PowerStream Inc.

Conservation and Demand Management

2013 Annual Report

Submitted to:

Ontario Energy Board

September 30, 2014

Executive Summary

This annual report is submitted by PowerStream Inc. in accordance with the filing requirements set out in the CDM Code (Board File No. EB-2010-0215), specifically Appendix C Annual Report Template, as a progress report and modification to its September 27, 2013 Strategy. Accordingly, this report outlines PowerStream's CDM activities for the period of January 1, 2013 to December 31, 2013. It includes 2013 verified resource savings (demand and energy savings), 2013 participation and spending, successes and challenges and an updated outlook to 2014.

As noted in the CDM guidelines, released April 26, 2012, the Ontario Energy Board (OEB) has deemed Time-of-Use (TOU) pricing a Province-wide Board-Approved CDM Program. The Ontario Power Authority (OPA) is to provide measurement and verification on TOU and PowerStream will report these results upon receipt from the OPA. The OPA has indicated that verified results for TOU savings will not be available until August 2015.

PowerStream initiated the design of a Board-Approved CDM Program in Fall 2012 and filed an application (EB-2013-0070) with the OEB on March 13, 2013. On June 21, 2013, the OEB approved PowerStream's application as filed. PowerStream launched the Business Refrigeration Incentives Program[1] on September 20, 2013. There was an immediate positive response from the market, with 286 businesses enrolling in the program in less than four months. By the end of the 2013, 249 of these participants had site audits completed and 6 of them had their energy savings measures installed. In the initial few months of program delivery, the rate of installations did not keep pace with the rate of participant registrations and audits. This was due to challenges securing sufficient capacity of refrigeration contractors and sufficient local inventory of the energy savings measures. PowerStream has worked to address these issues and by the end of August 2014, 687 installations have been completed.

With respect to OPA-Contracted Province-wide CDM Programs, PowerStream accepted the OPA's Master Agreement in late February 2011. In 2011, PowerStream focused on building a foundation for CDM delivery, including planning, recruitment of staff, and procurement of third party vendors. With this foundation established, PowerStream's focus in 2012 and 2013 was the successful delivery and execution of the Province-wide CDM Programs. Six provincial initiatives, which were included in original portfolio of Province-Wide Programs, did not deliver savings in 2013 as they were either discontinued or removed from the Master Agreement.

The OPA conducted EM&V for the 2013 OPA-Contracted Province-wide Programs. PowerStream's verified achievements for 2013 were an incremental demand savings of 30.9 MW, of which 10.4 MW is guaranteed to persist to 2014, and 48.1 GWh of incremental energy

[1] In the application to the OEB, this program was referred to as the Direct Install Refrigeration Program. In order to better market the program and reach targeted participants, the program was renamed. The program design has not changed.

savings, which cumulates to 93.7 GWh at the end of 2014. Combined with 2011 and 2012 results, PowerStream has achieved, as of the end of 2013, a total of 28.5 MW and 377.5 GWh in verified savings, representing 29.8% and 92.7% of PowerStream's 2011-2014 demand and energy savings targets, respectively. Table 1 provides a comparison of the 2011-2013 verified results against the milestones identified in PowerStream's 2012 CDM Annual Report filed on September 27, 2013.

Table 1: 2013 Verified Results vs Milestones

Cumulative Progress to Date	2013 Milestone as per 2012 Annual Report		2013 Verified Annual Results		Variance to 2013 Milestone	
	Savings	% to Target	Savings	% to Target	Savings	% to Target
2014 Net Demand Savings (MW)	25.2	26.4%	28.5	29.8%	3.3	3%
2011-2014 Net Cumulative Energy Savings (GWh)	366.1	89.9%	377.5	92.7%	11.4	3%

As shown in Table 1 above, PowerStream's 2013 results were quite positive. As of the end of 2013, PowerStream's actual progress towards its four year targets is very close to the milestones set out in the 2012 Annual Report, with a positive variance of 3% for both demand and energy. Additional details on 2013 actual results, including a discussion of key drivers of variance compared to forecasted results, is provided in Section 3.1.

PowerStream's current projection as of September 18th, 2014 is to achieve 78.6% of its demand target and 108.8% of its energy target. This projection includes savings from OPA-Contracted Province-wide Programs, PowerStream's Business Refrigeration Incentive Program as well as TOU rates. The two largest contributors to PowerStream's projected shortfall against its demand savings target are TOU rates and the Demand Response 3 (DR3) Program. Both of these initiatives, which are either entirely or mostly outside of PowerStream's control, are likely to contribute far fewer demand savings than was contemplated during the setting of LDC targets and the design of the provincial CDM programs in 2010. The DR3 program was in fact cancelled in 2013. At the time the DR3 program was cancelled, PowerStream had roughly 6.2 MW and 27 customers who had signed agreements with the aggregators but not yet enrolled. In addition to these, PowerStream's peaksaverPLUS program is currently tracking lower than what was forecasted for 2014, contributing to the decrease in the current projection from what was forecasted in the 2012 Annual Report.

As with any forecasting exercise, there are known risks to achieving the CDM targets. In some cases these risks can be mitigated by PowerStream while in other cases, PowerStream has little to no control over the risks, such as TOU savings results or the cancellation of the DR3 program. PowerStream has developed a risk assessment and mitigation accordingly.

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Background

On September 16, 2010, the Ontario Energy Board (OEB) issued a Conservation and Demand Management (CDM) Code for Electricity Distributors[2] (Code). The Code sets out the obligations and requirements with which Local Distribution Companies (LDCs) must comply in relation to the CDM targets set out in their licenses. PowerStream's target is to achieve 95.57 MW of demand savings by December 31, 2014 and 407.34 GWh of cumulative energy savings over the period January 1, 2011 to December 31, 2014. To comply with the Code requirements, PowerStream filed a CDM Strategy Document[3] (Strategy) to the OEB on October 29, 2010 which laid out a high-level description of how it intended to achieve its CDM targets. The Strategy projected an achievement of 100.2% of its demand target and 101.8% of its energy target through the delivery of Ontario Power Authority (OPA) Contracted Province-Wide CDM Programs starting January 1, 2011. The Code also requires LDCs to file an Annual Report with the OEB.

PowerStream submitted its 2011 Annual Report[4] on September 28, 2012. In the report, PowerStream demonstrated its progress and modifications to the original Strategy. In that updated "2012 Strategy" PowerStream maintained a projected achievement of 100% of the demand and energy savings targets, although it was noted that the demand savings forecast included 21.6 MW from TOU savings and that there was high uncertainty and risk with these savings coming to fruition.

In relation to the 2011-2014 program term, the Minister of Energy on December 21, 2012, directed the OPA to fund CDM programs which meet the definition and criteria of OPA-Contracted Province-Wide CDM Programs for an additional one-year period from January 1, 2015 to December 31, 2015. The Ministerial Directive did not amend the timelines for LDCs to achieve their energy and demand savings targets. Therefore, PowerStream's main focus will remain on achieving CDM savings within the 2011-2014 timeframe.

PowerStream submitted its 2012 Annual Report[5] on September 27, 2013. In the report, PowerStream demonstrated its progress and modifications to the "2012 Strategy". In that updated "2013 Strategy", PowerStream reduced its forecasted energy savings to 101.4% from 120% and demand savings to 79.8% from 100%.

In 2013, PowerStream entered into an agreement with Collus PowerStream to deliver CDM on behalf of it. Since the savings achieved and the Program Administration Budget (PAB) spent by

[2] http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/214820/view/CDM_Code_20100916.PDF

[3] http://www.ontarioenergyboard.ca/OEB/_Documents/EB-2010-0215/PowerStream_CDM%20Strategy_20101029.pdf

[4] http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/367872/view/2011%20PowerStream%20Annual%20CDM%20Report_Additional%20Information_20121012.PDF

[5] http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/411169/view/PowerStream_2012%20Annual%20CDM%20Report_2013Sep27.PDF

Collus PowerStream under this agreement does not affect PowerStream's results or budget, activities and results of Collus PowerStream will not be considered in this report.

PowerStream has prepared this document as its third Annual Report, in accordance with the code requirements, and to demonstrate its progress and modifications to the 2013 Strategy. This report covers the period of January 1, 2013 to December 31, 2013.

1 Board-Approved CDM Programs

1.1 Introduction

PowerStream initiated the design of a Board-Approved CDM Program in Fall 2012 and filed an application (EB-2013-0070[6]) with the OEB on March 13, 2013. On June 21, 2013, a Decision[7] was made and the OEB approved PowerStream's application as filed. PowerStream anticipated at the time that this program would generate 3.33 MW of demand savings that would persist to 2014 and 19.6 GWh of cumulative energy savings. This represents an additional 3.5% and 4.8% towards PowerStream's demand and energy targets, respectively. PowerStream launched the Business Refrigeration Incentives Program[8] on September 20, 2013.

In addition, in its April 26, 2012 CDM Guidelines[9], the OEB has deemed the implementation of Time-Of-Use (TOU) pricing to be a Province-wide Board-Approved CDM Program for the purposes of achieving the CDM targets. The OEB recognizes that a portion of the aggregate electricity demand target was intended to be attributable to savings achieved through the implementation of TOU Pricing. The OEB established TOU prices and has made the implementation of this pricing mechanism mandatory for distributors. On this basis, the OEB has determined that distributors will not have to file a Board-Approved CDM Program application regarding TOU pricing.

1.2 Program Description

1.2.1 BUSINESS REFRIGERATION INCENTIVES (BRI) PROGRAM

Description: The Business Refrigeration Incentives (BRI) Program promotes the identification and implementation of energy efficient equipment upgrades and maintenance measures to commercial refrigeration equipment. Participants receive significant value for participation. Program incentives include a comprehensive on-site electricity audit providing recommendations for equipment retrofit and maintenance; up to $2,500 in materials and labour to retrofit commercial refrigeration equipment performed by an authorized, licensed refrigeration or electrical contractor; and benchmarking of the facility to understand energy consumption versus other businesses of a similar size and operation. Eligible measures include: anti-sweat heater controls for coolers and freezers, strip curtains for walk-in coolers and freezers, night curtains on display cases, coil cleaning, Electronically Commutated Motor (ECM) upgrades, LED display case lighting, and LED A19 lamps for walk in coolers and freezers.

[6] http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/386474/view/PowerStream_APPL_CDM_20130313.PDF

[7] http://www.rds.ontarioenergyboard.ca/webdrawer/webdrawer.dll/webdrawer/rec/400644/view/dec_order_PowerStream_20130621.PDF

[8] In the application to the OEB, this program was referred to as the Direct Install Refrigeration Program. In order to better market the program and reach targeted participants, the program was renamed. The program design has not changed.

[9] http://www.ontarioenergyboard.ca/OEB/_Documents/EB-2012-0003/CDM_Guidelines_Electricity_Distributor.pdf

Target Customer Type(s): General Service customers with an average annual demand of less than 250 kW; must have commercial grade refrigeration equipment used to cool products.

Objectives: The objective of the program is to offer installation of commercial refrigeration products and services of up to $2500. The purpose of this program is to assist customers in achieving electricity demand savings, by upgrading to more energy-efficient refrigeration equipment.

Delivery: PowerStream marketed the program and conducted the energy audit and benchmarking aspects of the program. PowerStream has engaged third party contractors to conduct the assessment and installation of the commercial refrigeration measures. PowerStream has also engaged a third party evaluator (from OPA's Vendor of Record list) to conduct Evaluation, Measurement and Verification (EM&V) of the program.

Initiative Activities/Progress:

PowerStream's activities specific to the BRI program are summarized in Table 2.

Table 2: Activities – BRI Program

Activities
PowerStream's main focus in 2013 with respect to the BRI program was to procure third party contractors, hire internal staff, enhance/build the infrastructure for the program, and marketing to generate the customer awareness and program participation. Key activities with respect to the above are summarized below: Third Party contractors: • Contracted a third party contractor to manage the installations • Contracted a third part evaluator (from OPA's Vendor of Records list) to conduct the EM&V of the program Internal staff: • Hired 2 Commercial Energy Advisors to perform the site energy audits. • Hired a staff member to manage the internal BRI phone line which customers use to call in to apply for the program Infrastructure development: • Modified the existing Microsoft Dynamics Customer Relationship Management (CRM) database by developing modules to handle and store all necessary BRI information Marketing and market research: PowerStream's strategy for delivering the BRI program is to generate awareness with qualified end users through a highly segmented and targeted marketing effort as well as to leverage channel partner relationships to drive participation. A mutli-touch point approach was implemented as follows: • Direct Mail to 4000+ qualified customers • Outbound Calling • Street Teams using our in-house assessment team • Chamber of commerce advertising - online & print • Community Newspaper Advertising • Email lead nurture campaign

1.2.2 TOU IMPLEMENTATION

Description: In August of 2010, the OEB issued a final determination to mandate TOU pricing for Regulated Price Plan (RPP) customers by June 2011, in order to support the Government's expectation for 3.6 million RPP consumers to be on TOU pricing by June 2011, and to ensure that smart meters funded at ratepayer expense are being used for their intended purpose.

Target Customer Type(s): Residential and small business customers (up to 250,000 kWh per year)

Objectives: TOU pricing is designed to incent the shifting of energy usage. Therefore peak demand reductions are expected, and energy conservation benefits may also be realized.

The RPP TOU price is adjusted twice annually by the OEB. A summary of the RPP TOU pricing, per kWh, is provided in Table 3.

Table 3: RPP TOU Pricing

Effective Date	On Peak	Mid Peak	Off Peak
November 1, 2010	9.9	8.1	5.1
May 1, 2011	10.7	8.9	5.9
November 1, 2011	10.8	9.2	6.2
May 1, 2012	11.7	10.0	6.5
November 1, 2012	11.8	9.9	6.3
May 1, 2013	12.4	10.4	6.7
November 1, 2013	12.9	10.9	7.2
May 1, 2014	13.5	11.2	7.5

Delivery: The OEB sets the TOU rates. Distributors install and maintain the smart meters and convert customers to TOU billing.

Initiative Activities/Progress: PowerStream began transitioning its RPP customers to TOU billing on August 2009. There are 325,129 PowerStream customers enrolled in TOU billing as of September 30, 2013 which represent 99.53% of PowerStream's mandated customer base.

1.3 Participation

PowerStream launched the BRI program 3 months after it was approved. As the program was launched late in 2013, much of the effort was on marketing, building the necessary infrastructure, generating program participation, and performing the site audits. There was an immediate positive response from the market, with 286[10] businesses enrolling in the program in less than four months. By the end of the 2013, 249[11] of these participants had site audits completed and 6 of them had their energy savings measures installed. In the initial few months of program delivery, the rate of installations did not keep pace with the rate of participant registrations and audits. This was due to challenges securing sufficient capacity of refrigeration contractors and sufficient local inventory of the energy savings measures. PowerStream has worked to address these issues and by the end of August 2014, 687 installations have been completed.

[10] The evaluation report indicates that only 269 businesses participated in the program in 2013. The reason for the difference is because the evaluation report is not including businesses that enrolled in the program what were later cancelled their application or were found to be ineligible.

[11] The evaluation report indicates that only 234 site audits were performed in 2013. The reason for the difference is because the evaluation report is not including audits completed for businesses that later cancelled their application or were found to be ineligible.

There are 325,129 PowerStream customers enrolled in TOU billing as of September 30, 2013, representing 99.53% of PowerStream's mandated customer base. Of those, 298,341 are residential customers and 27,096 are non-residential customers. PowerStream only has 91 mandated accounts remaining that have not yet had smart meters installed.

1.4 Spending

The Business Refrigeration Incentive (BRI) program received OEB approval on June 20, 2013 with approval of total funding to deliver the program of $4.1 Million. PowerStream began delivery of the BRI program on September 20, 2013. Table 4 below identifies the 2013 fixed and variable costs to the program.

Table 4: BRI Program 2013 Spending by Expense Category

Expense Category	2013
Fixed Program Costs	**416,783**
Program Administration	
Labour	240,185
Marketing	86,693
EM&V	19,378
Other	70,527
Variable Program Costs	**6,000**
Participant Based Fee (PBF)	
Participant Incentive Payments (PIP)	6,000
TOTAL COST	**422,783**

PowerStream does not have any expenses to report for the period of January 1, 2013 to December 31, 2013 in relation to TOU billing as a Board-Approved CDM Programs. Costs associated with the implementation of TOU pricing are recoverable through distribution rates, and not through the Global Adjustment Mechanism (GAM).

1.5 Evaluation

The BRI Program launched on September 20, 2013. Pursuant to the CDM Code, PowerStream has procured a third-party EM&V contractor from the OPA's EM&V Vendor of Record list. The key evaluation findings as summarized and provided by the third party evaluator for the BRI program are included in Table 5 below. The results of the impact evaluations (net-to-gross ratios and realization rates) and net demand and energy savings are outlined in Table 6 below. Please see Appendix A for the full evaluation report for 2013 for the BRI program.

Table 5: BRI Evaluation Findings

Business Refrigeration Initiative
• Wide variation in unit savings was seen across measures • The most common measures implemented were cleaning the condenser coils of coolers, and replacing motors with ECM models, followed by replacing display lighting with LED lights • Based on on-site monitoring, the realized gross energy and demand reductions are quite a bit lower than the prescriptive values from the literature, averaging about 67% for energy and 64% for demand of the prescriptive values • There is a very low free rider rate for these measures due to multiple barriers to upgrading efficiency of refrigeration units, including: lack of awareness of opportunities, lack of awareness of appropriate contractors, financial constraints, and limited availability of several of the technologies in the marketplace. • Due to a low number of installations resulting from a late start of the program, and challenges in ramping up installs, the energy savings and demand reduction from the program in 2013 were not material, estimated at 57,000 kWh and 6 kW.

Table 6: BRI Verified Evaluation Results

	Peak Demand	Energy
Realization Rate	0.64	0.67
Net-to-Gross	0.958	0.972
Net Savings	6.05 kW	57,427 kWh

In accordance with CDM Guidelines dated April 26, 2012 (Board File No. EB-2012-0003), the OEB requires that any evaluations of savings from TOU pricing should be conducted by the OPA for the province then allocated to distributors. PowerStream will report these results upon receipt from the OPA. As of September 30, 2014, the OPA has not released its verified results of TOU savings to distributors. The OPA has indicated that verified results for TOU savings will not be reported to LDCs until August 2015. As such, PowerStream is not able to provide any verified savings related to TOU program at this time.

1.6 CDM Variance Account

PowerStream offered the BRI program which is a Board Approved CDM Program in 2013 which created a variance account. Total fixed funding awarded for the BRI Program was $1,198,000. PowerStream's 2013 fixed program costs were $416,783 which created a variance amount of $781,217.

1.7 Additional Comments

While the OEB's CDM Guidelines clarified that savings from TOU rates, as verified by the OPA, will contribute towards LDCs' CDM targets, significant uncertainty remains as to actual amount of savings that will be achieved from TOU rates. The OPA has indicated that LDCs will not receive verified results until 2015 and as such this uncertainty presents a significant risk to LDCs with respect to their demand savings targets. OPA has indicated that the LDCs evaluated in 2014 show similar savings from TOU as the 2013 evaluation results. As such, at this time PowerStream is maintaining its forecast of 12.5 MW of demand savings coming from TOU implementation. This is a drop from PowerStream's initial forecast of 21.6 MW of demand savings from TOU rates that PowerStream stated in its 2011 Annual CDM report to the OEB. However, it still represents more than 13% of PowerStream's 2011-2014 demand savings target.

2 OPA-Contracted Province-Wide CDM Programs

2.1 Introduction

Effective February 25, 2011, PowerStream entered into an agreement (Master Agreement) with the OPA to deliver OPA-Contracted Province-Wide CDM Programs from January 1, 2011 to December 31, 2014. Table 7 summarizes the OPA-Contracted Province-Wide Programs that were in market and delivering results in 2013 and their targeted customers. It also includes the references to this document where their descriptions, objectives, and activities are detailed. In addition to the OPA-Contracted Province–Wide CDM Programs, pre-2011 Programs, 2010 Programs extended into 2011, were added to the list.

Table 7: Summary of OPA-Contracted Province-Wide Programs and pre-2011 Programs

Initiative	Description/Reference	Customer Class
Consumer Program		
Appliance Retirement	Appendix B - A	All residential rate classes
Appliance Exchange	Appendix B - B	All residential rate classes
HVAC Incentives	Appendix B - C	All residential rate classes
Conservation Instant Coupon Booklet	Appendix B - D	All residential rate classes
Bi-Annual Retailer Event	Appendix B - E	All residential rate classes
Residential Demand Response	Appendix B - G	All residential rate classes
New Construction Program	Appendix B - F	All residential rate classes
Commercial & Institutional Program		
Equipment Replacement Incentive Initiative	Appendix C - A	All general service classes
Direct Install Lighting	Appendix C - B	General Service < 50 kW
Existing Building Commissioning Incentive	Appendix C - C	All general service classes
New Construction and Major Renovation	Appendix C - D	All general service classes
Energy Audit	Appendix C - E	All general service classes
Industrial Program		
Process & System Upgrades	Appendix D - A	General Service 50 kW & above
Monitoring & Targeting	Appendix D- B	General Service 50 kW & above
Energy Manager	Appendix D - C	General Service 50 kW & above
Key Account Manager	Appendix D - D	All general service classes
Demand Response 3	Appendix D - E	General Service 50 kW & above
Low Income Program		
Low Income Program	Appendix E	All residential rate classes
Pre-2011 Programs completed in 2011-14		
Electricity Retrofit Incentive Program	Appendix C - A	All general service classes
High Performance New Construction	Appendix C - D	All general service classes

The initiatives that were either officially removed from the Master Agreement or discontinued and were not delivering savings in 2013 are listed in Table 8.

Table 8: OPA-Contracted Province-Wide Program Initiatives not In-market in 2013

Initiatives Not in Market in 2013	Status
Consumer Program	
Midstream Electronics	Removed from Master Agreement
Midstream Pool Equipment	Removed from Master Agreement
Home Energy Audit Tool	Removed from Master Agreement
Retailer Co-op	Discontinued
Commercial & Institutional Program	
Direct Service Space Cooling	Removed from Master Agreement
Demand Response 1	Removed from Master Agreement
Industrial Program	
Demand Response 1	Removed from Master Agreement

2.2 Program Descriptions

OPA-Contracted Province-Wide CDM Program descriptions and additional initiative information can be found on the saveONenergy website at https://saveonenergy.ca

2.2.1 CONSUMER PROGRAM

Description: Provides residential customers with programs/tools to help them understand and manage the amount of energy they use throughout their entire home by reducing the household's energy consumption while also helping the environment.

Targeted Customer Type(s): Residential Customers

Objective: To provide incentives to both existing homeowners and developers/builders to motivate the installation of energy efficiency measures in both existing and new home construction.

Activities: PowerStream's activities specific to the Consumer Program are summarized in Table 9.

Table 9: Activities – Consumer Program Level

Activities
PowerStream's main strategy in delivering Consumer Program Initiatives in 2013 was to continue to use market research to enhance PowerStream's understanding of the consumer segment and to inform marketing execution. A number of the market research activities and marketing activities in 2013 are summarized below: Market research: • Conservation, Awareness, Satisfaction and Attitudes Study (CASA). The purpose of this study is to track and understand the marketing impacts, barriers to program participation, and satisfaction of program participants. Results: high baseline awareness levels; traditional participation barriers being challenged; and strong satisfaction across all Consumer Initiatives. • Residential Customer Segmentation Study. The purpose of the study was to classify PowerStream's residential customer base into distinct segments to further develop an understanding of our customers and their needs as well as to facilitate targeted marketing and customized messaging to help promote program participation. Results: 3,753 customer interviews were conducted and 5 distinct segments emerged. • Residential Ethnic Focus Groups. The purpose of this study was to speak with two largely represented ethnic segments within our service territory: Chinese and Italian customers, to understand how different ethnic groups view PowerStream and the CDM initiatives. Key findings include: The proposal of advertising in different languages was positively received and marketing in multiple languages sets the expectation that all elements of program participation could be carried out in preferred language; Community based communications are preferred. Marketing and promotion: • Participated in 19 community events (e.g. Kempenfest, Markham Fair, Vaughan Earth Hour Event) to promote all Consumer Initiatives • Held 18 in-store events (e.g. Home Depot, Lowes) • Distributed approximately 800 handouts promoting Consumer Program Initiatives • Reached approximately 3,500 customers and gathered over 1,000 sign ups during events • Placed 107 print advertisements in local newspapers within PowerStream's service territory • Distributed 900,000 bill inserts to PowerStream customers • 296,172 Direct mail pieces mailed to our customers • 145 GO Train posters on train lines in our service territory • 20 Online ads running for an 8 week period

The targeted customer types, objectives, descriptions, and activities of each Consumer Program Initiative are detailed in Appendix B. The Appendix also includes additional comments, provided

by the OPA-LDC Residential Working Group, regarding some of the lessons learned and future opportunities for each Consumer Program initiative.

2.2.2 COMMERCIAL AND INSTITUTIONAL (C&I) PROGRAM

Description: Provides commercial, institutional, agricultural and industrial organizations with energy-efficiency programs to help reduce their electrical costs while helping Ontario defer the need to build new generation and reduce its environmental footprint. Programs to help fund energy audits, to replace energy-wasting equipment or to pursue new construction that exceeds our existing codes and standards are available. Businesses can also pursue incentives for controlling and reducing their electricity demand at specific times.

Targeted Customer Type(s): Commercial, Institutional, Agricultural, Multi-family buildings, Industrial

Objective: Designed to assist building owners and operators as well as tenants and occupants in achieving demand and energy savings, and to facilitate a culture of conservation among these communities as well as the supply chains which serve them.

Activities: PowerStream's activities specific to the Commercial and Institutional (C&I) Program are summarized in Table 10**.**

Table 10: Activities – C&I Program Level

Activities
PowerStream's main strategies for delivering the C&I Program, and increasing program participation in 2013 were: develop relationships with key business customers and integrate market research results to improve sales and marketing execution. A number of the market research activities, sales and marketing activities in 2013 are summarized below. Market research: • Customer Awareness, Satisfaction, and Attitudes Study (CASA). The purpose of this study is to track and understand the marketing impacts, barriers to program participation, and satisfaction of program participants. Results: PowerStream's sales and marketing efforts are driving program awareness; PowerStream's highest priority initiatives have highest levels of awareness; and key drivers/barriers of participation are money, environment, relevance, and impact on business operations. • RETROFIT program focus groups. The purpose of this study was to speak with contractors and business customers (both participants and non-participants) to assess the overall interest in the program, motivations and barriers to participation, and to test potential messaging. Key findings include: Messaging surrounding "winning more business" resonated with contractors and messaging surrounding "bottom line savings" enticed business customers. All participants stressed the importance of a simplified application process and responsiveness (within 1-2 weeks) for application approvals. Marketing, promotion and sales: • Ongoing account management for 1400 accounts • Reached 540 new accounts in 2013 • Assigned an account specialist to every account greater than 500 kW • Hosted 16 events/workshops/information sessions • Participated in 7 community/industry events for both large and small business sectors to promote the suite of C&I Programs • Small Business (<50 kW): Placed 11 print ads; 6 online ads; distributed 14,000+ direct mail pieces; implemented an outbound calling campaign which generated 2000+ leads • Large Business (>50 kW): Direct Mail campaign to 2600+ contractors & 4,500+ customers • Launched monthly e-newsletter "Empower Your Business" reaching 1500+ customers and channel partners • Continued CDM Champions recognition program for channel partners

The targeted customer types, objectives, descriptions, and the activities of each C&I Program Initiative are detailed in Appendix C. The Appendix also includes additional comments, provided

by the OPA-LDC C&I Working Group, regarding some of the lessons learned and future opportunities for each C&I Program initiative.

2.2.3 INDUSTRIAL PROGRAM

Description: Large facilities are discovering the benefits of energy efficiency through the Industrial Programs which are designed to help identify and promote energy saving opportunities. It includes financial incentives and technical expertise to help organizations modernize systems for enhanced productivity and product quality, as wells as provide a substantial boost to energy productivity. This allows facilities to take control of their energy so they can create long-term competitive energy advantages which reach across the organization.

Targeted Customer Type(s): Industrial, Commercial, Institutional, Agricultural

Objective: To provide incentives to both existing and new industrial customers to motivate the installation of energy efficient measures and to promote participation in demand management.

Activities: PowerStream's activities specific to the Industrial Program are summarized in Table 11. Most of the C&I activities listed in Table 10 are also applicable to the Industrial Program since these program's target audiences overlap and most initiatives are available to both C&I and Industrial customers**.**

Table 11: Activities – Industrial Program Level

Activities
PowerStream's main focus in 2013 for the Industrial Program was the renewal and management of Roving Energy Managers and Embedded Energy Managers and greater involvement and direct marketing of the Demand Response 3 Program. • Renewed 2 Roving Energy Managers to work with 6 PowerStream key business/industrial customers • Managed 6 Embedded Energy Managers to work with PowerStream and non-PowerStream customers • Built relationships and worked with Demand Response aggregators in promoting Demand Response 3 Program • Utilized PowerStream's CDM Key Account Specialist in conducting Demand Response 3 sales activities • PowerStream's first M&T application was submitted in 2013 and later approved and contracted in 2014

The targeted customers, objectives, descriptions, and activities of each Industrial Program Initiative are detailed in Appendix D. The Appendix also includes additional comments, provided by the OPA-LDC Industrial Working Group, regarding some of the lessons learned and future opportunities for each Industrial Program initiative.

2.2.4 LOW INCOME PROGRAM (Home Assistance)

Description: This is a turnkey program for income qualified customers. It offers residents the opportunity to take advantage of free installation of energy efficient measures that improve the comfort of their home, increase efficiency, and help them save money. All eligible customers receive a Basic and Extended Measures Audit, while customers with electric heat also receive a Weatherization Audit. The program is designed to coordinate efforts with gas utilities.

Targeted Customer Type(s): Income qualified Residential Customers

Objective: To offer free installation of energy efficient measures to income qualified households for the purpose of achieving electricity and peak demand savings.

Activities: PowerStream's activities specific to the Low Income Program are summarized in Table 12.

Table 12: Activities – Low Income Program

Activities
PowerStream launched this Program within its service territory in 2012. Major program delivery activities undertaken in 2013 were: • Held 11 outreach events/meeting • Distributed 6,000 updated HAP brochures to the third party service provider to provide to their energy auditors. • 306,000 bill inserts were distributed to PowerStream residential customers

The targeted customers, objectives, descriptions, and activities of the Low-Income Program Initiative are detailed in Appendix E. The Appendix also includes additional comments, provided by the OPA-LDC Residential Working Group, regarding some of the lessons learned and future opportunities for the Home Assistance Program.

2.2.5 Portfolio level activities

PowerStream's 2013 activities that are common to all programs are summarized in Table 13 below.

Table 13: Activities – Common to all Programs

Category	Activities
Planning	• Updated Program Delivery Plans for 2014, which includes budget, procurement, marketing, human resources and monitoring plans and annual demand and energy milestones • Planned staffing levels for the BRI program and its effect on staffing on other programs
Procurement	Completed 3 competitive proposal processes for the following purposes: • BRI Program – Installations • BRI Program – Evaluation, Measurement, & Verification • Advertising agency vendor of record
Staff Resourcing	Recruited 8 incremental staff members mainly for the BRI program and processing applications for the ERII program

2.3 Participation

Table 14 includes the number of participants in each OPA contracted province wide initiative that was offered by PowerStream in 2013. These results were quality controlled and verified by the OPA. It also includes true-up analysis and reporting for 2011 and 2012 program years. The true-up analysis and reporting will continue each year until the end of 2011-2014 reporting period. This true-up analysis ensures that energy and demand savings are properly categorized in the year that they were achieved and that any omissions and/or errors identified after the release of the verified results are properly accounted and reported for.

Table 14: Participation

Initiative	Activity Unit	2013 Participation	Cumulative 2011-2013 Participation
Consumer Program			
Appliance Retirement	Appliances	831	5,481
Appliance Exchange	Appliances	187	449
HVAC Incentives	Equipment	7,946	24,266
Conservation Instant Coupon Booklet	Items	23,028	60,249
Bi-Annual Retailer Event	Items	62,717	196,350
Retailer Co-op	Items	0	134
Residential Demand Response	Devices	21,152	21,152
Residential Demand Response (IHD)	Devices	19,678	19,678
Residential New Construction	Homes	0	9
Business Program			
Equipment Replacement Incentive Initiative	Projects	727	1,336
Direct Install Lighting	Projects	2,315	5,891
Building Commissioning	Buildings	0	0
New Construction	Buildings	4	5
Energy Audit	Audits	9	27
Small Commercial Demand Response (thermostat)	Devices	0	0
Small Commercial Demand Response (IHD)	Devices	0	0
Demand Response 3	Facilities	17	17
Industrial Program			
Process & System Upgrades	Projects	0	0
Monitoring & Targeting	Projects	0	0
Energy Manager	Projects	40	44
Equipment Replacement Incentive Initiative	Projects	0	34
Demand Response 3	Facilities	15	15
Home Assistance Program			
Home Assistance Program	Homes	906	1,164
Aboriginal Program			
Home Assistance Program	Homes	0	0
Direct Install Lighting	Projects	0	0
Pre-2011 Programs completed in 2011			
Electricity Retrofit Incentive Program	Projects	0	195
High Performance New Construction	Projects	1	23
Toronto Comprehensive	Projects	0	0
Multifamily Energy Efficiency Rebates	Projects	0	1
LDC Custom Programs	Projects	0	5
Other			
Program Enabled Savings	Projects	4	32
Time-of-Use Savings	Homes	0	0

2.4 Spending

Table 15 itemizes PowerStream's expenses, by funding category, for each Program Initiative that was offered in 2013. Program Administration Budget (PAB) expenses are futher detailed by expense category (as stipulated in the CDM Code, Appendix A) and are shown in Table 16. Participant Based Funding (PBF) and Participant Incentive Payments (PIP) are based on actual participation in applicable initiatives. The Capability Building Funding includes the Embedded Energy Managers, Roving Energy Managers, and the Key Account Manager. In addition, Pre-2011 Programs were not funded by the 2011-2014 Program terms, they were funded as per their respective program agreements.

In 2013, marketing and program execution continued to be at full force, which increased PAB spend on OPA-Contracted Province-wide Programs by 30% as compared to 2012. Moreover, PIP expenditures increased by 78% while PBF spend was more than two and a half times the amount compared to 2012 (this does not factor in spend on pre-2011 initiatives).

Table 15: 2013 Spending by Initiative ($)

Initiative	Program Administration Budget (PAB)	Participant Based Funding (PBF)	Participant Incentive Payments (PIP)	Capability Building Funding (CBF)	TOTAL
Consumer Program	**1,838,214**	**4,929,662**			**6,767,876**
Appliance Retirement	88,089	-	-	-	88,089
Appliance Exchange	16,102	-	-	-	16,102
HVAC Incentives	79,337	-	-	-	79,337
Conservation Instant Coupon Booklet	81,090	-	-	-	81,090
Bi-Annual Retailer Event	266	-	-	-	266
Residential Demand Response	1,506,387	4,929,662		-	6,436,049
Residential New Construction	66,943	-	-	-	66,943
Commercial and Institutional Program	**2,210,566**	**565,705**	**8,165,932**		**10,942,203**
Equipment Replacement Incentive Initiative (ERII)	1,563,848	-	5,277,142	-	6,840,990
Direct Install Lighting	438,313	565,705	2,810,552	-	3,814,570
Existing Building Commissioning Incentive	25,361	-	*5,506*	-	30,867
New Construction and Major Renovation Initiative	119,218	-	*35,052*	-	154,270
Energy Audit	63,826	-	37,680	-	101,506
Small Commercial Demand Response	Included in Residential Demand Response				
Demand Response 3	Included in Industrial Demand Response 3				
Industrial Program	**357,754**		**92,740**	**596,564**	**1,047,059**
Process & System Upgrades					
a) preliminary study	110	-	*20,000*	-	20,110
b) engineering study	52,913	-	*72,740*	-	125,653
c) program incentive	70,400	-	-	-	70,400
Monitoring & Targeting	17,674	-	-	-	17,674
Energy Manager (REM's and EEM's)	110,304	-	-	487,100	597,404
Equipment Replacement Incentive Initiative	Included in Commercial and Institutional ERII				
Demand Response 3	106,353	-	-	-	106,353
Key Account Manager				109,464	109,464
Low Income Program	**223,886**		**357,817**		**581,702**
Low Income Program	223,886	-	357,817	-	581,702
TOTAL Province-wide CDM PROGRAMS	**4,630,420**	**5,495,367**	**8,616,489**	**596,564**	**19,338,840**

Table 16: 2013 PAB Spend by Expense Category ($)

Program	Labour Costs	Customer Care, Advertising, Marketing	IT	Other Service Providers	Other	Total
Consumer	698,873	927,325	31,034	8,804	172,177	1,838,214
Commercial & Institutional	1,108,141	355,441	36,333	493,562	217,089	2,210,566
Industrial	266,606	32,200	5,299	3,123	50,527	357,754
Low Income	80,674	9,446	3,028	114,790	15,948	223,886
TOTAL	**2,154,294**	**1,324,412**	**75,694**	**620,279**	**455,741**	**4,630,420**

Table 17 and Table 18 below identify PowerStream's cumulative spend by Initiative and by expense category for the period 2011-2013.

Table 17: Cumulative 2011-2013 Spending by Initiative ($)

Initiative	Program Administration Budget (PAB)	Participant Based Funding (PBF)	Participant Incentives (PIP)	Capability Building Funding (CBF)	TOTAL
Consumer Program	**4,133,001**	**6,496,521**			**10,629,522**
Appliance Retirement	429,914	-	-	-	429,914
Appliance Exchange	195,269	-	-	-	195,269
HVAC Incentives	378,986	-	-	-	378,986
Conservation Instant Coupon Booklet	302,624	-	-	-	302,624
Bi-Annual Retailer Event	6,124	-	-	-	6,124
Retailer Co-op	9,178	-	-	-	9,178
Residential Demand Response	2,686,870	6,496,521	-	-	9,183,391
Residential New Construction	124,036	-	-	-	124,036
Commercial and Institutional Program	**4,753,290**	**1,427,615**	**14,495,986**		**20,676,891**
Equipment Replacement Incentive Initiative (ERII)	3,600,470	-	8,271,799	-	11,872,269
Direct Installed Lighting	631,869	1,427,615	6,075,122	-	8,134,606
Existing Building Commissioning Incentive	61,946	-	5,506	-	67,452
New Construction and Major Renovation Initiative	247,429	-	40,376	-	287,805
Energy Audit	211,576	-	103,183	-	314,759

Small Commercial Demand Response	Included in Residential Demand Response				
Demand Response 3	Included in Industrial Demand Response 3				
Industrial Program	**719,727**		**92,740**	**771,136**	**1,583,603**
Process & System Upgrades					
a) preliminary study	63,343	-	*20,000*	-	83,343
b) engineering study	116,207	-	*72,740*	-	188,947
c) program incentive	128,144	-	-	-	128,144
Monitoring & Targeting	33,184	-	-	-	33,184
Energy Manager	209,023	-	-	590,980	800,003
Equipment Replacement Incentive Initiative	Included in Commercial and Institutional ERII				
Demand Response 3	158,708	-	-	-	158,708
Key Account Manager	11,118			180,156	191,274
Low Income Program	**482,883**		**542,427**		**1,025,310**
Low Income Program	482,883	-	542,427	-	1,025,310
Pre-2011 Programs Completed in 2011-14	**145,460**	**742,957**	**3,150,425**		**4,038,842**
Electricity Retrofit Incentive Program	-	-	3,018,390	-	3,018,390
High Performance New Construction	-	-	-	-	-
Multifamily Energy Efficiency Rebates	-	-	-	-	-
Data Centre Incentive Program	-	-	83,260	-	83,260
PeakSaver Extension	145,460[12]	742,957	48,775		937,192
TOTAL Province-wide CDM PROGRAMS	**10,234,361**	**8,667,093**	**21,432,003**	**771,136**	**37,954,168**

Table 18: Cumulative 2011-2013 PAB Spend by expense category ($)

Program	Labour Costs	Customer Care, Advertising, Marketing	IT	Other Service Providers	Other	Total
Consumer	1,832,840	1,741,610	88,582	72,850	397,119	4,133,001
Commercial & Institutional	2,662,568	620,406	103,753	882,886	483,677	4,753,290
Industrial	542,185	60,381	15,515	9,267	92,379	719,727
Low Income	181,272	14,659	6,375	238,467	42,110	482,883
TOTAL	**5,218,865**	**2,437,056**	**214,225**	**1,203,470**	**1,015,285**	**10,088,901**

[12] The $145,460 in administration cost spent on the Peaksaver Extension is not charged against PowerStream's 2011-2014 PAB.

2.5 Evaluation

In order to assess the impacts (energy and demand savings) and the effectiveness of the conservation programs on its participants and/or market, the OPA conducted EM&V of the OPA-Contracted Province-Wide Programs. The key evaluation findings as summarized and provided by the OPA are included in Table 19 below. The results of the impact evaluations are summarized in Table 20 (net-to-gross ratios and realization rates) and Table 21 (net demand and net energy savings).

Table 19: Evaluation Findings

Initiative	Evaluation Findings – Provincial Level (Source: 2013 EM&V Summary Report from the OPA)
Consumer Program	
Appliance Retirement	• Overall participation continues to fall with 20,952 appliances recycled in 2013, compared with 34,146 in 2012 and 56,110 in 2011. The program has experienced close to a 40% reduction (39.1% 2011 to 2012, 41.1% 2012 to 2013) in recycled appliances in each subsequent year of operation. • Per unit savings increased for both energy (+15.4%) and demand (+4.0%) between 2012 and 2013 due to a greater proportion of refrigerators/freezers with large volumes and a manufacturer date before NAECA was implemented. Dehumidifiers also show a higher per unit savings related to the change in ENERGY STAR definitions. • Net to gross ratio stayed constant at around 43% between 2012 and 2013.
Appliance Exchange	• Increased per unit energy and demand savings due to an adjustment to the assumed consumption of "conventional" and Energy Star dehumidifiers. The calculated weighted average annual energy savings of an exchanged dehumidifier increased 36.6% • Of the participants surveyed who reported they had replaced the dehumidifiers they exchanged, 100% reported purchasing ENERGY STAR® models. • 48% increase in the number of eligible dehumidifiers collected in the program. In 2013, 5,337 dehumidifier units were collected compared to 3,617 dehumidifier units and 219 window air conditioners in 2012. • Net to Gross ratio (NTG) was 52.6% which is a slight increase of the 2012 NTG of 51.5%.
HVAC Incentives	• Per unit furnace savings decreased from 1139 kWh/yr in 2012 to 1090 kWh/yr due to a slight shift in the number of participants who use their furnace fan non-continuously both before and after the retrofit as opposed to changing from continuous to non-continuous operation. • Per unit energy and demand savings assumptions for central air conditioners did not change from 2012. • Total participation (equipment) increased 7.5% from 2012 to 91,581.
Conservation Instant Coupon Booklet	• Customers redeemed more than ten times as many annual coupons in 2013 as in 2012 because of new LED coupons and full year availability of all coupons. Customers redeemed 13% more annual coupons in 2013 than in 2011, the first full year of annual coupons due to the high volume of new LED coupons. • There was a significant reduction in savings specialty CFL related measures. In 2013, the findings showed around 30% of participants are replacing incandescent bulbs compared to 60% of participants replacing incandescent bulbs in 2012. • Despite the significant per unit savings reductions, the Net Annual Savings from Annual Coupons in 2013 was more than 5.5 times that in 2012. This is primarily because of higher participation due to the inclusion of LED coupons and full year availability of all coupons.

	• 93% of coupons redeemed in 2013 were for general purpose LEDS and specialty CFLs and LEDs, producing 89% of net annual energy savings and 84% of net demand savings. • Measure NTG ratio was approximately 8% higher in 2013 than in 2012 due to the inclusion of participant like spillover, i.e., purchase of additional coupon initiative measures without using coupons because of program influence.
Bi-Annual Retailer Event	• 36% lower net annual savings in 2013 compared to 2012 primarily because of significant reductions in per unit savings estimates for standard and specialty CFLs. In 2013, findings showed a decrease in replacement rate of incandescent bulbs. Only 30% of 2013 participants are estimated to have replaced incandescent bulbs compared to 60% of participants replacing incandescent bulbs in 2012. This leads to a change in the baseline assumption for the savings calculations. • 19% increase in the number of coupons redeemed during the Spring and Fall Events in 2013 compared to 2012 because of substantial increase in LED purchases with event coupons. • 87% of coupons redeemed were for general purpose and specialty CFLs and LEDs, producing 80% of net annual energy savings and 73% of net demand savings. • Measure NTG ratio was approximately 8% higher in 2013 than in 2012 due to the inclusion of participant like spillover, i.e., purchase of additional coupon initiative measures without using coupons because of program influence.
Residential Demand Response	• The cycling strategy for CAC load control was changed from 50% simple cycling to 60% simple cycling. • Under 1-in-10 year weather conditions, the 2013 estimated impacts for load control devices are higher than the 2012 estimates in all months and are between 10 and 15% higher during the core summer months of June through August. • This year's IHD analysis has yielded an estimate of no statistically significant energy savings. • Load impact estimates for the average small and medium business and for electric water heaters among residential customers are also unchanged from the prior year's analysis.
Residential New Construction	• Energy and demand savings for the Initiative increased by 300% compared to the combined 2011 and 2012 results ; number of projects also increased from 45 in 2011 and 2012 to 86 in 2013. • All projects are opting for the prescriptive or performance path. No custom project applications were received in 2013, similar to 2011-2012. • Net-to-gross ratio for the initiative was higher by 14% from 49% in 2012 to 63% in 2013. • 100% of participants found application process reasonable and understandable.
Commercial and Institutional Program	
Equipment Replacement Incentive Initiative	• A total of 8,785 projects completed in 2013. Reported energy savings for individual projects ranged from 1 kWh to over 5,000,000 kWh. • Net to Gross ratio (NTG) for energy was 72.8%, consistent with prior years. • NTG for demand was 72.0%, consistent with prior years. • NTG ratios are comparable to similar programs across North America.

Direct Installed Lighting	• In 2013 OPA introduced: a) an increase in the incentive to $1500 from $1000, b) new LED measures c) Agribusiness eligibility • 17,782 projects completed in 2013 (3.8% decrease from 2012). • However, 12.2% increase in Net Verified Energy Savings relative to 2012. • The average incentive per project and savings per project both increased between 2012 and 2013. • Net to Gross ratio (NTG) for 2013 remained unchanged at 94%.
Existing Building Commissioning Incentive	• No Commissioning projects completed the hand-off/completion phase in 2013. • 29 unique participants in the 2013 population. • Improvements to the chilled water system controls were the most commonly targeted measure. • Large variation in estimated savings results between investigation phase and implementation phase.
High Performance New Construction	• Number of projects increased by 25% from 69 in 2012 to 86 in 2013. • Custom projects, representing only about 8% of the total number of projects, account for 67% of verified demand savings and 54% of verified energy savings. • A realization rate of 72% for energy savings is low due to the low realization rate of the Agribusiness high ventilation, low speed fans which comprised of 15% of the HPNC prescriptive project energy savings. • Net-to-gross ratio for the initiative was higher by 5% from 49% in 2012 to 54% in 2013. • 100% of participants found the application process to be reasonable and understandable.
Energy Audit	• 319 audits were completed in 2013. • 2013 sample saw more recommended measures implemented without incentives (33% in 2013 vs. 13% in 2012). • The average per audit summer peak demands savings is estimated to be 13 kW.
Small Commercial Demand Response	• Not available. Summary of provincial evaluation findings was not provided by the OPA.
Demand Response 3	• See Demand Response 3 within Industrial Program.
Industrial Program	
Process & System Upgrades Initiative	• In 2013, three PSUI projects were put into service. Projects were very well documented and technical reviews were thorough. Most projects are delivering the level of energy savings expected or more (realization rates of 87% for energy savings and 86% for summer demand savings). • Good level of quality on M&V conducted in each project. The level of free-ridership was found to be very low, at only 7% for energy savings and 6% for demand savings, and no spillover was identified. • Energy Managers are seen as important drivers of program enabled savings projects.

Monitoring & Targeting	• Not applicable. No 2012 results.
Energy Manager	• See Process & Systems Upgrade Initiative for evaluations regarding Energy Manager (non-incented) savings. No separate evaluation findings were provided by the OPA.
Equipment Replacement Incentive Initiative	• See Equipment Replacement Incentive Initiative under C&I Program.
Demand Response 3	• The largest 20 contributors account for 60% of the contractual demand reduction – in other words, less than 5% of contributors account for the majority of the load reductions. • In 2013, DR-3 was successfully dispatched locally for the first time in order to provide assistance in restoring power after a prolonged power outage due to substation flooding.
Low Income Program	
Low Income Program	• Participation increased significantly to 26,756 participants in 2013 from 5,033 in 2012. • Realization rates were slightly lower in 2013 (0.88 for kWh and 0.26 for kW) than in 2012 (0.98 for kWh and 0.32 for kW) primarily due to researched installation verification and persistence factors. • Realization rate for demand savings remained low as FAST calculated kW savings for certain insulation measures remained very high and recommended revisions to kW savings factors were not yet in use in 2013 (changes to the FAST tool to address these issues were made in early 2014).
Pre-2011 Programs completed in 2011-2014	
Electricity Retrofit Incentive Program	• No projects completed for this initiative in 2013.
High Performance New Construction	• Initiative was not evaluated in 2013. • Net-to-Gross ratios used are consistent with the 2010 evaluation findings (realization rate of 100% and net-to-gross ratio of 50%).
Multifamily Energy Efficiency Rebates	• No projects completed for this initiative in 2013.
Data Centre Incentive Program	• No projects completed for this initiative in 2013.

Table 20: Verified Realization Rates and Net-to-Gross Ratios by Initiative (Source: 2013 PowerStream Final Report provided by the OPA)

Initiative	Peak Demand Savings								Energy Savings							
	Realization Rate				Net-to-Gross Ratio				Realization Rate				Net-to-Gross Ratio			
	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014
Consumer Program																
Appliance Retirement	1.00	1.00	n/a		0.50	0.46	0.42		1.00	1.00	n/a		0.50	0.47	0.44	
Appliance Exchange	1.00	1.00	1.00		0.52	0.52	0.53		1.00	1.00	1.00		0.52	0.52	0.53	
HVAC Incentives	1.00	1.00	n/a		0.60	0.50	0.48		1.00	1.00	n/a		0.60	0.49	0.48	
Conservation Instant Coupon Booklet	1.00	1.00	1.00		1.14	1.00	1.11		1.00	1.00	1.00		1.11	1.05	1.13	
Bi-Annual Retailer Event	1.00	1.00	1.00		1.13	0.91	1.04		1.00	1.00	1.00		1.10	0.92	1.04	
Retailer Co-op	1.00	n/a	n/a		0.68	n/a	n/a		1.00	n/a	n/a		0.68	n/a	n/a	
Residential Demand Response	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Residential Demand Response (IHD)	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Residential New Construction	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Business Program																
Equipment Replacement Incentive Initiative	0.93	0.93	0.93		0.73	0.76	0.73		1.23	1.05	1.05		0.75	0.76	0.74	
Direct Install Lighting	1.08	0.69	0.82		0.93	0.94	0.94		0.90	0.85	0.84		0.93	0.94	0.94	
Building Commissioning	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
New Construction	n/a	n/a	0.97		0.50	n/a	0.54		n/a	n/a	0.99		0.50	n/a	0.54	
Energy Audit	n/a	n/a	1.02		n/a	n/a	0.66		n/a	n/a	0.97		n/a	n/a	0.66	
Small Commercial Demand Response	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Small Commercial Demand Response (IHD)	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Demand Response 3	0.76	n/a	n/a		n/a	n/a	n/a		1.00	n/a	n/a		n/a	n/a	n/a	

Industrial Program															
Process & System Upgrades	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Monitoring & Targeting	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Energy Manager	n/a	1.21	0.90		n/a	0.90	0.90		n/a	1.21	0.90		n/a	0.90	0.90	
Equipment Replacement Incentive Initiative																
Demand Response 3	0.84	n/a	n/a		n/a	n/a	n/a		1.00	n/a	n/a		n/a	n/a	n/a	
Home Assistance Program															
Home Assistance Program	n/a	0.23	0.54		n/a	1.00	1.00		n/a	0.99	0.86		n/a	1.00	1.00	
Aboriginal Program															
Home Assistance Program	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Direct Install Lighting	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Pre-2011 Programs completed in 2011															
Electricity Retrofit Incentive Program	0.77	n/a	n/a		0.52	n/a	n/a		0.78	n/a	n/a		0.52	n/a	n/a	
High Performance New Construction	1.00	1.00	1.00		0.50	0.50	0.50		1.00	1.00	1.00		0.50	0.50	0.50	
Toronto Comprehensive	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Multifamily Energy Efficiency Rebates	0.96	n/a	n/a		0.68	n/a	n/a		0.96	n/a	n/a		0.68	n/a	n/a	
LDC Custom Programs	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	
Other															
Program Enabled Savings	n/a	n/a	1.00		n/a	n/a	1.00		n/a	n/a	1.00		n/a	n/a	1.00	
Time-of-Use Savings	n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a		n/a	n/a	n/a	

Energy Manager, Aboriginal Program and Program Enabled Savings were not independently evaluated

Table 21: Verified Energy and Demand Savings by Initiative (Source: 2013 PowerStream Final Report provided by the OPA)

Initiative	Net Incremental Peak Demand Savings (kW)				Net Incremental Energy Savings (kWh)				2014 Net Annual Peak Demand Savings (kW)	2011-2014 Net Cumulative Energy Savings (kWh)
	2011	2012	2013	2014	2011	2012	2013	2014		
Consumer Program										
Appliance Retirement	159	94	53		1,160,946	662,323	354,976		303	7,338,875
Appliance Exchange	15	16	39		18,962	28,384	69,085		61	290,610
HVAC Incentives	2,829	1,635	1,658		5,192,089	2,761,285	2,830,426		6,122	34,713,062
Conservation Instant Coupon Booklet	80	15	34		1,295,153	92,817	511,655		129	6,482,375
Bi-Annual Retailer Event	112	98	79		1,950,839	1,777,858	1,140,456		288	15,417,844
Retailer Co-op	0	0	0		2,335	0	0		0	9,339
Residential Demand Response (thermostat)	1,251	3,873	11,897		3,239	28,587	16,249		0	48,075
Residential Demand Response (IHD)	0	0	0		0	0	0		0	0
Residential New Construction	0	0	0		0	0	0		0	0
Consumer Program Total	**4,445**	**5,731**	**13,760**		**9,623,565**	**5,351,253**	**4,922,846**		**6,904**	**64,300,180**
Business Program										
Equipment Replacement Incentive Initiative	1,225	4,690	5,114		7,512,897	25,834,397	28,469,682		10,994	164,305,694
Direct Install Lighting	2,106	1,437	2,327		5,296,278	5,424,343	7,944,313		5,092	50,600,302
Building Commissioning	0	0	0		0	0	0		0	0
New Construction	16	0	778		69,868	0	1,579,613		795	3,438,698
Energy Audit	0	52	79		0	251,763	436,057		131	1,627,401
Small Commercial Demand Response (thermostat)	0	0	0		0	0	0		0	0
Small Commercial Demand Response (IHD)	0	0	0		0	0	0		0	0
Demand Response 3	1,243	1,232	1,921		48,536	17,913	28,336		0	94,784
Business Program Total	**4,590**	**7,411**	**10,220**		**12,927,578**	**31,528,415**	**38,458,000**		**17,012**	**220,066,879**

Industrial Program										
Process & System Upgrades	0	0	0		0	0	0		0	0
Monitoring & Targeting	0	0	0		0	0	0		0	0
Energy Manager	0	19	421		0	36,000	3,717,682		114	5,349,159
Equipment Replacement Incentive Initiative	502	0	0		3,213,757	0	0		501	12,852,927
Demand Response 3	2,634	3,186	6,406		154,591	76,793	157,656		0	389,040
Industrial Program Total	**3,135**	**3,205**	**6,827**		**3,368,348**	**112,793**	**3,875,338**		**615**	**18,591,126**
Home Assistance Program										
Home Assistance Program	0	36	45		0	313,102	595,251		80	2,103,438
Home Assistance Program Total	**0**	**36**	**45**		**0**	**313,102**	**595,251**		**80**	**2,103,438**
Aboriginal Program										
Home Assistance Program	0	0	0		0	0	0		0	0
Direct Install Lighting	0	0	0		0	0	0		0	0
Aboriginal Program Total	**0**	**0**	**0**		**0**	**0**	**0**		**0**	**0**
Pre-2011 Programs completed in 2011										
Electricity Retrofit Incentive Program	1,958	0	0		9,540,024	0	0		1,958	38,160,095
High Performance New Construction	211	644	83		1,082,896	2,745,770	221,916		938	13,012,727
Toronto Comprehensive	0	0	0		0	0	0		0	0
Multifamily Energy Efficiency Rebates	75	0	0		194,534	0	0		75	778,138
LDC Custom Programs	81	0	0		533,038	0	0		81	2,132,152
Pre-2011 Programs completed in 2011 Total	**2,325**	**644**	**83**		**11,350,493**	**2,745,770**	**221,916**		**3,052**	**54,083,112**
Other										
Program Enabled Savings	0	0	5		0	0	7,515		5	15,030
Time-of-Use Savings	0	0	0		0	0	0		0	0
Other Total	**0**	**0**	**5**		**0**	**0**	**7,515**		**5**	**15,030**
Adjustments to 2011 Verified Results		**107**	**5**			**1,508,750**	**8,134**		**110**	**6,063,238**
Adjustments to 2012 Verified Results			**719**				**4,051,236**		**719**	**12,153,075**
Energy Efficiency Total	**9,368**	**8,736**	**10,715**		**37,063,617**	**39,928,041**	**47,878,626**		**27,668**	**358,627,866**
Demand Response Total (Scenario 1)	**5,128**	**8,291**	**20,225**		**206,366**	**123,292**	**202,240**		**0**	**531,898**
Adjustments to Previous Years' Verified Results Total	**0**	**107**	**724**		**0**	**1,508,750**	**4,059,370**		**829**	**18,216,313**
OPA-Contracted LDC Portfolio Total (inc. Adjustments)	**14,496**	**17,134**	**31,664**		**37,269,983**	**41,560,083**	**52,140,236**		**28,497**	**377,376,078**

3 Combined CDM Reporting Elements

3.1 Progress Towards CDM Targets

PowerStream achieved a total of 30.9 MW of verified demand savings in 2013, of which 10.4 MW is guaranteed to persist to 2014, and 48.1 GWh of verified energy savings, which cumulates to 93.8 GWh at the end of 2014. Combined with 2011 and 2012 results, PowerStream has achieved, as of the end of 2013, a total of 28.5 MW of demand savings guaranteed to persist to 2014 and 377.5 GWh in cumulative energy savings, representing 29.8% and 92.7% of PowerStream's demand and energy savings targets, respectively. Table 22 illustrates the net peak demand and energy savings by program with their contribution towards the 2014 target.

Table 22: Summarized Program Results

	2013 Incremental Net Savings		Program to Date Contribution to Targets	
	Peak Demand Savings (MW)	Energy Savings (GWh)	Net Annual Peak Demand Savings (MW) in 2014	2011-2014 Net Cumulative Energy Savings (GWh)
Province-Wide CDM Programs				
Consumer Programs	13.76	4.92	6.50	61.91
Business Programs	17.05	42.33	18.34	252.61
Home Assistance Program	0.05	0.60	0.08	2.10
Pre-2011 Programs	0.08	0.22	3.38	57.02
Program Enabled Savings	0.01	0.01	0.19	3.74
Total Province-Wide CDM Programs	**30.94**	**48.08**	**28.50**	**377.38**
BRI Program	0.01	0.06	0.00	0.10
Total Portfolio	**30.95**	**48.14**	**28.50**	**377.47**

As shown in Table 23 below, PowerStream's 2013 results were quite positive. As of the end of 2013, PowerStream's actual progress towards its four year targets is very close to the milestones set out in the 2012 Annual Report, with a positive variance of 3% for both demand and energy.

Table 23: 2013 Results vs 2012 Milestones

Cumulative Progress to Date	2013 Milestone as per 2012 Annual Report		2013 Verified Annual Results		Variance to 2013 Milestone	
	Savings	% to Target	Savings	% to Target	Savings	% to Target
2014 Net Demand Savings (MW)	25.2	26.4%	28.5	29.8%	3.3	3%
2011-2014 Net Cumulative Energy Savings (GWh)	366.0	89.9%	377.5	92.7%	11.4	3%

The key factors contributing to the higher than forecasted results were:

- True-up in results for 2012 that was not anticipated at the time the forecast was set.
- Unexpected savings from a pre-2011 High Performance New Construction project completed in 2013
- Residential programs in general having a higher uptake than originally forecasted
- Achieved a significant amount of non-incented savings by energy managers which based on past experience was not expected
- Equipment Replacement Incentive Initiative and the Direct Install Lighting program both performed better than anticipated
- OPA released a guidance document to claiming Program Enabled Savings which allowed PowerStream to successfully claim Program Enabled Savings for the first time.

3.2 CDM Strategy Modifications

PowerStream updates its demand and energy savings forecasts twice a year – in December and September. At the end of each calendar year (also PowerStream's fiscal year), an internal estimate of year-end CDM results is made as well as updated outlook for remainder of CDM target period. In September of each year, PowerStream updates its 2011-2014 CDM outlook based on EM&V results of previous year received from OPA and progress within the current program year.

PowerStream's current projection as of September 18th, 2014 is to achieve 78.6% of its demand target and 108.8% of its energy target. This projection includes savings from OPA-Contracted Province-wide Programs, PowerStream's Business Refrigeration Incentive Program as well as TOU rates. The projected achievement of demand savings not only fall below PowerStream's target, but is also at further at risk because it is highly reliant on obtaining 12.5 MW of savings from TOU rates. As mentioned earlier, OPA will only be releasing the verified savings due to TOU rates in August of 2015.

Due to the uncertainty with TOU rates and due to the fact that PowerStream's current projection is to achieve only 78.6% of its demand savings target, PowerStream identified 5

tactics that will allow it to exceed its current projections. The focus of the tactics is to achieve demand savings as according to PowerStream's internal estimate, PowerStream has already met its energy target as of August 2014. The tactics were developed by CDM staff and were evaluated based on impact and ease of implementation. Due to the fact that less than half an year remains in the current framework, the main constraint to be considered when developing the tactics was time. Whatever the tactics chosen, needed to allow for the projects to be completed and for savings to be captured in the current framework. The 5 tactics chosen were the following:

1. *Following up on ERII projects in the pipeline:* Follow up on ERII project that have been sitting in "Pre-approved" or "Draft" status for a while to see if they would require any assistance with the application or the project itself.

2. *peaksaverPLUS "Last Chance/Home Audit" campaign:* Multi-tactic marketing campaign (bill insert, direct mail, radio, online) with last chance messaging and offering a free in-home energy audit for the first 500 customers. This campaign has been launched and will be in market September to November 2014. PowerStream estimates that there is potential to capture 1.5 MW – 2 MW of incremental savings due to this campaign.

3. *ERII "Quick Wins with Lighting" campaign:* Multi-tactic campaign (direct mail, LinkedIn, outbound calling) targeting lighting retrofit projects. This campaign has been launched and will be in market September to November 2014. PowerStream estimates that there is potential to capture up to 100 LED conversion lighting projects, which could lead to up to 1.5 MW in demand savings.

4. *Following up on HPNC projects in the pipeline:* Conduct monthly follow up phone calls with customers that have been pre-approved to see how their project is proceeding and to see if they would require any help with the application process. This initiative has already been launched. PowerStream estimates that there is potential to capture up to 1 MW of demand savings from these projects.

5. *BRI head office campaign:* Potential identified to capture up to 1 MW from multi-location customers and franchised retail locations through head office outreach and endorsement. A sales plan has been developed to determine largest opportunities and customer meetings are ongoing.

In its 2011 Annual CDM Report, filed in September 2012, PowerStream was still forecasting to achieve 100% of its demand savings targets. The single biggest contributor to the reduction in forecasted demand savings is TOU rates. In its 2011 Annual CDM Report, PowerStream had been estimating the contribution from TOU rates implementation at approximately 22MW. This assumption was based on the provincial savings estimate of 308MW that was used to set the LDCs' aggregate 2011-2014 CDM target of 1330MW and based on PowerStream at approximately 7% of the province. While verified TOU savings from the OPA will not be available until mid-2015, preliminary TOU evaluation findings for 4 LDCs (not including PowerStream) were presented to all LDCs by OPA at its 2012 EM&V workshop in early September 2013. Based

on these preliminary findings, PowerStream has lowered its TOU savings forecast by approximately 10MW.

In its 2012 Annual CDM Report, filed in September 2013, PowerStream was forecasting on achieving 79.8% of its demand target and 101.4% of its energy target. As such, there is not much change in PowerStream's current projection and the forecast presented in the 2012 Annual CDM Report.

The main driver for the increase in projected energy savings over what was forecasted in the 2012 Annual CDM Report was overachieving on our 2013 milestones as already discussed in Section 3.1. The other major contributor was an increase in the pipeline of projects for HPNC.

The contributors for the small drop in the demand projection is the underperformance of the peaksaver PLUS program in 2014 and the cancellation of the Demand Response 3 (DR3) program. At the time the DR3 program was cancelled, PowerStream had roughly 6.2 MW and 27 customers who had signed agreements with the aggregators but not yet enrolled.

The DR3 program is a program that has underachieved extensively from the OPA's initial forecast. In the original (2010) provincial forecasts for the OPA-Contracted Province Wide Programs, it was anticipated that Demand Response initiatives within the Industrial and C&I Programs would contribute approximately 223 MW across the Province, representing approximately 21.5% of the total demand savings (1037 MW) forecasted for the OPA-Contract Province Wide Program Portfolio. PowerStream is currently projecting approximately 8.4 MW of savings from DR3 which represents less than 14% of PowerStream's total projected demand savings from OPA-Contracted Province Wide Programs. PowerStream believed there was still significant market potential for the DR3 program which could support the LDC's and the OPA in meeting the province wide demand target. As the DR subject matter expert on the OPA-LDC Industrial Program Working Group, PowerStream spearheaded the development of a second DR3 business case in the summer of 2013, which included recommendation to encourage greater participation in the program. This business case was presented to the OPA by the Working Group in October 2013 as an opportunity to make up a portion of the projected demand target shortfall. None of the recommended changes were implemented. While not formally communicated, PowerStream understands that there may have been a number of issues preventing these program improvements, including limited OPA procurement authority for Demand Response resources beyond 2014 and the current surplus of electricity capacity in the province over the next few years.

Table 24 and Table 25 below provide more detailed illustrations of the updated forecasts; showing the amount of demand savings persisting from one year to the next and the amount of energy that cumulates to 2014.

Table 24: Revised 2011-2014 Milestones, Demand

Year	Status	Program	Net Annual Demand Savings (MW)				Progress Against OEB Target (95.57 MW)	
			2011	2012	2013	2014	Running Total (MW)	%
2011	Verified	Province-Wide Programs	14.6	9.5	9.4	8.9	8.9	9.3%
2012	Verified	Province-Wide Programs		17.7	9.4	9.2	18.1	19.0%
	Estimated*	Province-Wide Programs		0.5	0.5	0.5	18.6	19.5%
2013	Verified	Province-Wide Programs			30.9	10.4	29.0	30.3%
	Verified	BRI Program (Board Approved)			0.0	0.0	29.0	30.3%
	Estimated*	Province-Wide Programs			0.4	0.4	29.4	30.8%
2014	Projected	Province-Wide Programs				32.4	61.8	64.6%
		BRI Program (Board Approved)				0.8	62.6	65.5%
		Time of Use Rates				12.5	**75.1**	**78.6%**

Table 25: Revised 2011-2014 Milestones, Energy

Year	Status	Program	Net Annual Energy Savings (GWh)				Cumulative Energy Savings (GWh)	Progress Against OEB Target (407.34 GWh)	
			2011	2012	2013	2014	2011-2014	Running Total (GWh)	%
2011	Verified	Province-Wide Programs	38.8	38.6	38.3	36.9	152.6	152.6	37.5%
2012	Verified	Province-Wide Programs		44.1	44.2	43.1	131.0	283.7	69.6%
	Estimated*	Province-Wide Programs		2.4	2.4	2.4	7.2	290.9	71.4%
2013	Verified	Province-Wide Programs			48.1	45.6	93.7	384.6	94.4%
	Verified	BRI Program (Board Approved)			0.1	0.0	0.1	384.7	94.4%
	Estimated*	Province-Wide Programs			2.9	2.9	5.7	390.4	95.8%
2014	Projected	Province-Wide Programs				47.4	47.4	437.8	107.5%
		BRI Program (Board Approved)				5.6	5.6	**443.4**	**108.8%**

* 2012 and 2013 Estimated Province-Wide Program results is PowerStream's estimate of how much savings PowerStream will get towards 2012 and 2013 results respectively as a true-up in the 2014 OPA Final Verified Report.

To summarize the modifications to the Strategy, Figure 1 and Figure 2 are provided to illustrate the comparison of demand and energy savings forecast from the original Strategy (Oct 2010) to the 2012 Strategy (Sep 2012), to the 2013 Strategy (Sep 2013), and to the September 2014 projection.

Figure 1: Comparison of Demand Savings Forecasts

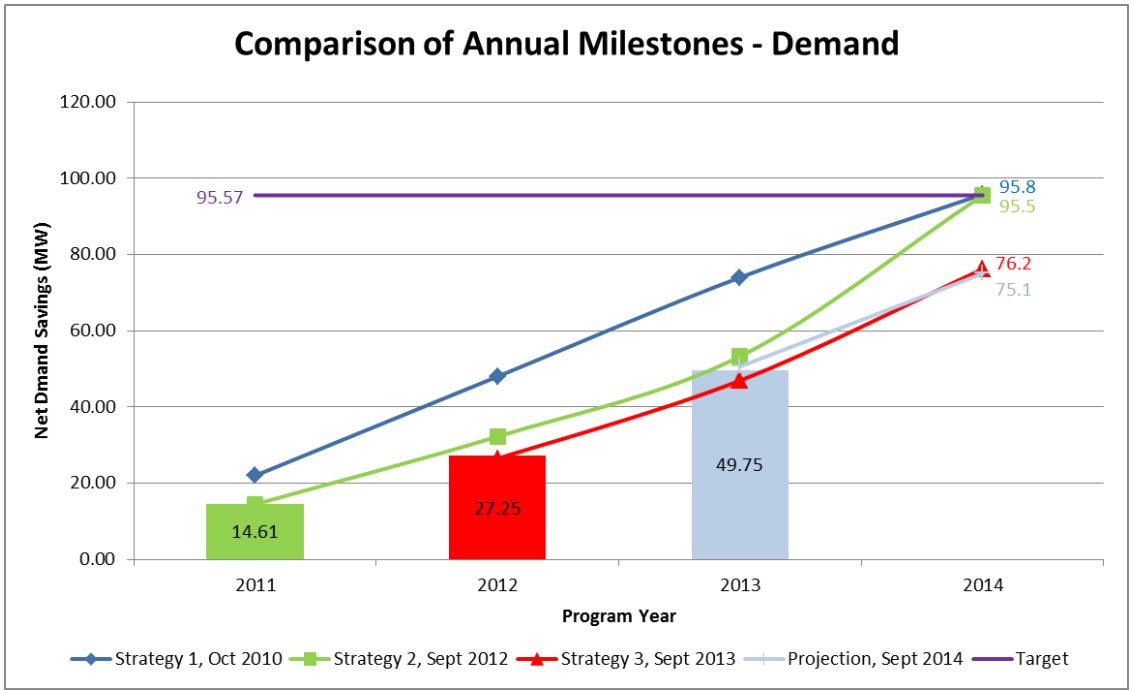
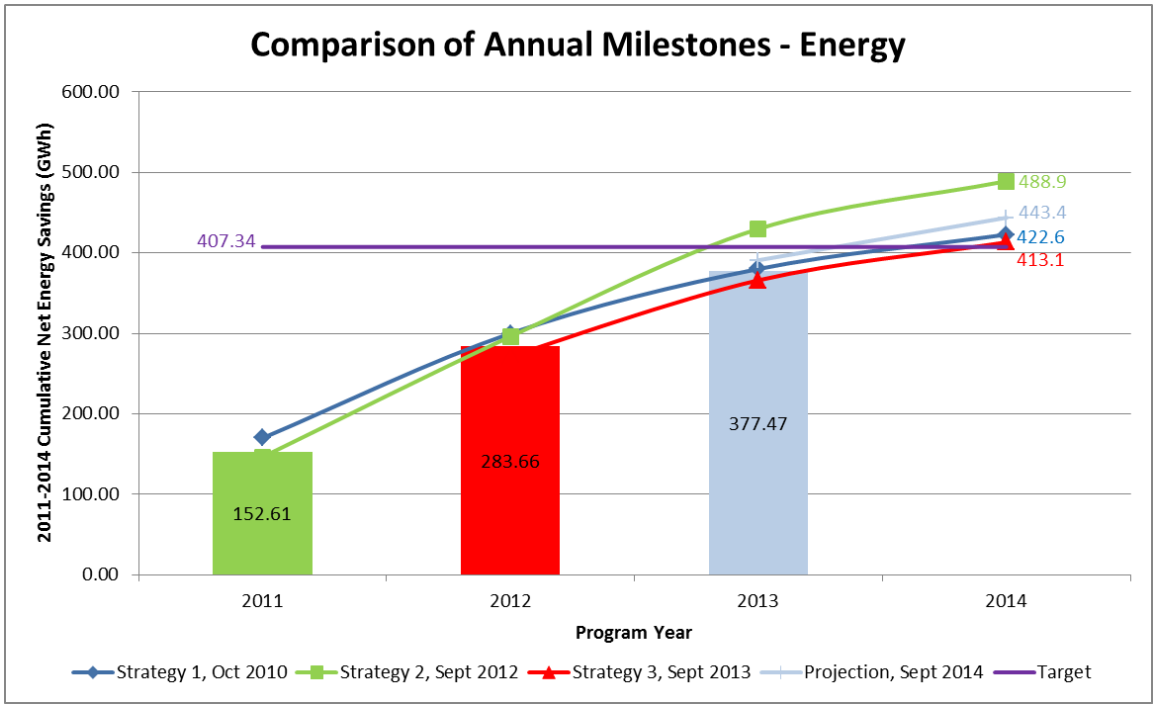


Figure 2: Comparison of Energy Savings Forecasts



As with any forecasting exercise, there are known risks to achieving the CDM targets. In some cases these risks can be mitigated by PowerStream while in other cases, PowerStream has little to no control over the risks, such as TOU savings results or the cancellation of the DR3 program. PowerStream has developed a risk assessment and mitigation accordingly. These risks, together with their impact and mitigation plan are summarized in Table 26 below.

Table 26: Risk Assessment and Mitigation Plan

Risks	Likelihood	Impact	Mitigation strategies
EM&V uncertainty – results much lower than planned due to Net-to-Gross adjustments (e.g. free ridership, realization rates)	Low	High	• Primarily outside of PowerStream control • Make conservative estimates using most up to date data assumptions
Time of Use (TOU) savings lower than forecasted	Medium	High	• Entirely outside of PowerStream control • Use the most up-to-date information available to forecast
Forecasted program participation levels are not achieved	Low	Medium	• Not seen as a major risk as participation forecasts are based on several years of actual data
Business Refrigeration Incentives Program - demand and/or energy savings lower than planned	Medium	Low	• Target measures with high savings potential • Actively monitor cost effectiveness of the program
OPA extension of commercial Equipment Replacement Incentive Initiative (ERII) to end of 2015 • Customers now have until end of 2015 to complete their projects, but only those completed in 2014 will count to our OEB target • Reduces sense of urgency for customers in 2014	High	Medium	• Communications/messaging with customers to encourage them to remind them to apply to finish their project and claim their incentive
ERII and HPNC projects not being captured towards PowerStream's result despite being completed in 2014 due to the time the OPA extracts the data	Medium	Medium	• Work with the OPA to ensure all HPNC projects completed in 2014 are captured even if the Pre-Billing Report (PBR) has not been submitted for the project • Communicate with pre-approved ERII applicants to encourage them to submit their post application as soon as their project is completed.

PowerStream revised its budget to provide a more accurate reflection of what PowerStream expects to spend. Table 27 shows the annual budget per program which includes Program Administration Budget, Participant Based Funding, Participant Incentive Payment, and Capability Building Funding.

The budgets were updated to factor in the expenses to date, remaining funds available from the OPA, and the detailed marketing and execution plans. PBF and PIP values, shown below, are estimates based on the projected number of participants in the applicable OPA-Contracted Province-wide Program Initiative. Similar to the demand and energy projection, the budgets include actual expenses incurred from 2011-2013 and forecast for 2014.

Table 27: Revised 2011-2014 Budget, OPA-Contracted Province Wide Programs ($)

		Residential	C&I	Industrial	Home Assistance	Total, by Year
2011	PAB	$987,887	$801,487	$77,714	$37,396	$1,904,483
	PBF/PIP	-	2,120,978	-	-	2,120,978
	CBF	-	-	-	-	-
	2011 total	987,887	2,922,465	77,714	37,396	$4,025,462
2012	PAB	1,306,900	1,741,236	284,259	221,601	3,553,996
	PBF/PIP	1,566,859	5,070,986	-	184,610	6,822,455
	CBF	-	-	174,572	-	174,572
	2012 total	2,873,759	6,812,223	458,831	406,210	$10,551,023
2013	PAB	1,838,214	2,210,566	357,754	223,886	4,630,420
	PBF/PIP	4,929,662	8,731,637	92,740	357,817	14,111,857
	CBF	-	-	596,564	-	596,564
	2013 total	6,767,876	10,942,203	1,047,059	581,713	$19,338,841
2014	PAB	2,385,172	3,123,108	459,178	209,549	6,177,007
	PBF/PIP	2,622,000	6,948,418	-	404,000	9,974,418
	CBF	-	-	861,263	-	861,263
	2014 total	5,007,172	10,071,526	1,320,441	613,549	$17,012,688
Total, by Program		$15,636,694	$30,748,417	$2,904,045	$1,638,858	$50,928,014

Comparing the 2013 actual spend to the 2013 budget provided in the 2012 Annual Report resulted in an overall spending variance of 6% as detailed in Table 28. The main reason for the PAB variance is largely due to later than anticipated start dates of additional resources and delay in contract/consulting services due to contracted project prioritization. PBF/PIP was overspent in 2013 due to more than estimated participation levels attributable to PeakSaver Plus, ERII, and SBL initiatives. Low income and HPNC resulted in lower than anticipated PIP results. CBF variance is mainly due to Q4 payments paid in 2014 for the Embedded Energy Managers.

Table 28: 2012 Spend VS. 2012 Budget

	2013 Budget per 2012 Annual Report	2013 Actual Spend	Variance to 2013 Budget	% Variance to 2013 Budget
PAB	$5,044,078	$4,630,420	$(413,658)	-8.2%
PBF/PIP	12,421,368	14,111,857	1,690,499	13.6%
CBF	778,828	596,564	(182,264)	-23.4%
2013 total	$18,244,274	$19,338,841	$1,094,577	6.0%

In addition to the budget above, PowerStream received an OEB approval on June 21, 2013 to deliver the Business Refrigeration Incentives Program at an estimated cost of up to $4.1 Million. The forecasted breakdown of the approved program delivery budget, as set out in PowerStream's application to the OEB, is provided in tables Table 29 and Table 30.

Table 29: Board Approved CDM Program 2013-2014 Forecast ($)

	2012	2013	2014	Total
Fixed Program Costs	78,204	538,215	582,042	1,198,461
Variable Program Costs	-	36,000	84,000	120,000
Subtotal - Program Costs	**78,204**	**574,215**	**666,042**	**1,318,461**
Customer Incentives	-	839,490	1,958,810	2,798,300
Total Delivery Costs	**78,204**	**1,413,705**	**2,624,852**	**4,116,761**

Table 30: Board Approved CDM Program Fixed Spend by Expense Category

Program Costs	2012 Actual	2013 Actual	2014 Forecast	Total
Legal		2,185	0	2,185
Program Administration		303,077	571,564	874,641
Marketing		86,693	110,000	196,693
Evaluation, Measurement & Verification		24,828	161,795	186,623
Total	**$0**	**$416,783**	**$843,359**	**$1,260,142**

Appendix A: BRI Evaluation Report

Strategic Solutions for a Changing World™

Year 1 evaluation of the *Business Refrigeration Incentives* program

PowerStream *Business Refrigeration Incentives* program

Year 1 evaluation

This document was prepared for PowerStream by IndEco Strategic Consulting Inc.

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Contents

Executive summary

Purpose

This document reports on the results of the evaluation of the Business Refrigeration Incentives program offered by PowerStream through the end of 2013.

Scope and method

The scope of the project considers both process and impact issues related to the project.

Process related issues are based on interviews with persons responsible for delivering the program, including program administrators, auditors, persons responsible for marketing and installation.

In addition, an on-line survey was conducted of program participants. The survey was conducted between April 15, 2014 and May 12, 2014. All program participants as of early April were invited to respond and 103 agreed to do so. The survey provided information used in assessing satisfaction with the program, and for determining how much of gross energy savings identified can actually be attributed to the program (i.e. net energy savings.)

Several questions were added to a PowerStream comprehensive customer survey (CASA) to get perspectives on the program from non-participants.

Selected equipment at a random sample of facilities was logged for a period of time before and after installation of retrofit measures to assess real-world impacts of the installed measures. Measurements were taken at 19 facilities on 81 refrigeration units through the end of April, and actual measures were compared to estimated (prescriptive) values, and this 'realization factor' was applied to installations that occurred in 2013.

Status of data

Several types of data were used in the analysis, each with its own limitations.

Prescriptive data on estimated savings for particular retrofit measures were provided by PowerStream. Estimated savings were based on a review of the literature, and were based on 'typical' units. The range of potential unit sizes, or usage patterns and their impact on energy use was not available.

Survey data Surveys were sent to 281 facilities that had participated in the program as of the end of March 2014, and 103 responses were

received. Overall, that response rate would provide results with a reasonable level of statistical confidence (90%±7%). However, some questions only applied to a subset of the sample, and the confidence that those responses are typical of a large population is lower.

Monitoring data were based on measures taken over roughly a two week period before and after installation of retrofit measures. In many cases, it was not possible to attribute savings to individual measures because multiple measures were installed simultaneously. Where individual measures types were installed, there appears to be a wide variation in the measured savings.

Main findings

The process being used for the program appears to be working well for the most part, and there is a reasonable level of customer satisfaction with the program, though it is lower than PowerStream has realized in other parts of the business. Customers indicate an interest in participating in the program. In fact, PowerStream has slowed marketing of the program at times because interest was greater than the ability to meet that interest.

At the end of 2013, there were 269 participants in the program, but installs had been completed at only 6 facilities. The number of installs was well below expectation due to a variety of factors including: the late start of the program, difficulty securing retrofit equipment, and changes in installers involved in the program.

PowerStream made changes to the program beginning in 2013, and continuing into early 2014 to address barriers to successful implementation.

PowerStream developed a powerful database for managing the project, which has rich information about program participants and progress of the program.

The impact of the program, measured in kilowatt-hours saved and kilowatts of demand reduced was well below expectations for 2013. Actual net savings were just over 57 MWh, and demand reductions were about 6 kW. The main reason for the low numbers was the low number of installations, and the smaller than expected number of measures per installation. In addition, actual unit savings were also lower than predicted at about 67% for energy and 64% for demand.

Impact measures are for the installed equipment. It was not possible to measure energy savings attributable to the audit portion of the project.

Conclusions and recommendations

The overall process used for the program appears to be working, though there were significant problems in realizing installations. PowerStream has taken numerous measures to address these problems, and is and should continue monitoring progress carefully. The pace of installations has picked up considerably in 2014.

Since 2013, PowerStream contractors have more experience with what to expect at customers' sites, and therefor what equipment needs to be stocked and taken to customers' sites, which specific brands of measures work best, and on the needs for distributors to carry equipment. Nevertheless, PowerStream should consider additional training for contractors on customer service to increase the customer satisfaction level.

Additional detail on pre-retrofit conditions of equipment, measures installed and the refrigeration units they are installed in should help to refine estimates of savings in the future.

Introduction

PowerStream's *Business Refrigeration Incentives* (BRI) program provides energy audits and refrigeration upgrades to qualifying businesses with a peak demand of less than 250 kW within the commercial and institutional sector at no charge for equipment valued up to $2,500. The program aims to overcome the substantial market barriers associated with promoting energy efficient refrigeration equipment upgrades to businesses including: limited awareness of energy use and electricity costs of refrigeration equipment, limited knowledge of opportunities to reduce energy use, limited availability of equipment from distributors, and limited access to capital to upgrade refrigeration equipment.

Target market and eligibility

The BRI program targets business owners within the commercial and institutional sector that have commercial grade refrigeration equipment.

In the PowerStream service territory, there are approximately 3,000 restaurants and 1,000 grocers. In addition, there are many other small commercial businesses with product refrigeration, including florists, medical laboratories, and school cafeterias.

In order to be eligible for the BRI program, customers must:

- Have a General Service (GS) Account with PowerStream. Customers with residential accounts will not be eligible.
- Have an average annual demand of less than 250 kW.
- Have commercial grade refrigeration equipment used to cool products (e.g. food to flowers). Customers with residential refrigeration equipment will not be eligible.

If the facility is leased, the participant must have the authority to have the measures installed as a condition of the lease or with the consent of the owner of the facility.

Evaluation goals and objectives

The overall goal of the BRI program is to achieve electricity savings and demand reductions that will contribute towards PowerStream's 2011-2014 CDM targets. Specific objectives include:

- To achieve electricity savings and peak demand reductions;
- To increase awareness of energy efficiency measures and programs; and
- To stimulate changes in behaviour, technology and market conditions that favour energy efficiency.

Program elements

Eligible participants in the BRI program receive a turn-key service that includes:

- A free electricity audit and assessment;
- A customized report and "Energy Action Plan" based on the electricity audit and assessment; and
- Up to $2,500 of eligible refrigeration measures and services provided and installed at no charge.

Table 1 describes the elements of the program that are undertaken to encourage participation and support energy and demand savings in eligible commercial and institutional customers.

Table 1 Description of elements

Element	Description
Direct marketing	PowerStream uses direct marketing methods to promote participation in the program. These include: direct mail inserts, follow up door-to-door community blitz, and direct calling.
Audit and assessment	Customers receive a free electricity audit and assessment based on the following data: • Customer profile/firmographics (e.g. type of business, operating hours); • Historical electricity consumption; and • Walk through audit results (e.g. load inventory, square footage, age of equipment). Once the customer agrees to the audit and assessment, PowerStream schedules and conducts the audit.
Electronic assessment report and work order	PowerStream provides customers with a customized, user friendly (electronic) report and Energy Action Plan that includes a description of: • Key end-uses driving electricity consumption patterns in the facility; • Specific eligible refrigeration recommendations for measures / services to be installed and associated energy and demand savings; • Additional opportunities for energy and demand savings related to other end-uses and other applicable CDM programs; and • A comparative benchmark of the facility's electricity use against similar businesses. PowerStream also provides customers will a work order for up to $2,500 in eligible refrigeration measures.

Element	Description
Follow-up and installation scheduling	PowerStream follows-up with customers to encourage them to sign the work order. Once customers sign the work order agreeing to the installation of measures, PowerStream schedules the installation.
Measure installation	PowerStream arranges for the installation of eligible refrigeration measures of up to $2,500 by a qualified refrigeration mechanic licensed in Ontario. Eligible measures that are included are as follows: • Anti-sweat heater controls for cooler or freezers • Night curtains on display cases • Cleaning cooler/freezer condenser coils • Energy efficient evaporator fan motors (ECM motor upgrade) • LED display case lighting • Strip curtains for walk-in coolers and freezers.
Quality assurance visit	PowerStream conducts quality assurance visits of a representative sample of participating facilities. The purpose of the visits is to collect information for EM&V and reinforce participants' confidence in the program.
Customer satisfaction survey	PowerStream delivers surveys to a representative sample of program participants (both customers who proceeded to the direct install phase of the program, and those who did not). The purpose of the surveys is to collect information for EM&V and reinforce participants' confidence in the program.

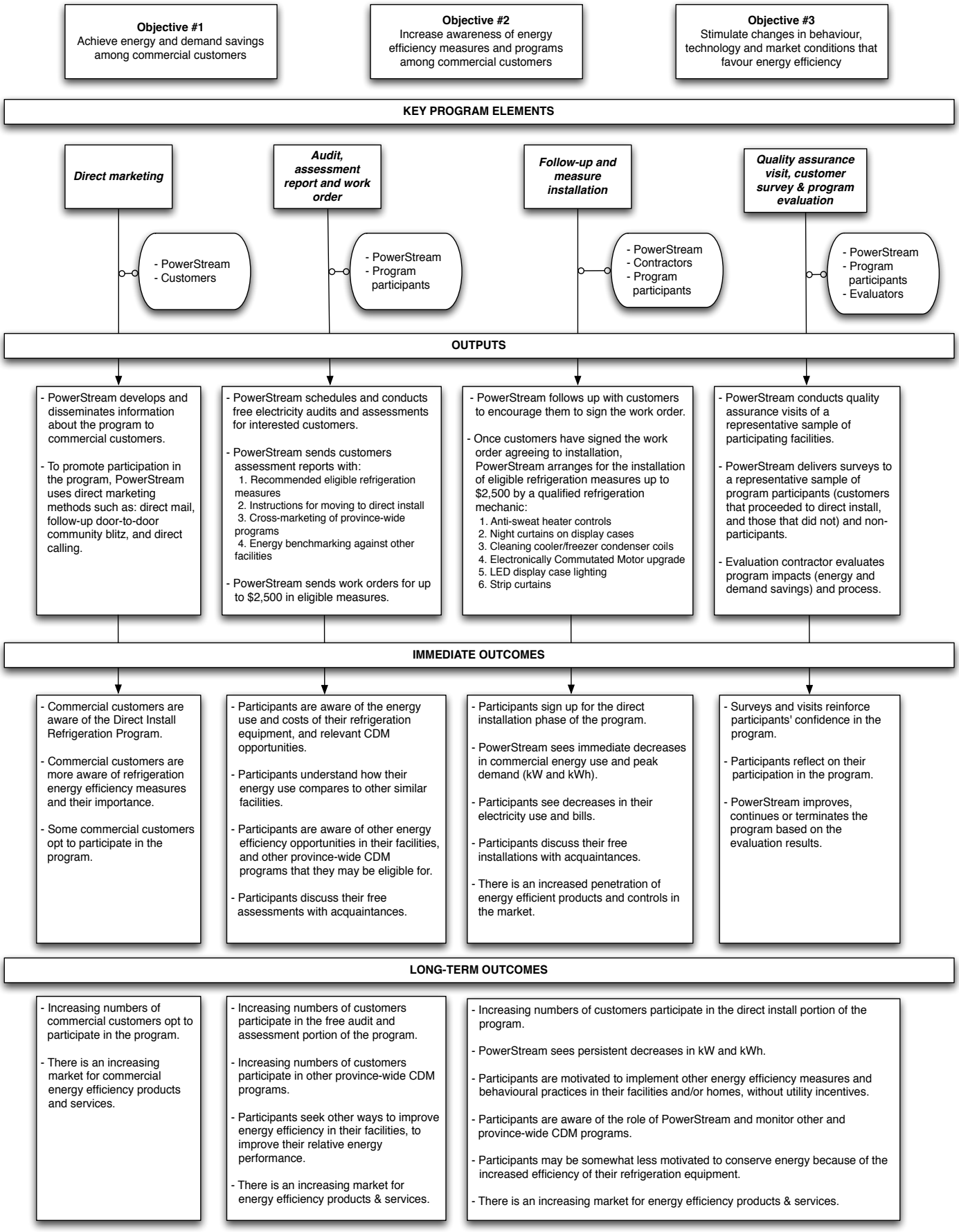
Expected savings

PowerStream has estimated that the BRI program will generate 3.3 MW and 19.6 GWh of net savings, representing an additional 3.5% and 4.8% towards PowerStream's 2011-2014 demand and energy targets, respectively.

Grocery stores and restaurant typically use approximately three times the amount of electricity per square foot of retail space compared to offices and other retail businesses. Refrigeration represents the largest single end-use of electricity in these facilities – 50% for restaurants and 72% for grocers.

Logic diagram

The logic model on the next page illustrates the theory of the PowerStream BRI program. The evaluation will assess the immediate outcomes only.


Objective #1
Achieve energy and demand savings among commercial customers
Objective #2
Increase awareness of energy efficiency measures and programs among commercial customers
Objective #3
Stimulate changes in behaviour, technology and market conditions that favour energy efficiency
KEY PROGRAM ELEMENTS
Direct marketing
- PowerStream
- Customers
Audit, assessment report and work order
- PowerStream
- Program participants
Follow-up and measure installation
- PowerStream
- Contractors
- Program participants
Quality assurance visit, customer survey & program evaluation
- PowerStream
- Program participants
- Evaluators
OUTPUTS
- PowerStream develops and disseminates information about the program to commercial customers.
- To promote participation in the program, PowerStream uses direct marketing methods such as: direct mail, follow-up door-to-door community blitz, and direct calling.
- PowerStream schedules and conducts free electricity audits and assessments for interested customers.
- PowerStream sends customers assessment reports with:
1. Recommended eligible refrigeration measures
2. Instructions for moving to direct install
3. Cross-marketing of province-wide programs
4. Energy benchmarking against other facilities
- PowerStream sends work orders for up to $2,500 in eligible measures.
- PowerStream follows up with customers to encourage them to sign the work order.
- Once customers have signed the work order agreeing to installation, PowerStream arranges for the installation of eligible refrigeration measures up to $2,500 by a qualified refrigeration mechanic:
1. Anti-sweat heater controls
2. Night curtains on display cases
3. Cleaning cooler/freezer condenser coils
4. Electronically Commutated Motor upgrade
5. LED display case lighting
6. Strip curtains
- PowerStream conducts quality assurance visits of a representative sample of participating facilities.
- PowerStream delivers surveys to a representative sample of program participants (customers that proceeded to direct install, and those that did not) and non-participants.
- Evaluation contractor evaluates program impacts (energy and demand savings) and process.
IMMEDIATE OUTCOMES
- Commercial customers are aware of the Direct Install Refrigeration Program.
- Commercial customers are more aware of refrigeration energy efficiency measures and their importance.
- Some commercial customers opt to participate in the program.
- Participants are aware of the energy use and costs of their refrigeration equipment, and relevant CDM opportunities.
- Participants understand how their energy use compares to other similar facilities.
- Participants are aware of other energy efficiency opportunities in their facilities, and other province-wide CDM programs that they may be eligible for.
- Participants discuss their free assessments with acquaintances.
- Participants sign up for the direct installation phase of the program.
- PowerStream sees immediate decreases in commercial energy use and peak demand (kW and kWh).
- Participants see decreases in their electricity use and bills.
- Participants discuss their free installations with acquaintances.
- There is an increased penetration of energy efficient products and controls in the market.
- Surveys and visits reinforce participants' confidence in the program.
- Participants reflect on their participation in the program.
- PowerStream improves, continues or terminates the program based on the evaluation results.
LONG-TERM OUTCOMES
- Increasing numbers of commercial customers opt to participate in the program.
- There is an increasing market for commercial energy efficiency products and services.
- Increasing numbers of customers participate in the free audit and assessment portion of the program.
- Increasing numbers of customers participate in other province-wide CDM programs.
- Participants seek other ways to improve energy efficiency in their facilities, to improve their relative energy performance.
- There is an increasing market for energy efficiency products & services.
- Increasing numbers of customers participate in the direct install portion of the program.
- PowerStream sees persistent decreases in kW and kWh.
- Participants are motivated to implement other energy efficiency measures and behavioural practices in their facilities and/or homes, without utility incentives.
- Participants are aware of the role of PowerStream and monitor other and province-wide CDM programs.
- Participants may be somewhat less motivated to conserve energy because of the increased efficiency of their refrigeration equipment.
- There is an increasing market for energy efficiency products & services.

Program participation

The BRI program officially launched on September 20, 2013. The information provided in this section covers program participation from four weeks before the launch date until the end of 2013.

Projected participation

At the start of the BRI program, PowerStream projected 1,200 customers would participate in the program by the end of 2014 (based on an earlier estimated launch date). Table 2 below illustrates the estimated participant breakdown over the two years.

Table 2 Projected participation breakdown (2013-2014)

	Total	Grocer	Restaurant
2013-2014 participants	1200	500	700
2013 participants	360 (30%)	150	210
2014 participants	840 (70%)	350	490

Actual participation in 2013

In 2013, over the course of 17 weeks, 269 participants applied to the BRI program, 234 audits were conducted, and 217 participants signed agreements. Due to equipment assessment and back-log issues, installations were only completed in six businesses. A list of installed measures is provided in Table 3 below.

Table 3 List of measures installed in 2013

Measure	Quantity
Clean condenser coils (cooler)	43
Clean condenser coils (freezer)	3
1/20 HP ECM fan motor upgrade	19
1/15 HP ECM fan motor upgrade	8
9 W ECM fan motor upgrade	19
Strip curtains - Walk-in freezer	1
Strip curtains - Walk-in cooler	2
LED case lighting - power supply	11
36" LED case lighting	1
48" LED case lighting	6
60" LED case lighting	16

The backlog on installation was caused by a number of factors, including:

- Later than anticipated program start-up
- Difficulty in signing up installers
- Difficulty in securing inventory for installations.

Sectoral distribution

In 2013, the following businesses completed the installation process:

- 2 bakeries
- 2 restaurants
- 1 do-it-yourself wine and beer outlet
- 1 convenience store.

Process evaluation

This section reviews the key elements of the BRI program (as outlined previously in Table 1), including the direct marketing, audit and assessment, installation, and quality assurance stages. The process evaluation focuses on identifying:

- How effective were the various marketing and outreach methods?
- What were the major barriers to program participation for customers and conversely, what is motivating customers to participate?
- Views on the initial telephone assessment with a PowerStream representative.
- How useful was the energy audit and the Energy Action Plan for program participants?
- Views on the assessment and installation process including opinions on installers, installed equipment and logistics of the installation. Are the resources assigned to the program sufficient?
- Any recommendations by program participants and non-participants on improving the program.
- Process improvements for key program elements as the program moves forward.

The process evaluation of the BRI program considers the results of the surveys sent out to 103 full and partial program participants and 19 non-participants, along with discussions held with key program administrators. The survey results include customers who participated in the program in the first quarter of 2014 (January to the beginning of April).

Direct marketing

Core-marketing activities included a direct mail communication piece, an outbound calling campaign, and web and print advertising. North American Industrial Classification System (NAICS) codes were used to identify eligible customers, and both non-participants and participants of other PowerStream CDM programs (e.g. small business lighting) were approached for the BRI program. The pre-qualification procedure involved identifying participants who are current PowerStream customers, have an energy demand less than 250 kW, and have refrigeration equipment.

The direct mail piece was sent out in batches of 500 over a 6-week period and accounted for 31% of the total appointments booked for 2013.

After the initial mailing, customers were contacted by telephone. In 2013, 119 participants were called. The outbound calling campaign consisted of a 10-minute phone survey where information on energy use, monthly energy bills, and contact details were collected. In 2013, 42% of the total appointments booked were made as a result of the outbound calling campaign.

Customers who did not sign up right away were sent a second mailing.

In addition, PowerStream fielded calls from customers who heard about the BRI program and called PowerStream for more information. 87 participants came in through in-bound calls.

Initial telephone assessment

After the direct marketing campaign, eligible customers were contacted by PowerStream to partake in an initial screening process where they were provided further information on the BRI program and the process. The majority of full and partial participants indicated that they were very satisfied with the initial screening process (80% and 70%, respectively) and that the PowerStream employee they spoke with clearly explained the program and was adequately able to answer questions. Very few customers (2%) indicated that the initial assessment was too long and they were not satisfied. At the end of the telephone assessment, 97% of customers proceeded with the BRI program.

Audit and assessment

In 2013, PowerStream completed 234 of the total targeted 360 audits for the BRI program. Audits were somewhat behind target in part because of the later than anticipated start-up date, and because installations lagged the audits and PowerStream did not want people to have to wait an excessive amount of time between the audit and the installation.

Overall, participants said that they were generally pleased with the audits and were appreciative that PowerStream staff were closely involved in each stage of the program delivery. Figure 1 below provides a breakdown of customer satisfaction level based on a survey of 82 customers who completed the audit phase of the BRI program.

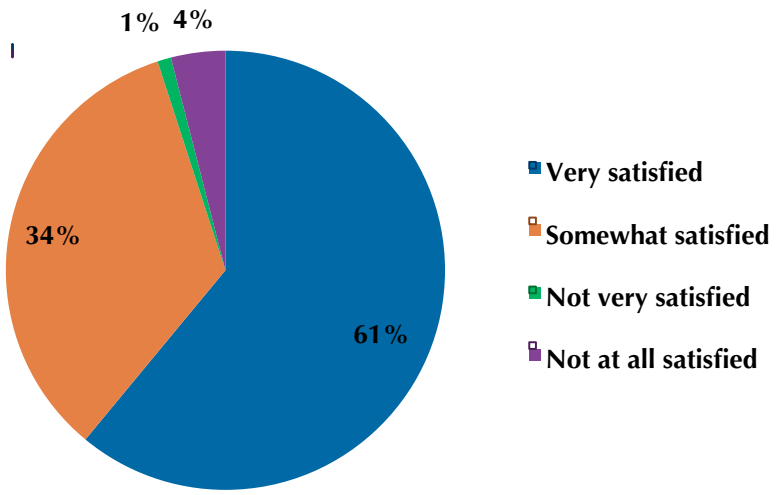


Figure 1 Satisfaction of survey respondents who completed the audit phase

The main reason for dissatisfaction was that the audit did not include enough information or was difficult to understand (20% of respondents indicated this). However, over three-quarters of full and partial participants agreed or strongly agreed that the auditor clearly explained the purpose of the audit (83%), was able to adequately identify energy savings (78%), and was able to help with any questions the customer had regarding equipment in their facility (78%). Of the 234 customers who were audited, 217 signed up for an assessment/installation. Due to the high demand for audits, PowerStream increased the number of auditors available (from one to two then to three).

PowerStream (and others) have pointed to the challenges in identifying suitable auditors for existing programs, and indicated this might be a problem for a greatly expanded program.

PowerStream also updated the original Energy Action Plan by automating and scaling back the audit process. As a result, more audits were conducted partway through the first year. A maximum of four one-hour audits were completed each business day. Audits included a walk through (not a complete inventory) and energy benchmarking. Customers received a brief report from the auditor, which was also passed directly to the installers. Overall, survey respondents were satisfied with the Energy Action Plan and indicated that the plan was understandable (82%), useful (82%) and at an appropriate level of detail (85%).

Measure installation

As outlined in the initial program plan, information from the audit went on to the assessor who then sub-contracted the work out to the

installers.[1] PowerStream then reviewed the bill of materials prior to the installation to ensure all of the energy saving opportunities were being captured. The contractor found that the time and resource requirements for undertaking the assessment were significant due to the nature of the equipment and the needs for disassembly, in some cases, to identify retrofit opportunities. It was deemed more efficient to undertake the retrofit right away, rather than to schedule an additional visit. In response, PowerStream integrated the assessment and installation stages of BRI program delivery. The installers, along with site owners, made the final decisions on what equipment was to be updated and what the overall retrofit involved.

In the next year of the program, PowerStream should ensure it has a good understanding of two issues related to this change:

- The customer's and installer's choice of measures to implement may be based on criteria other than energy savings and demand reductions. For example, customers may be motivated by extending the life of their equipment, and installers may prefer measures that are quick and easy to install. PowerStream will want to ensure that it captures information on the total range of measures that could be implemented in each facility. This will help to assess whether customers' and installers' choices are sub-optimal, and will also help to assess whether the maximum budget allocated for each customer should be revisited as the program is extended.
- The inventory needs for an integrated process. Knowledgeable refrigeration contractors will know what equipment types to expect, based on information from the audit, and can ensure that the appropriate range of measures are on-hand. This knowledge will improve over time. PowerStream will want to ensure that opportunities are not being lost because of inadequate on-truck stock.

Despite some minor issues, most customers who completed the installation phase were satisfied with the process. Figure 2 below provides a breakdown of customer satisfaction level based on a survey of 54 customers who completed the installation phase. However, these satisfaction levels are lower than what PowerStream has seen for other services it provides, where annual customer satisfaction surveys have seen a satisfaction level of 86% to 88%.

[1] The BRI program allows customers who wish to do so to use their own installer. Review mechanisms will likely be required to ensure installations are consistent with overall program parameters, but this also has the potential to involve a broader range of contractors in the program, bringing more experience in the industry, and better insight for PowerStream of the sector, its needs and challenges.

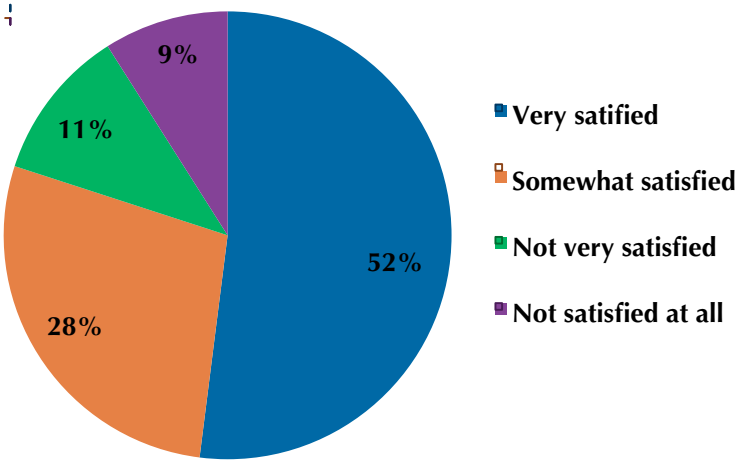


Figure 2 Satisfaction level of survey respondents who completed the installation phase

Reasons for dissatisfaction include: work not being completed as promised (24%), contractor was in a rush or did not keep the appointment (9%), contractor did not have the proper parts (6%), the work took longer than expected (4%), and the customer was not convinced that there are any real savings (4%).

Table 4 below provides a summary of how much respondents strongly agreed or agreed with the following statements related to the installation phase. The remainder of respondents either disagreed, strongly disagreed or neither agreed nor disagreed.

Table 4 Reasons for satisfaction from survey respondents who completed the installation phase

Reason	Strongly agree / agree
I was able to schedule a time for the installation that was convenient for me.	83%
The Installer arrived at the scheduled time.	83%
The Installer made an effort to ensure that the installation did not disrupt my business operations.	83%
The Installer's work was completed in a professional manner.	78%
I was given the opportunity to express my views on which equipment I preferred to be retrofitted.	70%
The Installer was able to help me with any questions I had regarding the equipment in my facility.	70%
The Installer clearly stated which equipment would be retrofitted, and provided suitable reasoning.	69%
The Installer had all the necessary equipment to complete the retrofit.	69%

In light of some of these values, and some of the findings of the QA/QC checks, discussed below, PowerStream is considering what sorts of training contractors require on customer service practices.

Another indicator of satisfaction is the referral rate. 56% of survey respondents indicated that they have recommended the BRI program to business colleagues. Of those who have not recommended the program to a business colleague (yet), 66% said it was somewhat (39%) or very (27%) that they would recommend the program to a business colleague.

Notwithstanding these generally favourable comments from participants, all parties involved in the project (PowerStream, the contractor and the EM&V team) are concerned about the slow pace of installations, and initiated steps in 2013, which have continued into 2014 to accelerate the rate of installations, while ensuring that installations are effective, thorough and of high quality.

Some of the obstacles to a faster installation rate included difficulties in contracting with qualified installers, getting the technology to be installed, and maintaining sufficient inventory on hand to address the widely varying technologies and situations encountered in the field. Towards the end of the year, PowerStream began to receive inquiries from additional contractors about the program, and from distributors interested in carrying inventory of measures used in the program. These are positive signs.

Among the steps that PowerStream has taken to improve the rate of installation are:

- Constant monitoring of the rate of installation, the value of measures installed (including relative to what was identified in the initial audit), and close communication with the contractor engaged to deliver the program.
- Changes to the installation protocol, to eliminate see whether the assessment and installation phases could be integrated, and attempting to ensure installer's vehicles have an extensive inventory of potential measures.
- Engaging additional contractors, independent of the originally contracted firm, to assess whether challenges faced are endemic to the program, or specific to the delivery firm.
- Exploring different contractor payment models to explore whether the contractor's and the program's objectives can be aligned.
- Discussions with additional distributors about their ability and willingness to stock the technology measures required by the program.
- Providing additional training to auditors (e.g. by shadowing installers) so that they have a better ability to identify potential savings.

Quality assurance / quality control visit

Upon completion of the audit and installation, in early 2014 PowerStream conducted quality assurance / quality control (QA/QC) visits of a representative sample of participating facilities (17 businesses). The purpose of the visits was to collect information for EM&V and reinforce participants' confidence in the program. The following table lists the QA/QC inspection criteria that were evaluated during the visits and the outcome.

Table 5 QA/QC inspection criteria for 17 participating businesses

Criteria	Yes	No	N/A / unknown
Was the assessor (contractor) on time?	94%	-	6%
Did the assessor have PowerStream branding to identify themselves as representing PowerStream?	100%	-	-
Was the assessor polite and professional?	94%	6%	-
Was the assessor's vehicle in good repair?	100%	-	-
Did the subcontractor install equipment in a safe manner?	94%	6%	-
Was the work done in an eligible manner, and was it installed in accordance with the program requirements?	88%	12%	-
Was the site left clean and all old materials removed from the site for proper decommissioning / recycling?	100%	-	-
Did the Participant sign the work order?	76%	12%	12%
Were all the other requirements of the Work Order and Participant Agreement complied with?	100%	-	-
Did the contractor complete all reasonable and eligible measures to maximize the incentive?	29%	71%	-
Did the subcontractors leave the Participant details of the warranty?	12%	82%	6%
Did the subcontractors leave the emergency contact information in case of premature equipment failure?	12%	82%	6%

Overall, 41% of customers indicated that all eligible measures as noted in the audit were installed; however, 53% stated that less than 75% of eligible measures were installed. Common comments and suggestions for improvement are listed in Table 6 below.

Table 6 Common comments and corrective actions from QA/QC visits of 17 participating businesses

Comment	Corrective action
Participant was lead to believe the contractor would be returning to the site to finish installation, but contractor never did.	Contractor should complete the installation or contact the participant to inform them that the installation has been completed.
Contractor did not leave behind a phone number or warranty paperwork.	Contractor should follow-up with the participant and provide contact information and warranty paperwork.
Contractor did not install certain measures that were identified in the audit and participant is still in the dark if any other measures will be implemented.	Contractor should follow-up with the participant and explain why certain measures were not installed or work with participant to install remaining eligible measures.
Participant was not given proper notice by the contractor and did not know the appointment time.	Contractor should contact participant ahead of time and ensure participant is aware of appointment time.

Table 5 makes clear that a number of customer service expectations were not being met for those customers with whom follow-up occurred, further pointing to the need for contractor training on customer service.

Customer satisfaction survey

A survey was delivered to 103 full or partial program participants in April 2014 to gather feedback and collect information on their experiences. Nineteen non-participants were also surveyed to understand the reasons for opting out of the BRI program. Table 7 below provides details on the firmographics of the full and partial program participant survey respondents.

Table 7 Firmographics of full and partial participant survey respondents

Firmographic	Full-participants	Partial-participants	Total
Rent	88%	81%	
Own	12%	19%	
Branch of a chain	0%	6%	
Franchise	44%	32%	
Independently owned	56%	62%	
Restaurant			59%
Other (not restaurant)			41%

Reasons for participation

When full and partial program participants were asked why they first decided to participate in the BRI program, 75% indicated that both of the following reasons were equally motivating factors:

1 The opportunity to have the energy usage in my facility reviewed by an energy efficiency expert.

2 The offer of up to $2500 in free energy efficiency upgrades for my facility.

Further to this, survey respondents were asked how appealing they found certain aspects of the program. Table 8 summarizes the percentage of respondents who indicated the program elements were either very appealing or somewhat appealing. The remainder of respondents either found them not very appealing, not at all appealing, or were unable to say.

Table 8 Degree of program aspect appeal to full and partial program participant survey respondents

Program aspect	Very appealing / somewhat appealing
The program is offered by PowerStream.	92%
The program is designed to help me reduce my electricity bills.	92%
The program will pay for the first $2500 of equipment I need.	92%
The program saves me from having to find a contractor.	84%

Reasons for non-participation

The following table summarizes the main reasons why business owners opted out of the BRI program based on the survey results of 19 respondents. The percentages provided indicate whether respondents strongly agreed or somewhat agreed with the accompanying statements.

Table 9 Reasons for non-participation in the BRI program

Reason for non-participation	Strongly agree / somewhat agree
I do not have time to participate in the BRI program.	59%
I am concerned about the costs associated with the BRI program.	85%
I am worried I will not be able to choose my own contractor.	46%
I feel retrofitting my equipment will not make my business any more energy efficient.	38%
Making changes to my equipment creates too large a risk of disruptions to my business.	48%
I do not understand the BRI program and why I am being approached about it.	64%

Program outcomes and referrals

At the time of the survey, 56% of respondents said that they had already recommended the BRI program to business colleagues, and 66% of respondents who had not yet recommended the program said that they were likely or very likely to recommend the program in the future. A very high majority (91%) indicated that they were very or somewhat likely to participate in other *saveONenergy* programs, and 89% said they were very or somewhat likely to implement other energy saving measures in their facilities in the future.

Overall program administration

Although not a step in the program *per se*, PowerStream has also developed thorough tools and process for managing the program, including: a comprehensive database on program participants that tracks both information about the participants as well as their status within the program (the CRM), weekly 'dashboard' reports on progress in the preceding week, issues that require resolution, and their urgency, and processes to follow up with customers when problems are identified.

PowerStream has (and continues) to make improvements to the program administration as needs or opportunities are identified.

Impact evaluation

In this section we consider various components of the impact evaluation, which measures energy savings and demand reductions from activities in 2013. The discussion takes into account:

- Gross prescriptive energy savings and demand reductions
- Realization factors for prescriptive energy savings and demand reductions
- Net energy savings and demand reductions
- Other impacts from the programs.

Gross prescriptive energy savings and demand reductions

Gross prescriptive energy savings and demand reductions are estimates savings and reductions made based on values from the literature, and without accounting for free riders or spill over.

PowerStream records in its database the date install was completed, and the work order showing what specific measures were undertaken or installed. In 2013, the measures outlined in Table 3 would result in savings of 87,978 kWh and a reduction of 9.88 kW in 2013 applying the prescriptive values, as shown in Table 10.

Table 10 Estimated 2013 gross energy savings and demand reductions (based on prescriptive saving estimates)

Measure	# installed in 2013	Gross demand savings per unit (kW/unit)	Gross first year energy savings per unit (kWh/unit)	Total estimated gross demand reduction (kW)	Total estimated gross first year energy savings (kWh)	Total estimated energy savings 2013-2014 (kWh)
Anti-sweat heater control - cooler (per door)	0	0.51	1250	0	0	0
Anti-sweat heater control - freezer (per door)	0	0.51	1250	0	0	0
Strip curtains - walk-in cooler	2	0.434	486	0.868	972	1,944
Strip curtains -- walk-in freezer	1	0.573	642	0.573	642	1,284
Night curtains on cases	0	0	888	0	0	0
Clean condenser coils - cooler	43	0.05	438	2.15	18,834	18,834
Clean condenser coils - freezer	3	0.18	1576.8	0.54	4,730	4,730
ECM fan motor upgrade	46	0.091	1202	4.186	55,292	110,584
LED case lighting	34	0.046	220.8	1.564	7,507	15,014
Total				**9.881**	**87,978**	**152,391**

In addition to these savings, there is anecdotal information about savings that occurred as a result of the audits themselves. For example, one audited facility was found to have an inappropriately programmed thermometer and once this was corrected, there were significant reductions in overall electricity use. Unfortunately, there is not a practical way to identify all measures taken as a result of the audits, and to report on energy savings (or demand reductions) associated with them.

In addition to these savings, there were potential interactive effects of these measures, e.g. in reducing the air conditioning load of the facility where the refrigeration unit runs more efficiently. These will be estimated for the program in the 2014 evaluation.

Realization factor and adjusted gross energy savings

Monitoring was undertaken of 19 facilities and 82 cooler or freezer units over the period between September 2013 and April 2014 to measure actual energy savings that were realized from measures installed in these units.[2] To measure actual savings, a data logger was placed on units at randomly selected facilities for approximately five week periods consisting of two weeks before installs were undertaken, a week during installs, and two weeks after measures were installed.

One expects the actual measurements to deviate somewhat from the literature values for numerous reasons, including natural variation in the population of refrigerators (e.g. age, usage patterns, size, etc.), variation in the measures installed (e.g. capacity of motor, type of LED lamp, etc.) To account for this, actual observations are compared to expected savings, and the ratio of these is the 'realization rate'.

We were, however, surprised by how much variation was observed across the units measured, with a number of units using *more* electricity after measures were installed. Although in some cases there are clear explanations for why this might be, in others there is no obvious reason.

Because multiple measures were often installed on the same refrigeration unit, it is not fully possible to estimate energy savings attributable to individual measures across the population of units monitored. However, we are able to calculate the total realization rate in all of the units monitored (which had a different mix of measures than were in the sample of completed installs in 2013), and in some cases, units only had a single measure installed. The resulting realization rates from these comparisons are presented in Table 11.

Table 11 Realization rates (actual/prescriptive values)

	Number of measures	Summer demand reductions	Winter demand reductions	First year energy savings
For all units monitored	215	0.64	0.57	0.67
Night curtains on cases	1	-	-	0.02
Clean condenser coils - cooler	13	2.17	1.72	1.32
Clean condenser coils - freezer	4	0.09	0.18	(0.06)
ECM fan motor upgrade	10.5	1.83	1.65	1.20

These numbers suggest that energy savings for ECM motors are 20% higher than the value from the literature, but night curtains are only 2

[2] Because only four facilities in total, and only one in which the installs had been completed in 2013, were monitored in 2013, we have chosen to look at the larger pool of observations available through April 2014.

percent of the savings reported in the literature. However, even within these groups, the variation is huge. The standard deviation for the 13 cleaning condenser coils – coolers is almost double the mean savings.

Net energy savings and demand reductions

Net energy savings and demand reductions are estimated by applying a "net to gross factor" that may take into account a number of components, most typically spillover and free riders.

Spillover

"Spillover" measures impacts of the program, beyond those directly associated with the measures installed by the program. In the context of this program, these might include:

- Measures taken by non-participants because of the existence of the program but not measured by the program. For example, non-participants may hear about the program and implement some of the measures on their own, even though they decide not to participate in the program.
- Measures taken by participants because of their experience with the program, but not measured by the program. For example, a participant choosing to implement energy efficiency measures in other, non-refrigeration parts of his or her facility.

A significant number (89%) of survey respondents indicated they expect to implement other energy saving measure in their facility in the future, as a result of having participated in the BRI program. Of those, 58% said they were 'very likely' to, and 31% said they were 'somewhat' likely to. Unfortunately, responses were not specific enough to measure the savings likely to accrue.

In addition, 91% said they were likely to participate in other saveONenergy program, with most of those (71%) saying they were very likely to.

Free riders

Free riders are persons who would have adopted the technologies or behaviours promoted by the program even if the program did not exist. The free rider rate can only be estimated, using a number of methodologies. For this project, the free ridership is estimated based on responses to questions to the program participants.

We estimate the free rider rate based on responses to questions related to whether the participants had plans to undertake an audit or upgrade their refrigeration system prior to hearing about the program, whether the program made it possible for them to implement the measures earlier than they otherwise would have, and how important energy and energy efficiency is to their overall business plans. We also asked them

what about the program was appealing to them, including whether they saw advantage to not having to find a contractor to undertake the work.

Depending on their answers to the questions, they were identified as a free rider, a partial free rider, or not a free rider.

In addition to these considerations, which speak to the *intent* of participants, we also considered the availability of individual measures, and whether or not participants likely would have had the *ability* to implement these measures in the absence of the program. At least in 2013, several of the measures that are part of the program were extremely difficult to acquire, and it would not have been simple for a participant to obtain the technology required. A qualitative assessment of ability to obtain the technology was applied to each measure offered by the program to get a measure specific free rider rate.

In a survey of firms involved in the program in April 2014, 54 facilities indicated that they had completed the installation phase of the project. Of these, 4% indicated they had specific plans to improve their refrigeration program before signing up for the program, and 30% indicated they were considering doing so. All but one of those who were considering upgrades indicated that they were able to have improvements to their refrigeration equipment done earlier than otherwise would have happened.

We also asked representatives from these companies how important energy efficiency was to their business plan. A majority (56%) chose "Important, my business plan is influenced by my desire to achieve energy efficiency in my facility" and 44% chose "Important but only after all other needs of the business are fulfilled." All those indicating they had specific plans chose the "important" option, as did 59% of those 'considering' upgrading their refrigeration equipment. The remainder of the 'considering' group, 41%, chose the 'important but' response.

All but one of the respondents who had completed installations indicated that one of the benefits of the program was that it saved them having to find a contractor to do the work, suggesting they were not likely in a position to proceed with the work in the near term in the absence of the program.

We assigned scores that estimate the extent of free ridership based on participants' response to these questions as shown on Table 12.

Table 12 - Rating of partial free riders based on responses to survey

Responses	% Free rider	% of participants
Had specific plans, completed earlier because of the program, and consider energy efficiency as 'important'	75%	4%
Were considering upgrades, completed earlier than would otherwise have happened, and consider energy efficiency as 'important but'	10%	13%
Were considering upgrades, completed earlier than would otherwise have happened, and consider energy efficiency as 'important'	25%	17%
Were considering upgrades, didn't have earlier completion as a result of the program, and consider energy efficiency as 'important'	50%	2%
Did not have plans to upgrade their refrigeration equipment	0%	65%

We would have expected a full free rider to have had specific plans, not have completed the installation earlier, and to not see a benefit from the program finding him a contractor. A full free rider would also likely consider energy efficiency as 'important'.

Combining the partial free rider rating with the incidence gives an overall free ridership rate of 9.2%. As discussed above, this considers only 'intention' of participants.[3]

Program contractors found it difficult to obtain some of the measures, and the difficulty of acquiring and maintaining the technologies was one of the constraints on the number of installs completed. These suggest it would have been very difficult for participants to have installed these measures in the absence of the program, and the free ridership was decreased to reflect this difficulty. Estimates of the difficulty of obtaining the measures, a rating of this difficulty, and the resulting free ridership by measure are estimated as follows:

[3] Using a similar methodology, the free ridership for the audits is estimated to be 9.8%, but this is not used because it is not possible to estimate energy savings from the audit component of the program alone.

Table 13 Adjusted free rider rates and net to gross ratio

	Contractor rating of difficulty (1-5)	Ease of obtaining	Adjusted free rider	NTGR
ECM fan motor upgrade	1		-	1.00
Clean condensor coils - Cooler	5	1	0.09	0.91
LED case lighting	2	0.25	0.02	0.98
Clean condenser coils - Freezer	5	1	0.09	0.91
Strip curtains - Walk-in cooler	4	1	0.09	0.91
Strip curtains - Walk-in freezer	4	1	0.09	0.91
Night curtains on cases	3	0.75	0.07	0.93
Anti-sweat heater control - Cooler	2		-	1.00
Anti-sweat heater control - Freezer	2		-	1.00
Total (kW savings)			0.042	0.96
Total (kWh savings)			0.028	0.97

NOTE: Total free rider rates and NTGR are based on a weighted average taking into account the number of installs completed in 2013 and their prescriptive gross energy savings.

Applying the realization rate from Table 11 to the net energy savings above, in Table 13 results in an overall estimate of energy savings and demand reductions:

Table 14 Estimate of net energy savings and demand reductions from the program in 2013

	Gross savings	Realization rate	Adjusted gross savings	Net to gross factor	Net savings
Energy (kWh)	87,978	0.67	59,092.55	0.972	57,427
Summer peak demand (kW)	9.88	0.64	6.31	0.958	6.05
Winter peak demand (kW)	10	0.57	5.64	0.958	5.40

Cost-effectiveness evaluation

The Ontario Energy Board expects that programs offered by LDCs will be cost-effective, as measured by various tests prescribed by the Ontario Power Authority, and in particular the Total Resource Cost test (TRC) and the Program Administration Cost test (PAC). A description of these and how they are calculated is provided in the OPA's *Cost Effectiveness Guide*.[4]

The TRC test compares anticipated benefits (in avoided energy use and demand) over the life of the measure against the costs of the program (technology and administration) over its life. All dollars are expressed in present value. The PAC test considers only costs borne by the LDC for incentives and administration.

The benefits associated with the net energy savings and net demand reductions identified above, over the weighted average life of the measures installed have a value of $32,850 as expressed in 2013 dollars. (It is not feasible to calculate the benefits on a measure by measure basis because of the way measures were installed in groups on the same refrigeration units.)

The program costs in 2013 were $6,445 for variable costs (including customer incentives and program administration fees) and $416,783.17 for fixed costs (including labour, legal, shared services marketing, EM&V, telephone and other).

The net TRC benefits are thus -$390,000, suggesting the program was not cost effective in 2013. (The PAC test results are the same, as no participant incurred costs for technologies, which were all covered by the program.)

Significant program initiation costs were incurred in 2013, and as noted above only 6 installations were completed, though 269 participants had registered, 217 participants had signed agreements, and 234 field audits had been completed. Thus it cannot be concluded that the negative results as of the end of calendar 2013 are indicative of the program as a whole not being cost effective.

The OPA's cost effectiveness guide recognizes that the sort of situations described above are typical of multi-year programs, and suggests that annual reporting may be done for information purposes, but that the overall cost effectiveness assessment should be based on the full duration of the program.

[4] Ontario Power Authority. 2010. *Conservation and Demand Management Cost Effectiveness Guide*. Available at http://www.powerauthority.on.ca/sites/default/files/OPA%20CDM%20Cost%20Effectiveness%20Test%20Guide%20-%202010-10-15%20F.pdf

Conclusions and recommendations

PowerStream's Business Refrigeration Incentives (BRI) program provides several benefits to program participants, each of which is valued by the majority of participants:

- An on-site audit of energy use and major energy using equipment and identification of steps that the customer can take to reduce energy use
- A turnkey installation of up to $2500 worth of energy saving refrigeration equipment.

The program is designed to overcome the barriers to greater energy efficiency in facilities that have significant energy demand for refrigeration.

The program was only initiated in September 2013 and is scheduled to run through 2014. The program encountered a number of challenges that are being addressed by the program administrators.

Process findings

Direct marketing through incoming and outgoing calling is reported as the primary entry point for persons participating in the program, and is where the greatest effort is being extended. This approach appears to be effective.

The initial telephone assessment is effective at assessing eligibility and interest of prospective participants. There is a very low number (3%) of participants dropping out of the program once they pass this screen.

The audit is valued highly by program participants, and is important to building rapport between PowerStream and the participants. In theory, it should help participants to think about energy use comprehensively, not just about individual energy using parts of their business (like refrigeration). A high percentage of participants surveyed who had completed only the audit stage of the program indicated an intention to take other measures to reduce energy use, and to participate in other saveONenergy programs. However, is has proven difficult to attribute specific energy savings to the audits.

The installation stage of the program has encountered significant problems. As a result, installs completed in 2013 were far below targeted numbers. PowerStream has been addressing these problems proactively, and the pace of installs has picked up dramatically since December of 2013.

Overall, the program is being carefully and comprehensively managed, with a state of the art CRM system that captures customer information and tracks progress. The system is being refined as opportunities and needs are identified.

Impact findings

In 2013, there were significantly fewer installations than had been planned for reasons including: the late start of the program, challenges in getting qualified installers, and problems getting access to the technological measures needed for the installations. Consequently, the impact of the program was less than hoped for during the planning stages. An overview of the key program results in presented in Table 15.

Table 15 Overview of impact results

Program metric for 2013	Finding
Number of participants	269
Number of audits completed	234
Number of installs completed	6
Average cost of measures installed	$ 2,052
Summer demand realization rate	0.64
Winter demand realization rate	0.57
Energy realization rate	0.67
Gross verified summer demand savin	6.31
Gross verified winter demand savings	5.64
Gross verified annual energy savings	59,093
Net to gross ratio (demand)	0.96
Net to gross ratio (energy)	0.97
Net summer peak demand savings (k	6.05
Net winter peak demand savings (kW	5.40
Net annual energy savings (kWh)	57,427

The realization rates are from units that had monitoring equipment installed on them through April 2014. In most cases, it was not possible to attribute specific savings to specific measures, and there is a wide variation in the savings realized due to factors related to usage, variation in equipment size (e.g. for motors), severity of cleaning required/done (for condenser coil cleaning), and other factors. In many cases, it is not clear what circumstances the prescriptive values are associated with.

As expected, free ridership for the program (estimated for all participants through April 2014) was very low as this is a sector that does not regularly invest in energy efficiency improvements. Their ability to do so is compounded by the unavailability of many retrofit technologies in the market.

Conclusions and recommendations

Process

On the process side, most aspects of the program are working very well, though the pace of installs to the end of December 2013 was far

below expectations, even when the late start to the program is taken into account. Three issues in particular must be addressed:

- Ensuring that appropriately qualified installers are identified, and that the compensation offered to them is sufficient to sustain their interest in the program
- Working with equipment distributors to encourage them to stock refrigeration retrofit technologies
- Constructing processes and compensation schemes that ensure program objectives and installer objectives are aligned. For example, ensuring that the installer is not encouraged to skimp on measures because his or her on-truck inventory is inadequate, or that it is less lucrative to install measures that are more difficult to install but that yield greater energy savings.

PowerStream has already taken steps to address each of these, though the latter of these will be a continuing challenge for this (and other programs). PowerStream is addressing the latter one by considering increasing the payments per measure, and involving additional contractors with different payment structures.

A significant change in the original program concept was the integration of the assessment and installation stages. The advantage of integrating these stages is that one less site visit is required, and the contractor felt the work to complete the install was only a marginal increase over the work to conduct the assessment, for example if equipment had to be opened up to determine what installation would be possible. The disadvantages of removing this stage include: the contractor does not know what equipment will be needed, and will require a large inventory to meet all potential needs, the customer has limited opportunity to consider what retrofits make the most sense within the $2500 limit, or whether he or she is in a position to go beyond the $2500, and finally, the monitoring of units for EM&V purposes requires the data logger installer to guess which equipment will be retrofitted, and risks monitoring equipment that isn't retrofitted.

The results of the survey of participant satisfaction, and the QA/QC follow up suggest there is an opportunity for better training of installers in customer service, and program expectations.

Impact

On the impact side, the program was only just beginning in 2013 and the impact results are less than expected, but overall results cannot be inferred from these early results, which are limited primarily by the small number of installations completed.

The data for the units that were monitored before and after implementation show a fairly low overall realization rate, and there is significant variation across units and facilities. Some of this variation is inevitable as a result of variations in activity within facilities and other exogenous factors. Some of it relates to variations within the measures

(e.g. motor capacity) that is not reflected in the prescriptive values. It would be helpful to have additional information on equipment characteristics, and the changes made (e.g. sizes of motors removed and the replacement motor, a qualitative assessment of how dirty condenser coils are, and whether a motor replaced is a condenser motor).[5]

Ideally, PowerStream would want to be able to assess the impact of the audit stage of the process, which would require specific information in the audits on measures to be taken, and subsequent follow-up to see whether recommended actions were implemented. This is not part of the project plan, and it is not clear whether it would be practical to measure the impact of recommended actions. It is likely that the measurable benefits of the audit stage will only be able to be measured as the qualitative value placed on it by customers.

[5] Information on equipment sizes is shown on facility invoices, but is not reported by unit, which is how impacts are being measured, and all units in a facility may not be logged.

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Appendix B: Activities by Initiative – Residential Program

A. APPLIANCE RETIREMENT INITIATIVE (Fridge and Freezer Pick-Up)

Target Customer Type(s): Residential Customers

Initiative Frequency: Year-round

Objectives: Achieve energy and demand savings by permanently decommissioning certain older, inefficient refrigeration appliances located in Ontario.

Description: This is an energy efficiency Initiative that offers individuals and businesses free pick-up and decommissioning of old large refrigerators and freezers. Window air conditioners and portable dehumidifiers will also be picked up if a refrigerator or a freezer is being collected.

Targeted End Uses: Large refrigerators, large freezers, window air conditioners, and portable dehumidifiers.

Delivery: OPA centrally contracts for province-wide marketing, call centre, appliance pick-up, and decommissioning process. LDC provides local marketing and coordination with municipal pick-up where available. Additional detail is available:

- saveONenergy website https://saveONenergy.ca/Consumer/Programs/Appliance-Retirement.aspx

In Market Date: March 2011 – PowerStream began offering Appliance Retirement soon after the Master Agreement was signed. Since Appliance Retirement is an initiative that was familiar to the customers, and there was minimal change to the initiative design compared to its predecessor program (The Great Refrigerator Roundup), the transition and launch of this initiative was simple and fast.

Initiative Activities/Progress: Please refer to Table 9 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- Due to the duration of the program, and the revised eligibility requirements to a minimum of 20 years old, this Initiative appears to have reached market saturation and has been under consideration for removal from the Portfolio.
- Rather than strictly remove this Initiative from the schedules, the OPA and LDCs could review what opportunities there are to include other measures such as stoves, dishwashers, washers and dryers. The framework of this Initiative may be a suitable foundation for a more holistic residential appliance retirement program. As such, the Residential portfolio could be strengthened through program evolution rather than weakened through diminished program offerings.
- As participation is very responsive to province wide advertising, OPA province-wide advertising should continue to play a key role if the initiative continues.
- Better relationships with retailers may play a role in increasing participation in this Initiative. Retailers can provide opportunities to capture replacement appliances and have them decommissioned after a sale has been committed.
- In an effort to capture additional savings in the perceived last year of the Initiative, the eligibility requirement for refrigerators was revised from 20 years old to 15 years old in Q2 2014.

B. APPLIANCE EXCHANGE INITIATIVE (Exchange Events)

Target Customer Type(s): Residential Customers

Initiative Frequency: Spring and Fall

Objective: The objective of this initiative is to remove and permanently decommission older, inefficient window air conditioners and portable dehumidifiers in Ontario.

Description: This initiative involves appliance exchange events. Exchange events are held at local retail locations and customers are encouraged to bring in their old room air conditioners (AC) and dehumidifiers in exchange for coupons/discounts towards the purchase of new energy efficient equipment. Window air conditioners were discontinued from the program in 2013.

Targeted End Uses: Window air conditioners and portable dehumidifiers

Delivery: OPA contracts with participating retailers for collection of eligible units. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Consumer/Programs/EXCHANGE-EVENT.aspx

In Market Date: May 2011 – PowerStream, together with the participating retailers in PowerStream's service area, began offering Appliance Exchange in the spring of 2011.

Initiative Activities/Progress: Please refer to Table 9 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- The design of the Initiatives, including eligible measures and incentives amounts are developed through the Residential Working Group. Retail Partner(s) are contracted by the OPA to deliver the initiatives province-wide. Individual LDCs have the opportunity to stage in-store events to drive the distribution of LDC coded Coupons and promotion of other programs in the portfolio.
- The restrictive, limited and sometimes non-participation of local stores can diminish the savings potential for this Initiative.
- To date there has only been one retailer participant in the Appliance Exchange Initiative.
- In 2012 there was a decrease in the number of window air conditioners being received through the program. A review of eligible measures in the Appliance Exchange program was conducted, and as these units are not cost effective on their own it was determined that they be removed from the program in order to improve the overall cost effectiveness of the Initiative.
- Notification to LDCs regarding retailer participation and eligible measures continues to be delayed. Improved communications will aid in appropriate resource allocation and marketing of the Initiative.
- This Initiative may benefit from the disengagement of the retailer and allowing LDCs to conduct these events, possibly as part of a larger community engagement effort, with the backing of ARCA for appliance removal.
- The initiative appears to require more promotion from retailers and LDCs.

C. HVAC INCENTIVES INITIATIVE (Heating and Cooling Incentives)

Target Customer Type(s): Residential Customers

Initiative Frequency: Year-round

Objective: The objective of this initiative is to encourage the replacement of existing heating systems with high efficiency furnaces equipped with Electronically Commutated Motors (ECM), and to replace existing central air conditioners (CAC) with ENERGY STAR® qualified systems and products**.**

Description: This is an energy efficiency initiative that provides rebates for the replacement of old heating or cooling systems with high efficiency furnaces (equipped with ECMs) and ENERGY STAR® qualified CACs by approved Heating, Refrigeration, and Air Conditioning Institute (HRAI) qualified contractors.

Targeted End Uses: Central air conditioners and furnaces

Delivery: OPA contracts centrally for delivery of the program and distributors are encouraged to convince local contractors to participate in the initiative. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Consumer/Programs/HVAC-Rebates.aspx

In Market Date: March 2011 – PowerStream began offering HVAC Incentives Initiative (HVAC) soon after the Master Agreement was signed. Since HVAC is an initiative that is familiar to the customers, and there was minimal change to the initiative design compared to its predecessor program (Heating and Cooling Rebates), the transition and launch of this initiative was simple and fast.

Initiative Activities/Progress: Please refer to Table 9 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- Incentive levels appear to be insufficient to prompt customers to upgrade HVAC equipment prior to end of useful life. An Air Miles incentive was introduced in 2013 to try and encourage early replacement.
- This Initiative is contractor driven with LDCs responsible for marketing efforts to customers. More engagement with the HVAC contractor channel should be undertaken to drive a higher proportion of furnace and CAC sales to eligible units.
- In an effort to build capability, mandatory training has been instituted for all participating HVAC contractors. This could present too much of a barrier for participation for some contractors as the application process already presents a restriction to contractor sales. It has been noted that there are approximately 4500-5000 HVAC contractors in the Province, however in 2013, only a total of 1,587 contractors completed the mandatory HVAC training and can participate in the program.
- There are cases where non-participating contractors are offering their own incentives (by discounting their installations to match value of the OPA incentive). As this occurs outside of the Initiative, savings are not credited to LDCs. OPA should consider this in future program impact evaluation studies.
- Changes to the Schedule in 2014 to allow for incentives for new installations, rather than strictly replacement units, may provide greater Initiative results.

D. CONSERVATION INSTANT COUPON BOOKLET INITIATIVE (Coupons)

Target Customer Type(s): Residential Customers

Initiative Frequency: Year-round

Objective: The objective of this initiative is to encourage households to purchase energy efficient products by offering discounts.

Description: This initiative provides customers with year-round coupons. The coupons offer instant rebates towards the purchase of a variety of low cost, easy to install energy efficient measures and can be redeemed at participating retailers. Booklets were directly mailed to customers and were also available at point-of-purchase. Downloadable coupons were also available at www.saveoneenergy.ca.

Targeted End Uses: ENERGY STAR® qualified standard compact fluorescent lights (CFLs), ENERGY STAR® qualified light fixtures, lighting control products, weather stripping, hot water pipe wrap, electric water heater blanket, heavy duty plug-in timers, advanced power bars, clothesline, and baseboard programmable thermostats

Delivery: The OPA develops the electronic version of coupons and posts them online for download. PowerStream distributes coupons at local events. The OPA enters into agreements with retailers to honour the coupons. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Consumer/Programs/Instant-Rebates.aspx

In Market Date: March 2011 – PowerStream official launch of the Coupon Initiative was when the OPA began mailing out the year-round conservation booklets to PowerStream customers.

Initiative Activities/Progress: Please refer to Table 9 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- The timeframe for retailer submission of redeemed coupons varies depending on the retailer and in some cases has been lengthy. The delays and incomplete results reporting limits the ability to react and respond to Initiative performance or changes in consumer behaviour.
- Coupon booklets were not printed and mailed out in 2013 so were not widely available to consumers without the ability to download and print online coupons. In addition, consumers may not have been aware of the online coupons. The Initiative may benefit from province-wide marketing as a substitute to a mail out campaign.
- The product list could be distinctive from the Bi-Annual Retailer Event Initiative in order to gain more consumer interest and uptake.
- Program evolution, including new products and review of incentive pricing for the coupon Initiatives, should be a regular activity to ensure continued consumer interest.
- In 2013, LDCs were provided with 3 custom coded coupons. All coupons have been provided with LDC custom coding in 2014 which allows LDCs to promote coupons based on local preferences.
- Consumer experience varies amongst retailers offering Coupon discounts which can limit redemptions. For example, a particular high volume 'participating retailer' does not accept coupons and have their own procedure. In addition, some retailers have static lists of eligible products and will not discount eligible products unless the product on the list.

- The saveONenergy programs would benefit from specific end cap displays, aisle product stands and product-specific areas. Having products throughout a retail environment weakens the impact.

E. BI-ANNUAL RETAILER EVENT INITIATIVE (Retailer Events)

Target Customer Type(s): Residential Customers

Initiative Frequency: Bi-annual events

Objective: The objective of this initiative is to provide instant point of purchase discounts to individuals at participating retailers for a variety of energy efficient products.

Description: Twice a year (Spring and Fall), participating retailers host month-long rebate events. During the months of April and October, customers are encouraged to visit participating retailers where they can find coupons redeemable for instant rebates towards a variety of low cost, easy to install energy efficient measures.

Targeted End Uses: Same as the conservation instant coupon booklet initiative

Delivery: The OPA enters into arrangements with participating retailers to promote the discounted products, and to post and honour related coupons. LDCs also refer retailers to the OPA. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Consumer/Programs/Instant-Rebates.aspx

In Market Date: May 2011 – PowerStream official launch of the Retailer Event is when the participating retailers held their Spring events in 2011.

Initiative Activities/Progress: Please refer to Table 9 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- This Initiative is strongly influenced by the retail participants and has no direct involvement from the LDCs.
- LDCs have the opportunity to stage in-store events to drive the distribution of LDC coded Coupons and promotion of other programs in the portfolio however this requires cooperation from the local retailer and LDC staff bandwidth.
- Limited engagement of local retailers can restrict the savings potential for this Initiative.
- The Product list has changed very little over the past five years.
- Program evolution, including new products and review of incentive pricing for the coupon Initiatives, must be a regular activity to ensure continued consumer interest.
- The Product list could be distinctive from the Conservation Instant Coupon Initiative in order to gain more consumer interest and uptake.
- A review conducted by the Residential Working Group identified three areas of need for Initiative evolution: 1) introduction of product focused marketing; 2) enhanced product selection and 3) improved training for retailers as retail staff tend not to be knowledgeable regarding the products or promotion.
- This Initiative may benefit from a more exclusive relationship with a retailer appropriate to the program. There should be a value proposition for both the retailer and LDC.
- Independently the Retailer Co-op and Bi-Annual Retailer Event Initiative may not present a value for the investment of LDC resources to support these events and should be backed by a strong Residential portfolio.

F. NEW CONSTRUCTION PROGRAM (New Home Construction)

Target Customer Type(s): Residential Customers

Initiative Frequency: Year-round

Objective: The objective of this initiative is to provide incentives to participants for the purpose of promoting the construction of energy efficient residential homes in the Province of Ontario.

Description: This is an energy efficiency initiative that provides incentives to homebuilders for constructing new homes that are efficient, smart, and integrated (applicable to new single family dwellings). Incentives are provided to homebuilders who install energy efficient measures as determined by a prescriptive list or via custom options, or by meeting or exceeding the EnerGuide performance rating system.

Targeted End Uses: All-off switch, ECM motors, ENERGY STAR® qualified CAC, lighting control products, lighting fixtures, EnerGuide 83 whole home, EnerGuide 85 whole homes

Delivery: Local engagement of builders is a responsibility of the LDC and will be supported by the OPA's air coverage driving builders to their LDC for additional information. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Consumer/Programs/New-Residential-Construction.aspx

In Market Date: January 2012 – Although the Schedule was out in 2011, PowerStream was not able to launch the initiative until early 2012. PowerStream placed emphasis on implementing initiatives that are effective and familiar to customers, and offer the greatest ratepayer value and greatest amount of persisting savings.

Initiative Activities/Progress: Please refer to Table 9 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- This Initiative provides incentives to home builders for incorporating energy efficiency into their buildings. To support this, LDCs need to provide education to the consumers regarding the importance of choosing the energy efficient builder upgrade options without an immediate benefit to the consumer.
- In 2012 the application process was streamlined, however continues to be too cumbersome for builders. This combined with limited return has resulted in this Initiative to continue to under-achieve.
- Administrative requirements, in particular individual home modeling, must align with perceived stakeholder payback
- Performance applications are expected to increase in 2014 due to some industry players interest in the Initiative. However, it is anticipated that the performance track will be the primary track used in applications, which provides low savings for the incentive provided. Savings and associated incentives may need to be revised to an appropriate level.
- The addition of LED light fixtures, application process improvement and moving the incentive from the builder to the home-owner may increase participation.
- This Initiative may benefit from collaboration with the Natural Gas utilities.

G. RESIDENTIAL DEMAND RESPONSE PROGRAM (*peaksaver* and *peaksaver* PLUS™)

Target Customer Type(s): Residential and Small Commercial Customers

Initiative Frequency: Year-round

Objective: The objectives of this initiative are to enhance the reliability of the Independent Electric System Operator (IESO)-controlled grid by accessing and aggregating specified residential and small commercial end uses for the purpose of load reduction, increasing consumer awareness of the importance of reducing summer demand, and providing consumers their current electricity consumption and associated costs.

Description*:* In ***peaksaver***PLUS™ participants are eligible to receive a free programmable thermostat or switch, including installation. Participants also receive access to price and real-time consumption information on an In Home Display (IHD).

Targeted End Uses: CACs, electric water heaters, and pool pumps

Delivery: PowerStream manages the initiative, procure the technology, install the control devices (through procured service provider), and promote/market the initiative. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Consumer/Programs/PeaksaverPlus.aspx

In Market Date: January 2011 – This is one initiative that was not halted even though PowerStream did not sign the Master Agreement until end of February 2011. The predecessor program was offered prior to 2011 and was extended until August 31, 2011. The ***peaksaver***PLUS™ initiative was not launched until May 2012 even though the Schedule was out in August 2011. The cause of the delay was primarily the lengthy time spent on studying which IHD technology would best meet both PowerStream and its customers' needs.

Initiative Activities/Progress: Please refer to Table 9 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- In Home Energy Display units that communicate with installed smart meter technology continue to mostly be in the development phase and are not ready for market deployment. There continues to be a lack of Energy Display selection in the marketplace.
- Smart Meters installed by most LDCs do not have the capability to communicate directly to an In Home Display and any mass replacement of newly installed meters with communicating abilities would not be fiscally responsible. When proposing technical Initiatives that rely on existing LDC hardware or technology there should be an extensive consultative process.
- Introduction of new technology requires incentives for the development of such technology. Appropriate lead times for LDC analysis and assessment, product procurement, and testing and integration into the Smart Meter environment are also required. Making seemingly minor changes to provincial technical specifications can create significant issues when all LDCs attempt to implement the solution in their individual environments.
- The variable funding associated with installing a load controllable thermostat is not sufficient unless it is combined with an In Home Display (IHD) which might not be possible all the time and when IHD is optional.
- Given the different LDC environments, and needs, each LDC is positioning the Initiative slightly differently. While a Thermostat has high marketability, it also carries a higher maintenance

liability due to no-heat and no-AC calls. A switch with an independent IHD is seen as a lower liability option but also has a much lower marketability.

- This is the main Initiative within the Residential portfolio that was to drive savings for LDC, however the 2012 evaluation indicated savings realized from the IHD were not statistically significant. LDCs were advised that the evaluation of the IHDs would continue with 2013 data.
- Verified demand savings in 2012 from the load control devices were less than originally anticipated. This prompted an increase to the load cycling strategy in 2013 in order to increase savings closer to the original business case.

Appendix C: Activities by Initiative – C&I Program

A. EFFICIENCY: EQUIPMENT REPLACEMENT INCENTIVE (ERII)

Target Customer Type(s): Commercial, Institutional, Agricultural, and Industrial Customers

Initiative Frequency: Year-round

Objective: The objective of this Initiative is to offer incentives to non-residential distribution customers to achieve reductions in electricity demand and consumption by upgrading to more energy efficient equipment for lighting, space cooling, ventilation, and other measures.

Description: The Equipment Replacement Incentive Initiative (ERII) offers financial incentives to customers for the upgrade of existing equipment to energy efficient equipment. Upgrade projects can be classified into either: 1) prescriptive projects, where prescribed measures replace associated required base case equipment; 2) engineered projects, where energy and demand savings and incentives are calculated for associated measures; or 3) custom projects for other energy efficiency upgrades.

Targeted End Uses: lighting, space cooling, ventilation, and other measures

Delivery: PowerStream manages the initiative, reviews and approves applications, conducts site visits (via third party service providers), pays approved applications, and promotes/markets the initiative. Applications are submitted online via the saveONenergy website. Additional detail is available:

- saveONenergy website https://saveONenergy.ca/Business/Program-Overviews/Retrofit-for-Commercial.aspx

In Market Date: March 2011 – PowerStream began offering ERII soon after the Master Agreement was signed. Since ERII is an initiative that is familiar to the customers, because it was relatively similar to its predecessor program (ERIP), it did not take long to launch this initiative.

Initiative Activities/Progress: Please refer to Table 10 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- A large proportion of LDC savings are attributed to ERII.
- Capability building programs from Industrial programs have had very positive contributions to ERII program.
- This Initiative is limited by the state of the economy and the ability of commercial/institutional facility to complete capital upgrades.
- Applicants and Applicant Representatives continue to express dissatisfaction and difficulty with the online application system. This issue has been addressed by LDCs through application training workshops, Key Account Managers, channel partner/contractor training and LDC staff acting as customer Application Representatives. Although this has been an effective method of overcoming these issues and encouraging submissions, it also reflects on the complexity and time consuming nature of the application process. As such, Applicant Representatives continue to influence the majority of applications submitted. Continued development of Channel Partners is essential to program success.
- Prescriptive and Engineered worksheets provide a much needed simplified application process for customers. However, the eligible measures need to be updated and expanded in both

technology and incentive amounts to address changing product costs and evolution of the marketplace.

- A focus on demand incentives has limited some kWh project opportunities. In particular, night lighting projects have significant savings potential for customers but tend to have incentives of 10% of project cost or less.
- The requirement to have a customer invoice the LDC for their incentive is very burdensome for the customer and results in a negative customer experience and another barrier to participation.
- There is redundancy in the application process as customers may need to complete a worksheet and then enter most of that information over to the online application form. This can be cumbersome.
- Processing Head Office application became much easier for the Lead LDC after Schedule changes came into effect in August 2013. The changes implemented allowed the Lead LDC to review and approve all facilities in a Head Office application on behalf of all satellite LDCs under certain circumstances.
- The application process for Head Office projects remains a significant barrier. Applicants need to manually enter one application per facility associated with the project can be extremely onerous, often requiring a dedicated resource.
- Streamlining of the settlements systems resulted in significant improvement in the payment process in 2013.

B. DIRECT INSTALL INITIATIVE (Small Business Lighting)

Target Customer Type(s): Small Commercial, Institutional, Agricultural facilities and multi-family buildings

Initiative Frequency: Year-round

Objective: The objective of this initiative is to offer a free installation of eligible lighting and water heating measures of up to $1,500 to eligible owners and tenants of commercial, institutional and agricultural facilities and multi-family buildings, for the purpose of achieving electricity savings and peak demand savings.

Description: The Direct Installed Lighting (DIL) Initiative targets customers in the General Service <50kW account category. This Initiative offers turnkey lighting and electric hot water heater measures with a value up to $1,500 at no cost to qualifying small businesses. In addition, standard prescriptive incentives are available for eligible equipment beyond the initial $1,500 limit.

Target End Uses: Lighting and electric water heating measures

Delivery: PowerStream, through a third party service provider, conducts door-to-door blitz on eligible small businesses to encourage participating in the initiative. Participants may also enrol directly with PowerStream. PowerStream's service provider conducts the energy audit/walk-through, the installation of the efficient measure, and the disposal of the old equipment. PowerStream, together with the service provider, were also responsible for marketing and promotion. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Business/Program-Overviews/Small-Business-Lighting-and-AC.aspx

In Market Date: March 2011 – PowerStream began offering DIL soon after the Master Agreement was signed. Since DIL is an initiative that is familiar to the customers, because it was very similar to its predecessor program (Power Savings Blitz), the transition and launch of this initiative was simple and fast.

Initiative Activities/Progress: Please refer to Table 10 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- LED lighting was introduced in 2013 as a new measure and has been well received by customers who may not have previously qualified for DIL eligible upgrades. This is an efficient product with a long estimate useful life.
- Cold start high output lighting was removed from the program. This particularly affected the farming customers who now have limited options within the program to utilize.
- The inclusion of a standard incentive for additional measures increased project size and drove higher energy and demand savings results in some situations. However, LDCs are unable to offer these standard incentives to prior participants. The ability to return to prior participants and offer a standard incentive on the remaining upgrades has potential to provide additional energy and demand savings.
- Many customers are not taking advantage of any additional measures, which may present an opportunity to for future savings with a new program offering.
- Electrical contractor's margins have been reduced due to no labour rate increase, increase cost of materials, greater distances between retrofit and more door knocking required before a successful sale. This has led to a reduction in vendor channel participation in some regions.
- Measure incentives and additional funding for fork lifts were introduced in September 2013 and were well received by installers. However, adjustments like these require longer lead times. As such, many customers were not able to benefit from this change in late 2013. Consideration

should be given to providing advanced notification to LDCs and contractors of the upcoming changes to allow for planning.

C. EXISTING BUILDING COMMISSIONING INCENTIVE INITIATIVE (Commissioning)

Target Customer Type(s): Commercial, Institutional, and Agricultural Customers

Initiative Frequency: Year-round

Objective: The objective of this initiative is to offer incentives for optimizing (but not replacing) existing chilled water systems for space cooling in non-residential facilities for the purpose of achieving implementation phase energy savings, implementation phase demand savings, or both.

Description: This initiative offers participant incentives for scoping study phase, investigation phase, implementation phase, and hand off/completion phase of the project

Targeted End Uses: Chilled water systems for space cooling

Delivery: PowerStream manages the initiative, reviews and approves applications, conducts site visits (via third party service providers), pays approved applications, and promotes/markets the initiative. Paper-based applications are submitted directly to PowerStream. Additional detail is available:

- saveONenergy website https://saveONenergy.ca/Business/Program-Overviews/Existing-Building-Commissioning.aspx

In Market Date: March 2011 – PowerStream began offering Commissioning soon after the Master Agreement was signed.

Initiative Activities/Progress: Please refer to Table 10 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- Initiative name does not properly describe the Initiative.
- There was minimal participation for this Initiative. It is suspected that the lack of participation in the program is a result of the Initiative being limited to space cooling and a limited window of opportunity (cooling season) for participation.
- Participation is mainly channel partner driven, however the particulars of the Initiative have presented a significant barrier for many channel partners to participate.
- The customer expectation is that the program be expanded to include a broader range of measures for a more holistic approach to building recommissioning and chilled water systems used for other purposes should be made eligible and considered through Change Management.
- This initiative should be reviewed for incentive alignment with ERII, as currently a participant will not receive an incentive if the overall payback is less than 2 years.

D. NEW CONSTRUCTION AND MAJOR RENOVATION INITIATIVE (New Construction)

Target Customer Type(s): Commercial, Institutional, Agricultural and Industrial Customers

Initiative Frequency: Year-round

Objective: The objective of this initiative is to encourage builders of commercial, institutional, and industrial buildings (including multi-family buildings and agricultural facilities) to reduce electricity demand and/or consumption by designing and building new buildings with more energy-efficient equipment and systems for lighting, space cooling, ventilation and other measures.

Description: The New Construction initiative provides incentives for new buildings to exceed existing codes and standards for energy efficiency. The initiative uses both a prescriptive and custom approach.

Targeted End Uses: New building construction, building modeling, lighting, space cooling, ventilation and other measures

Delivery: PowerStream manages the initiative, reviews and approves applications, conducts site visits (via third party service providers), pays approved applications, and promotes/markets the initiative. Paper-based applications are submitted directly to PowerStream. Additional detail is available:

- saveONenergy website https://saveONenergy.ca/Business/Program-Overviews/New-Construction.aspx

In Market Date: March 2011 – PowerStream began offering New Construction soon after the Master Agreement was signed. Though the initial approach is to implement it internally, it was re-launched in quarter one 2012 when PowerStream finalized the procurement of a third party service provider to implement the initiative on its behalf.

Initiative Activities/Progress: Please refer to Table 10 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- With the Ministerial Directive issued December 21, 2012, facilities with a completion date near the end of 2014 currently have some security that they will be compensated for choosing efficient measures. However, buildings that are in the planning phase with completion dates post-2015 may not participate due to funding uncertainty.
- Participants estimated completion dates tend to be inaccurate and are usually six months longer. This could result in diminished savings towards target when facilities are not substantially completed by December 31, 2014.
- The custom application process requires considerable customer support and skilled LDC staff. The effort required to participate through the custom stream exceeds the value of the incentive for many customers.
- There are no custom measure options for items that do not qualify under the prescriptive or engineered track as the custom path does not allow for individual measures, only whole building modelling.
- This Initiative has a very low net-to-gross ratio, which results in half the proposed target savings being 'lost'.
- The requirement to have a customer invoice the LDC for their incentive is very burdensome for the customer and results in a negative customer experience and a potential barrier to participation.

E. ENERGY AUDIT INITIATIVE (Audit Funding)

Target Customer Type(s): Commercial, Institutional, Agricultural and Industrial Customers

Initiative Frequency: Year-round

Objective: The objective of this initiative is to offer incentives to owners and lessees of commercial, institutional, multi-family buildings and agricultural facilities for the purpose of undertaking assessments to identify all possible opportunities to reduce electricity demand and consumption within their buildings or premises.

Description: This initiative provides participants incentives for the completion of energy audits of electricity consuming equipment located in the facility. Energy audits include development of energy baselines, use assessments and performance monitoring and reporting.

Targeted End Uses: Various measures

Delivery: PowerStream manages the initiative, review and approve applications, conduct site visits (via third party service providers), pay approved applications, and promote/market the initiative. Paper-based applications are submitted directly to PowerStream. Additional detail is available:

- saveONenergy website https://saveONenergy.ca/Business/Program-Overviews/Audit-Funding.aspx

In Market Date: March 2011 – PowerStream began offering Energy Audit Initiative soon after the Master Agreement was signed.

Initiative Activities/Progress: Please refer to Table 10 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- The introduction of the new audit component for one system (i.e. compressed air), has increased customer participation.
- The energy audit Initiative is considered an 'enabling' Initiative and 'feeds into' other saveONenergy Initiatives.
- Evaluators in 2012 and 2013 recognized savings towards LDCs targets as a result of customers implementing low/no cost recommendations from their energy audits.
- Audit reports from consultants vary considerably and in some cases, while they adhere to the Initiative requirements, do not provide value for the Participant. A standard template with specific energy saving calculation requirements should be considered.
- Customers look to the LDCs to recommend audit companies. A centralized prequalified list provided by the OPA may be beneficial.
- Participation has been limited to one energy audit per customer which has restricted enabling and direction to the other Initiatives. This has been revised in 2014 and LDCs are now able to consider additional customer participation when presented with a new scope of work.
- Consideration should be given to allowing a building owner to undertake an audit limited to their lighting system. This way they may receive valuable information from neutral third party regarding the appropriate lighting solution for their facility instead of what a local supplier wants to sell.
- The requirement to have a customer invoice the LDC for their incentive is very burdensome for the customer and results in a negative customer experience and another barrier to participation.

Appendix D: Activities by Initiative – Industrial Program

A. PROCESS & SYSTEMS UPGRADES INITIATIVE (PSUI)

Target Customer Type(s): Industrial, Commercial, Institutional, and Agricultural Customers

Initiative Frequency: Year-round

Objectives: The objectives of this initiative are to:

- Offer distribution customers capital incentives and enabling initiatives to assist with the implementation of large projects and project portfolios;
- Implement system optimization project in systems which are intrinsically complex and capital intensive; and
- Increase the capability of distribution customers to implement energy management and system optimization projects.

Description: PSUI is an energy management initiative that includes three initiatives: (Preliminary Engineering Study (PES), Detailed Engineering Study (DES), and Project Incentive Initiative (PII)). The incentives are available to large distribution connected customers with projects or portfolio projects that are expected to generate at least 350 MWh of annualized electricity savings or, in the case of Micro-Projects, 100 MWh of annualized electricity savings. The capital incentive for this Initiative is the lowest of:

a) $200/MWh of annualized electricity savings
b) 70% of project cost
c) A one year payback

Targeted End Uses: Processes and systems

Delivery: PowerStream's Key Account Manager (KAM) works with targeted customers to identify possible projects that will be eligible for PSUI. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Business/Program-Overviews/Process-and-System-Upgrades.aspx

In Market Date: June 2011 – PowerStream began offering PSUI soon after the release of the Industrial Schedules. However, the Industrial Program Manager was not hired until September 2011 and the KAM until April 2012. As a result, the initiative was not fully executed until quarter two 2012.

Initiative Activities/Progress: Please refer to Table 10 of this document and Table 11 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- Numerous energy studies have been submitted and completed. This is a strong indication that there is the potential for large projects with corresponding energy savings. Most of these studies have been initiated through the Energy Manager and KAM resources.
- This Initiative is limited by the state of the economy and the ability of a facility to complete large capital upgrades.
- There is typically a long sales cycle for these projects, and then a long project development cycle. As such, limited results are expected to be generated in 2013. The majority of the results are expected in 2014 with a much reduced benefit to cumulative energy savings targets.

- Delays with processing funding payments have caused delayed payments to Participants beyond contract requirements. In some cases, LDCs have developed a separate side agreement between the LDC and Participant acknowledging that the Participant cannot be paid until the funds are received.
- The contract required for PSUI is a lengthy and complicated document. A key to making PSUI successful is a new agreement which is a simplified with less onerous conditions for the customer.
- To partially address this, changes were made to the ERII Initiative which allowed smaller projects to be directed to the Commercial stream. Most industrial projects to-date have been submitted as ERII projects due to less onerous contract and M&V requirements.
- A business case was submitted by the Industrial Working Group in July 2012 which would change the upper limit for a small project from 700 MWh to 1 million dollars in incentives. This would allow more projects to be eligible for the new small capital project agreement and increase participant uptake, while still protecting the ratepayer. This small capital project agreement was finalized in August 2013.
- While there is considerable customer interest in on-site Load Displacement (Co-Generation) projects, in 2012 the OPA was accepting waste heat/waste fuel projects only. Natural gas generation projects were on hold awaiting a decision on whether PSUI will fund these types of projects. In June 2013, a decision was made to allow natural gas load displacement generation projects to proceed under PSUI. It is expected that a number of projects will proceed although results may not be counted towards LDC targets due to in-service dates beyond 2014.
- The requirement to have a customer invoice the LDC for their incentive is very burdensome for the customer and results in a negative customer experience and another barrier to participation.

B. MONITORING & TARGETING INITIATIVE (M&T)

Target Customer Type(s): Industrial, Commercial, Institutional and Agricultural Customers

Initiative Frequency: Year-round

Objective: This initiative offers access to funding for the installation of Monitoring and Targeting systems in order to deliver a minimum savings target at the end of 24 months and sustain for the term of the M&T Agreement.

Description: This initiative offers customers funding for the installation of a Monitoring and Targeting system to help them understand how their energy consumption might be reduced. A facility energy manager, who regularly oversees energy usage, will now be able to use historical energy consumption performance to analyze and set targets.

Targeted End Uses: Various measures

Delivery: PowerStream's Key Account Manager (KAM) works with targeted customers to identify possible projects that will be eligible for M&T. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Business/Program-Overviews/Process-and-System-Upgrades/Monitoring-and-Targeting.aspx

In Market Date: June 2011 – PowerStream began offering M&T soon after the release of the Industrial Schedules. However, the Industrial Program Manager was not hired until September 2011 and the KAM until April 2012. As a result, the initiative was not fully executed until quarter two 2012.

Initiative Activities/Progress: Please refer to Table 10 of this document and Table 11 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- The M&T initiative is targeted at larger customers with the capacity to review the M&T data. This review requires the customer facility to employ an Energy Manager, or a person with equivalent qualifications, which has been a barrier for some customers. As such, a limited number of applications have been received to date.
- The savings target required for this Initiative can present a significant challenge for smaller customers.
- Changes were made to ERII in 2013 to allow smaller facilities to employ M&T systems.

C. ENERGY MANAGER INITIATIVE (Energy Managers)

Target Customer Type(s): Industrial, Commercial, Institutional and Agricultural Customers

Initiative Frequency: Year-round

Objective: The objective of this initiative is to provide customers and LDCs the opportunity to access funding for the engagement of energy managers in order to deliver a minimum annual savings target.

Description: This initiative provides customers the opportunity to access funding to engage an on-site, full time embedded energy manager, or an off-site roving energy manager who is engaged by the LDC. The role of the energy manager is to take control of the facility's energy use by monitoring performance, leading awareness programs, and identifying opportunities for energy consumption improvement, and spearheading projects. Participants are funded 80% of the embedded energy manager's salary up to $100,000 plus 80% of the energy manager's actual reasonable expenses incurred up to $8,000 per year. Each embedded energy manager has a target of 300 kW/year of demand savings from one or more facilities. LDCs receive funding of up to $120,000 for a Roving Energy Manager plus $8,000 for expenses.

Targeted End Uses: Various measures

Delivery: PowerStream was responsible for encouraging large customers to take opportunity of the Energy Manager initiative. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Business/Program-Overviews/Process-and-System-Upgrades/Energy-Managers.aspx

In Market Date: June 2011 – PowerStream began offering Energy Manager soon after the release of the Industrial Schedules. However, the Industrial Program Manager was not hired until September 2011 and the KAM until April 2012. As a result, the initiative was not fully executed until quarter two 2012.

Initiative Activities/Progress: Please refer to Table 10 of this document and Table 11 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- The Energy Managers have proven to be a popular and useful resource for larger customers.
- LDCs that are too small to qualify for their own REM are teaming up with other utilities to hire an REM to be shared by the group of utilities.
- Some LDCs and Customers are reporting difficulties in hiring capable Roving and Embedded Energy Managers (REM/EEM), in some instances taking up to 7 months to have a resource in place.
- New energy managers require training, time to familiarize with facilities and staff and require time to establish "credibility". Energy Managers started filling their pipeline with projects in 2012 but few projects were implemented until 2013.

D. KEY ACCOUNT MANAGER (KAM)

Target Customer Type(s): Industrial, Commercial, Institutional and Agricultural Customers

Initiative Frequency: Year-round

Objective: This initiative offers LDCs the opportunity to access funding for the employment of a KAM in order to support them in fulfilling their obligations related to the PSUI. The KAM is considered to be a key element in assisting the consumer in overcoming traditional barriers related to energy management and help them achieve savings since the KAM can build relationships and become a significant resource of knowledge to the customer.

Description: The funding will be available for an LDC or a group of LDCs servicing a minimum of five Distribution Consumers each having at least 5MW of Annual Peak Demand. Funding for KAM is allocated on the basis that a fully-employed KAM is one who is employed on a full-time basis servicing ten Distribution Consumers each having at least 5MW of Annual Peak Demand.

Targeted End Uses: Various measures

Delivery: PowerStream was responsible for applying and receiving approval to hire a KAM. PowerStream's KAM is responsible for working with large customers in identifying energy savings opportunities and encouraging them to participate in the most appropriate programs.

In Market Date: April 2012 – PowerStream hired a KAM in April 2012. As a result, the initiative was not fully executed until quarter two 2012.

Initiative Activities/Progress: Please refer to Table 10 of this document and Table 11 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- Customers appreciate dealing with a single contact to interface with an LDC, a resource that has both the technical and business background who can communicate easily with the customer and the LDC.
- Finding this type of skill set has been difficult. In addition, the short-term contract discourages some skilled applicants resulting in longer lead times to acquire the right resource.

E. DEMAND RESPONSE 3 (DR3)

Target Customer Type(s): Industrial, Commercial, Institutional and Agricultural Customers

Initiative Frequency: Year-round

Objective: This initiative provides for Demand Response (DR) payments to contracted participants to compensate them for reducing their electricity consumption by a pre-defined amount during a DR event.

Description: Demand Response 3 (DR3) is a demand response initiative for commercial and industrial customers, of 50 kW or greater to reduce the amount of power being used during certain periods of the year. The DR3 initiative is a contractual resource that is an economic alternative to procurement of new generation capacity. DR3 comes with specific contractual obligations requiring participants to reduce their use of electricity relative to a baseline when called upon. This Initiative makes payments for participants to be on standby and energy payments for the actual energy reduction provided during a demand response event. Participants are scheduled to be on standby approximately 1,600 hours per calendar year for possible dispatch of up to 100 hours or 200 hours within that year depending on the contract.

Targeted End Uses: Commercial and industrial operations

Delivery: DR3 is delivered by Demand Response Providers (DRP), under contract to the OPA. The OPA administers contracts with all DRPs and Direct Participants that provide in excess of 5 MW of demand response capacity. The OPA provides administration including settlement, measurement and verification, and dispatch. LDCs are responsible for outreach and marketing efforts. Additional detail is available:

- saveONenergy website https://saveonenergy.ca/Business/Program-Overviews/Demand-Response/Demand-Response-3.aspx

In Market Date: June 2011 – PowerStream began offering DR3 soon after the release of the Industrial Schedules. Most DR3 aggregators delivering DR3 in PowerStream's service area had already established relationships and contracts with PowerStream's customers prior to the launch of this initiative.

Initiative Activities/Progress: Please refer to Table 10 of this document and Table 11 of this document

Additional Comments (as provided by LDC-OPA Program Working Group):

- Until early 2013 customer data was not provided on an individual customer basis due to contractual requirements with the aggregators. This limited LDCs' ability to effectively market to prospective participants and verify savings.
- No program improvements were made in 2013 however, it was accepted that prior participants who renew their DR3 contract within the 2011-2014 term will contribute to LDC targets.
- As of 2013, Aggregators were able to enter into contracts beyond 2014 which has allowed them to offer a more competitive contract price (5 year) than if limited to 1 or 2 year contracts.
- Metering and settlement requirements are expensive and complicated and can reduce customer compensation amounts, and present a barrier to smaller customers.
- Compensation amounts for new contracts and renewals have been reduced from the initial launch of this program (premium zones and 200 hour option have been discontinued) and subsequently there has been a corresponding decrease in renewal revenue.

Appendix E: Low Income Program (Home Assistance Program)

Target Customer Type(s): Income Qualified Residential Customers

Initiative Frequency: Year-round

Objective: The objective of this program is to offer free installation of energy efficiency measures to income qualified households for the purpose of achieving electricity and peak demand savings.

Description: This is a turnkey program for income qualified customers. It offers residents the opportunity to take advantage of free installation of energy efficient measures that improve the comfort of their home, increase efficiency, and help them save money. All eligible customers receive a Basic and Extended Measures Audit, while customers with electric heat also receive a Weatherization Audit. The program is designed to coordinate efforts with gas utilities.

Targeted End Uses: End uses based on results of audit.

Delivery: PowerStream, through a third party service provider, conducts outreach to eligible participants in collaboration with social agencies. Participants may also enrol directly with the PowerStream. PowerStream's service provider conducts the energy audit/walk-through, the installation of the efficient measure, and the disposal of the old equipment. PowerStream, together with the service provider, were also responsible for marketing and promotion.

In Market Date: April 2012 – Although the Schedule was released midway through 2011, PowerStream was not able to launch the program until quarter two 2012. Even though the procurement process started in 2011, the contract with third party service provider was executed in 2012.

Initiative Activities/Progress: Please refer to Table 12 of this document.

Additional Comments (as provided by LDC-OPA Program Working Group):

- The process for enrolling in social housing was complicated and time consuming. This was addressed in late 2012 and showed some benefits in 2013.
- The financial scope, complexity, and customer privacy requirements of this Initiative are challenging for LDCs and most have contracted this program out. This Initiative may benefit from an OPA contracted centralized delivery agent.