovery systems, variable speed drive systems, and solar air and water heating systems. The program provides incentives to help cover the cost of feasibility studies that are often required for larger projects and newer or emerging technologies, and implementation incentives based on projected savings from the project.

You know your business, we know energy.

Together, let's find the custom project to help your business use energy more efficiently. You can save an average of \$3,500 annually on energy costs and receive financial incentives for your project.

Find out what types of projects you can do. View the Custom Measures video at www.hydro.mb.ca/psfb.

Commercial Custom Measures Program
 Telephone: (204) 360-3676
 Toll-free: 1-888-MBHYDRO (1-888-624-9376)
 E-mail: powersmartforbusiness@hydro.mb.ca
www.hydro.mb.ca/psfb

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The program targets all commercial customers planning new construction, renovation or expansion projects. Often the high incremental cost of energy efficient technologies and systems, customer uncertainty of payback, and lack of awareness of energy efficient alternatives limit a customer's propensity to invest in an energy efficient project. The Commercial Custom Measures Program addresses these barriers by promoting new and innovative technologies, offering a feasibility study incentive to provide confidence in energy savings estimates, and offering incentives to help reduce the implementation cost.

	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Projects (annual)	78	14	15	15	122
Capacity Savings (MW)	1.9	0.3	0.6	0.9	2.8
Energy Savings (GW.h)	25.4	1.1	2.2	3.4	28.7
Natural Gas Savings (million m ³)	1.4	0.1	0.2	0.3	1.7
Utility Investment (Millions, 2014\$)	\$4.4	\$0.6	\$0.7	\$0.7	\$6.4
Customer Investment (Millions, 2014\$)	\$12.6	\$0.6	\$0.6	\$0.6	\$14.3
Total DSM Investment (Millions, 2014\$)	\$16.9	\$1.2	\$1.2	\$1.3	\$20.6

Estimated Average Annual Bill Reduction per Customer (Electric): \$4,646

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$6,427

**Includes estimates for 2013/14*

Commercial Building Optimization Program

The Commercial Building Optimization Program (CBOP) was launched in 2006 to encourage commercial customers with existing buildings to engage in an assessment and adjustment process known as retrocommissioning (RCx) to help return their buildings' mechanical systems to their designed operating characteristics and even further optimize their operation to save energy and improve occupant comfort. The program focuses on identifying non-capital intensive energy conservation opportunities with relatively short payback periods and offers incentives that cover a portion of the cost of hiring an RCx agent and implementing the energy efficient measures identified through the investigation process.



The market consists of existing commercial buildings larger than 50 000 square feet and between 2 to 25 years of age with direct digital control systems and functioning heating, ventilating, and air conditioning mechanical systems. There are approximately 470 buildings in this market, however, there are significant barriers that must be overcome to reach these customers including the lack of experience and availability of RCx providers in Manitoba, lack of customer awareness of the cost-saving benefits of RCx, and lack of customer time and competing priorities for capital to invest in energy efficiency projects. The program addresses these barriers by providing training and information sessions for potential and existing RCx providers, promoting RCx at relevant industry events, and offering incentives to reduce the capital cost and payback cycle of the RCx process.

	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Buildings (annual)	15	4	4	6	29
Capacity Savings (MW)	0.0	0.1	0.2	0.4	0.5
Energy Savings (GW.h)	5.2	0.6	1.2	2.1	7.3
Natural Gas Savings (million m ³)	0.7	0.1	0.2	0.5	1.2
Utility Investment (Millions, 2014\$)	\$2.2	\$0.5	\$0.4	\$0.5	\$3.5
Customer Investment (Millions, 2014\$)	\$0.2	\$0.1	\$0.1	\$0.2	\$0.6
Total DSM Investment (Millions, 2014\$)	\$2.3	\$0.6	\$0.5	\$0.7	\$4.1

Estimated Average Annual Bill Reduction per Customer (Electric): \$8,840

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$10,779

**Includes estimates for 2013/14*

New Buildings Program

The New Buildings Program is an 8-year program that began in 2010. Its primary objective is to transform the commercial new construction industry in preparation for pending building codes which will require significant improvements in overall building energy efficiency. The program offers technical assistance and financial incentives for customers designing and constructing new, energy efficient commercial buildings.



The provincial government has adopted the National Energy Code of Canada for Buildings (NECB) 2011 into the Manitoba building code. Coming into force December 1, 2014, this adoption will have a significant impact on the energy efficiency of new commercial buildings and will affect many disciplines in Manitoba's construction industry, including the code enforcement authorities.

Two incentive options are currently offered to all customers: The Prescriptive Path, which specifies minimum design criteria for common building types or the Custom Design Path, which offers building designers flexibility to create energy efficient buildings. Power Smart buildings are designed to use at least 33% less energy than similar buildings designed to meet the Model National Energy Code of Canada for Buildings 1997 (MNECB 97). Custom Design Path participants are eligible for an energy modeling incentive and are also given the option to enroll in the Proven Performance Path which provides further incentives for energy efficiency beyond the program's minimums. The target market is all new commercial buildings constructed in Manitoba and represents approximately 200 new commercial building projects in the province each year. In order to move the market toward the energy efficiency requirements proposed under the upcoming building code, the industry faces fundamental changes to the current methods of designing, constructing, and commissioning commercial buildings. A lack of qualified, local firms offering integrated design, energy modeling, and building commissioning; industry perceptions of higher initial capital costs associated with designing and constructing energy efficient buildings; and a lack of customer and industry knowledge about lifecycle costing creates barriers to constructing energy efficient buildings. To help overcome these barriers, Manitoba Hydro has worked closely with the Province's Green Building Coordination Team to develop the Green Building Policy for Government of Manitoba Funded Projects. This policy ensures the Province's investments in new construction will help transform the local market by leading by example, and will help build industry capacity within Manitoba. Program efforts are focused on larger and more complex projects in order to showcase the benefits of energy efficient buildings to a broader audience on a larger scale. Providing financial incentives along with industry training and support aids in addressing these barriers.

To date, there have been 33 buildings constructed that meet the Power Smart requirement of at least 33% more energy efficient than the MNECB 97. In addition to these completed projects, another 51 projects are currently registered to participate. The program is forecast to achieve a market penetration rate of 25% of annual buildings constructed being energy efficient in 2016/17.

	2009/10 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Buildings (annual)	33	30	40	50	153
Capacity Savings (MW)	1.4	4.6	10.8	18.6	20.0
Energy Savings (GW.h)	7.7	10.5	24.4	41.9	49.6
Natural Gas Savings (million m ³)	2.8	0.3	0.7	1.2	4.0
Utility Investment (Millions, 2014\$)	\$3.8	\$3.1	\$3.9	\$4.5	\$15.3
Customer Investment (Millions, 2014\$)	\$3.1	\$6.7	\$8.9	\$11.2	\$29.9
Total DSM Investment (Millions, 2014\$)	\$6.9	\$9.8	\$12.8	\$15.7	\$45.2

Estimated Average Annual Bill Reduction per Customer (Electric): \$18,921

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$2,311

*Includes estimates for 2013/14

Commercial Refrigeration Program

The Commercial Refrigeration Program was launched in 2006 to encourage commercial customers to reduce energy consumption by providing over 15 different product incentives for energy efficient upgrades to refrigeration display cases, walk-in boxes, mechanical rooms, and lighting. Savings are achieved by providing customers with information about best practices and maintenance, promoting energy efficient refrigeration technologies, and optimizing the operation of new and existing refrigeration equipment.



The target market is commercial customers with foodservice refrigeration equipment, primarily grocery, retail, and convenience stores. Many of the qualifying energy efficient refrigeration systems have higher incremental costs, and equipment upgrade decisions are sometimes based on aesthetics over energy efficiency. Offering financial incentives to lower incremental costs and promoting the energy and associated bill savings along with non-energy benefits of efficient refrigeration systems, such as increased comfort in refrigeration aisles for both customers and employees, reduced product spoilage, and extended equipment life for refrigeration motors and compressors, is effectively addressing these barriers.

	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Locations (annual)	1,046	367	208	60	1,681
Capacity Savings (MW)	4.8	1.3	2.0	2.4	7.2
Energy Savings (GW.h)	32.6	11.7	17.9	21.3	53.9
Utility Investment (Millions, 2014\$)	\$3.0	\$1.7	\$1.5	\$0.3	\$6.6
Customer Investment (Millions, 2014\$)	\$3.6	\$0.1	\$0.1	\$0.1	\$3.9
Total DSM Investment (Millions, 2014\$)	\$6.6	\$1.8	\$1.6	\$0.5	\$10.5

Estimated Average Annual Bill Reduction per Customer (Electric): \$1,673

*Includes estimates for 2013/14

Commercial Kitchen Appliance Program

The Commercial Kitchen Appliance Program was launched in 2008 to encourage customers to choose ENERGY STAR steam cookers (gas and electric) and ENERGY STAR deep fat fryers (gas only) when replacing commercial appliances.

The target market for steam cookers and deep fat fryers consists of restaurants and foodservice establishments with either gas or electric commercial kitchen appliances. ENERGY STAR qualified appliances have a higher initial cost to purchase, and many customers are not aware that using ENERGY STAR appliances can decrease operating and maintenance costs and improve food quality. Providing financial incentives and promoting the various energy and non-energy benefits of ENERGY STAR kitchen appliances is effectively addressing these market barriers.

Manitoba Hydro is also currently investigating the opportunity to reintroduce pre-rinse spray valves - a previously offered initiative. The technology has evolved to offer a more efficient spray valve option, thereby creating an opportunity to achieve further energy savings.

	2008/09 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Appliances (annual)	107	630	834	1,187	2,758
Capacity Savings (MW)	0.2	0.7	1.7	3.1	3.3
Energy Savings (GW.h)	0.9	0.7	1.5	2.7	3.5
Natural Gas Savings (million m ³)	0.1	0.2	0.5	1.0	1.1
Utility Investment (Millions, 2014\$)	\$0.5	\$0.2	\$0.2	\$0.2	\$1.1
Customer Investment (Millions, 2014\$)	\$0.2	\$0.0	\$0.1	\$0.1	\$0.3
Total DSM Investment (Millions, 2014\$)	\$0.6	\$0.2	\$0.3	\$0.3	\$1.4

Estimated Average Annual Bill Reduction per Customer (Electric): \$452

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$137

**Includes estimates for 2013/14*



Network Energy Management Program

The Network Energy Management Program was launched in 2009 to encourage customers to install program-approved software that conserves energy by sending personal computers (PCs) into a mode that consumes less energy when they are not in use. The program is aimed at commercial organizations that manage a network of PCs.

The target market is comprised of approximately 2 500 physical locations in the school/college and office sectors, representing approximately 300 000 PCs. Installation, configuration, and testing of this new software on existing networks can require a significant time investment. Although management may realize operational cost savings, IT staff are often cautious when implementing software that they perceive may in any way restrict their ability to access individual PCs remotely to perform maintenance and system upgrades. The program provides financial incentives and promotes the product benefits through direct marketing to both management and IT staff in order to address these barriers to adoption.

	2009/10 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Licenses (annual)	4,631	3,343	5,562	7,784	21,320
Capacity Savings (MW)	0.1	0.2	0.5	1.0	1.0
Energy Savings (GW.h)	0.8	0.5	1.4	2.5	3.3
Utility Investment (Millions, 2014\$)	\$0.3	\$0.1	\$0.1	\$0.1	\$0.6
Customer Investment (Millions, 2014\$)	\$0.0	\$0.1	\$0.1	\$0.1	\$0.2
Total DSM Investment (Millions, 2014\$)	\$0.2	\$0.1	\$0.2	\$0.3	\$0.8

Estimated Average Annual Bill Reduction per Customer (Electric): \$4,929

*Includes estimates for 2013/14

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Or visit: www.hydro.mb.ca/psfb

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Internal Retrofit Program

The Internal Retrofit Program (IRP) was launched in 1993 with the goal of retrofitting all Manitoba Hydro buildings to Power Smart levels during planned renovations and initiating energy efficiency improvements to corporate facilities when cost-effective to do so. The program assists with funding associated with the implementation of energy efficient measures including lighting, building envelope, HVAC, water, and custom measures. The program also ensures that newly constructed Manitoba Hydro facilities meet the requirements outlined in the Manitoba Green Building Policy. The program’s target market is all existing Manitoba Hydro buildings that do not meet Power Smart levels, including generating stations, commercial buildings, and corporate housing. There are approximately 1000 Manitoba Hydro buildings province-wide and the program aims to have 100% of these facilities satisfy Power Smart requirements. To date, the Internal Retrofit Program has achieved energy savings of over 41 GW.h. The program end date is planned for the end of the 2017/18 fiscal year.



	1992/93 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Projects (annual)	1,316	49	68	56	1,489
Capacity Savings (MW)	10.5	0.2	0.4	0.5	11.0
Energy Savings (GW.h)	41.9	1.3	2.4	3.3	45.3
Natural Gas Savings (million m ³)	0.0	0.0	0.0	0.0	0.0
Utility Investment (Millions, 2014\$)	\$13.0	\$0.9	\$0.9	\$0.8	\$15.5

*Includes estimates for 2013/14

Power Smart Shops Program

The Power Smart Shops Program is intended to promote energy efficiency to small commercial customers including restaurants, food retail, non-food retail/services, and small offices. The program proposal will explore an outreach model to assist customers in saving energy through the free installation of low cost energy efficient faucet aerators and low flow pre-rinse spray valves as well as a free lighting assessment and written report that



identifies opportunities to save energy by retrofitting inefficient lighting. Packaging Power Smart PAYS Financing along with Power Smart incentives for lighting and other energy efficient opportunities is expected to mitigate the upfront capital cost market barriers. The proposed program is expected to make upgrading easy and convenient for the customer.

This particular market segment is a proven late adopter of energy efficient technologies due to a number of unique barriers that have not been specifically addressed by existing Power Smart for Business programs. Limited resources, costs of upgrades, and lack of industry exposure are all barriers that the Power Smart Shops Program aims to help overcome. The program will also provide customers with information on other energy saving technologies and low/no cost energy saving tips.

	2009/10 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Projects (annual)	708	0	108	367	1,184
Capacity Savings (MW)	0.2	0.0	0.1	0.2	0.4
Energy Savings (GW.h)	0.8	0.0	0.2	0.8	1.6
Natural Gas Savings (million m ³)	0.0	0.0	0.0	0.0	0.0
Utility Investment (Millions, 2014\$)	\$0.7	\$0.0	\$0.1	\$0.2	\$1.1
Customer Investment (Millions, 2014\$)	\$0.0	\$0.0	\$0.0	\$0.1	\$0.1
Total DSM Investment (Millions, 2014\$)	\$0.8	\$0.0	\$0.2	\$0.3	\$1.2

Estimated Average Annual Bill Reduction per Customer (Electric): \$36

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$6

**Includes estimates for 2013/14*

Support Program

The following convenient financing program offered by Manitoba Hydro supports the incentive-based programs by allowing customers to finance initial project costs and pay these costs back on their monthly Manitoba Hydro bill.

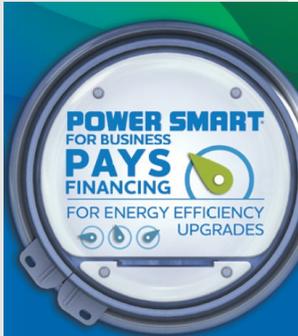
Power Smart for Business PAYS Financing

The Power Smart for Business PAYS (Pay As You Save) Financing Program was launched in September 2013. The program's objective is to assist commercial customers in reducing their energy and water consumption by offering extended financing terms for energy efficiency upgrades such as T8, T5, and LED lighting, high efficiency natural gas furnaces, condensing and near-condensing boilers, insulation, geothermal systems, CO₂ sensors, custom measures (commercial and industrial applications), and WaterSense® labeled toilets and urinals. This offering compliments and supports the various incentive-based programs by assisting customers in managing the installation cost of their upgrade.

To qualify, upgrades must have sufficient estimated annual utility bill savings to offset the monthly financing repayment, thereby resulting in an energy bill that is slightly less than the total bill prior to the retrofit. The target market for this program consists primarily of small business owners and tenants as well as government, school and municipal buildings. Financing will be available for extended terms with 20 to 25 year amortization periods dependent on the upgrade, with the interest rate being fixed for the first 5 years. These are projects that would not likely have occurred without the availability of this convenient and flexible financing offering.

	2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Loans (annual)	24	25	35	28	112
Capacity Savings (MW)	0.7	0.1	0.1	0.2	0.9
Energy Savings (GW.h)	2.5	0.3	0.5	0.8	3.3
Natural Gas Savings (million m ³)	0.0	0.0	0.1	0.1	0.0
Average Loan Amount: \$13,104					

*Includes estimates for 2013/14



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Power Smart for Business PAYS Financing

PayAs You Save (PAYS) Financing is a convenient and affordable way to finance energy saving upgrades on your monthly energy bill.

PAYS offers extended financing terms for energy efficiency upgrades. You PayAs You Save because your monthly payments are less than the estimated annual utility savings generated by your upgrade. These savings are averaged over 12 months and used to calculate your monthly payments.

PAYS Financing is tied to your property meter, which means if you sell your property, the financing may be transferred to the new owner with their consent. The monthly payments can also be transferred from property manager to someone's consent.

Start saving now. Synchronizing the energy efficiency of your building with PAYS financing, you can save energy, lower your operating costs, improve building comfort and reduce your environmental impact.

Eligibility

To apply for PAYS Financing you must be a Manitoba Hydro customer, listed as a commercial user and own the property where the upgrade will be made.

You must be approved for financing by Manitoba Hydro, prior to the purchase or installation of any eligible upgrades.

Eligible upgrades

The following upgrades are eligible for PAYS Financing if they meet Manitoba Hydro's specified requirements and efficiency levels. For a complete list of eligible upgrades and requirements, visit hydro.mb.ca/pays.

HEATING AND VENTILATION

(Maximum financing term of 20 years)

- Boilers
- Furnaces
- Electric heating systems
- Geothermal heat pump systems
- CO₂ sensors (Maximum financing term of 10 years)

BUILDING ENVELOPE

(Maximum financing term of 25 years)

- Insulation (roof/wall)

LIGHTING

(Maximum financing term of 20 years)

- Energy efficient lighting systems

WATER CONSERVATION

- WaterSense labeled toilets and urinals

Note: Financing for Water Conservation measures is available only when combined with an energy saving upgrade.

CUSTOM MEASURES

(Maximum financing term depends on the measure)

- Typical projects include customized energy saving upgrades to electrical and natural gas systems, or measures that recover or create energy.

To check if your project is eligible, visit hydro.mb.ca/pays to use the Power Smart for Business PAYS Financing calculator.

Incentive programs

Manitoba Hydro's Power Smart for Business programs offer a variety of financial incentives and rebates that may make some upgrades even more affordable. Your contractor can help you apply for applicable incentive programs along with your PAYS application. To find out more, visit hydro.mb.ca/pays.



Industrial

Manitoba Hydro offers incentive-based programs to address opportunities within the industrial market. These programs take a customer-focused approach to identify and address operating and production challenges in a manner that not only improves overall energy efficiency, but enhances productivity and competitiveness for Manitoba industry.

Manitoba's industrial market can be characterized as consisting of a large variety of industries with a broad size demographic of customers within each classification. While some sectors are responsible for higher percentages of consumption than others, no one industry sector is dominant within the province. In Manitoba, each sector is typically dominated by less than six customers, with the remaining customers being smaller with more specialized operations or substantively lower outputs. This diversity presents some unique challenges as opportunities to capture substantive savings are tied directly to specific industry business cycles within each industry sector that dictate major events such as equipment change-outs, plant overhauls, facility expansions, and new plant construction. These cycles are periodic and can stretch across decades.

Manitoba Hydro's industrial Power Smart programs must have broad appeal in order to be relevant and responsive to the needs of a diverse population of industrial customers.

Incentive Based Programs

Performance Optimization Program

The Performance Optimization Program was originally launched in June 1993 to promote energy efficiency through the optimization of electric motor-driven industrial systems such as air compressors, pumps, fans and blowers, optimization of industrial refrigeration, process heating, electro-chemical processes systems, and implementation of plant-wide energy management systems. The program is designed to provide industrial and large commercial customers with technical support and financial incentives to assist in the identification, investigation, and implementation of system efficiency improvements throughout a facility.



The target market consists of approximately 2 000 industrial customers, with the program being available to both existing facilities and new construction projects. Emphasis is placed on the 300 largest customers who represent about 1/3 of the energy consumed in Manitoba. The average duration of a project from identification of the opportunity to implementation ranges from 6 months to 2 years, averaging approximately 18 months.

The actual number of project applications facilitated in any fiscal year and the savings achieved per project can vary dramatically based on project size, equipment age, and remaining life of the individual systems being optimized. However, savings levels are relatively consistent, thereby reflecting the capability within Manitoba Hydro's programs to adapt to available opportunities. Targeted companies may have multiple eligible energy conservation projects that are captured in a short period of time, resulting in intense periods of activity in a company or industry sector followed by a lull in activity thereafter as investment is recouped and productivity gains are utilized.

	1993/94 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
Capacity Savings (MW)	99.9	2.7	5.8	9.4	109.3
Energy Savings (GW.h)	517.2	17.1	37.1	60.0	577.2
Utility Investment (Millions, 2014\$)	\$35.5	\$5.9	\$6.9	\$7.9	\$56.2
Customer Investment (Millions, 2014\$)	\$88.1	\$0.7	\$0.8	\$0.9	\$90.5
Total DSM Investment (Millions, 2014\$)	\$123.6	\$6.6	\$7.7	\$8.9	\$146.7

Estimated Average Annual Bill Reduction per Customer (Electric): \$7,895

*Includes estimates for 2013/14

Natural Gas Optimization Program

The Natural Gas Optimization Program (NGOP) is a 12-year program that was launched in September 2006. Its primary objective is to support the systematic improvement of natural gas equipment and processes for industrial and large institutional customers. The program supports customers by offering financial incentives



for steam trap audits, feasibility studies, and energy efficient project implementation. The program was principally developed to promote custom applications within large industrial, institutional, and commercial facilities comprised of roughly 1 400 customers in Manitoba. Since the launch of the program, it has become apparent that the small-to-medium industrial customers are also interested in pursuing energy efficiency with support from Manitoba Hydro. The scope of the NGOP has since been expanded to allow the program to respond to all industrial customer inquiries, regardless of the size of the facility or volume of natural gas consumed.

Like the Performance Optimization Program, the NGOP is a custom program that supports a variety of technologies across a wide variety of applications including boiler conversions, process water and air heat recovery, process equipment and pipe insulation, boiler economizers, and other available technologies. The program is designed to address key market barriers related to project costs, available benefits, cost/benefit ratios, and desired return on investment. Current low natural gas commodity prices are challenging Manitoba Hydro customers' desired rates of return on investment in conservation initiatives.

	2006/07 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
Natural Gas Savings (million m ³)	14.0	1.2	2.4	3.6	17.6
Utility Investment (Millions, 2014\$)	\$4.5	\$0.6	\$0.6	\$0.6	\$6.2
Customer Investment (Millions, 2014\$)	\$24.6	\$2.0	\$2.0	\$2.0	\$30.7
Total DSM Investment (Millions, 2014\$)	\$29.0	\$2.6	\$2.6	\$2.6	\$36.9

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$22,247

**Includes estimates for 2013/14*

Bioenergy Optimization Program

The Bioenergy Optimization Program was launched in 2008 to encourage customers to install, operate, and maintain customer-sited load displacement generation systems that employ combined heat and power (CHP) and renewable fuels, specifically biomass. The target market consists of customers that have readily available, low-cost sources of biomass, a continual need for heat and power, and the capability to operate and maintain biomass-to-energy conversion systems. A lack of proven demonstration projects of biomass-to-energy is a key barrier for many customers, considering the high initial costs for many of these systems. To increase awareness and knowledge of bioenergy opportunities, Manitoba Hydro has undertaken five demonstration projects over the past 3 years. Increased awareness combined with incentives are expected to increase customer interest and acceptance of bioenergy systems. Manitoba Hydro’s program further supports customers in developing a thorough understanding of the costs and benefits of bioenergy systems, assisting with the development of strong business cases for future installations.

Major customer sectors targeted include industrial, Hutterite colonies, and livestock production. The size of these systems is anticipated to be smaller during the earlier stages of the program, primarily due to the high cost of the systems. Installations are anticipated to grow in size as comfort with these technologies matures. While initial projections for customer participation are relatively modest, opportunities for larger savings exist in larger industrial facilities with substantial waste streams and considerable need for combined heat and power systems to support their operations. Government policy on renewable energy is anticipated to be a factor in the future uptake of load displacement generation systems in Manitoba.

	2008/09 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
Capacity Savings (MW)	0.1	1.6	3.4	4.7	4.8
Energy Savings (GW.h)	0.1	14.3	29.5	41.1	41.2
Natural Gas Savings (million m ³)	0.0	0.0	0.7	0.9	0.9
Utility Investment (Millions, 2014\$)	\$11.2	\$2.1	\$2.7	\$1.8	\$17.8
Customer Investment (Millions, 2014\$)	\$27.1	\$2.4	\$3.5	\$2.4	\$35.3
Total DSM Investment (Millions, 2014\$)	\$38.3	\$4.4	\$6.2	\$4.2	\$53.1

Estimated Average Annual Bill Reduction per Customer (Electric): \$81,687

Estimated Average Annual Bill Reduction per Customer (Natural Gas): \$26,946

**Includes estimates for 2013/14*



Customer-Sited Load Displacement

The Customer-Sited Load Displacement Program encourages customers to install, operate, and maintain customer-sited load displacement generation systems that employ combined heat and power (CHP) and rely on the use of waste streams and by-products, locally available, low cost sources of biomass fuel, and other renewable energy sources. The target market consists of several large-sized customers or customer sectors that are striving to optimize their operations and improve environmental performance.

Waste streams and by-products from manufacturing operations typically present a cost of disposal and an environmental liability to the manufacturer. Being able to convert waste streams and by-products into useful energy for the manufacturing operation is potentially a more sustainable practice and a means to reduce energy and disposal costs. Similarly, locally available low cost sources of biomass such as waste wood and crop residues can be harnessed as a sustainable and economic fuel source for on-site heat and power generation applications. Other emerging energy sources such as wind and solar may have potential in certain instances to offset purchased energy. Manitoba Hydro’s new Customer-Sited Load Displacement Program offers technical and financial support to understand the feasibility to use these types of fuel sources, to implement the equipment and systems for load displacement generation, and to ensure ongoing, reliable operation of the energy production equipment.



Major customer sectors targeted by the program include forestry, chemicals, metals, oil and gas, and wastewater treatment. The size of these systems is anticipated to range from 1 MW to 15 MW of electrical load displacement via on-site generation. Installations are anticipated to cost between \$3,500 to \$5,000 per kW electric installed. Customer costs will be dependent upon existing infrastructure and operational capability.

	2014/15	2015/16	2016/17	Total to 2016/17
No. of Customers (annual)	11	14	7	32
Capacity Savings (MW)	24.1	37.6	56.0	56.0
Energy Savings (GW.h)	137.5	191.0	335.6	335.6
Utility Investment (Millions, 2014\$)	\$1.6	\$5.2	\$21.4	\$28.1
Customer Investment (Millions, 2014\$)	\$7.8	\$17.5	\$44.9	\$70.1
Total DSM Investment (Millions, 2014\$)	\$9.4	\$22.7	\$66.3	\$98.3

Estimated Average Annual Bill Reduction per Customer (Electric): Variable depending on project size

Curtable Rate Program

Under the Curtable Rate Program, qualifying customers receive a monthly credit on load (kW) that can be curtailed on notice from Manitoba Hydro. To be eligible, customers' load/processes must be configured to allow them to meet the requested curtailment within the notification period as outlined under their chosen contract option.

	1990/00 to 2013/14*	2014/15	2015/16	2016/17	Total to 2016/17
No. of Customers (annual)	49	3	3	3	58
Capacity Savings (MW)	160.4	160.9	160.9	160.9	160.9
Utility Investment (Millions, 2014\$)	\$94.0	\$6.0	\$6.0	\$6.0	\$111.9

*Includes estimates for 2013/14

