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March 30, 2015

Via Email
Original via Mail

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC
V6Z 2N3

Attention: Ms. Erica M. Hamilton, Commission Secretary

Dear Ms. Hamilton:

Re: FortisBC Energy Utilities (FEU)[1]
Energy Efficiency and Conservation Program - 2014 Annual Report

Attached please find the Energy Efficiency and Conservation Program 2014 Annual Report for the FEU.

If further information is required, please contact Ken Ross, Manager Integrated Resource Planning and EEC Reporting at 604-576-7343 or ken.ross@fortisbc.com.

Sincerely,

on behalf of the FORTISBC ENERGY UTILITIES

Original signed by: Ilva Bevacqua

For: Diane Roy

Attachment

cc (email only): EEC Advisory Group

[1] comprised of FortisBC Energy Inc. (FEI), FortisBC Energy (Vancouver Island) Inc. (FEVI) and FortisBC Energy Whistler Inc. (FEW), amalgamated under FEI as of December 31, 2014.

The FortisBC Energy Utilities

Energy Efficiency and Conservation Program 2014 Annual Report

March 30, 2015

Table of Contents

List of Tables

1 REPORT OVERVIEW

The FortisBC Energy Utilities (FEU or the Companies),[1] are committed to delivering a broad portfolio of cost-effective Energy Efficiency and Conservation (EEC) measures that address the expectations of customers while meeting the requirements for public utilities to pursue cost-effective demand-side measures (DSM). In 2014, the companies achieved a combined portfolio MTRC[2] of 1.7 on expenditures of $27.5 million, meeting the EEC goal of cost-effective program delivery. 2014 EEC activity has been conducted within the funding amounts set out in the BC Utilities Commission's (BCUC or the Commission) December 30, 2013 Order G-230-13 granting interim 2014 funding approval for EEC activities, and the subsequent approval of the Companies' 2014-2018 EEC Plan as part of their recent Performance Based Ratemaking (PBR) Application.

This EEC Annual Report (the Report) outlines the Companies' actual results and expenditures for 2014. The format of this Report follows the format of the 2013 Report, and relies on detailed tables to demonstrate EEC Program results and expenditures. Throughout the Report, actual results are compared against the Companies' 2014-18 EEC Plan, as approved by the Commission in Order G-138-14. Reported details from individual programs may vary from the 2014-18 EEC Plan due to some programs contained within the 2014-18 Plan not being launched while the Companies' EEC activities operated under interim funding until the Commission's September 15, 2014-2018 PBR Decision. Where this occurs, explanations have been provided in the applicable Program Area sections of this report.

Moving forward, Annual Reports for the Companies' gas and electric programs will have a common format starting with the Report for 2015.

1.1 Purpose of Report: Transparency, Accountability and Update on Progress

This Report details the Companies' activities for the overall EEC portfolio and in each Program Area. EEC incentive and non-incentive expenditures are reported at the level of each program or measure, as well as at the program area and portfolio levels. Results for the Total Resource Cost (TRC), Ratepayer Impact Measure (RIM), Participant Cost Test (PCT), and Utility Cost Test (UCT) are provided for the overall portfolio and each Program Area in Section 2, and for each program or measure in the respective Program Area sections: In accordance with British Columbia's Demand-Side Measures Regulation, results of the modified TRC (MTRC) calculations (see Section 2.1) are also provided where appropriate.

[1] Comprised of FortisBC Energy Inc. (FEI), FortisBC Energy (Vancouver Island) Inc. (FEVI) and FortisBC Energy Whistler Inc. (FEW), amalgamated under FEI as of December 31, 2014.

[2] Pursuant to the BC Demand-side Measures Regulation, the portfolio level MTRC is calculated based on costs and benefits of all programs in the portfolio as well as any program area and portfolio level administration costs, and including the benefit adders for those programs for which the MTRC is relied upon to determine cost effectiveness on an individual program basis (i.e. those programs that have been designated as being under the MTRC Cap as presented in Section 2.1 of this report).

This Report also demonstrates that the Companies are meeting the accountability mechanisms directed by the Commission in Order No. G-36-09. One such mechanism was the requirement to file EEC Annual Reports, which states:

> *"A requirement that Terasen* [now FEU] *submit annually to the Commission, by the end of the first quarter following year-end, for each year of the funding period, a report on all EEC initiatives and activities, expenditures and results for TGI and TGVI* [now the FEU]*."*

Section 2.5 discusses any new requirements from the Commission concerning information to be included in the 2014 Annual EEC Report.

1.2 Organization of the EEC Annual Report

Each section of the Report presents the results of 2014 EEC activities as follows:

Section 1: Report Overview

- Provides a high-level background for the Report.

Section 2: Portfolio Overview

- Provides a summary and detail regarding the actual 2014 expenditures for EEC activities, along with an explanation of expenditures held in both the EEC deferral account and another deferral account set up for EEC incentive amounts provided to Alternative Energy Services ("AES") projects in which the FEU are a participant.

Section 3: Funding Transfers

- Provides a discussion on funding transfers.

Section 4: EEC Advisory Group Activities

- Provides information regarding EEC Advisory Group ("EECAG") activities in 2014, including a summary of meetings and accountability considerations.

Sections 5 - 9 provide information on the:

- Residential Energy Efficiency Program Area;
- Low Income Energy Efficiency Program Area;
- Commercial Energy Efficiency Program Area;
- Innovative Technologies Program Area; and
- Industrial Energy Efficiency Program Area.

Each of the above mentioned sections contain a table summarizing the planned and actual expenditures for the respective Program Area in 2014, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC, MTRC and other cost-effectiveness test results. Additional tables outline the individual 2014 programs, including program and measure descriptions, program assumptions and sources for these assumptions, and a breakdown of incentive and non-incentive spending. Where applicable, details on program closures or planned programs that were not launched in 2014 are also included in these program detail sections.

As noted above, the Report reflects the implementation of the Companies' 2014-18 EEC Plan. Reported details from some individual programs may not reflect the 2014-18 EEC Plan, however, due to some programs contained within the Plan not being launched while the Companies' EEC activities operated under interim funding until the Commission's September 15th, 2014 PBR Decision. Where this occurs, the reported details reflect the approved programs that were actually run in 2014, and the expenditures, associated energy savings and cost effectiveness results of those programs. Explanations of this variance have been provided in the applicable Program Area sections of this report.

Section 10: Conservation Education and Outreach Initiatives

- Provides both a summary and details regarding actual 2014 expenditures for the Conservation Education and Outreach ("CEO") Program Area.

Section 11: Enabling Activities

- Provides both summary and detail regarding actual 2014 expenditures for the Enabling Activities that support the work of the EEC portfolio as a whole.

Section 12: Evaluation

- Provides both summary and detail regarding pending and actual expenditures for 2014 program evaluation activities, as well as summary results from evaluations and studies completed in 2014.

Section 13: Data Gathering, Reporting and Internal Control Processes

- Provides a summary of the Companies' data tracking, process control and reporting for 2014 EEC activities, and a high level description of the Companies' internal approval process for programs.

Section 14: 2014 EEC Annual Report Summary

- Summarizes the Report and the Companies' 2014 EEC activies.

2 PORTFOLIO OVERVIEW

In this Section, the Companies provide their EEC energy savings, expenditures and cost-effectiveness test results on an overall portfolio level for 2014. A summary of the overall portfolio results is provided in Table 2-1, demonstrating that the Companies achieved a combined portfolio MTRC of 1.7. EEC expenditures were $27.5 million and recorded natural gas savings were 2,740,819 GJ. These are positive outcomes resulting from the Companies' EEC activity over 2014.

Table 2-1: Overall EEC Portfolio Results for 2014

Indicator - 2014 Results		Service Territory		Total
		FEI	FEVI	
Annual Gas Savings (GJ/yr.)		327,511	66,096	393,607
NPV of Gas Savings (GJ)		2,288,615	452,204	2,740,819
Utility Expenditures, Incentives ($000s)		13,924	2,672	16,596
Utility Expenditures, Non-Incentives ($000s)		9,709	1,245	10,955
Utility Expenditures, Total ($000s)		23,633	3,917	27,551
Benefit/Cost Ratios	TRC	0.9	0.8	0.9
	MTRC	1.7	1.4	1.7
	Utility	1.0	1.2	1.0
	Participant	2.0	2.2	2.1
	RIM	0.5	0.4	0.5

Table 2-2 below provides the cost-effectiveness test results by Program Area for the overall EEC portfolio.

Table 2-2: Overall EEC Portfolio Level Results by Program Area 2014

Portfolio and Service Territory	Annual Gas Savings (GJ/yr.)		NPV Gas Savings (GJ)	Utility Expenditures ($000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending						
	2014-2018 EEC Plan	2014 Actual		2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	TRC	MTRC	Utility	Participant	RIM
Portfolio Level Activities														
FEI	No Direct Savings			n/a	n/a	n/a	1139	n/a	1139	No Direct Savings				
FEVI				n/a	n/a	n/a	138	n/a	138					
Total				n/a	n/a	n/a	1277	n/a	1277					
Residential Sector														
FEI	170,789	81,122	836,144	6,815	7,533	2,655	2,083	9,469	9,616	0.8	2.5	1.1	1.5	0.5
FEVI	19,465	12,945	132,593	972	1,026	297	259	1,089	1,285	0.4	1.4	1.2	1.5	0.3
Total	190,255	94,067	968,737	7,606	8,559	2,952	2,342	10,558	10,901	0.7	2.3	1.1	1.5	0.4
Commercial Sector														
FEI	335,875	210,275	1,212,766	7,801	5,749	1,816	1,792	9,617	7,541	1.6	n/a	2.0	2.9	0.5
FEVI	31,919	44,646	253,096	1,247	1,532	268	341	1,515	1,873	1.7	n/a	2.1	3.2	0.5
Total	367,794	254,922	1,465,861	9,049	7,281	2,083	2,133	11,132	9,413	1.6	n/a	2.1	3.0	0.5
Industrial Sector														
FEI	99,531	16,773	120,239	1,173	435	565	214	1,738	649	1.2	n/a	1.6	3.3	0.5
FEVI	10,134	2,953	32,382	118	59	56	10	174	69	1.5	n/a	4.5	1.5	1.1
Total	109,664	19,726	152,621	1,291	494	621	224	1,912	719	1.2	n/a	1.9	2.7	0.6
Low Income														
FEI	22,170	19,341	119,466	1,245	213	1,062	571	2,307	784	2.0	n/a	1.8	7.9	0.7
FEVI	4,188	5,552	34,133	154	55	168	40	322	95	5.0	n/a	4.4	18.1	0.4
Total	26,357	24,893	153,599	1,399	268	1,229	611	2,629	880	2.3	n/a	2.1	10.0	0.6
Conservation Education and Outreach														
FEI	No Direct Savings			n/a	n/a	2,160	2,516	2,160	2,516	No Direct Savings				
FEVI				n/a	n/a	240	216	240	216					
Total				n/a	n/a	2,400	2,733	2,400	2,733					
Innovative Technologies														
FEI	No Direct Savings			178	(6)	928	493	1,106	487	No Direct Savings				
FEVI				20	0	82	35	101	35					
Total				198	(6)	1,009	528	1,207	522					
Enabling Activities														
FEI	No Direct Savings			n/a	n/a	4,109	901	4,109	901	No Direct Savings				
FEVI				n/a	n/a	406	206	406	206					
Total				n/a	n/a	4,515	1,107	4,515	1,107					
TOTAL PORTFOLIOS														
FEI	**628,365**	**327,511**	**2,288,615**	**17,034**	**13,924**	**13,295**	**9,709**	**30,506**	**23,633**	**0.9**	**1.7**	**1.0**	**2.0**	**0.5**
FEVI	**65,706**	**66,096**	**452,204**	**2,491**	**2,672**	**1,517**	**1,245**	**3,847**	**3,917**	**0.8**	**1.4**	**1.2**	**2.2**	**0.4**
Total	**694,070**	**393,607**	**2,740,819**	**19,345**	**16,596**	**14,809**	**10,955**	**34,353**	**27,551**	**0.9**	**1.7**	**1.0**	**2.1**	**0.5**

Notes (Table 2-2):

- FEW (Fortis Energy Whistler) is included in FEI except where specifically reported.
- In the above table, and in tables throughout the report, any difference in the totals between the Portfolio Overview, Program Area, and individual program tables is due to rounding. Some "zero" values are a reflection of rounding to the $000 expenditure level when expenditures were under $500.
- Portfolio Level Activities are those activities for which the costs cannot be assigned to individual EEC programs. It should be noted that these activities are distinct from the Enabling Activities specifically listed in Section 9 of the 2014-18 EEC Plan. These distinct Portfolio Level Activities include expenditures such as EECAG activities, EEC Energy Solutions Managers, portfolio level staff labour, staff training and conferences, research and association memberships, portfolio level research studies, and regulatory work including consulting fees.

Throughout this Report, the following general notes also apply to all the program areas:

- FEW (Fortis Energy Whistler) is included in FEI (except where specifically reported).
- Cost-effectiveness test results are reported to one decimal point.
- In tables throughout the report, any difference in the totals between the Portfolio Overview, Program Area, and individual program tables is due to rounding. Some "zero" values are a reflection of rounding to the $000 expenditure level when expenditures were under $500.
- A "Non-Program Specific Expense" line item has been included for each program area. These expenditures represent the costs that are attributable to that program area but that support multiple programs and, therefore, are not specific to only one program. Generally, these expenditures represent items such as training, travel, marketing collateral and consulting services that support the overall program area.

It is the Companies' view that, as with prior annual reports, the savings reported herein continue to be conservative and lower than the savings experienced in the marketplace as a result of the Companies' EEC activities, causing the cost-effectiveness test results reported to be lower than they would be otherwise, for the following reasons:

- Net to Gross Ratio - The Net-to-Gross ratio that the Companies are using to report energy savings from EEC activity is conservative in that it includes the free ridership impact, which serves to reduce reported energy savings, but does not include the energy savings benefits of spillover[3] effect. In the future, the Companies intend to identify and

[3] Free ridership refers to individuals who participate in a program who would have participated in the absence of an incentive. Spillover refers to individuals that adopt efficiency measures because they are influenced by program-related information and marketing efforts, though they do not actually participate in the program. These can be included in the Net-to-Gross ratio employed in the cost-effectiveness analysis to capture the additive effects of spillover to balance the reductive effects of free ridership.

incorporate spillover effects into reporting of energy savings impacts from EEC activity on a program-by-program basis, where spillover can be supported.

- Attribution from Government Regulation – the introduction of many municipal, provincial and federal minimum equipment and system performance standards is supported by the Companies' EEC activity. The Companies have not historically claimed any energy savings from the implementation of these standards. This year, the Companies do claim energy savings from advancing codes and standards through one program - the Residential New Home Program (see Section 5). Despite claiming these energy savings, the Companies believe the claimed savings are conservative and do not represent all of the savings attributable to the Companies' codes and standards work. The Companies will continue to look for opportunities to claim energy savings from the implementation of these standards.

- Conservation Education and Outreach – CEO activities had expenditures of over $2.7 million in 2014. These activities do result in energy savings; however, since these savings remain difficult to quantify, the Companies do not currently attribute energy savings to them. Thus, these benefits are not reflected in the EEC portfolio TRC. The Companies are exploring approaches to determining energy savings from CEO activities and the Companies may account for these energy savings in the future.

- Enabling Activities – Enabling Activities similarly had expenditures of $1.1 million in 2014 for work that contributes to energy savings but that cannot currently be quantified. Since these savings are not included in the EEC portfolio TRC calculation, the Companies believe the portfolio energy savings benefits are higher than reported.

The Companies' EEC activities include a number of specified demand side measures. The *Demand-Side Measures Regulation* defines "specified demand-side measure" as:

a) a demand-side measure referred to in section 3 (c) or (d),

b) the funding of energy efficiency training,

c) a community engagement program,

d) a technology innovation program, or

e) financial or other resources provided

i. to a standards-making body to support the development of standards respecting energy conservation or the efficient use of energy, or

ii. to a government or regulatory body to support the development of or compliance with a specified standard or a measure respecting energy conservation or the efficient use of energy in the Province;

Specified demand side measures within the Companies portfolio include the FEU's Innovative Technologies programs (see Section 8), FEU's education and community engagement programs (see Section 10), and FEU's Codes and Standards related EEC activity (see Section 11). The *Demand Side Measures Regulation* defines how the Commission must consider these specified measures. Section 4(4) of the *Regulation* stipulates that the cost effectiveness of specified measures must be determined by the cost effectiveness of the EEC portfolio as a whole. These measures are therefore not subject to the 33% MTRC 'impact cap'. Additionally, these measures cannot be determined to be not-cost effective under the Utility Cost Test.

In summary, the Companies' 2014 EEC expenditures, including specified DSM, were cost-effective under the BC *Demand-Side Measures Regulation*.

2.1 Portfolio Level MTRC Calculation and Results

In 2014, the FEU met the conditions of the Province's *Demand-Side Measures Regulation*, achieving a portfolio MTRC value of 1.7 with 26.5% of the portfolio enabled by the MTRC cost-effectiveness test. While the FEU strive for TRC test results that approach or exceed 1.0 within each program and across all programs, there are benefits to implementing programs that do not meet the TRC threshold, primarily making programs available to those customers that would otherwise be underserved (such as low income and residential customers). There are also non-energy benefits that arise from the FEU's EEC programs, such as water savings, increased human health and comfort, and economic benefits such as job creation. These benefits were recognized in 2011 and 2014 amendments to the *Demand-Side Measures Regulation*, which enable the use of an MTRC. The MTRC uses the long-run marginal cost of acquiring electricity generated from clean or renewable resources in British Columbia as a proxy for the avoided cost of natural gas and allows for the inclusion of non-energy benefits ("NEBs").[4]

Utilities can implement DSM with TRC values less than 1.0 but that meet an MTRC threshold of 1.0 as long as expenditures on these activities do not exceed 33 percent of the total portfolio expenditure. The FEU refer to this 33 percent as the "MTRC Cap". Table 2-3 shows both the TRC and MTRC of those programs that do not meet the TRC. Table 2-2 shows that the portfolio MTRC is 1.7, in accordance with the *Demand-Side Measures Regulation* and the Commission's approval to assess cost-effectiveness on an overall portfolio basis[5].

[4] The BC *Demand Side Measures Regulation* was amended in July, 2014 by allowing for the whole cost of the long-run marginal cost of acquiring electricity generated from clean or renewable resources in British Columbia to be used as a proxy for the avoided cost of natural gas in the MTRC cost-effectiveness test (*Demand Side Measures Regulation,* Section 4 (1.1)). As the DSM Regulation stipulates, the value that the FEU have used for the avoided cost of gas in the MTRC calculation is $100/MWh, or $27.78/GJ, as indicated in BC Hydro's November 2013 Integrated Resource Plan, Section 9.2.12, "Long Run Marginal Cost" (pgs. 9-51 to 9-55).

[5] The Commission approved the assessment of the cost effectiveness using an MTRC of 1 or greater on an overall portfolio basis as part its decision on the 2012-2013 RRA, page 174. While this approval was not explicitly stated in the most recent 2014-2019 PBR decision, the FEU interpret this approval to be implicit in the approval of the 2014-2018 EEC Plan.

Table 2-3: Programs Subject to MTRC and the Relative Proportion of 2014 Portfolio Spending

Measure	TRC	MTRC	Expenditure ($000s) subject to cap	% of Portfolio Spending
Energy Efficiency Home Performance (LiveSmartBC) (FEI)	0.8	3.3	$1,152	4.2%
Energy Efficiency Home Performance (LiveSmartBC) (FEVI)	0.9	3.9	$98	0.4%
Energy Efficiency Home Performance (HERO) (FEI)	0.7	2.8	$300	1.1%
Energy Efficiency Home Performance (HERO) (FEVI)	0.8	3.2	$28	0.1%
Furnace Replacement Pilot Program (FEI)	0.5	1.5	$3,330	12.1%
Furnace Replacement Pilot Program (FEVI)	0.5	1.4	$206	0.7%
ENERGY STAR® Domestic Hot Water "DWH" Technologies Program (FEI)	0.4	1.8	$1,357	4.9%
ENERGY STAR® Domestic Hot Water "DWH" Technologies Program (FEVI)	0.2	1.2	$463	1.7%
Energy Conservation Assistance Program (ECAP) (FEI)	0.5	1.7	$340	1.2%
Energy Conservation Assistance Program (ECAP) (FEVI)	0.5	1.9	$33	0.1%
Total			**$7,306**	**26.5%**

2.2 Meeting Approved Spending Levels

The Companies' EEC expenditures were within the approved levels. FEI filed its 2014-18 Performance Based Ratemaking (PBR) Application with the Commission on June 10, 2013. As part of the 2014-2018 PBR Application, the FEU requested acceptance, pursuant to section 44.2 of the *Utilities Commission Act* (*UCA*) of an expenditure schedule for Energy Efficiency and Conservation expenditures from 2014 to 2018.

Given that a decision on FEI's PBR Application was to be delayed until late in 2014, on Dec 12, 2013, the FEU requested acceptance of EEC expenditures schedules for 2014 that would be sufficient to permit the FEU to carry on its existing, previously approved EEC programs until a PBR Decision was issued. Specifically, the FEU sought:

1. Acceptance pursuant to section 44.2(a) of the Act of FEU EEC expenditure schedules of up to $15 million on the EEC program areas in order to continue existing EEC activity from January 1, 2014 until such time as a final Decision is released.
2. The EEC framework for EEC expenditures previously approved by Order G-44-12, including financial treatment, will continue for the purpose of these expenditures.

On December 30, 2013, the BCUC gave Order Number G-230-13 accepting the FEU's request for interim funding.

On September 15, 2014, the BCUC issued its decision on FEI's 2014-2018 Performance Based Rate Making Application (the PBR Decision). In the PBR Decision, the BCUC approved the FEU's request for a five-year expenditure period. This includes EEC expenditures of up to $34.353 million for 2014.

In the 2014-2018 PBR Application, the FEU proposed to maintain the 2012–2013 approved approach that only $15 million of the requested annual EEC budget be added to the EEC rate base each year of the PBR period, with any additional EEC spend being captured in an EEC non-rate base deferral account attracting AFUDC. The FEU requested approval to transfer any new amounts accumulated in the non-rate base EEC deferral account to FEU rate base EEC deferral account in the following year. This included approval to transfer the balance in the non-rate base EEC incentive deferral account as of December 31, 2013 to the rate base EEC deferral account on January 1, 2014. In the 2014-18 PBR Application, it was proposed that the amounts will be amortized over 10 years beginning in 2014 in accordance with the existing approved amortization period for the EEC rate base deferral account. In its decision, the Commission Panel approved FEU's request to (i) continue the EEC accounting treatment approved for 2012–2013 and, (ii) to transfer any new amounts accumulated in the non-rate base EEC deferral account to FEU rate base EEC deferral account in the following year. In accordance with this decision, $12.3 million was transferred to the EEC non-rate based defferal account in 2014.

The FEU note a difference in the expenditure total of the EEC rate base amount plus the non-rate base deferral account ($15 million + $12.3 = $27.3 million as noted in the previous paragraph) and the total 2014 EEC expenditure shown in Tables 2-1 and 2-2 ($27.5 million). The EEC expenditures transferred to the EEC non-rate base deferral account is lower than EEC spending shown in Tables 2-1 and 2-2 due to a number of projects, primarily in the Industrial Program Area, in which EEC activity occurred in 2014 but for which expenditures were not processed prior to 2014-year end. As the EEC Annual Report has shown the expenditures and results of the activity in the year in which it occurred, this variance in 2014 will result in an equal but opposite variance in the amount to be transferred to the non-rate base deferral account at the end of 2015.

The Companies have managed their 2014 EEC activity within the funding limits set out by the Commission for each Program Area. Actual spending in each Program Area is shown in Table 2.2 and each of the Program Area Summary Tables (Sections 5 through 11).

2.3 EEC Incentives for AES/TES Deferral Account

Commission Order G-44-12 directed the FEU to hold all EEC incentives that are provided for Alternative Energy Services (AES) or Thermal Energy Services (TES) technologies for projects

in which the Companies are a participant in a separate deferral account. No costs were added to this account in 2014.

2.4 Meeting Adequacy Requirements of the Demand-Side Measures Regulation

The *Demand-Side Measures Regulation* has the following requirements for a utility's portfolio of EEC activity to be considered adequate:

> *"A public utility's plan portfolio is adequate for the purposes of Section 44.1 (8) c of the Act only if the plan portfolio includes all the following:*
>
> *a) A demand-side measure intended specifically to assist residents of low-income households to reduce their energy consumption;*
> *b) If the plan portfolio is introduced on or after June 1, 2009, a demand-side measure intended specifically to improve the energy efficiency of rental accommodations;*
> *c) An education program for students enrolled in schools in the public utility's service area;*
> *d) If the plan portfolio is submitted on or after June 1, 2009, an education program for students enrolled in post-secondary institutions in the public utility's service area."*

The Companies have met all the requirements for adequacy in their EEC Portfolio. There are a number of programs for low income customers, which are discussed in their own section (see Section 6). A number of the Commercial Energy Efficiency programs are intended for use by owners of rental buildings, including the Energy Specialist Program (see Section 7). Additionally, the Low Income Energy Conservation Assistance Program (ECAP) and Energy Savings Kit (ESK) programs, as well as all Residential Energy Efficiency programs, are available to rental properties (see Sections 5 and 6). Additionally, High Efficiency Domestic Hot Water Fixtures were made available to renters through the Companies' Commercial MURB and Residential Low Flow Fixtures Programs (see Tables 7-10 and Table 5-7 respectively). Planning activity for a new program specifically to address market barriers to energy efficiency faced by renters also began in 2014, for launch in 2015 in accordance with Commission directives contained in its decision on the FEI 2014-2019 PBR Plan (Order Number G-138-14).

In terms of education programs, the Companies funded a variety of initiatives for K-12 students, including Destination Conservation, Energy is Awesome, Green Bricks, Energy Champion School Assembly Presentations and the Vancouver Aquarium Aquaguide initiative (see Section 10, Table 10-4). The Companies also funded post-secondary student engagement delivered by supporting behavior change initiatives targeting post-secondary institutions and conducted education programs for residential and commercial customers (see Section 10).

2.5 Addressing BCUC Directives from the FEI 2014-19 Performance Based Ratemaking Decision

The Companies filed their 2014-18 EEC Plan and associated funding request to the BCUC with the FEI 2014-2018 PBR Application. There were a number of Commission Directives from the PBR Decision (Commission Order G-138-14) that are specific to the 2014-18 EEC Plan. In this section, the Companies address Directives relevant to the overall EEC Portfolio. Program specific directives are addressed in the applicable program area section of this report.

2.5.1 AVOIDED COST OF GAS

The Commission Panel directed the FEU to include an update of the avoided cost of gas used for the MTRC in this EEC Annual Report. The Commission noted that the avoided cost of gas used for the MTRC "should reflect BC Hydro's LRMC [Long Run Marginal Cost of clean electricity] included in their November 2013 Integrated Resource Plan, and the recent amendments to the DSM Regulations" (pg. 263). As the DSM Regulation stipulates, the value that the FEU have used for the avoided cost of gas in the MTRC calculation is $100/MWh, or $27.78/GJ, as indicated in BC Hydro's November 2013 Integrated Resource Plan, Section 9.2.12, "Long Run Marginal Cost" (pgs. 9-51 to 9-55).

2.5.2 LABOUR COSTS

The Commission Panel directed the FEU to allocate 'FEU labour costs coded to EEC' to its EEC programs in this Annual Report, with the exception of costs related to Evaluation, Measurement & Verification. The FEU were also directed to include a description of the cost allocation methodology used, and any differences between the methodology proposed and that used in the 2012–2013 Application.

The FEU have tracked labour costs by program and therefore were able to address these directives by adjusting where in the cost effectiveness analysis these costs are attributed. The FEU have included labour costs coded to each EEC program in the reported "Administration" expenditures for each program within each EEC Program Area. The total administration expenditures are included in the specific program tables within each EEC Program Area section of this report (Sections 5-11). Note that some administrative labour costs are still appropriately attributed to the Portfolio and not to specific programs. In all, this allocation differs from how labour costs were included in the 2012 and 2013 EEC Annual Reports, wherein all EEC labour costs were included in the "Portfolio Level Activities."

It should be noted that in many cases this change in reporting has resulted in differences between the "Administrative" expenditures reported for each program in the 2013 and 2014 EEC Annual Reports. The "Administrative" expenditures from 2014 will thus not be comparable to past reported years. In some cases, applying labour costs to an individual program will negatively impact the cost-effectiveness of the program; however, this change does not impact the overall cost-effectivenss of the Portfolio. The FEU also note that the

allocation of labour costs to the program level, as opposed to the portfolio level, has resulted in some Program Area's total spending being above the budgeted amounts set out in the 2014-18 EEC plan, as accepted by the Commission in Commission Order G-138-14.

2.5.3 CONTRACTOR NETWORK PROGRAM

The Commission Panel expressed concerns that the FEU's Contractor Network Program, the FortisBC Trade Ally Network, may include expenses that could be characterized as marketing and that may inadvertently result in load building. As such, the Panel directed the FEU to explain how it ensures the focus of the contractor network program is on reducing overall gas consumption by customers in this EEC Annual Report. This explanation follows.

For 2014, the Contractor program has been renamed the Trade Ally Network (TAN). The focus of the TAN is to increase EEC program uptake, and encourage the safe, permitted installation of efficient natural gas appliances.Contractors who are part of the TAN are a key delivery pathway for EEC programs and initiatives. Through the TAN co-op advertising initiative, members have access to funds to offset costs related to the promotion of high efficiency natural gas products and services. Approximately $195,000 of the $348,000 communication expenditure in the TAN program arises from Member contractor co-op advertising activity. All co-op advertising must be pre-approved by FEI to ensure compliance with co-op advertising program terms and conditions; these terms and conditions require that contractor co-op advertising feature energy efficiency messaging related to natural gas products and services in order to be eligible for funding by FEI. The remaining expenses for the TAN program are expenditures related to contractor training, orientation sessions, and collateral, all of which focus on educating contractors about EEC programs, general FEI business updates, and benefits available to participating contractors through the FortisBC Trade Ally Network program.

2.6 Collaboration & Integration

The Companies continue to collaborate and integrate EEC/DSM programming with both FortisBC Inc. (FBC - the electric utility) and BC Hydro, as well as with other entities such as governments and industry associations. In the fall of 2014, the electric and gas DSM activity at the Companies was brought under common management, in order to further integrate electric and gas offerings to customers. The Companies recognize that collaboration generally will maximize program efficiency and effectiveness. Collaborative activity is captured in the individual Program Area sections and program descriptions found in Sections 5 through 11.

The FEU and BC Hydro continued to expand on their program and project collaborations in 2014 through their voluntary Memorandum of Understanding (MOU), the purpose of which is to develop enhanced utility integration in support of government legislation, policy and direction. The 3 year MOU, which was initially executed in July 2009, and extended for another 3 years in July 2012, provides shared objectives, areas of focus, guiding principles and administrative guidance for collaborative activity.

In 2014, the FEU and BC Hydro conducted a joint review of incremental cost efficiencies occurring as a direct result of the partnership over the April 1, 2013 to March 31, 2014 time period (BC Hydro fiscal year). This review examined the costs incurred for each program and project collaboration that was in place over the April 1, 2013 to March 31, 2014 time period and determined that the FEU and BC Hydro combined had total incremental cost efficiencies of approximately $4.5 million as a result of working together. The FEU, FBC and BC Hydro also continue to experience additional benefits from their collaboration efforts, including streamlined application processes for customers, extended program reach and consistent and unified messaging resulting in improved energy literacy.

2.7 Summary

The Companies' EEC portfolio met the goal of cost effectiveness with a MTRC value of 1.7 in 2014. The Companies are of the view that both energy savings accounted for in the portfolio and the resulting TRC are conservative. Benefits from additional activities, such as CEO, play a very important role in supporting the development and delivery of programs, while creating a culture of conservation in British Columbia. The Companies expect that with a more complete approach to the Net-to-Gross ratio, the incorporation of energy savings from CEO, and with the recent changes to the Demand-Side Measures Regulation, the EEC portfolio will continue to be cost effective.

3 FUNDING TRANSFERS

There were no funding transfers between Program Areas in 2014.

4 EEC ADVISORY GROUP ACTIVITIES

4.1 Overview

The Energy Efficiency and Conservation Advisory Group (EECAG) provides insight and feedback on the Companies' portfolio of EEC activities and related issues. This includes: EEC program and portfolio performance, development and design; funding transfers; policy and regulations that may impact EEC activities; and other issues and activities as they may arise.

Members may be appointed based on their relevant subject matter expertise, representation of a common interest shared by stakeholders, or representation of a particular organization/group and/or interest. This includes, but is not limited to, governments, regions, First Nations organizations, customers, suppliers, industries, non-governmental organizations, research institutes and other groups that have historically intervened in the Companies' regulatory proceedings.

Since the formation of the EECAG in 2009, the Companies have had the opportunity to gain valuable insight on EEC program design and implementation and develop positive working relationships with stakeholders. EECAG input continues to be instrumental as the Companies move forward with EEC activities, helping to ensure that efforts are aligned with the interests and suggestions of stakeholders.

4.2 Summary of 2014 Workshops

EECAG workshops provide a forum for stakeholders to learn about EEC programs and engage in constructive dialogue with the Companies. For 2014, the Companies held an EECAG workshop on November 27th in Vancouver. The EECAG Independent Facilitator was engaged in workshop design and facilitation of the workshop. While the EECAG may meet more than once per year, there were a number of factors that resulted in a single meeting in 2014 being deemed appropriate; key among them being the amendments to the *Demand Side Measures Regulation* being issued in July and the timing of the PBR Decision from the BCUC. As very few changes were made to the Companies' portfolio of EEC activities while awaiting these two items, the Companies felt it would be the most productive use of the EECAG's time to wait until these two items had been released prior to hosting an EECAG meeting.

At the fall workshop, the Companies provided:

- EEC program area updates for 2014;
- A review of the impact of the PBR Decision on the Companies' EEC activities, including the initiation of the Companies 2014-18 EEC Plan;

- An update on the impact of the revised BC DSM Regulations[6]; and,
- An update on the Companies' proposal to claim energy savings from the Advancement of Codes and Standards.

The Companies' proposal to claim energy savings from the Advancement of Codes and Standards was presented to the EECAG by the Energy Utilization Manager from the Companies' Business Performance and Technical Solutions team who drafted the approach. While clarification questions were raised, no EECAG members expressed opposition to the approach. Details on the Companies proposal are described further in Section 5, in the notes below Table 5-8, "New Homes Programs" (pgs. 32-33).

Additionally, the Companies sought input on a number of program and policy areas, including:

- An exploration of the facilitators for, and barriers to, targeting EEC programs at renters, and initial brainstorming of program design ideas for the introduction of a Rental Program in order to address the Commission's directive to introduce a program "intended to specifically address the unique market barriers to energy efficiency faced by renters (for example, the landlord-tenant split-incentive)"[7]; and
- Opportunities to claim energy savings from Conservation Education and Outreach.

The Companies sought input into the potential design of a renters' program within the parameters set out by the Commission's directive. The EECAG was very helpful in providing suggestions on how to proceed in the development of an EEC program intended to specifically address the unique market barriers to energy efficiency faced by renters. During group discussions, many key barriers and facilitators were identified, and some potential program designs were explored. Key points of discussion included:

- the observation that many external factors, such as vacancy rates, low gas rates and residential tenancy legislation, limit how the landlord-tenant split incentive issue can be addressed;
- the observation that renters are a difficult to reach market segment and current EEC program offerings do provide solutions to this market segment given external factors;
- the importance of engaging with stakeholders to fully identify the target market moving forward;
- the recognition that many different stakeholders need to be engaged to fully tackle this issue;

[6] See Section 2, "Portfolio Overview" under Subsection 2.1, "Portfolio Level MTRC Calculation and Results" (Footnote 4, pg. 10)

[7] On September 15, 2014, the BCUC issued its Decision on FEI's Multi-Year Performance Based Ratemaking Plan for 2014- 2018. Within that decision the Commission directed the Companies to, "by the end of 2015 and within the existing EEC funding envelope, file with the Commission one or more EEC programs intended specifically to address the unique market barriers to energy efficiency faced by renters (for example, the landlord tenant split-incentive)" (pg. 275 Commission Order G-138-14)

- exploring the option of making adjustments to current program offerings that could extend their reach into the rental market perhaps being the best way to reach this market, rather than creating a specific new program; and,
- the potential for education and outreach to be an additional, specific program offering that could complement current program offerings serving the rental market.

The EECAG was also very receptive to claiming energy savings from Conservation Education and Outreach (CEO) initiatives. Most of the EECAG members communicated that they felt education and outreach was a very important aspect of reducing customer energy use and creating a culture of conservation. Group members felt that claiming savings was a way to recognize the contribution CEO makes to EEC efforts as a whole. At the time of the meeting, no member felt that the Companies should not claim savings from CEO. It was noted that there is a need to not get too hung up on evaluation and claiming energy savings, but also continue to recognize the non-measurable benefits of CEO.

In addition to the above group discussions, updates were presented on program impact evaluations from the Furnace Early Replacement Program. There were no funding transfers to report to the EECAG for 2014. As always, presentations on these topics were followed by a question and answer period and discussion to solicit input for future consideration.

4.3 Feedback & Lessons Learned

In addition to input on specific topics presented, EECAG members are encouraged to provide general feedback on the workshops, membership or any other issues. This feedback is typically submitted to the Companies via evaluation forms distributed at each workshop.

In an ongoing effort to improve EECAG interaction, results from feedback are considered by the Companies, in collaboration with the EECAG Independent Facilitator, to help design future EECAG sessions and workshops. The Companies listened to feedback from the 2013 workshops and incorporated more emphasis on the group discussion/feedback sessions (keeping in mind that there will always be a need to provide “information-out” in order to update and inform the EECAG on the complexities of EEC programming, evaluation, and policy). This included clearly communicating the FEU’s objectives with regards to bringing a particular topic to the EECAG for discussion, as well as clearly communicating the specific input sought on the particular issue or opportunity. The Companies also took more time to update the EECAG on how their advice has been used by the FEU to address potential EEC design and administration issues or to influence utility energy efficiency and DSM policy.

Feedback from the 2014 EECAG Workshop was largely positive. Only a few members commented that they would like to see a better balance of FEU presentation and group discussions. A few positive suggestions were also made to improve the general organization of the workshop and group discussions. The Companies will take this feedback into consideration when designing and organizing the next meeting. As always, the Companies will strive to design

future meetings in ways that provide information to the EECAG at the appropriate level of detail while also maximizing opportunities for discussion and provision of input.

5 RESIDENTIAL ENERGY EFFICIENCY PROGRAM AREA

5.1 Overview

The Residential Energy Efficiency Program Area continued to encourage residential customers to reduce their overall consumption of natural gas and their associated energy costs. Residential programs were successful in reducing annual natural gas consumption by over 94,000 GJ. The program area achieved an overall TRC of 0.7 and an MTRC of 2.3. FEU invested $10.9 million in Residential Energy Efficiency programs in 2014; of which 79 percent of this investment was incentive spending.

Table 5-1 summarizes the projected and actual expenditures for the Residential Energy Efficiency Program Area in 2014, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC, MTRC and other cost-effectiveness test results.

Residential programs serve over 860,000 homes in the FEU service territories. For EEC purposes, these end-use customers live in residential single-family homes, row houses, townhomes or mobile homes.[8] These programs serve retrofit and new home applications. Residential programs, in combination with the Companies' education and outreach activities, play an important role in driving the culture of conservation in British Columbia.

[8] Programs for Multifamily Dwellings served under Rate Schedule 2 or 3 are included in the Commercial Energy Efficiency Program Area (please refer to Section 8) other than a contribution towards in-suite Low Flow fixtures program represented in the Residential Program Area portfolio.

Table 5-1: 2014 Residential Energy Efficiency Program Area Results Summary

Program and Service Territory	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures ($000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending						
	2014-2018 EEC Plan	2014 Actual		2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	TRC	MTRC	Utility	Participant	RIM
Non Program Specific Expenses														
FEI	No Direct Savings			0	0	491	466	491	466	No Direct Savings				
FEVI				0	0	49	68	49	68					
Total				0	0	540	534	540	534					
Energy Efficiency Home Performance (LiveSmartBC)														
FEI	25,019	16,045	184,458	652	985	308	166	959	1,152	0.8	3.3	1.5	1.0	0.5
FEVI	2,474	1,435	17,079	65	79	31	19	95	99	0.9	3.9	1.7	2.0	0.4
Total	27,493	17,480	201,537	716	1,065	338	185	1,055	1,250					
Energy Efficiency Home Performance (HERO)														
FEI	8,340	2,470	29,956	217	141	102	158	319	300	0.7	2.8	1.0	1.9	0.4
FEVI	825	274	3,328	22	17	10	11	32	27	0.8	3.2	1.2	2.9	0.3
Total	9,164	2,744	33,284	239	158	112	169	351	327					
Furnace Replacement Program														
FEI	28,586	19,600	203,571	2,715	2,930	338	400	3,053	3,330	0.5	1.5	0.9	1.0	0.3
FEVI	2,827	1,128	11,842	269	170	33	36	302	206	0.5	1.4	0.9	1.4	0.2
Total	31,413	20,728	215,413	2,984	3,100	371	436	3,355	3,536					
Enerchoice Fireplace Program														
FEI	13,203	15,048	140,949	887	940	269	296	1,156	1,235	2.2	n/a	1.0	14.0	0.3
FEVI	3,097	4,430	41,895	208	275	63	61	271	336	1.9	n/a	1.2	12.1	0.2
Total	16,300	19,478	182,844	1,095	1,214	332	357	1,427	1,571					
Appliance Service Program														
FEI	No Direct Savings			324	0	91	0	415	0	No Direct Savings				
FEVI				32	0	9	0	41	0					
Total				356	0	100	0	456	0					
ENERGY STAR® Domestic Hot Water "DHW" Technologies														
FEI	10,931	13,925	138,409	874	1,111	123	246	997	1,357	0.4	1.8	0.9	1.2	0.4
FEVI	1,081	5,239	53,213	86	414	12	50	98	464	0.2	1.2	1.1	0.7	0.3
Total	12,012	19,164	191,622	960	1,525	135	296	1,095	1,821					
Low Flow Fixtures / Domestic Hot Water Conservation Program														
FEI	11,671	5,002	37,019	173	45	91	104	264	149	2.0	n/a	2.5	7.0	0.5
FEVI	1,154	51	464	17	3	9	3	26	5	1.4	n/a	2.6	2.8	0.3
Total	12,825	5,053	37,483	190	47	100	106	290	154					
New Home Program														
FEI	7,596	9,032	101,782	772	1,381	171	166	943	1,547	2.0	n/a	2.4	1.4	1.1
FEVI	751	388	4,772	76	68	17	12	93	80	2.2	n/a	3.7	1.7	1.4
Total	8,347	9,420	106,554	848	1,449	188	178	1,036	1,627					
New Technologies Program														
FEI	1,321	0	0	174	0	65	0	239	0	No Direct Savings				
FEVI	131	0	0	17	0	6	0	23	0					
Total	1,452	0	0	191	0	71	0	262	0					
Customer Engagement Tool for Conservation Behaviours														
FEI	64,125	0	0	0	0	520	79	520	79	No Direct Savings				
FEVI	7,125	0	0	0	0	58	0	58	0					
Total	71,250	0	0	0	0	578	79	578	79					
On-Bill Financing														
FEI	No Direct Savings			26	0	86	1	112	1	No Direct Savings				
FEVI				0	0	0	0	0	0					
Total				26	0	86	1	112	1					
ALL PROGRAMS														
FEI	**170,791**	**81,122**	**836,144**	**6,814**	**7,533**	**2,655**	**2,083**	**9,469**	**9,616**	**0.8**	**2.5**	**1.1**	**1.5**	**0.5**
FEVI	**19,465**	**12,945**	**132,593**	**791**	**1,026**	**297**	**259**	**1,088**	**1,285**	**0.4**	**1.4**	**1.2**	**1.5**	**0.3**
Total	**190,256**	**94,067**	**968,737**	**7,605**	**8,559**	**2,952**	**2,342**	**10,557**	**10,901**	**0.7**	**2.3**	**1.1**	**1.5**	**0.4**

Notes:

- Forecasts for the Energy Efficiency Home Performance Initiative presented in the 2014 EEC Plan were split 75% LiveSmart BC: 25% Home Energy Rebate Offer. This allocation was derived due to the fact that LiveSmart expenditures represent 12 months of activity while HERO was not launched until mid-way through 2014.

5.2 Residential TRC and MTRC Results

EEC Program Principles state that programs should be universal, offering access to EEC for all residential and commercial customers. Although many Residential EEC programs are challenged in meeting a conventional TRC test in a low gas cost environment, these programs, with their broad reach, are cost-effective when considering broader societal benefits and

greenhouse gas (GHG) emission reductions. This was recognized in the 2011 and 2014 amendments to the Demand-Side Measures Regulation that enabled the inclusion of lower TRC programs through the application of the MTRC.

The overall 2014 Residential Program Area TRC was 0.7 while the programs evaluated using the MTRC had a combined MTRC result of 2.3.

5.3 2014 Residential Energy Efficiency Programs

Tables 5-2 through 5-9 outline the specific Residential Energy Efficiency programs undertaken in 2014, including program and measure descriptions and a breakdown of non-incentive spending.

Table 5-2: Energy Efficient Home Performance Program (LiveSmart BC)

Program Description	April 1, 2013 through March 31, 2014 The LiveSmart BC Efficiency Incentives program promoted energy efficient home retrofits through a collaboration with utility partners and provincial, federal and municipal governments. Program partners shared investments in administration, evaluation and communications to engage the province in energy efficient home retrofits in a cost-effective program. During this program period, utility partners paid the building envelope incentives with no contribution from Ministry of Energy and Mines ("MEM"). MEM's contribution included subsidizing home Energuide evaluations for homeowners and providing administrative services. In 2014, the Home Energy Rebate Offer (HERO) replaced LiveSmart BC in the marketplace.						
Target Market	Residential customers						
New vs Retrofit	Retrofit						
Eligible Measures	Draftproofing	Attic Insulation	Basement Insulation	Wall Insulation	Crawl Space and Miscellaneous	Bonus Offer	
Incremental Measure Cost	$989	$1,357	$1,186	$1,398	$684	N/A	
Incentive Amount - FBC	$340	$486	$625	$1,075	$237	$750	
Savings Per Participant	6 GJ	12 GJ	9 GJ	21 GJ	6 GJ	N/A	
Measure Life & Source	20 year average assumed (10-15 years for Air Sealing, 20-25 years for Insulation); Consultations with BC Hydro, Habart & Hood, 2010 Conservation Potential Review and Dunsky Energy Consulting.						
Free Rider Rate & Source	20% average assumed based on past program analysis and NRCan evaluation. *Final Report: Analysis of Net-to-gross Survey Results for the ecoENERGY Retrofit for Homes Program.* Bronson Consulting Group. August, 2010						
Sources of Assumptions	Habart and Hood, Hot 2000 Energy Modeling Reports 2010, 2011 2010 Conservation Potential Review Dunsky Energy Consulting, Hot 2000 Modeling 2012, 2013 BC Hydro PowerSmart, Evaluation of the LiveSmart BC Efficiency Incentive Program F2009-F2011						
Participants	Service Region	2014-Projected	2014 Customers				
	FEI	1,985	1147				
	FEVI	199	87				
	FEW	22	0				
	Total	2,205	1,234				
Expenditures ($,000s)				Non-Incentive Expenditures			
	Service Region	Building Envelope Incentives		Admin	Communication	Research & Evaluation	Total
	FEI	985		166	0	0	1,152
	FEVI	79		19	0	0	99
	FEW	0		0	0	0	0
	Total	1,065		185	0	0	1,250

Notes:

- This program was a collaboration between the FEU, BC Hydro PowerSmart, FBC (PowerSense) Ministry of Energy and Mines (MEM), Natural Resources Canada
- The results in this table represent invoices FEU received in 2014 for retrofits that primarily occurred between April 1, 2013 and March 31, 2014.
- Forecasts for the Energy Efficient Home Performance Initiative presented in the 2014 EEC Plan were split 75% LiveSmart BC: 25% Home Energy Rebate Offer. This allocation was derived based on the fact that LiveSmart expenditures represent 12 months of activity while HERO was not launched until mid-way through 2014.
- Measure costs were based on market analysis provided by Dunsky Energy Consulting.
- Energy savings estimates sourced both the BC Hydro Evaluation of the LiveSmart BC Efficiency Incentive Program based on billing consumption of F2009-F2011 participants and Dunsky Energy Consulting Hot 2000 estimates, which are more representative of installed measures in the 2013 - 2014 iteration of the program.
- Administrative expenses represent FEU's contribution towards program administration provided by Ministry of Energy and Mines for 2013 and 2014.

Table 5-3: Energy Efficient Home Performance Program (HERO)

Program Description	This program promotes energy-efficient home retrofits focused on educating homeowners on the concept of home performance. Utility partners will administer the program. Federal, provincial and municipal governments will assist with program promotion and other initiatives including capacity building for weatherization and educational opportunities to promote NRCan's new Home Energy Rating System.				
Target Market	Residential customers				
New vs Retrofit	Retrofit				
Partners	BC Hydro, PowerSense, BC Ministry of Energy and Mines, Natural Resources Canada and local governments				
Eligible Measures	Draftproofing	Attic Insulation	Basement Insulation	Wall Insulation	Bonus Offer
Incremental Measure Cost	$989	$1,357	$1,186	$1,398	N/A
Incentive Amount	Up to $500	Up to $600	Up to $1000	Up to $1200	$750
Savings Per Participant	6 GJ	12 GJ	9 GJ	21 GJ	N/A
Measure Life & Source	20 year average assumed (10-15 years for Air Sealing, 20-25 years for Insulation, and 20-25 years for Windows); Consultations with BC Hydro, Habart & Hood, 2010 Conservation Potential Review and Dunsky Energy Consulting.				
Free Rider Rate & Source	20% average assumed based on past program analysis and NRCan evaluation. *Final Report: Analysis of Net-to-gross Survey Results for the ecoENERGY Retrofit for Homes Program.* Bronson Consulting Group. August, 2010				
Sources of Assumptions	Habart and Hood, Hot 2000 Energy Modeling Reports 2010, 2011 2010 Conservation Potential Review Dunsky Energy Consulting, Hot 2000 Modeling 2012,2013 BC Hydro PowerSmart, Evaluation of the LiveSmart BC Efficiency Incentive Program F2009-F2011				
Participants	Service Region	2014-Projected	2014 Actual		
	FEI	662	296		
	FEVI	66	47		
	FEW	7	0		
	Total	735	343		
Expenditures ($,000s)			Non-Incentive Expenditures		
	Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	141	76	79	3	300
	FEVI	17	6	4	0	27
	FEW	0	0	0	0	0
	Total	158	83	83	3	327

Notes:

- Forecasts for the Energy Efficient Home Performance Initiative presented in the 2014 EEC Plan were split 75% LiveSmart BC: 25% Home Energy Rebate Offer. This allocation was derived based on the fact that LiveSmart expenditures represent 12 months of activity while HERO was not launched until mid-way through 2014.

- Since HERO is new to the market resulting in a relatively small sample size, in-depth evaluation of energy savings and incremental costs for 2014 program participants have not been conducted. Therefore, FEU used savings and incremental costs from previous LiveSmart BC iterations. An in-depth evaluation of measure costs and depth of insulation upgrades performed within HERO will be conducted in 2015 based on information obtained from program applications and further market analysis.

Table 5-4: Furnace Replacement Program

Program Description	The Furnace and Boiler Replacement program targets customers with functioning furnaces (standard or mid-efficiency) or boilers and, through a combination of marketing and incentives, encourages them to replace the equipment now, rather than waiting for it to fail at some point in the future.						
Target Market	Residential customers						
New vs Retrofit	Retrofit						
Partners	N/A						
Eligible Measures	Standard efficiency	Mid - Efficiency	Boilers				
Incremental Measure Cost	$1,845	$1,845	$3,139				
Incentive Amount	$800	$800	$800				
Contractor Incentive	$50	$50	$50				
Savings Per Participant	7.3 GJs	5.3 GJs	9.0 GJs				
Measure Life & Source	Furnace - 18 years and Boiler - 18 years -Navigant Consulting report, BC Hydro Power Smart QA Standard,						
Free Rider Rate & Source	21% based on Furnace Replacement Program - Billing Analysis of 2012 Participant Savings. Sampson						
Sources of Assumptions	2012 and 2013 Furnace Replacement Pilot Program Evaluation - by Habart and Associates Furnace Replacement Program - Billing Analysis of 2012 Participant Savings. Sampson Research Inc. 2012 FortisBC Residential End Use Study						
Participants	Service Region	2014 Projected	2014 Actual				
	FEI	3,357	3,691				
	FEVI	336	212				
	FEW	37	1				
	Total	3,730	3,904				
Expenditures ($,000s)			Non-Incentives				
	Service Region	Incentives	Dealer Incentive	Admin	Communication	Research & Evaluation	Total
	FEI	2,929	178	99	57	67	3,329
	FEVI	170	10	11	8	7	206
	FEW	1	0	0	0	0	1
	Total	3,100	188	109	65	74	3,536

Notes:

- The Furnace & Boiler Replacement program continues to be run outside of heating season to reduce the incidence of emergency replacements.
- The program is successful in terms of participation targets, contractor feedback and cost effectiveness. However, analysis of 2014 program participant data resulted in about a 32% decrease in annual savings than forecasted in the 2014 EEC Report. Factors that contributed to this decline in savings include the following:
    - Replacements of standard furnaces result in higher energy savings based on the early replacement methodology. In 2013, standard replacements were 76% while in 2014 standard replacements were 64% of total participants. This is consistent with the 2012 Residential End Use Study which demonstrates that the installed base of standard efficiency furnaces has declined from 44% in 2008 to 23% in 2012. FEU estimates that there are 138,000 standard efficiency and 240,000 mid-efficiency furnaces still operational in the province with significant opportunity to reduce natural gas consumption through an upgrade to high efficiency models.
    - Energy savings per participant was reduced from 10.3 GJs in 2013 Annual Report to 7.3 GJs based on results from Billing Analysis and the fact that Remaining Life estimates in the 2014 program was 4.1 years rather than 4.8 years

Table 5-5: EnerChoice Fireplace Program

Program Description	This program promotes the purchase and installation of energy-efficient EnerChoice fireplaces. The program emphasizes consumer and dealer education about the importance of selecting natural gas fireplaces based on energy-efficiency performance attributes rather than just decorative features. Program awareness and participation will be promoted through a combination of customer and dealer incentives and promotional activities.
Target Market	Residential customers
New vs Retrofit	Both
Partners	N/A
Eligible Measures	EnerChoice Fireplace
Incremental Measure Cost	EnerChoice Fireplace (Retrofit): $150, EnerChoice Fireplace (New Construction): $300
Customer Incentive Contractor Incentive	$300 $50 (Retrofit only)
Savings Per Participant	7.8 GJ
Measure Life & Source	15 years- Data from prior program participants, Impact of Terasen Gas Pilot Fireplace Program (2004) by Habart and Associates, 2010 Conservation Potential Review, 2012 FortisBC Residential End Use Study
Free Rider Rate & Source	40% - Retrofit and 15% New Construction - increase over 2013 is indicative of market transformation

Participants

Service Region	2014 Projected	Retrofit	New Construction
		Total	Total
FEI	2,920	2,871	250
FEVI	694	822	94
FEW	37	11	0
Total	3,651	3,704	344

Expenditures ($,000s)

Service Region	Incentives	Non-Incentives				
		Contractor Incentives	Admin	Communication	Research & Evaluation	Total
FEI	940	144	44	65	43	1,235
FEVI	275	41	9	7	5	336
FEW	0	0	0	0	0	0
Total	1,214	184	53	72	47	1,571

Notes:

- Contractor incentives of $50 per participant are allocated to the administration portion of non-incentive spend.

Table 5-6: ENERGY STAR® Water Heater Program

Program Description	This program promotes the replacement of standard efficiency water heaters with efficient ENERGY STAR® models. As part of a longer term market transformation strategy, the program introduced 0.67 EF storage tank water heaters and new technologies with energy factors (EF) greater than 0.80. The new technologies include condensing and non-condensing tankless water heaters, hybrids and condensing storage tanks. The program is available to both retrofit and new construction markets. The program supports upcoming federal and provincial Efficiency Act Standards for natural gas- and propane-fired water heaters.				
Target Market	Residential customers				
New vs Retrofit	Both				
Partners	N/A				
Eligible Measures	ESTAR 0.67 EF Storage Tank	Non-Condensing Tankless	Condensing Tankless	Hybrids	Condensing Storage Tank
Incremental Measure Cost					
Retrofit	$250	$1,510	$2,359	$2,219	$2,030
New Construction	$100	$425	$825	$1,478	$2,771
Incentive Amount	$200	$400	$500	$500	$1,000
Savings Per Participant	3 GJ	7 GJ	8 GJ	7 GJ	5 GJ
Measure Life & Sources	17.2 years- Manufacturers and other utilities; ACEEE Emerging Hot Water Technologies and Practices for Energy Efficiency as of 2011. October 2011. Report Number A112. Sachs, H., Jacob Talbot and Nate Kaufman; Canadian Residential Water Heater Market Assessment. 2009. Caneta Research Inc.				
Free Rider Rate & Source	10%- ACEEE Emerging Hot Water Technologies and Practices for Energy Efficiency as of 2011. October 2011. Report Number A112. Sachs, H., Jacob Talbot and Nate Kaufman; Program Participant Feedback. 2012 Residential End Use Study.				
Sources of Assumptions	ACEEE Emerging Hot Water Technologies and Practices for Energy Efficiency as of 2011. October 2011. Report Number A112. Sachs, H., Jacob Talbot and Nate Kaufman; 2014 Program Participant Feedback. A Canadian high efficiency natural gas water heater pilot project. Project # 417311. Natural Gas Technologies Centre. Prepared by Adam Neale.				

Participants

Service Region	2014 Total Projected	2014 Actual							
		ESTAR 0.67 EF Storage Tank		Non-Condensing Tankless		Condensing Tankless & Hybrids		Condensing Storage Tank	
		Retrofit	New Const.	Retrofit	New Const.	Retrofit	New Const.	Retrofit	New Const.
FEI	2,492	1,861	9	75	47	824	146	188	15
FEVI	249	256	9	84	43	372	78	84	1
FEW	28	1	0	0	0	0	0	0	0
Total	2,769	2,118	18	159	90	1,196	224	272	16

Expenditures ($,000s)

Service Region	Incentives	Non- Incentives				Total
		Dealer Incentives	Admin	Comm.	Research & Evaluation	
FEI	1,111	143	43	60	0	1,357
FEVI	414	38	5	7	0	464
FEW	0	0	0	0	0	0
Total	1,525	181	48	66	0	1,821

Notes:

- The Canadian high efficiency natural gas water heater pilot project conducted by Natural Gas Technologies Centre which used sub-metering analysis of 38 homes confirmed that energy savings estimates are valid with overall energy savings of about 37% across new technologies.

Table 5-7: Low Flow Fixtures

Program Description	The objective of this program is to reduce hot water consumption in houses, row houses and MURBS through partnerships with utilities or government. Initiatives include the installation of low-flow fixtures and ENERGY STAR washers.					
Target Market	Residential customers					
New vs Retrofit	Retrofit					
Partners	Non-Governmental Organizations (NGOs), Municipalities and BC Hydro					
Eligible Measures	Low-Flow Fixtures; ENERGY STAR® Washers					
Low Flow Fixtures:						
Incremental Measure Cost	N/A in this direct install program					
Incentive Amount	N/A in this direct install program					
Savings Per Participant	Bathroom fixtures 0.3 GJ / Kitchen fixtures 1.2 GJ/ Shower 1.2 GJ					
Measure Life & Source	10 years- 2010 Conservation Potential Review (ultra low-flow shower head, 1.25 GPM)					
Free Rider Rate & Source	10%- City Green Report: Tap by Tap, January 10, 2012					
ENERGY STAR Washers:						
Incremental Measure Cost	$102					
Incentive Amount	• $50 rebate (FEU contributes $25) on qualifying ENERGY STAR® clothes washers - MEF of 2.6, WF of 4.0 • $100 rebate (FEU contributes $50) on qualifying ENERGY STAR clothes washers - MEF of 2.8, WF of 4.0					
Savings Per Participant	1.0 GJ Natural Gas plus 0.25 GJ electric - BC Hydro					
Measure Life & Source	14 years- 2010 Conservation Potential Review and Ontario Power Authority "2010 Prescriptive Measures and Assumptions: Release 1"					
Free Rider Rate & Source	20%- BC Hydro based on market share of eligible washers					
Participants		2014 Projected	Low Flow Fixtures	ENERGYSTAR Washers	Total	
	Service Region					
	FEI	8,550	5,457	802	6,259	
	FEVI	855	0	64	64	
	FEW	95	0		0	
	Total	9,500	5,457	866	6,323	
Expenditures ($,000s)		Incentives	Non-Incentives			Total
	Service Region		Admin	Communication	Research & Evaluation	
	FEI	45	28	0	76	149
	FEVI	3	1	0	2	5
	FEW	0	0	0	0	0
	Total	47	29	0	78	154

Table 5-8: New Home Program

Program Description	This program provides education and financial incentives in support of energy-efficient building practices for the Residential sector. This program supports the pending efficiency updates to the BC Building Code (effective Dec. 2014) and also educates consumers about the benefits of purchasing energy-efficient new homes. The Companies are collaborating with the BC Hydro Power Smart New Home and FortisBC PowerSense programs. Future program design is under development focusing on the introduction of ENERGY STAR® for New Homes in 2015.				
Target Market	Builders of residential properties – single family homes and townhomes and homeowner builders				
New vs Retrofit	New Construction				
Partners	BC Hydro and PowerSense				
Eligible Measures	EG80 Single Family Dwellings	EG80 Townhome/Rowhome	Boilers		
Incremental Measure Cost	$3,912	$1,166	$1,350		
Incentive Amount	$2,000	$200	$1,000		
Savings Per Participant	16.3 GJs	4.4 GJs	8.4 GJs		
Measure Life & Source	25 years- New Construction Costs and Savings and Life Cycle Costs, First published in 2011 and updated in 2014, Cooper and Habart, and Dunsky Energy Consulting				
Free Rider Rate & Source	15% for EnerGuide 80 and 40% for Boilers				
Participants	Service Region	2014 Projected	2014 Actual		
			EG80 SFD	EG80 Rowhome	Boiler
	FEI	1,368	244	311	885
	FEVI	137	28	15	15
	FEW	15	5	0	0
	Total	1,520	277	326	900
Expenditures ($,000s)			Non-Incentive Expenditures		
	Service Region	Incentives	Program Administration	Communication	Research & Evaluation	Total
	FEI	1,381	83	63	20	1,547
	FEVI	68	11	3	(2)	80
	FEW	0	0	0	0	0
	Total	1,449	94	65	19	1,627

Notes:

- The FEU has collaborated with BC Hydro Power Smart and FBC PowerSense on this program.
- Energy savings and participant costs were derived from a 2013 study, BC Building Code (2014) & New Homes Program, by Cooper and Habart. This study was co-developed with electric utilities.
- For 2014, the Companies are attributing energy savings for the advancement of Codes and Standards as a direct result of the New Home Program which has been in market since 2012. The program advances Codes and Standards by helping builders, developers and contractors become more knowledgeable in building more energy efficient homes and enabling the market transformation to more stringent codes that reduces energy use in newly constructed homes. As such, this work in part enabled the introduction of the new BC Building code effective December 2014 and the 2014 Vancouver Building By-Law (VBBL) effective January 1, 2015. Both of these new building codes set a higher energy efficiency standard for residential homes that include single family homes and row homes/townhouses over the current version of the respective building codes.
- Following the methodology as described in the Guide to DSM Regulation[9], under Section 3.6, including the codes and standards attribution in the New Home Program results in the program passing the TRC (see Table 5-1) without significantly affecting the cost-effectivenes of the portfolio as a whole. The table below shows the TRC and MTRC for the EEC Portfolio with and

[9] Guide to the Demand-Side Measures Regulation, BC Ministry of Energy and Mines, July 2014 (http://www.empr.gov.bc.ca/EEC/Strategy/EEA/Documents/Guide%20to%20the%20DSM%20Regulation_July%202014_c2.pdf)

without the inclusion of codes and standards energy savings attribution. It can be seen that the added benefits from codes and standards to the New Home Program does not significantly alter the cost-effectiveness of the EEC portfolio as a whole. The EEC portfolio TRC remained unchanged while the MTRC is only increased by 0.1 due to the benefits from codes and standards in the New Home Program.

Table 5.8a: Effect of Claimed Benefits in New Home Program on EEC Portfolio TRC, MTRC and UCT Cost Effectiveness Results

EEC Portfolio (**Without** Codes & Standards in New Home Program)			
	TRC	**MTRC**	**UCT**
FEI	0.8	1.7	0.9
FEVI	0.8	1.3	1.2
Combined	**0.8**	**1.6**	**0.9**
EEC Portfolio (**With** Codes & Standards in New Home Program)			
	TRC	**MTRC**	**UCT**
FEI	0.9	1.8	1.0
FEVI	0.8	1.4	1.2
Combined	**0.9**	**1.7**	**1.0**

Table 5-9: Customer Engagement Tool for Conservation Behaviours

Program Description	This program will provide customers with reports that show them their energy consumption in comparison to their neighbours. The reports will include energy saving tips and offers to reduce their energy bills. Promotional activities will include online tools and paper-based reporting.					
Target Market	Residential customers					
New vs Retrofit	Both					
Partners	FortisBC Electric for the Home Energy Reporting SST Measure					
Eligible Measures	Home Energy Reporting SST (40%), Home Energy Reporting (Gas Only) (60%)					
Incremental Measure Cost	$0					
Incentive Amount	$0					
Savings Per Participant	1 GJ Gas; 157 kWh Electric					
Measure Life & Source	1 year- OPOWER Evaluation Reports for gas utilities					
Free Rider Rate & Source	N/A					
Participants		2014 Projected	2014 Actual			
	Service Region					
	FEI	64,125	0			
	FEVI	7,125	0			
	FEW	0	0			
	Total	71,250	0			
Expenditures ($,000s)		Incentives	Non-Incentives			Total
	Service Region		Admin	Communication	Research & Evaluation	
	FEI	0	9	0	71	79
	FEVI	0	0	0	0	0
	FEW	0	0	0	0	0
	Total	0	9	0	71	79

Notes:

- This program was not launched in 2014. FEU developed the business case and released an RFP for vendor selection. However, through this process, it was determined that major privacy concerns existed relating to the requirement for migrating FEU's customer dataset. This project is on hold until FEU is satisfied that a technological solution that ensures the anonymity of personal information can be determined. The expenditures above reflect this ongoing administration cost for research and evaluation.

5.4 2014 Residential Energy Efficiency Programs Planned But Not Launched

5.4.1 THE APPLIANCE SERVICE PROGRAM

The Appliance Service program was not conducted in 2014 due to a re-allocation of resources in launching the Home Energy Rebate Offer. However, the program will return to market in 2015 due to positive feedback from contractors, who use the program as a tool for engaging customers in dialogues about energy efficient appliance upgrades.

5.4.2 CUSTOMER ENGAGEMENT TOOL

The FEU developed the business case and released an RFP for vendor selection. However, as noted above, the requirement for migrating the FEU's customer dataset raised significant privacy concerns. This project is on hold until the FEU are satisfied that a technological solution that ensures the anonymity of personal information can be determined.

5.4.3 ON-BILL FINANCING

On-bill financing pilots were found to be expensive and administratively burdensome for utilities. Pilot implementations were unsuccessful with very low uptake rates. However, the FEU have partnered with CIBC to offer a very competitive financing package through the Trade Ally Network program. Furthermore, partnerships with financial institutions are being developed in collaboration with BC Hydro and marketed through the Home Energy Rebate Offer program.

5.4.4 NEW TECHNOLOGIES

The FEU continue to explore New Technologies through the Innovative Technologies Program. There were no new technologies ready for program deployment in 2014. Combination heating and water heating systems is the first technology under consideration. A pilot is launching in early 2015. Pilot implementation learnings will be used to develop the business case which, if cost effective, will be presented to BCUC for approval as a 2016 program.

5.5 Summary

Residential Energy Efficiency Program Area activity in 2014 resulted in over 94,000 GJ/year of natural gas savings. Residential Energy Efficiency programs enabled customers to upgrade appliances and capture energy savings, supported the introduction of new provincial regulations and continued to build on relationships with the trades for education and program awareness. The combination of financial incentives, policy support, contractor outreach and effective marketing is instrumental to the ongoing success of these programs in generating natural gas savings and fostering market transformation in the residential sector.

Universality is a key guiding principle for the Companies' EEC initiatives. Amendments to the Demand-Side Measures Regulations have enabled more programs to be developed, resulting in significant energy savings benefits for residential customers. The Province, in turn, benefits from the resulting GHG emissions reductions in the residential building sector, as well as additional societal benefits such as water savings.

6 LOW INCOME ENERGY EFFICIENCY PROGRAM AREA

6.1 Overview

In 2014, the Companies saw continued success with the Energy Savings Kit (ESK) Program, implemented another successful Residential Energy Efficiency Works (REnEW) session, and continued development of the Energy Conservation Assistance Program (ECAP). Both the ESK program and the ECAP program continue to be a partnership with BC Hydro and the ESK program is also a partnership with FortisBC PowerSense.

In addition to the Companies' own Low Income programs, progress continues to be made on investing the $5.2 million in funds granted to the Companies by the Ministry of Energy, Mines and Natural Gas in 2009 to enable energy efficiency in low income households. In 2014, the Companies invested $677 thousand of this funding, primarily in retrofits in low income homes, the Super Efficient New Construction initiative, energy audits in non-profit housing societies, and the development of a building operator online training system. None of these investments are included in the spending amounts shown in Table 6-1. The remaining $1.5M will be invested over the next 2-3 years.

Table 6-1 summarizes the projected and actual expenditures for the Low Income Program Area in 2014, including incentive and non-incentive spending, annual and NPV gas savings, as well as the cost-effectiveness test results. The TRC and MTRC for low income EEC programs now uses a value of 140% of the benefits in accordance with July 2014 amendments to Section 4(2)(b) of the *Demand-Side Measures Regulation*. This amendment effectively increases the deemed cost effectiveness of the Low Income programs. In addition, amendments were also made to Section 1 of the *Demand-Side Measures Regulation* by changing the definition of "low-income household" to effectively increase the number of income qualified residents that can access EEC programs. This change to the definition of low income has helped sustain the ESK program participant numbers and will likely have a positive effect on ECAP participant numbers in 2015.

Table 6-1: 2014 Low Income Program Results Summary

Program and Service Territory	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures ($000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending						
	2014-2018 EEC Plan	2014 Actual		2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	TRC	MTRC	Utility	Participant	RIM
Non Program Specific Expenses														
FEI	No Direct Savings			0	0	268	107	268	107	No Direct Savings				
FEVI				0	0	37	8	37	8					
Total				0	0	305	115	305	115					
Energy Saving Kit (ESK)														
FEI	7,760	17,535	106,517	72	146	50	97	122	243	6.3	n/a	5.3	n/a	0.9
FEVI	2,587	5,358	32,736	24	45	13	9	37	54	9.6	n/a	7.4	n/a	0.4
Total	10,347	22,893	139,253	96	191	63	106	159	297					
Energy Conservation Assistance Program (ECAP)														
FEI	6,195	1,806	12,949	901	67	606	273	1,507	340	0.5	1.7	0.5	n/a	0.3
FEVI	688	194	1,397	100	10	67	23	167	33	0.5	1.9	0.5	n/a	0.3
Total	6,883	2,000	14,346	1,001	77	673	296	1,674	373					
Residential Energy Efficiency Works (REnEW)														
FEI	No Direct Savings			0	0	41	94	41	94	N/A				
FEVI				0	0	41	0	41	0					
Total				0	0	82	94	82	94					
*Low Income Space-Heat Top-Ups														
FEI	2,102	0	0	58	0	12	0	70	0	N/A				
FEVI	234	0	0	6	0	1	0	7	0					
Total	2,336	0	0	64	0	13	0	77	0					
*Low Income Water-Heating Top-Ups														
FEI	614	0	0	10	0	4	0	14	0	N/A				
FEVI	68	0	0	1	0	0	0	1	0					
Total	682	0	0	11	0	4	0	15	0					
*Non-Profit Custom Program														
FEI	5,499	0	0	204	0	81	0	285	0	N/A				
FEVI	611	0	0	23	0	9	0	32	0					
Total	6,110	0	0	227	0	90	0	317	0					
ALL PROGRAMS														
FEI	**22,170**	**19,341**	**119,466**	**1,245**	**213**	**1,062**	**571**	**2,307**	**784**	**2.0**	**n/a**	**1.8**	**7.9**	**0.7**
FEVI	**4,188**	**5,552**	**34,133**	**154**	**55**	**168**	**40**	**322**	**95**	**5.0**	**n/a**	**4.4**	**18.1**	**0.4**
Total	**26,358**	**24,893**	**153,599**	**1,399**	**268**	**1,230**	**611**	**2,629**	**880**	**2.3**	**n/a**	**2.1**	**10.0**	**0.6**

6.2 2014 Low Income Programs

Tables 6-2 through 6-4 outline the specific Low Income programs undertaken in 2014, including program and measure descriptions and a breakdown of non-incentive spending.

Table 6-2: Energy Saving Kit (ESK) Program

Program Description	The goal of this program is to reach a broad audience of low income customers and enable them to take some simple steps towards saving energy by installing a bundle of easy-to-install items that are delivered to their door. Promotional activities will include bill inserts, print ads, direct mail, and partnerships with government ministries and non-profits that serve the low income population.					
Target Market	Low Income Residential Customers					
New vs Retrofit	Retrofit					
Partners	BC Hydro					
Eligible Measures	Bundle of measures, including low-flow fixtures, water heater pipe wrap, caulking, draft proofing tape, outlet gaskets, and window film.					
Incremental Measure Cost	$13.51 - Average based on the full cost of the gas measures included in the ESK and pro-rated by the proportion of participants that use natural gas for space or water heating.					
Incentive Amount	$13.51 - Since the program is free to participants, the incentive equals the incremental cost					
Savings Per Participant	2 GJ - Updated savings to align with 2011 CPR results.					
Measure Life & Source	8 years - Average based on the individual gas measures included in the Energy Saving Kit					
Free Rider Rate & Source	27% - Based on 2010 BC Hydro participant survey.					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	5,315	7,274			
	FEVI	1,772	2,224			
	FEW	0	5			
	Total	7,087	9,503			
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	146	64	32	1	243
	FEVI	45	5	3	0	54
	FEW	0	0	0	0	0
	Total	191	70	36	1	297

Notes:

- Investment in the ESK program was higher than expected due to higher than planned participation. The higher participation is likely attributed to a) a successful partnership with the Ministry of Social Development and Social Innovation and b) the revised DSM Regulation which recognizes higher levels of household income in the definition of Low Income individuals thereby increasing the number of eligible customers.
- There were an immaterial number of participants (5) from the Whistler region. As such, the total program investments in Whistler were so small (less than $200) that it has not been separated out from the FEI investments.

Table 6-3: Energy Conservation Assistance Program (ECAP)

Program Description	This program enables deep energy savings in low income customer homes that have moderate to high energy consumption. Promotional activities include bill inserts, print ads, customer endorsements, and partnerships with government ministries, housing providers, and other organizations that serve the low income populations.
Target Market	Low Income Residential Customers
New vs Retrofit	Retrofit
Partners	BC Hydro
Eligible Measures	Bundle of customized measures, which may include low-flow fixtures, water heater pipe wrap, professional draft proofing, outlet gaskets, window film, insulation, improved ventilation, CO detectors, and furnaces.
Incremental Measure Cost	$178 - Based on average cost of the customized bundle of measures installed based on the full cost of the gas measures installed in gas heated homes
Incentive Amount	$178 - Based on average cost of the customized bundle of measures installed based on the full cost of the gas measures installed in gas heated homes
Savings Per Participant	4.8 GJ
Measure Life & Source	10 years - Average based on the individual gas measures included in ECAP
Free Rider Rate & Source	4% (Source: Primarily third-party studies)
Participants	Service Region: FEI — 2014 Projected: 1,113 — 2014 Actual: 392 FEVI — 124 — 42 FEW — 0 — 0 Total — 1,237 — 434
Expenditures ($,000s)	2014 Service Region: FEI — Incentives: 67 — Admin: 153 — Communication: 108 — Research & Evaluation: 12 — Total: 340 FEVI — 10 — 13 — 9 — 1 — 33 FEW — 0 — 0 — 0 — 0 — 0 Total — 77 — 166 — 117 — 13 — 373

Notes:

- In 2014, both FortisBC and BC Hydro needed to undertake Requests For Proposals (RFP's) to support the administrative structure of the ECAP program. The need to undertake these RFP's necessitated the ECAP program to be out of market for a period of time and this had a negative impact on overall participation in the ECAP for 2014.

- In 2015 we expect participation and the associated investment in the ECAP program to increase substantially. Thanks to increased outreach efforts, the pipeline for ECAP participants is very strong and 2015 shall see significantly higher participation rates than 2014.

A detailed breakdown of installed ECAP measures is provided in Table 6.4a, below to demonstrate the types of measures being utilized in the ECAP program.

Table 6-3a: 2014 ECAP Measure Installations by Household Type (ECAP)

Installed Measure	House Type			
	Row	Single Family Dwelling	MURB	Total All House Types
Low Flow Faucet Aerators	227	600	18	**845**
Low Flow Shower Heads	92	251	6	**349**
Water Heater Pipe Wrap	24	152	-	**176**
Outlet/Switch Gaskets	-	-	11	**11**
Basic Draftproofing Material (door sweep)	107	250	-	**357**
Carbon Monoxide Detector (health and safety measure)	105	325	-	**430**
Piloted Furnace Installation	1	-	-	**1**

Table 6-4: Residential Energy Efficiency Works (REnEW) Program

Program Description	The goal of this program is to ensure that the energy-efficiency trade in BC is built in a way that enhances communities by building the energy efficiency retrofit labour skills of people that are facing barriers to employment. This program provides energy-efficiency trade training by industry experts at no cost to participants.					
Target Market	Low income individuals facing barriers to employment					
New vs Retrofit	N/A					
Partners	N/A					
Eligible Measures	N/A					
Incremental Measure Cost	N/A					
Incentive Amount	N/A					
Savings Per Participant	N/A					
Measure Life & Source	N/A					
Free Rider Rate & Source	N/A					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	10	12			
	FEVI	10	0			
	FEW	0	0			
	Total	20	12			
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	0	94	0	0	94
	FEVI	0	0	0	0	0
	FEW	0	0	0	0	0
	Total	0	94	0	0	94

6.3 2014 Low Income Programs Planned But Not Launched

6.3.1 LOW INCOME SPACE HEAT TOP-UP, LOW INCOME WATER HEATING TOP-UP, NON-PROFIT CUSTOM PROGRAM

All three of the above named programs were proposed in the 2014-2018 RRA. Due to the BCUC approval occurring late in the calendar year, there has not been sufficient time to further develop and implement these programs. It is anticipated that by mid or late 2015 these programs will be available to our customers.

6.4 Summary

The Low Income Program Area has been an important priority for the Companies since the initial creation of the EEC Program Principles. The goal of creating programs that are accessible to all has been achieved through the launch of the ESK Program, the REnEW Program and ECAP.

7 COMMERCIAL ENERGY EFFICIENCY PROGRAM AREA

7.1 Overview

In 2014, Commercial Energy Efficiency programs continued to encourage commercial customers to reduce their overall consumption of natural gas and their associated energy costs. The Commercial Energy Efficiency Program Area reduced annual natural gas consumption by 254,922 GJs and achieved an overall TRC of 1.6. Over $9 million was invested in Commercial Energy Efficiency, of which 78% was incentive spending.

Table 7-1 summarizes the projected and actual expenditures for the Commercial Energy Efficiency Program Area in 2014, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC and other cost-effectiveness test results.

Table 7-1: 2014 Commercial Energy Efficiency Program Results Summary

Program and Service Territory	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures ($000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending						
	2014-2018 EEC Plan	2014 Actual		2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	TRC	MTRC	Utility	Participant	RIM
Non Program Specific Expenses														
FEI	No Direct Savings			0	0	935	589	935	589	No Direct Savings				
FEVI				0	0	165	163	165	163					
Total				0	0	1,100	752	1,100	752					
Space Heating Program														
FEI	39,810	53,530	587,018	1,291	2,751	56	213	1,347	2,965	2.0	n/a	1.9	3.8	0.5
FEVI	13,270	11,934	93,514	430	589	9	26	439	615	2.2	n/a	2.1	3.9	0.5
Total	53,080	65,464	680,532	1,721	3,340	65	239	1,786	3,580	2.0	n/a	1.9	3.8	0.5
Water Heating Program														
FEI	10,856	7,919	86,843	172	144	34	114	206	258	1.1	n/a	2.2	3.0	0.4
FEVI	1,767	3,952	28,530	28	57	4	17	32	74	1.1	n/a	4.0	2.4	0.5
Total	12,623	11,871	115,373	200	201	38	131	238	332	1.1	n/a	2.6	2.8	0.5
Commercial Food Service Program														
FEI	11,015	8,062	54,945	243	129	126	184	369	313	1.0	n/a	1.5	2.7	0.5
FEVI	1,224	1,602	13,131	27	42	14	7	41	49	1.8	n/a	2.4	4.5	0.4
Total	12,239	9,664	68,076	270	171	140	191	410	362	1.1	n/a	1.7	3.0	0.5
Customized Equipment Upgrade Program														
FEI	39,151	16,588	157,982	1,682	637	196	354	1,878	991	1.1	n/a	2.5	1.6	0.6
FEVI	6,909	5,634	52,257	297	305	22	78	319	383	0.9	n/a	1.6	2.2	0.4
Total	46,060	22,222	210,239	1,979	942	218	432	2,197	1,374	1.1	n/a	2.2	1.8	0.6
EnerTracker Program														
FEI	93,462	29,861	28,023	296	74	113	107	409	180	0.9	n/a	1.2	2.8	0.5
FEVI	0	0	0	0	0	0	3	0	3	n/a	n/a	n/a	n/a	n/a
Total	93,462	29,861	28,023	296	74	113	109	409	183					
Continuous Optimization Program														
FEI	98,954	47,781	198,241	2,480	552	175	12	2,655	564	1.4	n/a	2.9	2.3	0.7
FEVI	4,123	4,348	18,113	103	153	20	1	123	154	0.6	n/a	0.9	1.2	0.5
Total	103,077	52,129	216,354	2,583	705	195	13	2,778	718	1.3	n/a	2.5	2.1	0.6
Commercial Energy Assessment Program														
FEI	41,628	29,154	29,154	341	127	73	34	414	161	1.7	n/a	1.3	4.5	0.4
FEVI	4,625	10,493	9,861	38	46	8	7	46	52	2.1	n/a	1.5	6.3	0.3
Total	46,253	39,647	39,015	379	172	81	41	460	213	1.8	n/a	1.3	4.9	0.3
Energy Specialist Program														
FEI	0	17,380	70,559	1,296	1,335	101	185	1,397	1,520	n/a	n/a	n/a	n/a	n/a
FEVI	0	3,342	13,569	324	328	25	28	349	356	n/a	n/a	n/a	n/a	n/a
Total	0	20,722	84,128	1,620	1,662	126	214	1,746	1,876					
MURB Program														
FEI	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a
FEVI	0	3,341	24,121	0	13	0	10	0	23	9.9	n/a	9.3	38.1	0.5
Total	0	3,341	24,121	0	13	0	10	0	23					
Mechanical Insulation Pilot														
FEI	0	0	0	0	0	8	0	8	0	n/a	n/a	n/a	n/a	n/a
FEVI	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a
Total	0	0	0	0	0	8	0	8	0					
ALL PROGRAMS														
FEI	**334,876**	**210,275**	**1,212,765**	**7,801**	**5,749**	**1,817**	**1,792**	**9,618**	**7,541**	**1.6**	**n/a**	**2.0**	**2.9**	**0.5**
FEVI	**31,918**	**44,646**	**253,096**	**1,247**	**1,532**	**267**	**341**	**1,514**	**1,873**	**1.5**	**n/a**	**2.1**	**3.2**	**0.5**
Total	**366,794**	**254,922**	**1,465,861**	**9,048**	**7,281**	**2,084**	**2,133**	**11,132**	**9,413**	**1.6**	**n/a**	**2.1**	**3.0**	**0.5**

7.2 2014 Commercial Energy Efficiency Programs

The following tables outline the specific Commercial Energy Efficiency programs undertaken in 2014, including program and measure descriptions and a breakdown of non-incentive spending.

Table 7-2: Space Heat Program

Program Description	This program provides rebates for the installation of high efficient space heating equipment in commercial applications. Currently only rebates for high efficiency boilers are offered. Dependent upon the results of the Condensing Gas-Fired Ventilation Unit Pilot Program undertaken by Innovative Technologies, rebates for condensing rooftop units may also be offered via the program in 2016.					
Target Market	Commercial					
New vs Retrofit	Both					
Partners	N/A					
	FEI		FEVI			
	Retrofit	New Construction	Retrofit	New Construction		
Incremental Measure Cost	$15,135	$48,606	$15,395	$24,505		
Incentive Amount	$13,055	$40,810	$12,784	$25,755		
Savings Per Participant	328 GJ	376 GJ	322 GJ	578 GJ		
Measure Life & Source	20 years - ASHRAE Handbook and Conservation Potential Review					
Free Rider Rate & Source	18% - Efficient Boiler Program Impact Evaluation, June 12, 2003					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	106	197			
	FEVI	36	42			
	FEW	1	1			
	Total	143	240			
Expenditures ($,000)	2014					
	Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	2,746	161	52	0	2,959
	FEVI	589	17	9	0	615
	FEW	6	0	0	0	6
	Total	3,340	178	61	0	3,580

Notes:

- The incremental measure cost noted for the FEVI new construction market is based on only four participants and was abnormally low as two of the four purchased their boilers at a considerable discount to the normally observed price level.

Table 7-3: Water Heating Program

Program Description	This program provides rebates for the installation of high-efficiency commercial water heaters with thermal efficiencies greater than or equal to 84%.					
Target Market	Commercial					
New vs Retrofit	Both					
Partners	N/A					
	FEI		FEVI			
	Retrofit	New Construction	Retrofit	New Construction		
Incremental Measure Cost	$6,040	$4,219	$5,782	$23,560		
Incentive Amount	$1,654	$2,929	$1,414	$4,499		
Savings Per Participant	109 GJ	105 GJ	119 GJ	59 GJ		
Measure Life & Source	12 years -2010 Conservation Potential Review, Navigant Consulting (16 April 2009) Measures and Assumptions for Demand Side Management Planning Appendix C: Substantiation Sheets Ontario Energy Board pp. 210-226					
Free Rider Rate & Source	5% - Navigant Consulting (16 April 2009), Measures and Assumptions for Demand Side Management Planning, Appendix C: Substantiation Sheets, Ontario Energy Board, pp. 210-226					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	89	98			
	FEVI	15	15			
	FEW	1	0			
	Total	105	113			
Expenditures ($,000)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	144	65	49	0	258
	FEVI	57	9	9	0	74
	FEW	0	0	0	0	0
	Total	201	73	58	0	332

Notes:

- The incremental measure cost and incentive amounts noted for the FEVI new construction market are based on only two participants. One of the two projects was considerably larger than what is normally observed, resulting in abnormally high values.

Table 7-4: Commercial Food Service Program

Program Description	This program offers a suite of rebates for the installation of high-efficiency cooking appliances, and in 2014 also provided low flow pre-rinse spray valves, and faucet aerators via a direct install initiative to commercial kitchens in the City of Vancouver.				
Target Market	Commercial				
New vs Retrofit	Both				
Partners	N/A				
	FEI		FEVI		
	Retrofit	New Construction	Retrofit	New Construction	
Incremental Measure Cost	$558	$6,396	$6,398	$6,035	
Incentive Amount	$1,918	$2,938	$3,813	$2,875	
Savings Per Participant	16 GJ	149 GJ	188 GJ	125 GJ	
Measure Life & Source	9.09 years	12.0 years	12.0 years	12.0 years	• Foodservice Incentive Program Study 2012, Fisher-Nickel Inc. • Marbek Conservation Potential Review (2010) • Past spray valve program data • Database for Energy Efficiency Resources (DEER). San Francisco, CA, California Public Utilities Commission, 2011.
Free Rider Rate & Source	18%	20%	20%	20%	• Foodservice Incentive Program Study 2012, Fisher-Nickel Inc. • Past spray valve program data

Participants	Service Region	2014 Projected	2014 Actual
	FEI	300	538
	FEVI	34	12
	FEW	3	1
	Total	337	551

Expenditures ($,000)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	128	63	121	0	312
	FEVI	42	7	0	0	49
	FEW	1	0	0	0	1
	Total	171	70	121	0	362

Notes:

- As part of the Commercial Food Service Program and in partnership with BC Hydro and the City of Vancouver, the FEU participated in a program to install low-flow pre-rinse spray valves and faucet aerators in Vancouver food service establishments during Q3/Q4, 2014. The participants, energy savings and incremental costs pertaining to these low-flow devices are included in the FEI numbers. As such the average savings and incremental cost per participant is comparatively lower in FEI than in other service territories. Note that the associated incentive spend is not included here as the Contractor's final report was not completed and FEI was not therefore invoiced by the Contractor prior to December 31, 2014. This incentive spend will be included in the 2015 report, without associated participants and natural gas savings.

- Efficiency a la Carte applications (as well as Water Heater and Space Heat Program participants) must obtain an installation permit in order to qualify for the rebate. Based on anecdotal evidence, very few foodservice establishments obtain a permit when installing new foodservice equipment. This functions as an impediment to program participation, and the Companies have a plan to address the issue in 2015.

Table 7-5: Customized Equipment Upgrade Program

Program Description	This program provides eligible customers with funding towards the completion of a detailed Energy Study, to identify energy saving opportunities specific and customized to their facilities, and subsequent capital incentive funding to encourage the implementation of any cost effective measures identified therein. The program seeks to capture energy savings associated with measures that are otherwise difficult to incent as part of a prescriptive program because they are complex, and one project may include multiple measures with interactive effects. The expected energy savings, measures, capital cost, incentives etc, will necessarily vary depending on the customer, though each project is submitted to a TRC test and must be approved by the utility.					
Target Market	Commercial customers					
New vs Retrofit	Both					
Eligible Measures	Utility funded energy study, and utility incented Energy Saving Measures as identified in the energy study and approved by the utility. Energy Saving Measures are variable.					
Incremental Measure Cost	Variable. Dependent upon participant's proposed Energy Saving Measures.					
Incentive Amount	If TRC ≥ 1.0 then $5 / discounted GJ saved over 50% of the Energy Measure Life (EML), up to 10 yrs.					
Savings Per Participant	Variable. Dependent upon participant's proposed Energy Saving Measures.					
Measure Life & Source	Variable. Dependent upon participant's proposed Energy Saving Measures.					
Free Rider Rate & Source	Variable. Dependent upon participant's proposed Energy Saving Measures.					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	58	32			
	FEVI	10	10			
	FEW	1	0			
	Total	69	42			
Expenditures ($,000s) New Construction	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	60	68	0	0	128
	FEVI	8	5	0	0	13
	FEW	0	0	0	0	0
	Total	68	73	0	0	141
Expenditures ($,000s) Retrofit	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	577	286	0	0	863
	FEVI	297	73	0	0	370
	FEW	0	0	0	0	0
	Total	874	359	0	0	1,234

Notes:

- The Customized Equipment Upgrade Program is complex in nature and has variable measure savings, costs, incentives and/or cash flows which, unlike in prescriptive programs, occur over a period of years. Consequently, providing results for this program within an annual report format is challenging. In general, the savings in this program occur in later years after the participants have had the time to implement customized Energy Conservation Measures, while some program incentives and costs are payable at the outset. Please refer to the notes provided below for additional details.
- New Construction Program:
    - Participation in this program can last for approximately 5 years. This is broken down into approximately 12 months to prepare the required whole building energy simulation, followed by up to 48 months to build the proposed building. The program incurs incentive expenditures upon the successful completion of the energy simulation, as well as upon completion of the building, while natural gas savings are only obtained upon completion of the proposed building.

- This program is in partnership with BC Hydro PowerSmart. Participants are recorded when the energy simulations or the new buildings are complete, and the incentive becomes payable.
- The '2014 Actual' participants include 7 completed energy simulations.

- Retrofit Program:
  - Participation in this program can last for approximately 2 years. This is broken down into approximately 6 months to prepare the required energy study, followed by 18 months to implement the proposed Energy Conservation Measures. The program incurs incentive expenditures upon the successful completion of the energy study, as well as upon installation of the approved Energy Conservation Measures, while natural gas savings are only obtained upon installation of the approved Energy Conservation Measures.
  - The '2014 Actual' participants includes 26 completed energy studies, and 8 projects where Energy Conservation Measures were installed. The associated natural gas savings from these 8 projects is approximately 31,288 GJ/year.

Table 7-6: EnerTracker Program

Program Description	This 3-year pilot program is a subset of the continuous optimization (C.Op) program. It provides participants who are otherwise unable or unwilling to participate in the full C.Op program with access to an Energy Management Information System (EMIS). EMIS software provides customers with a detailed picture of their natural gas consumption in "near time". Timely access to this information is expected to speed up fault detection, thereby enabling more rapid corrective action to avoid wasted gas consumption, as well as to assist in the identification of additional natural gas conservation measures.					
Target Market	Commercial customers with existing AMR device (FEI Only).					
New vs Retrofit	Retrofit					
Partners	n/a					
Eligible Measures	Energy management information system					
Incremental Measure Cost	$325 / yr (Average) See Program notes for more details.					
Incentive Amount	$325/ yr (Average)					
Savings Per Participant	2% of annual natural gas consumption - Proof of concept study					
Measure Life & Source	1 year – Measure life is based on annual EMIS software subscription					
Free Rider Rate & Source	6.4% - Proof of concept study					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	405	227			
	FEVI	0	0			
	FEW	0	0			
	Total	405	227			
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	74	95	0	11	180
	FEVI	0	3	0	0	3
	FEW	0	0	0	0	0
	Total	74	98	0	11	183

Notes:

- As there is currently insufficient AMR (Automated Meter Reader) infrastructure in the FEVI service territory to support the rollout of this pilot, program availability is limited to the FEI service territory.
- Some FEI participants have older AMR infrastructure that needs to be upgraded in order to provide the appropriately granular data for the EMIS (Energy Management Information System). This required upgrade results in a higher incremental measure cost in the first year of

participation for affected participants. This AMR upgrade cost will not be present in a customer's subsequent years of participation.

- The average annual consumption per participant was lower than what the business case had originally estimated, resulting in a lower average savings per participant.
- The average incremental measure cost and incentive amount was lower in 2014 as there was a limited number of new participants incurring initial start-up costs such as meter upgrades and new participant fees; most participants simply incurred the software licensing cost.
- EM&V was not completed in time for this annual report, but findings will be reported in 2015 and will determine the future of the program offering.
- Note that participation in the program is cumulative, meaning the participant is enrolled for multiple years, claiming savings and incurring costs on an annual basis for the duration of the EMIS software license.

Table 7-7: Continuous Optimization Program

Program Description	The Continuous Optimization Program (C.Op), in partnership with BC Hydro PowerSmart is designed to help commercial building owners identify and correct energy wasting operation faults, and continuously monitor building performance to help maintain and improve energy efficiency, resulting in reduced operating costs. The program funds re-commissioing services to study the participant's building and recommend energy efficiency improvements, as well as access to an energy management information system (EMIS) to assist in tracking the building's performance after the re-commissioning work is complete. In return, participants must implement, at their costs, measures identified by the re-commissioning study that when combined have a payback period of two years or less.					
Target Market	Commercial customers with buildings >50,000 sqft who consume an average of 7,500 GJ of natural gas per year or natural gas is 40% of their building's total energy consumption.					
New vs Retrofit	Retrofit					
Partners	BC Hydro					
Eligible Measures	Re/Retro commissioning study, employee training, and "near time" energy consumption monitoring.					
Incremental Measure Cost	Average nominal program duration incremental cost (7 years): $41,275 2014 observed average implemented incremental cost: FEI- $22,178, FEVI-$22,992					
Incentive Amount	Average nominal program duration incentive amount (7 years): $15,915 2014 observed average implemented incentive amount: FEI- $12,831, FEVI - $25,539					
Savings Per Participant	Average expected annual natural gas savings: 1,465 GJ/year 2014 observed average implemented natural gas savings: FEI- 1,111 GJ/year, FEVI- 725 GJ/year					
Measure Life & Source	5 years - the duration of utility support for the energy management information system, plus one year.					
Free Rider Rate & Source	0% - BC Hydro					
Participants	Service Region	2014 Projected	2014 Actual	Participants Implementing in 2014	Cumulative Program Participants	
	FEI	111	2	43	351	
	FEVI	5	0	6	76	
	FEW	1	0	0	6	
	Total	117	2	49	433	
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	552	10	2	0	564
	FEVI	153	1	0	0	154
	FEW	0	0	0	0	0
	Total	705	11	2	0	718

Notes:

- The C.Op Program is conducted in partnership with BC Hydro PowerSmart and FBC PowerSense (Note: The program is known as the Building Optimization Program in the FBC electric service territory). Power Smart and Power Sense act as the primary administrators of program activities, with EEC providing financial and process support.
- Participation in this programs lasts for approximately 7 years for a typical participant. The 7 years are composed of approximately 12 months of baseline data collection, 24 months of re-commissioning study work, plus the implementation of a recommended bundle of energy conservation measures, and 48 months of monitoring and continuous improvement.
- Participants are recorded as soon as they are accepted into the program; however, natural gas savings do not occur until they have completed the implementation of a recommended bundle of

energy conservation measures, approximately 36 months later. As such, the program incurs incentive expenses (for the upgrading of meter equipment, re-commissioning costs and EMIS costs) before natural gas savings are obtained.

- The average nominal program duration incremental cost represents the total incremental cost expected to be incurred when an average participant completes the full 7 year run in the program. The average nominal incremental cost was slightly lower in 2014 following an update to the program structure. The 2014 observed average implemented incremental cost represents the incremental costs incurred specifically in 2014 divided by the total number of participants who implemented in 2014.
- The average nominal program duration incentive amount represents the total incentive expected to be paid when an average participant completes the full 7 year run in the program. The average nominal incentive was mildly reduced in 2014 following an update to the incentive structure. The 2014 observed average implementation incentive amount represents the incentive paid specifically in 2014 divided by the total number of participants who implemented in 2014. Due to the nature of the program, the incentive amount paid is not solely attributable to those who implemented in 2014.
- The average expected annual natural gas savings represent the expected annual natural gas savings per participant after they have completed the implementation of a recommended bundle of energy conservation measures. The 2014 observed average implemented natural gas savings represent natural gas savings attributed to customers who have completed the implementation of a recommended bundle of energy conservation measures specifically in 2014 divided by the total number of participants who implemented in 2014.
- Participant count clarification:
    - "2014 Actual" represent the number of new participants who were approved in 2014. Note that the program is now closed to new participants.
    - “Participants Implementing in 2014" represents the number of participants who have successfully completed implementing the bundle of energy conservation measures in 2014.
    - “Cumulative Program Participants" represent the total number of approved program participants from the entire multi-year duration"

Table 7-8: Commercial Energy Assessment Program

Program Description	This program identifies inefficiencies at the participant's facilities via an on-site walkthrough assessment by an energy-efficiency consultant. The consultant then produces a report that describes the observed inefficiencies, outlines proposed solutions, and identifies any applicable incentive programs. FortisBC then forwards the report to the participant. Simple measures, such as low-flow faucet aerators and pre-rinse spray valves, are provided to the participant at no charge.					
Target Market	Medium commercial and small industrial customers with an average annual consumption between 1,500 and 10,000 GJ.					
New vs Retrofit	Retrofit					
Partners	PowerSense					
	FEI	FEVI				
Incremental Measure Cost	$1,449	$1,424				
Incentive Amount	$1,410	$1,381				
Savings Per Participant	481 GJ	484 GJ				
Measure Life & Source	1.09 years	1.08 years	• 1 year – Conservative estimate based on the implementation of low-cost, simple recommendations (such as operational adjustments) from the energy assessment report. • Past spray valve program data • Database for Energy Efficiency Resources (DEER). San Francisco, CA, California Public Utilities Commission, 2011.			
Free Rider Rate & Source	34%	35%	• 2010 Friuch Energy Assessment Evaluation • Past spray valve program data			
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	466	90			
	FEVI	52	33			
	FEW	5	0			
	Total	523	123			
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	127	33	1	0	161
	FEVI	46	6	0	0	52
	FEW	0	0	0	0	0
	Total	172	40	1	0	213

Notes:

- In January 2014, the Commercial Energy Assessment Program was re-launched. This formerly "no-cost" program now includes a nominal fee to participate, and the provided reports are now more uniform and offer clear and consistent information on applicable EEC rebates. As expected, the number of participants decreased in 2014 from the number in 2013.

- At the time of writing the 2014-2018 EEC Plan, the FEU were unsure whether the Provincial Government's Business Energy Advisor ("BEA") program would continue or not. A contingency measure was planned for this program to ensure small businesses had access to energy analysis had the BEA program been discontinued. Participation from small business customers was foreseen in the 2014-2018 EEC Plan. As the BEA program was continued the scope of the Commercial Energy Assessment Program was not expanded to include small businesses and the number of participants in 2014 is significantly less than was estimated in the 2014-2018 EEC Plan. Of the 523 participants projected in the Plan, 72% were part of the small business market. Therefore, the number of participants in 2014 is within the expected range.

Table 7-9: Energy Specialist Program

Program Description	This program funds Energy Specialist positions, whose key priority is to identify opportunities for their organization to participate in FortisBC's EEC programs. The Energy Specialist reports to the Customer's BC Hydro-funded Energy Manager on holistic energy reduction projects, while also focusing on identifying opportunities to use natural gas more efficiently. Energy Specialist positions are funded by FortisBC up to $60,000 for a period of one year. This program is funded as an enabling program.					
Target Market	Large Commercial and Institutional Customers					
New vs Retrofit	Retrofit					
Partners	BC Hydro					
Eligible Measures	Energy Specialist position					
Incremental Measure Cost	$60,000					
Incentive Amount	$60,000					
Savings Per Participant	Total 2014 verified (non-EEC program) annual natural gas savings = 15,193 GJs/year					
Measure Life & Source	N/A					
Free Rider Rate & Source	6% weighted average against the verified savings - Evaluation of 2014 Energy Specialist Pilot Program completed projects					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	22	26			
	FEVI	5	5			
	FEW	0				
	Total	27	31			
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	1,335	118	0	67	1,520
	FEVI	328	19	0	10	356
	FEW	0	0	0	0	0
	Total	1,662	137	0	76	1,876

Notes:

- The Energy Specialist Program continues to experience success as an enabling program. In 2014, organizations with Energy Specialists represented 15% of all EEC Commercial program participation and 22% of all Commercial EEC incentives paid out. This is in addition to the EEC Conservation Education and Outreach, Innovative Technologies, and Low Income programs and incentives that Energy Specialists promoted and utilized in 2014.
- Some organizations had Energy Specialists for part of the year only
- The energy savings listed only apply to third party verified natural gas projects completed by Energy Specialists in 2014, which did not directly receive incentive funding from another EEC program. These energy savings are only reported and have not been included in the calculations for the benefit/cost tests as the required inputs are not available.
- Starting in July 2014, FEU began co-funding six Business Energy Advisors with BC Hydro. Business Energy Advisors were previously funded out of the Ministry of Energy and Mines LiveSmart BC program. FortisBC is a minority funding contributor in this arrangement contributing $60,000 per funding year for all six Business Energy Advisors combined which is equivalent to the funding of one Energy Specialist. Business Energy Advisors are tasked with the same objectives as Energy Specialists but are targeted at small to medium sized businesses. As a collective they are expected to achieve FortisBC EEC program participation results similar to that of one Energy Specialist. Hence, this has been counted as one participant in the participant total for the Energy Specialist Program.

Table 7-10: MURB Program

Program Description	This program focuses primarily on "In-Suite" gas saving measures for multi-unit residential buildings (MURBs). This program is the continuation and completion of the program described in table 7-9 of the 2013 Energy Efficiency and Conservation Annual Report. Energy saving measures were limited to the direct installation of low flow plumbing fixtures in the Capital Regional District.				
Target Market	Commercial - Medium and Large MURBs				
New vs Retrofit	Both				
Eligible Measures	Low flow showerheads & faucet aerators				
Incremental Measure Cost	$4.94 per showerhead, $1.03 per aerator				
Incentive Amount	$4.94 per showerhead, $1.03 per aerator				
Savings Per Participant	1.2 GJ/yr per showerhead, 0.75 GJ/Yr per aerator				
Measure Life & Source	10 years - 2010 FortisBC Residential CPR, 2009 OPA Report				
Free Rider Rate & Source	10% - Data from City Green, FortisBC 2010 Residential CPR, 2009 OPA Report				
Participants	Service Region	2014 Projected - New Construction	2014 Projected - Retrofit	2014 Actual - New Construction	2014 Actual - Retrofit
	FEI	0	0	0	0
	FEVI	0	1,500	0	3,529
	FEW	0	0	0	0
	Total	0	1,500	0	3,529
Expenditures ($,000s) New Construction	2014				
	Service Region				
	FEI				
	FEVI				
	FEW				
	Total				
Expenditures ($,000s) Retrofit	2014				
	Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	0	0	0	0	0
	FEVI	13	7	0	4	23
	FEW	0	0	0	0	0
	Total	13	7	0	4	23

Notes:

- Program activities in 2014 represent the continuation and completion of a direct install program, begun in 2013, in the Capital Regional District in partnership with City Green Solutions. This program is now complete and any further such initiatives involving "In-Suite" measures for multifamily customers will be captured under the Residential program area.
- 2014 projected participation was included in the 2013 Energy Efficiency and Conservation Annual Report, and represented the expected number of low flow showerheads installed. By program completion 2368 showerheads, and 1161 faucet aerators were installed in 2014.

7.3 2014 Commercial Energy Efficiency Programs Planned But Not Launched

7.3.1 MECHANICAL INSULATION PILOT PROGRAM

This pilot program had originally been set to launch in 2013 but was subsequently cancelled as the FEU were unable to conclude an agreement on terms satisfactory to the FEU with a 3rd party contractor to deliver the project. The FEU are not presently pursuing this pilot further.

7.4 Other Commercial Energy Efficiency Program Area Initiatives

7.4.1 ENERGY REBATE CENTRE & ONLINE ENERGY ADVISOR

The Energy Rebate Centre and Online Energy Advisor, both offered in collaboration with FortisBC Power Sense were closed this year. Energy Rebate Centre was closed as Power Sense implemented a new demand side management tracking system that was incompatible with the Energy Rebate Centre software architecture. Online Energy Advisor was closed as a review of the results suggested there was little incremental value to this offering at present. As these were not programs in the traditional sense (with attributable GJ savings, incremental measure costs, measure lives, free ridership etc.) they are not presented in tabular format in this report. Associated EEC spending has been captured under the Commercial Energy Efficiency Program Area's general administration and communications expenditures.

7.5 2014 Commercial Energy Efficiency Program Closures

7.5.1 MURB PROGRAM

This program (see Table 7-10), focused on "In-Suite" measures including low flow shower heads and faucet aerators, was closed after the completion of a direct install program in the Capital Regional District, begun in 2013. Any further efforts focused on "In-Suite" measures in multifamily buildings will henceforth be undertaken by the Residential Program area.

7.5.2 FIREPLACE TIMERS PILOT PROGRAM

This pilot program has been closed to new participation since 2011. The final expenditures were incurred in 2013, and detailed in that year's annual report. The program is now closed.

7.5.3 PSECA

This program has been closed to new participation since 2011. The final expenditures were incurred in 2013, and detailed in that year's annual report. The program is now closed.

7.6 Summary

Commercial Energy Efficiency Program Area activity in 2014 successfully achieved 254,922 GJ of annual natural gas savings and a positive TRC of 1.6. The Space Heat program continues to act as the cornerstone program as it invests more in natural gas efficiency projects than the other commercial programs. This however may very well change as the Customized Equipment Upgrade program picks up steam. While the total spend on this latter program was adversely impacted in 2014 by project implementation times that have been longer than anticipated, this is expected to change in 2015. More importantly, the Retrofit version of the program appears to be cost effective at TRC = 1.1; an initial result that bodes well for the future given that the program saw more studies that capital upgrades completed this year.

8 INNOVATIVE TECHNOLOGIES PROGRAM AREA

8.1 Overview

A primary objective of the Innovative Technologies Program Area is to identify market-ready technologies that are not yet widely adopted in British Columbia, and which are suitable for the development of or inclusion in the portfolio of ongoing EEC programs in other Program Areas. This is accomplished through pilot and demonstration projects, pre-feasibility studies and the use of EM&V protocols to validate manufacturers' claims related to equipment and system performance. Results from Innovative Technologies activities are used in making future EEC programming decisions and technology inclusions.

Just as important as identifying new technologies that should be incorporated into the EEC portfolio are findings that indicate which technologies should not. Section 8.3 summarizes how the activities and processes for the Innovative Technologies Program Area were successful in identifying proposed projects that should not proceed to full pilot phase or further.

All 2014 activities undertaken in this Program Area meet the definition of technology innovation programs as set out in the *Demand-Side Measures Regulation*. It should be noted that Innovative Technologies are considered a "specified demand-side measure,"[10] meaning that the Program Area or the measures therein are not subject to a cost-effectiveness test. Instead the cost-effectiveness of these expenditures will be evaluated as part of the DSM/EEC portfolio as a whole.[11] Innovative Technologies expenditures are also not subject to the 33 percent cap on programs for which the MTRC is utilized as a cost-effectiveness measure according to Section 4 (4) of the *Demand-Side Measures Regulation*.[12]

Table 8.1 summarizes the projected and actual expenditures for the Innovative Technologies Program Area in 2014, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC and other cost-effectiveness test results where applicable.

[10] BCUC Log No. 36730, Request for Clarification of Order G-44-12 and Decision on the 2012 – 2013 Revenue Requirements Application and Natural Gas Rates Application

[11] Subsection 4(4) of the BC *Demand-Side Measures Regulation,* and the Decision on the 2012 – 2013 Revenue Requirements Application and Natural Gas Rates Application, page 175.

[12] BCUC Log No. 36730, Request for Further Clarification of Order G-44-12 and Decision on the 2012 – 2013 Revenue Requirements Application and Natural Gas Rates Application and the Commission's May 11, 2012 letter.

Table 8-1: 2014 Innovative Technologies Program Area Results Summary

Program and Service Territory	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures ($000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending						
	2014-2018 EEC Plan	2014 Actual		2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	TRC	MTRC	Utility	Participant	RIM
Non-Program Specific Expenses														
FEI	No Direct Savings			n/a	0	n/a	160	n/a	160	No Direct Savings				
FEVI				n/a	0	n/a	13	n/a	13					
Total				n/a	0	n/a	173	n/a	173					
Pilot/Demonstration Projects														
FEI	No Direct Savings			n/a	(6)	n/a	198	n/a	192	No Direct Savings				
FEVI				n/a	0	n/a	20	n/a	20					
Total				n/a	(6)	0	218	n/a	212					
Studies														
FEI	No Direct Savings			n/a	0	n/a	134	n/a	134	No Direct Savings				
FEVI				n/a	0	n/a	2	n/a	2					
Total				n/a	0	n/a	137	n/a	137					
ALL PROGRAMS														
FEI	**n/a**	**0**	**0**	**n/a**	**(6)**	**n/a**	**493**	**0**	**487**	No Direct Savings				
FEVI	**n/a**	**0**	**0**	**n/a**	**0**	**n/a**	**35**	**0**	**35**					
Total	**n/a**	**0**	**0**	**n/a**	**(6)**	**n/a**	**528**	**0**	**522**					

Notes:

- Underspending in the Innovative Technology Program Area for the 2014 calendar year is due to four reasons:

  1. The Innovative Technology Framework filtered out technologies with planned expenditures that FortisBC deemed unsuitable for inclusion in the Companies' DSM portfolio. As described in section 8.2 of the FortisBC EEC Plan, the Innovative Technology Selection & Implementation process requires technologies to pass certain stage gates prior to conducting a pilot. The stage gates are in place to assess the technologies feasibility of meeting the DSM regulation criteria but also identifying risks, health and safety concerns that the technology may bear prior to realizing high program expenditures. In 2014, several technologies were filtered out. One example was the ozone commercial laundry technology. During the project scoping phase, it was assessed through speaking with stakeholders such as Work Safe BC that the ozone commercial laundry technology failed to meet the toxic process gas regulation and as such the planned expenditures were not spent. In its place, the Companies fast tracked the Apartment Fireplace Retrofit Efficiency pilot to launch in 2014. It is important to note that although the pilot was launched in 2014, the majority of the pilot expenditures would be realized in 2015 and 2016 associated to M&V and project coordination tasks.

  2. Several accrual reversals were made based on committed 2013 incentives and non-incentive expenditures from both the Condensing Gas-Fired Ventilation Unit pilot and the Ice Rink Resurfacing pilot. It is important to note that although these expenditures were accrued to 2013, resource bandwidth was used in 2014 to manage those projects.

  3. Due to unforeseen resourcing constraints, a business decision was made to delay launching the Smart Learning Thermostat pilot and to focus on the Apartment Fireplace Efficiency Retrofit pilot and existing projects until next year.

  4. Innovative Technology pilots realize expenditures over a 1-3 year period which doesn't directly align with the annual reporting cycle. It is important to note that even though a lot of work occurs during the beginning stages of a pilot, minimal expenditures are realized until later on in the pilot when the new technology is installed. This is due to the amount of work involved assessing technology risks, market barriers and evaluation requirements.

- An accrual reversal of $7,250 in incentive spending for the Condensing Gas-Fired Ventilation Unit Pilot resulted when a participant was accounted for in the 2013 program year, but withdrew their

participation in the pilot in 2014.(see Table 8.2 below) This accrual reversal accounts for the negative Pilot/Demonstration Project incentive expenditures in Table 8.1 above.

8.2 2014 Innovative Technologies Activities

Tables 8-2 and 8-3 outline the specific Innovative Technologies activities undertaken in 2014, including program and measure descriptions and a breakdown of non-incentive spending[13].

[13] As Innovative Technologies activities are considered pilots rather than EEC programs, they were not presented in individual program tables as in other Program Area sections in this report.

Table 8-2: Pilots

Program Description	The Pilot Program focused on evaluating market-ready technologies and conducting small scale pilots to gather data to validate manufacturers' claims about measure system performance and energy savings. The data from pilots can also be used to help improve the quality and installation of future systems, and to understand and reduce market barriers. Technologies that successfully emerge from the Innovative Technologies Program will be considered for inclusion in the various program areas within the larger EEC portfolio.
Target Market	Variable
New vs Retrofit	Retrofit
Pilots	
Condensing Gas-Fired Ventilation Units	Objectives of the program are to validate energy savings claims, assess customer acceptance rates, and identify technical issues associated with the installation and operation of condensing gas-fired ventilation units in British Columbia commercial buildings. These results may be used for consideration for prescriptive program or as an eligible measure within an existing program within the Commercial Program Area. Results are expected in Q3 2015.
	Service Region: 2014 Participants FEI: (1) FEVI: 0 Total: (1)
ENERGY STAR © 0.67 Storage Tank Water Heater Pilot	Objectives of the pilot are to determine the efficiency and savings of 0.67 EF and 0.70 EF water heaters by assessing their performance under various household profiles as well as understanding installation concerns such as electrical wiring, space considerations and venting. The data may be used to support proposed regulation of increased minimal efficiency standards of water heaters to 0.67 EF by 2016 as well as supporting the Residential Energy Star Domestic Hot Water Program. Results from an evaluation of participants who participated in the pilot in 2012-13 are expected in Q1 2015.
	Service Region: 2014 Participants FEI: 0 FEVI: 0 Total: 0
Ice Rink Resurfacing Efficiency Pilot	Objectives of the pilot are to validate energy savings claims, assess customer acceptance rates, and identify technical issues associated with the installation and operation of vortex mechanical de-aerator technology for ice re-surfacing in British Columbia ice arenas. Outcomes from the study resulted in natural gas savings of 330GJ/year. This technology was included as an eligible measure within the Commercial Custom Design Retrofit Program.
	Service Region: 2014 Participants FEI: 0 FEVI: 0 Total: 0
Residential High-Efficiency Water Heater Pilot	Objectives of the pilot are to obtain installation, performance and customer acceptance information regarding residential domestic hot water technologies with an Efficiency Factor (EF) of 0.80 or better. The study showed the on-site EF for the replacement water heater to be performing lower than expected, the new water heater to be performing more efficiently than expected and an increase in water usage among the participants. The Residential program team used the results to validate and calibrate the savings assumptions for water heaters with an EF of 0.80 or better as part of the Residential ENERGY STAR © Domestic Hot Water Technologies Program.
	Service Region: 2014 Participants FEI: 1 FEVI: 0 Total: 1

Table 8-2: Pilots (continued)

City of Vancouver Residential Solar Water Heating Pilot	Objectives of the pilot are to gather real data and validate the energy systems claims associated with the installation of 30 Solar Hot Water systems in Vancouver. Outcomes of the pilot showed that a solar hot water system is currently not cost effective due to the currently low natural gas rate, the relatively high capital costs of a residential solar hot water system, and a relatively small natural gas baseline for Domestic Hot Water in residential setting. The output measure assumptions resulted in not passing the cost effectiveness calculation and not including it as an eligible measure within the Residential program area.					
	Service Region	2014 Participants				
	FEI	0				
	FEVI	0				
	Total	0				
Apartment Fireplace Efficiency Retrofit Pilot	Objectives of the pilot are to verify energy savings from replacing older decorative style "B" vented fireplaces with Direct Vent EnerChoice level heating style fireplaces in Multi Unit Residential Buildings (MURB'S). The results will be used to determine the feasibility of launching a rebate program for high efficient EnerChoice direct vent fireplaces in MURB's or to extend the existing fireplace rebate offers to MURB'S. Results are expected Q2 2016.					
	Service Region	2014 Participants				
	FEI	0				
	FEVI	0				
	Total	0				
Combination Space and Water Heating System Pilot	Objectives of the pilot are to identify field-validated energy performance of each combination system type, technical issues, field-validated incremental costs, customer acceptance and the effective marketing channels for promoting a combination system retrofit rebate. The results will provide insight into a cost-effective rebate program for residential customers to upgrade their existing space and water heating equipment to combination systems. Results are expected Q2 2016.					
	Service Region	2014 Participants				
	FEI	0				
	FEVI	0				
	Total	0				
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	n/a	1			
	FEVI	n/a	0			
	FEW	n/a	0			
	Total	n/a	1			
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	(6)	64	0	134	192
	FEVI	0	12	0	8	20
	FEW	0	0	0	0	0
	Total	(6)	76	0	142	212

Notes:

- The negative participant count and negative incentive expenditures recorded with respect to the Condensing Gas-Fired Ventilation Unit Pilot reflect an accrual reversal of $7,250 in incentive spending that resulted when a participant was accounted for in the 2013 program year, but withdrew their participation in the pilot in 2014. When combined with the 2014 participant incentive spending for the Residential High Efficiency Water Heater Pilot, this accrual reversal accounts for the negative incentive expenditures of approximately $6,000 in Table 8.2 above.

- Innovative Technology pilots realize expenditures over a 1-3 year period which doesn't directly align with the annual reporting cycle. Early development work on a pilot can involve research assessing technology risks, market barriers and evaluation requirements. After a pilot is implemented in the field, there will be evaluation work to determine if a pilot is scalable. Therfore, some of the above reported pilots have expenditures, but zero participants in the reporting year.

Table 8-3: Studies

Description	Studies are used to assess the market opportunity, technical characteristics and projected energy savings of commercially available DSM technologies. The results can be used to determine the feasibility of launching a pilot or to make future program area inclusion decisions.
Target Market	Variable
New vs Retrofit	N/A
Studies	
Combination Units Prefeasibility Study	Study to assess the market opportunity, technical characteristics and projected energy savings for single family dwellings, townhouses, and apartment buildings to upgrade their current domestic hot water and space heating appliances to combination units. The study identified that combination systems can be cost-effective for certain upgrade scenarios and estimated an annual achievable natural gas savings potential between 22,5000 GJ and 54,000 GJ. In order to fill in the information gaps and validate results from the pre-feasibility study a Pilot is expected to launch in Q1 2015.
High-Efficiency Natural Gas Laundry Dryers Prefeasibility Study	Study to assess the market opportunity, technical characteristics and projected energy savings for residential and commercial facilities to replace or retrofit natural gas laundry dryers with high-efficiency natural gas laundry dryers. The results will be used to determine the feasibility of launching a pilot for these technologies across the commercial and residential market sectors. Results are expected in Q1 2015.
Automated Steam Trap Monitoring System Prefeasibility Study	Study to investigate market opportunity, technical characteristics and energy savings potential of retrofitting existing process steam systems with automated steam trap monitoring systems. The results show that although there is a significant energy savings opportunity to replace steam traps at the point of failure, there is uncertainties in the market of whether plant operators will do so. Prior to launching a pilot or making any program inclusion decisions, further research is required to characterize decision making process, adoption barriers and mitigation strategies. A market characterization study is expected to be conducted in 2015.
Fireplace Upgrades Prefeasibility Study	Study to assess the market opportunity, technical characteristics and projected energy savings for residential and multi-unit residential buildings (MURBs) to retrofit open-front decorative style natural gas fireplaces with high-efficiency fireplaces used for space heating purposes. The study identified an annual achievable savings potential of 14,675 GJ for end-of-life and early replacement scenarios in MURBs. The existing fireplace venting in MURBs can make retrofit difficult or impossible because of alterations to the exterior of the building. The study identified an EnerChoice rated direct vented fireplace geared specifically for MURBs that uses the existing venting and does not change the exterior appearance of the building. A pilot was launched in Q3 2014 to validate these energy savings claims, assess customer acceptance rates and identify technical issues associated with retrofitting this technology.
Expenditures ($,000s)	2014

Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
FEI	0	134	0	0	134
FEVI	0	2	0	0	2
FEW	0	0	0	0	0
Total	0	137	0	0	137

8.3 Summary

Innovative Technologies represent a key component of the Companies' overall commitment to EEC activities by identifying viable technologies and projects that have the potential to support the development of new programs within the larger EEC portfolio.

In 2014, the Companies received outcomes from the Residential High-Efficiency Water Heater pilot that was used for the development, launch and continuation of the ENERGY STAR water heater program. The M&V was conducted over a 2 year period from January 2012 – January 2014. Based on the M&V results, the monitored sites demonstrated average natural gas

savings of 37.1% annually and an average simple payback between 27 to 75 years. Those results informed NRCan's decision and announcement of Amendment 13 which may supersede the water heater regulations requiring the minimum efficiency performance (MEPs) to be .67 EF by 2016 and .80 EF by 2020.

Additionally, in 2014 the Companies received outcomes from both the Ice Rink Resurfacing Efficiency pilot and the City of Courtenay Pool Heating project that resulted in those technologies being included as eligible measures within the Commercial Programs Area. The Ice Rink Resurfacing pilot monitored a vortex de-aerator technology that maintains the ice surface using low temperature water in ice rinks. The vortex system is intended to remove air bubbles and filaments from the resurfacing water through cavitation before it is applied to the ice surface. The M&V was conducted over a 5 month period from November 2013 to March 2014. Based on the M&V results, the monitored sites demonstrated average natural gas savings of 330 GJ, or 79% annually. Vortex technologies were included as an eligible measure within the Customized Equipment Upgrade Program.

The City of Courtenay Pool Heating project monitored a solar thermal heating system that pre-heats water in outdoor municipal pools. The solar thermal system includes both a pool cover and an array of unglazed, flat plated, solar panels. The M&V was conducted over a 2 year period from June 2011 to August 2013. Based on the M&V results, the monitored site demonstrated an average natural gas savings of 308 GJ, or 48% annually. Solar thermal pool heating systems were included as an eligible measure within the Customized Equipment Upgrade Program.

Furthermore, the Innovative Technologies Program Area was successful in identifying several technologies that should not proceed to full pilots at the time of writing or be included as an eligible measure within an existing program. The Ozone Commercial Laundry pilot was placed on hold after it was identified that some of those technologies may not be compliant with the Toxic Process Gases regulation. The Innovative Technology group may revisit these technologies should those concerns be resolved. Additionally, in 2014 the Companies received outcomes from the Solar Residential Hot Water pilot that resulted in excluding it as an eligible measure within the Residential Programs Area. The solar thermal hot water system included a storage tank and a set of solar collectors to supplement the existing domestic hot water (DHW) system for delivering hot water in residential settings. The M&V was conducted over a 2 year period from December 2012 to January 2014. Based on the M&V results, the monitored sites demonstrated average natural gas savings of 6.5 GJ or 25% annually which was 7.4 GJ/year per year lower than the assumed pre-pilot case scenario. The lowered gas savings combined with the average installed costs of $7,677 resulted in the measure not passing the cost effectiveness calculation.

Overall, the Innovative Technologies initiatives successfully achieved results in evaluating the feasibility of new technologies and providing insights used towards the design of future EEC programs. The Innovative Technologies Program Area continues to use consistent criteria to ensure the greatest potential for screening technologies for further development as full programs in other areas of the EEC portfolio.

9 INDUSTRIAL ENERGY EFFICIENCY PROGRAM AREA

9.1 Overview

In 2014, the Industrial Energy Efficiency Program Area achieved an overall TRC of 1.2, with a combined net natural gas savings of 19,726 GJ/yr. Throughout 2014, the Companies continued to enhance relationships with key industry actors in order to identify industrial customers' motivations for adopting energy efficiency and the appropriate incentive levels to increase the uptake of Industrial Energy Efficiency programs.

The Commission approved the Industrial Optimization Program presented in the Companies' Multi-Year Performance Based Ratemaking Plan for 2014-2018. The Industrial Optimization Program includes measures that allow customers to identify, assess, and implement customer designed energy efficiency projects. The Technology Retrofit and Energy Audit and Analysis Programs reported separately in 2013 are now consolidated under this program. The measures included under the Industrial Optimization Program are the Technology Implementation measure (formerly Technology Retrofit Program) and the Industrial Energy Audit measure (formerly Energy Audit and Analysis Program). No additional measures were offered in 2014 as development work continued.

Industrial Optimization Program implementation in 2014 resulted in four new Technology Implementation funding agreements being executed with two of these participants commissioning projects. In addition, ten energy audit reports were completed and identified projects with the potential to provide natural gas savings of over 470,000 GJ/yr.

The Commission approved the Specialized Industrial Process Technology Program presented in the Companies' Multi-Year Performance Based Ratemaking Plan for 2014-2018. As outlined by the Commission's Decision, detailed plans are required to be submitted to the Commission for review and approval prior to program expenditures. No expenditures were incurred for this program in 2014.

Table 9-1 summarizes the projected and actual expenditures for the Industrial Energy Efficiency Program Area in 2014, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC and other cost-effectiveness test results.

Table 9-1: 2014 Industrial Energy Efficiency Program Results Summary

Program and Service Territory	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures ($000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending						
	2014-2018 EEC Plan	2014 Actual		2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	TRC	MTRC	Utility	Participant	RIM
Non Program Specific Expenses														
FEI	0	0	0	0	0	238	92	238	92	No Direct Savings				
FEVI	0	0	0	0	0	24	6	24	6					
Total	0	0	0	0	0	262	98	262	98					
Industrial Optimization Program														
FEI	75,787	16,773	120,239	996	435	253	122	1,249	557	1.3	n/a	1.7	2.9	0.6
FEVI	7,495	2,953	32,382	98	59	25	4	124	63	1.5	n/a	4.9	1.4	1.1
Total	83,282	19,726	152,621	1,094	494	278	126	1,373	621	1.3	n/a	2.0	2.5	0.6
Specialized Industrial Process Technology Program														
FEI	23,744	0	0	177	0	74	0	250	0	No Direct Savings				
FEVI	2,638	0	0	20	0	7	0	27	0					
Total	26,382	0	0	197	0	81	0	277	0					
ALL PROGRAMS														
FEI	**99,531**	**16,773**	**120,239**	**1,173**	**435**	**565**	**214**	**1,737**	**649**	**1.2**	**n/a**	**1.6**	**3.3**	**0.5**
FEVI	**10,133**	**2,953**	**32,382**	**118**	**59**	**56**	**10**	**175**	**69**	**1.5**	**n/a**	**4.5**	**1.5**	**1.1**
Total	**109,664**	**19,726**	**152,621**	**1,291**	**494**	**621**	**224**	**1,912**	**718**	**1.2**	**n/a**	**1.9**	**2.7**	**0.6**

Notes:

- The 2014 cost-effectiveness ratios for the Industrial Optimization Program are based on two projects where incentives were paid under the Technology Implementation measure and ten energy audits that were completed under the Industrial Energy Audit measure.
- For the purpose of cost effectiveness tests, 19,726 GJ in savings have been claimed for 2014 due to incentives being paid out based on each of the projects' natural gas saving performance throughout the first three years after the project's commissioning. Please see the Industrial Optimization Program description below for detailed information.

9.2 2014 Industrial Energy Efficiency Programs

The following tables outline the specific Industrial Energy Efficiency programs undertaken in 2014, including program and measure descriptions and a breakdown of non-incentive spending.

Table 9-2: Industrial Optimization Program

Program Description	The program includes measures that allow customers to identify, assess, and implement customized cost-effective energy efficiency projects for industrial processes using natural gas as process heat or an energy source. The previously approved Industrial Technology Retrofit Program and Industrial Energy Audit and Analysis Program are consolidated under the Industrial Optimization Program.					
Target Market	Medium and Large Industrial Facilities					
New vs Retrofit	Both					
Eligible Measures	Variable					
Incremental Measure Cost	Dependent upon participant's proposed Energy Saving Measures.					
Incentive Amount	Varies by measure. If TRC ≥ 1.0 then approximately $5 / GJ saved over 3 years					
Savings Per Participant	Variable					
Measure Life & Source	Variable. Dependent upon participant's proposed Energy Saving Measures.					
Free Rider Rate & Source	Variable. Dependent upon participant's proposed Energy Saving Measures.					
Participants	Service Region	2014 Projected	2014 Actual			
	FEI	19	11			
	FEVI	2	1			
	FEW	0	0			
	Total	21	12			
Expenditures ($,000s)	2014 Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	435	103	0	19	557
	FEVI	59	4	0	0	63
	FEW	0	0	0	0	0
	Total	494	107	0	19	621

Notes:

- The Industrial Energy Audit measure does not include direct savings as the incentives are aimed only at identifying energy saving opportunities. The client is not required to implement energy saving projects identified in the audit process. If the client decides to implement any of the projects identified in the audit process, then the client has to apply to the Technology Implementation measure (previously Technology Retrofit) to receive incentives. Direct savings from each approved project will be included in the Technology Optimization Program.

- Depending on the size of the incentive, Technology Implementation project incentive payments are either paid fully on project commissioning or are paid across the first three years after the project's commissioning and based on projects' natural gas saving performance in each year. Hence, for larger incentives only a portion of the incentive is paid in the year a project is commissioned. For consistency, in performing cost benefit analysis, in these cases only a prorated portion of the natural gas savings and project costs are included in the determination of the cost benefit ratios (e.g. if 25% of the incentives were paid in 2014, only 25% of the project cost and only the NPV of 25% of the project's savings would be used as inputs). Therefore, for the cost-effectiveness tests, 2014 savings of 19,726 GJ reflects the prorated portion of expected project savings net of free-ridership relative to incentives paid out in 2014. Energy savings from the previous Technology Retrofit Program were calculated in this same manner in 2013.

- In the 2012 EEC Annual Report, the cost-effectiveness ratios for the Technology Retrofit Program were calculated using the NPV of total estimated natural gas savings, the total estimated project cost, but only twenty five percent of the calculated incentive of the project commissioned in 2012. As such, the incentive paid in 2013 towards this project was necessarily included as an input to the 2013 cost-effectiveness ratios, though any energy savings and project costs were not, as these had been recorded in full in 2012. No incentive was paid for this project in 2014. However, any subsequent incentives paid for this project will be included in future reports, without any

corresponding costs or benefits, until such time as the full value of the incentive commitment has been accounted for.

- As shown in Table 9-2a, there were four Technology Implementation projects initiated (executed funding agreements) in 2014 of which two projects were commissioned.

Table 9-2a: Technology Implementation project numbers

Initiated Projects in 2014		Commissioned Projects in 2014	
Number of Projects:	4	Number of Projects:	2
Total Estimated Savings (GJ/yr):	56,907	Total Estimated Savings (GJ/yr):	6,407
Total Project Costs:	$ 1,335,000	Total Project Costs:	$ 524,408
Total Incentive:	$ 587,617	Total Incentive:	$ 96,105

9.3 2014 Industrial Energy Efficiency Programs Planned But Not Launched

9.3.1 SPECIALIZED INDUSTRIAL PROCESS TECHNOLOGY PROGRAM

As outlined in the Commission's PBR Decision, detailed plans for this program are required to be submitted to the Commission for review and approval prior to program expenditures. The Specialized Industrial Process Technology Program was under development in 2014. Program development will continue in 2015 in preparation for submitting a detailed plan to the Commission later in the year.

9.4 2014 Industrial Energy Efficiency Program Closures

9.4.1 TECHNOLOGY RETROFIT PROGRAM

The Technology Retrofit Program was consolidated under the Industrial Optimization Program and renamed as the Technology Implementation measure.

9.4.2 ENERGY AUDIT AND ANALYSIS PROGRAM

The Energy Audit and Analysis Program was consolidated under the Industrial Optimization Program and renamed as the Industrial Energy Audit measure.

9.5 Summary

The Companies are satisfied with the results of the Industrial Energy Efficiency Program Area in 2014. Four projects in the Industrial Optimization Program were initiated in 2014 with two of these being commissioned. The two other projects initiated in 2014 are due to be commissioned

in 2015, leading to significant additional natural gas savings. Ten energy audit reports were completed in 2014, and the Companies hope to see these energy audit participants convert into Technology Implementation participants. The Companies will look to further refine the Industrial Optimization program in 2015 with additional measures being added to the program. Development of the Specialized Industrial Process Technology Program will continue in 2015 in preparation for submitting a detailed plan to the Commission later in the year.

10 CONSERVATION EDUCATION AND OUTREACH INITIATIVES

10.1 Overview

The Conservation Education and Outreach (CEO) portfolio continues to support the EEC's portfolio goals of energy conservation in a variety of ways. In order to foster a culture of conservation, several programs and campaigns were undertaken in 2014, giving the EEC team new learnings and insights into behaviour change and customer attitudes on energy efficiency. Educating residential customers, commercial customers and students remains a strong priority and we continue to ensure steps are taken to make the information relevant and timely for these customers.

Continued collaboration with the electric utility, FBC, was executed in an effort to maximize efficiencies across both teams. In 2014 costs were shared on school outreach, community outreach, retail campaigns, communications pieces and various event materials. Steps were also taken to further partner with BC Hydro in the CEO portfolio in 2014, leading to three new projects: the Air Miles Campaign in partnership with Rona; The Empower Me program; and the joint partnership on the Workplace Conservation Awareness (WCA) Program.

CEO provided information to customers and the general public on natural gas conservation and energy literacy and sought out new opportunities to reach customers, both face-to-face and online. The FEU also continue to support various training seminars and educational workshops in collaboration with such organizations as the Canadian Home Builders' Associations and other industry associations. Our ethnic outreach program, Empower Me continued to reach out to our Punjabi and Chinese communities through a community-based social marketing approach.

The Companies have not attributed direct savings to these programs in 2014. CEO costs are included at the portfolio level and incorporated into the overall EEC portfolio cost-effectiveness results. Although there were no energy savings attributed to the CEO Program Area in 2014, it should be noted that the Companies continue to explore ways to identify and confirm energy savings from CEO activities and are likely to claim energy savings resulting from CEO in the future.

Table 10-1 below summarizes the projected and actual expenditures for the CEO Program Area in 2014. The approved spending for 2014 was $2.4 million and actual spending in 2014 was $2.7 million. Please note that the CEO program area spend is higher than planned due in large part to the change in allocation of labour costs from the Portfolio level costs into the program level costs, as required by the Commission.

Table 10-1: 2014 CEO Initiative Results Summary

Program and Service Territory	Annual Gas Savings (GJ/yr.) 2014-2018 EEC Plan	Annual Gas Savings (GJ/yr.) 2014 Actual	Actual NPV Gas Savings (GJ)	Utility Expenditures ($000s) Incentives 2014-2018 EEC Plan	Incentives 2014 Actual	Non-Incentives 2014-2018 EEC Plan	Non-Incentives 2014 Actual	All Spending 2014-2018 EEC Plan	All Spending 2014 Actual	Benefit/Cost Ratios TRC	MTRC	Utility	Participant	RIM
Non-Program Specific Expenses														
FEI				0	0	216	216	216	216					
FEVI	No Direct Savings			0	0	24	31	24	31	No Direct Savings				
Total				0	0	240	247	240	247					
Residential Education Program														
FEI				0	0	891	1,741	891	1,741					
FEVI	No Direct Savings			0	0	99	138	99	138	No Direct Savings				
Total				0	0	990	1,879	990	1,879					
Commercial Education Program														
FEI				0	0	405	208	405	208					
FEVI	No Direct Savings			0	0	45	19	45	19	No Direct Savings				
Total				0	0	450	227	450	227					
School Education Program														
FEI				0	0	648	351	648	351					
FEVI	No Direct Savings			0	0	72	29	72	29	No Direct Savings				
Total				0	0	720	380	720	380					
ALL PROGRAMS														
FEI				**0**	**0**	**2,160**	**2,516**	**2,160**	**2,516**					
FEVI	**No Direct Savings**			**0**	**0**	**240**	**216**	**240**	**216**	**No Direct Savings**				
Total				**0**	**0**	**2,400**	**2,733**	**2,400**	**2,733**					

10.2 2014 CEO Programs

Tables 10-2 through 10-4 below outline the CEO initiatives undertaken in 2014. These tables include program descriptions as well as a breakdown of spending, all of which is classified as "non-incentive spending".

Table 10-2: Residential Education Program

Program Description	This program provides information to Residential customers and the general public on natural gas conservation and energy literacy by seeking opportunities to engage with customers directly (either face-to-face or through online programs). This audience also included low income and ethnic customers. Promotional activities in 2014 included print and online communications and engagement campaigns as well as educational seminars, development of online tools and participation in home shows and community events. The Program also included the cost of production of materials for events and prizing for audience engagement that are utilized at events targeting Residential customers and children. In addition, continuing partnerships with the regional Canadian Home Builders' Associations and local sports organizations expanded outreach opportunities to engage with Residential customers. Furthermore, FEU continued to focus on behavioural change opportunities that resulted in energy savings. Collaborations between internal departments and with other utilities and partners were sought to achieve cost efficiencies in the budget, particularly for advertising and for outreach events.
Target Market	Residential customers and general public
New vs Retrofit	Both
Expenditures ($,000s)	2014

Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
FEI	0	1,156	585	0	1,741
FEVI	0	86	52	0	138
FEW	0	0	0	0	0
Total	0	1,241	638	0	1,879

Notes:

- Spending in this program was higher than planned in 2014 due to the extension of the Empower Me Program from June through to December. It should also be noted that the Empower Me Program won the Association of Energy Services Professionals (AESP) Award for Best Residential Program for Implementation and Design in 2014. Further communication dollars were utilized from this portfolio in 2014 in order to effectively communicate a new platform to mass market and targeted media to ethnic audiences.

Table 10-3: Commercial Education Program

Program Description	This program provides ongoing communication and education about energy conservation initiatives as well as encourages behavioural changes that help Commercial customers reduce their organization's energy consumption. The Commercial sector is made up of small and large businesses in a variety of sub sectors such as retail, offices, multi-family residences, schools, hospitals, hospitality services and municipal/institutions. Promotional activities for 2014 included print and online communications, event support of industry trade shows, industry association meetings, award events, and development of tools to assist with education and engagement. In addition, the Companies furthered partnerships with organizations such as Small Business BC, the Business Improvement Associations of BC (BIABC) and Climate Smart, who all work with small to medium-sized businesses. This program area continued to guide and support behaviour education campaigns delivered by energy specialists (or an energy manager) in their respective organizations. Collaborations between internal departments, as well as with other utilities, were pursued to achieve cost efficiencies in the budget, in particular on advertising and outreach events.					
Target Market	Commercial customers, multi-family, energy specialists, energy management staff					
New vs Retrofit	Retrofit					
Expenditures ($,000s)	2014					
	Service Region	Incentives	Admin	Communication	Research &	Total
	FEI	0	176	20	12	208
	FEVI	0	15	2	1	19
	FEW	0	0	0	0	0
	Total	0	192	22	14	227

Notes:

- This portfolio was underspent in 2014 because there were fewer than projected funding requests from the commercial sector.

Table 10-4: School Education Program

Program Description	This program responds to section 44.1 (8) (c) of the Utilities Commission Act, R.S.B.C 1996, c.473, s.125.1 (4) (e), where a public utility's plan portfolio is adequate if it includes an education program for students enrolled in [K-12] schools and post-secondary schools in the Companies' service area. Activities included building partnerships and funding support for a variety of in-class and online programs related to conserving energy for K-12 students, delivered both internally and externally by third parties such as non-profit organizations or local sports teams. Some of the activities included were: Energy is Awesome, Destination Conservation, Green Bricks, Energy Champion assembly presentations, Vancouver Aquarium Aquaguide, and Beyond Recycling. Some of these activities also included distribution or education of low-flow fixtures, colouring books, mood pencils, and educational playing cards as part of the program. Partnerships and funding support for post-secondary activties include in-class programs, in-residence and on-campus education campaigns.					
Target Market	Students					
New vs Retrofit	Retrofit					
Expenditures ($,000s)	2014					
	Service Region	Incentives	Admin	Communication	Research & Evaluation	Total
	FEI	0	321	14	16	351
	FEVI	0	26	2	2	29
	FEW	0	0	0	0	0
	Total	0	347	15	17	380

Notes:

- Spending on this program was lower than planned in 2014 due to a province-wide school strike in the summer and early fall of 2014, which hampered outreach efforts. FortisBC also scaled back our third-party delivery programs in an effort to consolidate all FortisBC led programs under one umbrella strategy. Efforts were focused on gathering primary research in 2014 for this overarching FortisBC school strategy for 2015 implementation.

10.3 Summary

CEO initiatives are designed to foster a culture of energy conservation in BC. This portfolio is immensely important to the overall EEC message and helps to keep the program information and energy conservation message top-of-mind with all of our customers. By changing attitudes and behaviours, The FEU will help communities reach their goals, help customers save energy and money, increase participation in EEC programs and ultimately support the shared goals of the Companies and the Provincial Government. This portfolio will continue to explore new ways and seek out new opportunities and channels to connect with our customers to ultimately grow that culture of energy conservation.

11 ENABLING ACTIVITIES

11.1 Overview

In 2014, Enabling Activities continued to support and supplement the Companies' EEC program development and delivery, advancing energy efficiency in British Columbia. This included: the ongoing Efficiency Partners program[14]; work completed in advancing national, provincial and municipal building codes, appliance/equipment standards, and regulations; maintenance on the Companies' 'TrakSmart' EEC program tracking system; initial planning for a new Conservation Potential Review; initial planning and work on a Commercial End-Use Study; and continued funding to support post-secondary energy management programs. While these activities play an important role in the Companies' portfolio of EEC activities by advancing the delivery of all Program Areas, the FEU have not claimed any energy savings for work completed in the Enabling Activities category.

While no energy savings will be claimed for Enabling Activities, the Companies have measured and attributed energy efficiency savings in the advancement of Codes and Standards as a direct result of the Residential New Home program. Details of these savings can be found in Section 5, Residential EEC Programs. Additionally, the Companies will continue to assess future programs in terms of how they advance Codes and Standards, and as such will consider an appropriate attribution for the related energy savings

In the previous two EEC Annual Reports, the Enabling Activities expenditures were captured in the Residential Energy Efficiency Program Area section of the report (Section 5), and a separate Enabling Activities section was included in the report simply to highlight the importance of these enabling activities. New to this report, and in alignment with the 2014-18 EEC Plan, the Companies have separated the Enabling Activities accounting and have reported expenditures independently in this section. One exception, as noted in Section 2, Subsection 2.5.2 ("Portfolio Overview" pg. 14) and as per the Commission Panel Directive, is EEC Labour not being included in Enabling Activities as per the 2014-18 EEC Plan, but is instead reported in the "Administration" expenditures for each program.

Table 11-1 summarizes the projected and actual expenditures for the Enabling Activities in 2014.

[14] The title of the 'Efficiency Partners Program' has been relabeled as the 'FortisBC Trade Ally Network.' It will be refered to as the 'Trade Ally Network' in this Annual Report and forwards into subsequent years.

Table 11-1: 2014 Enabling Activities Results

Program and Service Territory	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures ($000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending						
	2014-2018 EEC Plan	2014 Actual		2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	2014-2018 EEC Plan	2014 Actual	TRC	MTRC	Utility	Participant	RIM
Trade Ally Network														
FEI	No Direct Savings			n/a	n/a	450	523	450	523	No Direct Savings				
FEVI				n/a	n/a	50	163	50	163					
Total				n/a	n/a	500	686	500	686					
Codes and Standards														
FEI	No Direct Savings			n/a	n/a	32	122	32	122	No Direct Savings				
FEVI				n/a	n/a	3	15	3	15					
Total				n/a	n/a	35	138	35	138					
TrakSmart Maintenance														
FEI	No Direct Savings			n/a	n/a	72	138	72	138	No Direct Savings				
FEVI				n/a	n/a	8	15	8	15					
Total				n/a	n/a	80	153	80	153					
Conservation Potential Review														
FEI	No Direct Savings			n/a	n/a	0	0	0	0	No Direct Savings				
FEVI				n/a	n/a	0	0	0	0					
Total				n/a	n/a	0	0	0	0					
Commercial End Use Study														
FEI	No Direct Savings			n/a	n/a	0	27	0	27	No Direct Savings				
FEVI				n/a	n/a	0	3	0	3					
Total				n/a	n/a	0	30	0	30					
Energy Management Education Funding														
FEI	No Direct Savings			n/a	n/a	135	90	135	90	No Direct Savings				
FEVI				n/a	n/a	15	10	15	10					
Total				n/a	n/a	150	100	150	100					
ALL PROGRAMS														
FEI	No Direct Savings			n/a	n/a	**689**	**901**	**689**	**901**	No Direct Savings				
FEVI				n/a	n/a	**76**	**206**	**76**	**206**					
Total				n/a	n/a	**765**	**1,107**	**765**	**1,107**					

Notes:

- In the table above, the total "2014-2018 EEC Plan" utility expenditures for Enabling Activities are noted as $765 ($000), whereas in the 2014-18 EEC Plan, and in Section 2, Table 2-2 "Overall EEC Portfolio Results by Program Area 2014" (pg. 6), the total "2014-2018 EEC Plan" utility expenditures for Enabling Activities are noted as $4,515 ($000). As noted in the Overview above, this difference is due to the Companies reporting EEC Labour in the "Administration" expenditures for each program instead of these expenditures being included in Enabling Activities as originally per the 2014-18 EEC Plan. This change in reporting was taken in order to address the Commission Panel Directive to allocate labour to each EEC program (see Section 2, Subsection 2.5.2 ("Portfolio Overview" pg. 14))

11.2 2014 Enabling Activities by Program

The following tables outline the specific Enabling Activities undertaken in 2014 by activity, including activity descriptions along with a breakdown of spending. Note that all spending under Enabling Activities is considered non-incentive spending.

Table 11-2: Trade Ally Network

Program Description	This program develops and manages a contractor network to promote EEC programs and energy-efficiency messaging. FEU identifies trade allies as equipment manufacturers, service contractors, distributors and retailers, and recognizes the influence these industry groups have with the end-use Residential, Commercial and Industrial customers who make energy-efficiency decisions. This program also supports funding energy efficiency training as outlined in the DSM Regulation.				
Expenditures ($,000s)	2014 Service Region	Admin	Communication	Research & Evaluation	Total
	FEI	265	243	12	520
	FEVI	59	102	1	163
	FEW	1	2	0	3
	Total	324	348	14	686

Table 11-3: Codes and Standards

Program Description	Utilities have a unique understanding of energy supply and customer demand cycles, which can be of assistance in the development of codes and standards. The content and timing of code implementation directly affects market transformation in all program areas. FEU's level of regulatory involvement typically includes one of three involvement classifications: monitoring, stakeholder engagement and developing regulations. The Codes & Standards area "supports the development of or compliance with specified standard or a measure respecting energy conservation or the efficient use of energy" as referred to in the definition of "specified demand-side measures" in the DSM Regulation.
Public consultation process	Evaluation and analysis of National, Provincial and City of Vancouver initiatives for energy efficiency. Development of appropriate responses to these initiatives within specified timelines.
Industry consultation process	Collaboration with entities like BC Hydro and the Home Owner Protection Office (HPO) for the development of industry training and guidelines on implementation of new energy efficiency measures. Participation with the BC Safety Authority Gas Technology Committee industry stakeholder group.
Involvement with supporting projects	Active participation for supporting projects like: the development and completion of the FP Innovations Guide: Pathways to High-Performing Housing in British Columbia and the completion and roll out of Morrison Hershfield Engineering study of Thermal Performance of Building Envelope Assemblies for Buildings in BC. Both of these guides are available to the public for free download.
Codes and Standards Strategy	Active participation on the Canadian Standards Association (CSA) Strategic Steering Committee on Fuel Burning Equipment. This committee is the highest level committee in the fuel sector at CSA and oversees all committees and sub-committees in the fuel burning sector. Consultation with the Canadian Gas Association (CGA), Canadian Institute of Plumbing and Heating (CIPH), Heating Refrigeration and Air-conditioning Institute (HRAI) and the Canadian Home Builders Association (CHBA) on codes and regulations that are common to our industries.
Codes and Standards Maintainance	Active participation on the CSA Technical Committee on Energy Efficiency and Related Performance of Fuel-Burning Appliances and Equipment. This committee oversees all of the eleven existing performance standards for gas-fired equipment and is looking to develop new needed standards for equipment that are wanted or needed by industry. Participation in the Standards Council of Canada, committee on Domestic gas cooking appliances ISO/TC 291.
Thermal Metering	The CSA C-900 Canadian Heat Meter Standard has now been developed, reviewed and published in French and English.
Internal awareness of Code and Regulatory changes	Development of internal documents and updates for relevant program areas and personnel.
Standards library	Purchase of up to date standards for reference.
Expenditures ($,000s)	2014

Service Region	Admin	Communication	Research & Evaluation	Total
FEI	91	1	30	122
FEVI	12	0	3	15
FEW	0	0	0	0
Total	103	1	33	138

Table 11-4: TrakSmart Maintenance

Program Description	Ongoing IT maintenance costs related to the EEC TrakSmart program and portfolio DSM tracking system.				
Expenditures ($,000s)	2014				
	Service Region	Admin	Communication	Research & Evaluation	Total
	FEI	138	0	0	138
	FEVI	15	0	0	15
	FEW	0	0	0	0
	Total	153	0	0	153

Notes:

- Actual spending on the Demand Side Management System (DSMS), or TrakSmart, exceeded the 2014 planned amount since delays in the development of the system caused the final invoicing of the system delivery not to be paid until early 2014. The forecast amount contained only the maintenance costs while the actual amount contained both the maintenance costs and the final delivery milestone payment carried forward from previous years. This was not a project over run but rather a delay in the timing of the payments. Minor unexpected costs for maintenance on the data interface between the FEU's customer information system and the DSMS were also included in the actual amount but not the forecast amount.

Table 11-5: Conservation Potential Review

Program Description	FEU considers the CPR to be an important tool for use in developing, supporting, and assessing current and future EEC expenditure applications, as well as for directional input into program development. The purpose of a CPR study is to examine available technologies and determine their conservation potential, which includes the amount of energy savings that can be achieved through energy-efficiency and conservation programs over the study period. The CPR does this by comparing the economic and achievable potential of viable measures to a base case scenario. Planning work began in 2014 in collaboration with FortisBC Inc. (electric), BC Hydro and Pacific Northern Gas resulting in some minor administration expenses. Core work on the CPR will begin in 2015.				
Expenditures ($,000s)	2014				
	Service Region	Admin	Communication	Research & Evaluation	Total
	FEI	0	0	0	0
	FEVI	0	0	0	0
	FEW	0	0	0	0
	Total	0	0	0	0

Table 11-6: Commercial End Use Study

Program Description	The CEUS provides a snapshot of the FortisBC Commercial customer base including multi-family residential buildings. The survey collects information about the building, the business(es) occupying the building, the fuel choice for heating, cooling and cooking, the types and ages of appliances installed, energy-use behaviours, and customer attitudes towards energy issues. This study is shared with other FEU departments. The expenditures listed here represents only EEC's portion.				
Expenditures ($,000s)	2014				
	Service Region	Admin	Communication	Research & Evaluation	Total
	FEI	27	0	0	27
	FEVI	3	0	0	3
	FEW	0	0	0	0
	Total	30	0	0	30

Table 11-7: Energy Management Education Funding

Program Description	Funding to support post-secondary energy management programs such as the UBC Masters in Clean Energy and the BCIT Sustainable Energy Management Advanced Certificate.				
Expenditures ($,000s)	2014				
	Service Region	Admin	Communication	Research & Evaluation	Total
	FEI	90	0	0	90
	FEVI	10	0	0	10
	FEW	0	0	0	0
	Total	100	0	0	100

11.3 2013 Enabling Activities Planned But Not Launched

11.3.1 MARKET SATURATION STUDY

This study was to be in collaboration with BC Hydro and FBC to construct a market baseline of the installation saturation rates of the different energy end-use technologies currently operating in commercial buildings and small-medium industrial facilities in BC. The results of the study were to be used to better understand the opportunities for DSM program interventions, provide a basis for later comparisons of the status of the market in order to help evaluate the impact of DSM programs and codes and standards, and serve as an input to help calibrate the CPR.

11.3.2 HOME ENERGY EFFICIENCY WEB PORTAL

This project involved developing a home energy-efficiency web portal with content, energy saving tips, online calculators, and a "one-stop rebate shop" for the entire Province of BC. Partners would include the provincial government, BC Hydro and FBC Budget would cover building of the site, communications to launch the site, and ongoing support of a "community"

manager to keep the content fresh and programs updated. This project has been delayed until the Home Energy Rebate Offer is stabilized in market. Online forms are a longer term objective.

11.4 Summary

Enabling Activities are critical initiatives that support and supplement EEC program development and delivery. In 2014, the Efficiency Partners Program initiative was expanded to a broader Trade Ally Network incorporating additional channels for messaging, programs and products. The focus of the Trade Ally Network is to increase EEC program uptake, and encourage the safe, permitted installation of efficient natural gas appliances. As the program continues to expand and broaden in scope, so too does the number of trade allies available to support the delivery of EEC, and other company initiatives. The Companies' involvement in Codes and Standards work in 2014 continued to encompass varying degrees of activities including monitoring, reviewing and responding to existing and proposed regulatory changes and direct participation in energy efficiency pilot projects that enable program development, market transformation, and the early adoption of energy efficiency regulations.

12 EVALUATION

The FEU continued to advance their evaluation activities in 2014 by conducting evaluation studies on a program by program basis.[15] In alignment with the Companies' Evaluation Measurement & Verification (EM&V) Framework, evaluation activities are assessed at different stages of the program's lifecycle and evaluated when appropriate. The 2014 evaluation activities presented here reflect the number of mature programs in market and the level of studies required to provide program feedback.

12.1 2014 Program Evaluation and Evaluation Research Activities

The Companies' EM&V activities for 2014 continued to follow the growth of EEC programs as they reach maturity and more programs are put into market. Evaluation activities were focused on identifying energy savings, assessing participant awareness and satisfaction , barriers to participation, the effectiveness of education initiatives, and industry research. M&V activities were focused on identifying and verifying project and measure level savings assumptions and understanding any issues associated with equipment installation in the field.

The actual evaluation expenditure for 2014 is lower than planned as presented in the Companies' 5 Year 2014-18 EEC Evaluation Plan. The reason for this lower than planned spend is twofold. First, just as program activity remained in a holding pattern through much of the year pending the Commission's decision on the 2014-2018 EEC Plan as part of the FEI PBR proceeding, so too was some of the planned evaluation activity delayed pending this decision. Second, a number of programs for which evaluation activities were planned did not reach the point in their life cycle where those planned evaluation activities could be adequately conducted. With programs and program development now moving forward as a result of the PBR decision to accept the EEC Plan and with programs advancing in their life cycles, the FEU expect EM&V activity to increase in 2015.

Table 12-1 presents an inventory of all program evaluation and evaluation research related activities undertaken in 2014. Expenditures for these activities have been accounted for within the applicable Program Area administrative costs, but are also reported here in order to provide a concise, easy-to-view summary of evaluation activities. Included in the table are: a list of all the 2014 evaluation activities; the Program Area each activity occurred in; the general type of evaluation activity undertaken; the Companies' actual 2014 expenditures; and, a status update on each activity. The total expenditure for program evaluation and research activities in 2014 was $449,000.

[15] Types of evaluation activities include: Communications evaluations, which focus on advertising and media outreach; Evaluation studies, where quality assurance or inspection is conducted to gain more insight on the incented measure; Process evaluations, where surveys and interviews are used to assess customer satisfaction and program success; Impact evaluations, to measure the achieved energy savings attributable from the program; and, Measurement & Verifcation, to monitor real time energy savings associated with energy conservation measures.

Table 12-1: Inventory of EEC Program Evaluation and Evaluation Research Activities Conducted in 2014[16]

Evaluation Name	Program Area	Type of Evaluation	Years the program has been running [17]	Evaluation Partnership	Actual Evaluation Expenditure (000's)	Evaluation Status [18]
FortisBC Communications Tracking: Energy Efficiency and Conservation	EEC Portfolio	Communication	ongoing	none	$15	Customer engagement and awareness of EEC activities **Completed November 2014 by TNS**
EEC Collaboration with Municipalities - In-depth Interviews	EEC Portfolio	Communication	1	none	$6	**Completed April 2013 by Participant Research and results reported in the 2013 Annual Report.** Final project costs paid in 2014.
EEC Rebates Online Project	EEC Portfolio	Communication	1	none	$24	Online research to assess EEC and PowerSense rebate content and customer usability. **Completed December 2014 by Upanup Studios**
School Outreach Program	Conservation Education and Outreach	Research	1	FortisBC Inc (electric)	$18	**Completed November 2014 by Participant Research**
Furnace Replacement Pilot Program - Quality Installation Study for Furnaces	Residential	Evaluation Study	2	none	$3	Furnace Quality Inspection - **Completed October 2013 by Eccolighten and results reported in the 2013 Annual Report.** Final project costs paid in 2014
Furnace Replacement Program - Preliminary Evaluation Year 2 Pilot	Residential	Process	2	none	$28	Customer and Contractor application analysis for Year 2 Pilot - **Completed February 2014 by Habart & Associates Consulting Inc. with Sampson Research Inc.**
Furnace Replacement Program - Customer Survey (2013 Participants)	Residential	Process	2	none	$6	Customer survey dataset - **Completed December 2013 by TNS** Survey analysis and report - **Completed August 2014 by Sampson Research** together with the Billing Analysis 2014.
Furnace Replacement Program - Billing Analysis 2014	Residential	Process & Impact	2	none	$30	Billing Analysis - **Completed July 2014 by Sampson Research** Survey Analysis - **Completed August 2014 by Sampson Research**
Furnace Replacement Pilot Program - Contractor Survey (2014 Contractors)	Residential	Process	2	none	$12	Contractor Survey for 2014 Contractors. **Expected completion by Q2 2015**
EnerChoice Fireplace Evaluation - Participant Survey & Billing Analysis	Residential	Process & Impact	2	none	$46	Customer Survey and Billing Analysis conducted for program evaluation. **Expected completion by Q2 2015.**

[16] Table 12.1 does not include Prefeasibility Studies. Please refer to the Innovative Technologies section (Section 8) for details.

[17] Measurement & Verification studies require time to conduct activities which include, but are not limited to, project commissioning, installing and removal of monitoring equipment, data collection and, data analysis and reporting. The column 'Years the program has been running' will refer to the time required to conduct the M&V activities. M&V activities align with the International Performance Measurement and Verification Protocol (IPMVP). Concepts and Options for Determining Energy and Water Savings. Prepared by the Efficiency Valuation Organization: www.evo-world.org. January 2012.

[18] M&V completion refers to the time period where the actual monitoring and data collection ends. Analysis and reporting will require additional time

Table 12-1: Inventory of EEC Program Evaluation and Evaluation Research Activities Conducted in 2014 (continued)

Evaluation Name	Program Area	Type of Evaluation	Years the program has been running [17]	Evaluation Partnership	Actual Evaluation Expenditure (000's)	Evaluation Status [18]
New Construction - EnerGuide 80 - Developer Information	Residential	Research	2	none	$4	Retrieved a list of active Residential Developers in BC to compile an industry list. **Completed August 2014 by Dun & Bradstreet**
Energy Specialist Program Energy Savings Audit-2014 Update	Commercial	Impact	4	none	$58	Final Report completed May 2014 by Prism Engineering Ltd and ClearLead Consulting Ltd. and key findings presented in the 2013 Annual Report. Final project costs paid in 2014.
Energy Specialist Program Energy Savings Audit (Update for 2015)	Commercial	Impact	4	none	$19	The study is an update to the Energy Savings Audit to verify 2014 project savings. 2014 project savings have been verified, **Final Report to be completed April 2014 by Prism Engineering Ltd and ClearLead Consulting Ltd.**
EnerTracker	Commercial	Process & Impact	2	none	$13	Customer survey to assess program success, customer behavior and the usefulness of the Energy Management Information (EMIS) tool. Billing analysis of a small sample size to assess program energy savings. Customer Survey - **Completed August 2014 by Ipsos Reid** Billing Analysis - **Expected completion by Q2 2015**
City of Vancouver Residential Solar Water Heating Pilot	Innovative Technologies	Measurement & Verification	4	City of Vancouver & Solar BC	$3	M&V and Final Report completed - **June 2014 by FortisBC**
City of Courtenay Solar Pool Demonstration Project	Innovative Technologies	Measurement & Verification	3	City of Courtenay	$0	M&V and Final Report completed - **May 2014 by FortisBC** Final project costs paid in 2013.
Residential High Efficiency Water Heater Pilot - 0.80 Pilot	Innovative Technologies	Measurement & Verification	4	Canadian Gas Association, Natural Gas Technology Centre & other utilities	$59	M&V and Final Report completed - **July 2014 by NGTC**
ENERGY STAR© 0.67 Storage Tank Water Heater Pilot	Innovative Technologies	Measurement & Verification	3	none	$6	M&V completed in 2014. Expected completion of **Final Report by Q2 2015.**
Condensing Gas-Fired Ventilation Units (CMUA)	Innovative Technologies	Measurement & Verification	1	none	$45	Expected completion of **M&V + Final Report by Q4 2015**
Ice Rink Resurfacing Efficiency Pilot	Innovative Technologies	Measurement & Verification	1	FortisBC Inc (electric)	$4	M&V and Final Report completed - **May 2014 by FortisBC**
Apartment Fireplace Efficiency Pilot	Innovative Technologies	Measurement & Verification	New	none	$25	Baseline monitoring started December 2014. Expected completion of **M&V + Final Report by Q3 2016**

1
2

Table 12-1: Inventory of EEC Program Evaluation and Evaluation Research Activities Conducted in 2014 (continued)

Evaluation Name	Program Area	Type of Evaluation	Years the program has been running [17]	Evaluation Partnership	Actual Evaluation Expenditure (000's)	Evaluation Status [18]
Combination Space/Water Heating Units Pilot	Innovative Technologies	Measurement & Verification	New	none	$1	Expected completion of **M&V + Final Report by Q3 2016**
Industrial Optimization Program	Industrial	Measurement & Verification	3	none	$19	3 ongoing projects requiring M&V activities in 2014 Project 1 – expected completion of **M&V by Q3 2016** Project 2 – expected completion of **M&V by Q2 2016** Project 3 – expected completion of **M&V by Q4 2016** Commissioned 4 new projects in 2014 Projects 4 and 5 – Started M&V Q3 2014. Expected completion of **M&V by Q3 2017** Project 6 and 7 – M&V to start Q1 and Q3 2015 with expected completion of **M&V by Q1 & Q3 2018**
Contractor Program Co-ops Ads Research Project	Efficiency Partners Program	Process	2	none	$7	**Survey Completed in February 2013 by Participant Research and reported in the 2013 Annual Report.** Final project costs paid in 2014

3

Table 12-2 contains a summary of all program evaluation studies and pilot program reports completed in 2014 and includes a brief description of the methodologies and key findings.

Table 12.2: Summary of Key Findings and Methodology for 2014 Completed EEC Program Evaluation Studies and Pilot Program Reports

Evaluation Name	Program Area	Type of Evaluation	Methodology	Key Findings
FortisBC Communications Tracking: Energy Efficiency and Conservation	EEC Portfolio	Communication	Online interviews conducted for approximately 600 BC panelists aged 18 years of age or older and living within the FortisBC operating regions.	**Results**: Unprompted awareness of individual FortisBC programs is low. When prompted, respondents had greatest recognition of the Energy Star branded programs and of the "Good for smaller footprints" tag. Overall customer engagement remained unchanged throughout the year with nearly 6 in 10 being classified as at least "Somewhat Receptive" to energy efficiency. **Outcome of Key Findings:** Move to an overarching Energy Efficiency message and place less emphasis on individual programs.
EEC Rebates Online Project	EEC Portfolio	Communication	Conducted expert usability testing and group stakeholder interviews leading into 37 customer feedback sessions. Purpose of study to streamline EEC and PowerSense rebate content to allow customers to easily navigate and find rebates and energy saving tips.	**Results:** Customers relied on contractors and retailers to provide rebate information. Google search is the most popular method for customers to find their way to rebate information on the internet. Customers indicated difficulty using the main navigation on the company website. Overall, customers are confused by the division of website content by service i.e. natural gas/electricity. **Outcome from Key Findings**: Based on the results, the information is assisting in the ongoing updates to the company website and rebates page.
School Outreach Program	Conservation Education and Outreach	Research	32 in-depth telephone interviews conducted between June and October 2014 with teachers and administrators across British Columbia	**Results**: Overall reaction to the program was favorable. Respondents indicated the program was effective in covering classroom instruction, student engagement and reward. One main concern respondents expressed was the long time frame to achieve the program grant. **Outcome from Key Findings**: Based on the findings, the results provided feedback to the program design and the revision of the incentive time frame.

Table 12-2: Summary of Key Findings and Methodology for 2014 Completed EEC Program Evaluation Studies and Pilot Program Reports (continued)

Evaluation Name	Program Area	Type of Evaluation	Methodology	Key Findings
Furnace Replacement Program - Preliminary Evaluation Year 2 Pilot	Residential	Process	Preliminary evaluation conducted on the 2013 pilot program based on the data collected from the participant homeowners (2,134 forms) and comparing the results with the 2012 pilot program. The results are intended to provide an update to the benefit/cost analysis.	**Results:** A total of 423 contractors participated in the program. Similar to 2012, 74% of the installations were done by contractors who are part of the FortisBC Trade Ally Network. The analysis estimated an average period of advancement of 4.8 years in comparison to 4.3 in 2012 which may be due to the 2013 program in market outside of the heating season. **Outcome from Key Findings:** Results were used to update the benefit/cost analysis calculation.
Furnace Replacement Program - Customer Survey (2013 Participants)	Residential	Process	401 participants from the 2013 program completed an online survey in November 2013 about their experiences with the program and factors motivating their furnace replacement decisions.	**Results:** 95% of participants are highly satisfied with the Furnace Replacement Pilot Program (rating 8, 9 or 10 out of 10) The factor most likely to have motivated participants to sign up for the program is reduced energy bills, with 79% of participants indicating that reduced energy bills had a 'strong effect' on their decision to participate in the program, and almost all participants saying this had at least some effect on their decision. **Outcome from Key Findings:** The results were used as directional measure to show that the program is influencing early replacement of a functioning furnace. The results were also used to support the billing analysis to verify energy savings attributable to the program.
Furnace Replacement Program - Billing Analysis 2014	Residential	Process & Impact	Energy savings analysis for the 2012 program participants was conducted using 12 months pre-program and 12 months post-program billing data. Participant survey results from the 2012 and 2013 program were used to support the billing analysis.	**Results:** 306 program participants with sufficient billing data were analyzed. Based on weather normalized gas savings, participants replacing a standard furnace to an AFUE 96.1 or higher furnace can realize savings of 18.5 GJ/year. Participants replacing a mid-efficiency furnace with an AFUE 96.1 or higher furnace can realize savings of 12.5 GJ/year. **Outcome from Key Findings**: The results of the analysis were to update the program implementer's estimates of gross per-unit GJ savings for furnace replacements.

Table 12-2: Summary of Key Findings and Methodology for 2014 Completed EEC Program Evaluation Studies and Pilot Program Reports (continued)

Evaluation Name	Program Area	Type of Evaluation	Methodology	Key Findings
Energy Specialist Program Energy Savings Audit (Update for 2015)	Commercial	Impact	The methodology remains consistent with the Energy Savings Audit -2014 Update. A total of 16 completed projects were reviewed by Prism Engineering Ltd. and ClearLead Consulting Ltd. Each Energy Specialist was required to complete a project-specific questionnaire and provide detailed project calculations and information for review. Project savings were verified on a project by project basis. Energy Specialist gas savings projects verified were those that did not take advantage of an existing FortisBC incentive program.	**Results:** A total of 16 completed projects for 2014 were reviewed to represent savings in 2014. The total verified savings of these 16 projects are 15,193 GJ/year. NPV gas savings equate to 47,239 GJ which is calculated using a methodology to account for the potential that projects may not persist over the anticipated measure life. **Outcome of Key Findings:** Continue to provide the Energy Specialists with support where required to properly document estimated energy savings. The preliminary results are showing a lower variance than in prior years in claimed savings reported by the Energy Specialists compared to the verified savings. This suggests the Energy Specialists are better aware of the expected savings and are being more conservative with the estimated savings as a result of the documentation process and support from FortisBC.
EnerTracker	Commercial	Process & Impact	Online survey for 36 program participants representing 185 sites was conducted between July 3, 2014 and July 25, 2014.	**Results:** 19 program participants completed the online survey, representing 120 different sites. (54% response rate) 84% of the participants surveyed were highly satisfied with the EnerTracker program (rating 8, 9 or 10 out of 10) The same participants who are satisfied with the program overall also found the program to be 'somewhat useful' to 'very useful'. 68% of the sites surveyed implemented Energy Conservation initiatives as a result for the EMIS tool. **Outcome of Key Findings**: Results from survey will assist with the program design and help support a larger scale billing analysis to verify energy savings.

Table 12-2: Summary of Key Findings and Methodology for 2014 Completed EEC Program Evaluation Studies and Pilot Program Reports (continued)

Evaluation Name	Program Area	Type of Evaluation	Methodology	Key Findings
City of Vancouver Residential Solar Water Heating Pilot	Innovative Technologies	Measurement & Verification	**The M&V Plan:** Complies with the International Performance Measurement & Verification Protocol. The selected IPMVP option and measurement boundary was Option B[19] **M&V:** 4 residential pilot participants agreed to take part in the M&V to monitor their solar hot water systems for 12 to 20 months between April 2012 and December 2014.	**Results**: Based on the M&V results, the performance across the four participants is reasonably consistent with natural gas savings ranging between 21% and 28% (average 25% per participant). **Outcome of Key Findings**: The M&V results show that a solar hot water system is currently not cost effective due to the currently low natural gas rate, the relatively high capital costs of a residential solar hot water system, and a relatively small natural gas baseline for Domestic Hot Water in residential setting.
City of Courtenay Solar Pool Demonstration Project	Innovative Technologies	Measurement & Verification	**The M&V Plan:** Complies with the International Performance Measurement & Verification Protocol. The selected IPMVP option and measurement boundary was Option B[19] **M&V:** M&V on the pool solar thermal system and pool cover system was implemented from June 2011 to August 2013.	**Results:** Based on the M&V results, the total measured and verified natural gas savings by the pool solar thermal system and pool cover system are 308 GJ or 48% annually. The measured savings are in reasonable agreement with the pre-M&V estimates of 368 GJ/yr. Note the savings are site specific as it depends on the size of the solar thermal system and the size of the pool. **Outcome of Key Findings**: Results were presented to the Commercial Program Area. The pool solar thermal system and pool cover system were included as an eligible measure within the Commercial Custom Retrofit Program.

Table 12-2: Summary of Key Findings and Methodology for 2014 Completed EEC Program Evaluation Studies and Pilot Program Reports (continued)

Evaluation Name	Program Area	Type of Evaluation	Methodology	Key Findings
Residential High Efficiency Water Heater Pilot - 0.80 Pilot	Innovative Technologies	Measurement & Verification	**The M&V Plan:** Complies with the International Performance Measurement & Verification Protocol. The selected IPMVP option and measurement boundary was Option B[19]. In addition to M&V surveys were conducted with contractors and participants to help support the pilot project. **M&V**: A total of 78 sites were chosen to participant in the pilot project. The sites were divided by region and by technology type across British Columbia, Saskatchewan, Ontario and Quebec, with majority being in BC (52 out of 78). The sites were divided into two levels of monitoring; Level 1 measurement for basic natural gas and hot water consumption, and Level 2 where detailed temperatures, natural gas use, hot water use, and other parameters were measured.	**Results:** The average annual energy savings for all sites and technology types compared to a baseline water heater is approximately 37.1% savings. The study also provided information on measured water usage, energy usage patterns, installation issues, technology performance and customer acceptance. The study showed the on-site Energy Factor for the replacement water heater to be performing lower than expected, the new water heater to be performing more efficiently than expected, and an increase in water usage among the participants. **Outcome of Key Findings:** The results from the study were used as an additional input to update the program assumptions.
Ice Rink Resurfacing Efficiency Pilot	Innovative Technologies	Measurement & Verification	**The M&V Plan:** Complies with the International Performance Measurement & Verification Protocol. The selected IPMVP option and measurement boundary was Option A[20] **M&V:** 10 sites were monitored to measure the thermal energy (natural gas) avoided to heat the hot water and refrigeration energy (electric) avoided to remove the heat from the ice surface. The M&V was conducted from November 2013 to March 2014.	**Results:** Resurfacing through vortex technology generates thermal and electricity savings. Measured Savings for natural gas are 330 GJ/year and 22,400 kWh/year for electricity savings. **Outcome of Key Findings**: Based on the M&V results, the vortex technologies were included as an eligible measure in the Commercial Custom Retrofit Program.

[10] IPMVP Option A - Measurement of key parameters governing energy use to assess consumption. www.evo-world.org

12.2 Evaluation Collaboration

The FEU have continued to seek opportunities to increase collaboration activities with FBC, BC Hydro, and other entities to conduct program evaluation for EEC programs. The number of collaboration activities depends on the timing of the activity, program participants, legal and privacy concerns and, available budget to conduct the study. Tables 12-1 and 12-2 provide information on program evaluation activities completed in partnership with other organizations. Although there were no jointly funded evaluations completed in 2014 between FEU and BC Hydro as joint programs had not reached maturity to conduct an evaluation, collaboration on evaluation activities is proceeding. Examples include the School Outreach Program and the M&V work associated with the Ice Rink Resurfacing Efficiency Pilot. In addition, FEU collaborated with government and industry organizations on M&V evaluation projects.

Collaboration efforts on evaluation have been further enhanced by the Memorandum of Understanding (MOU) on collaboration discussed in Section 2.6. The FEU and BC Hydro evaluation staff held update meetings to review the evaluation plans and discuss future evaluation activities. Evaluation staff from both parties continue to hold update meetings and explore opportunities for future collaboration on program evaluations.

13 DATA GATHERING, REPORTING AND INTERNAL CONTROLS PROCESSES

13.1 Overview

The following section demonstrates that the Companies have business practices in place to ensure EEC activities and associated spending are in compliance with Commission Orders and the internal control processes of the Companies in general. In its 2009 EEC Decision, the Commission directed the Companies to include a discussion in the EEC Annual Report of the Companies' internal data gathering, monitoring and reporting control practices. The FEU continue to provide this information. This section addresses that directive by providing general information on data gathering and on the Companies' business practices related to program development and application processing.

13.2 Program Tracking, Evaluation and Reporting Functions

The FEU staff responsible for EEC tracking, evaluation and reporting, continue to report to a different Director than staff responsible for program development and implementation in order to:

- conduct independent evaluation activities;
- maintain an independent library of inputs into cost effectiveness calculations; and
- centralize reporting processes.

13.3 Robust Business Case Process Applied to All Programs

Before a new EEC pilot or program can be implemented, a business case must first be developed. The Companies are committed to putting each pilot or program through the appropriate level of internal scrutiny before moving ahead, and believe doing so ensures an increased chance of pilot or program effectiveness.

Business cases include information about program rationale and purpose, as well as a description of the target audience, assumptions, cost-benefit tests and proposed evaluation methods. Cost effectiveness analysis is performed using the California Standard Tests (CST) as outlined in the California Standard Practice Manual. The Companies use an in-house cost-benefit modeling tool developed in partnership with expert industry consultants[21] to apply the program costs and benefits in each of the four standard cost-effectiveness tests based on the California Standard Practice Manual (Rate Impact Measure [RIM], Utility, Participant, and TRC) and the MTRC in accordance with British Columbia Demand-Side Measures Regulation.

[21] Willis Energy Services Ltd. and The Cadmus Group Inc. provided input into this in-house cost-benefit model.

The results from this modelling are used as inputs for the business cases, which are approved in accordance with the Companies' policy on financial authorization levels.

In addition to the internal business case process, the Commission, in its' PBR Decision, has directed the FEU to submit a written request and business plan for any new programs they want to implement that have not previously been identified within the approved EEC Plan. Such requests must demonstrate the new program results in a net improvement to the Portfolio effectiveness or is needed to ensure balanced access to EEC programming among different customer groups. No such new programs have been implemented since the FEU have received this directive.

13.4 Incentive Applications Vetted for Compliance with Program Requirements

Ensuring that all customer applications are compliant with program eligibility requirements as laid out in program terms and conditions is also part of the internal control process. The Companies have a number of mechanisms in place to ensure EEC incentive funding applications are in compliance with program requirements. The verification process is specific to each program and is dependent on the type of program, its complexity, the financial value of the incentive and other parameters. The general principles applied are as follows:

- Each application is reviewed for completeness and accuracy;
- Applications must meet the criteria outlined in the terms and conditions of the program put forward through the approval process;
- Once approved, incentives are distributed to participants; and,
- Copies of application and supporting documents are filed and stored for seven years in case of an audit.

13.5 Internal Audit Services

Each year, the FEU engage the Companies' own Internal Audit Services (IAS) group to review the internal controls associated with the EEC initiative. The IAS utilize the most recently completed year of operation on which to conduct their audit (In this case, the 2014 Audit covers the 2013 year. This is consistent with past reports). A copy of the 2014 Audit report, which found that EEC management processes and controls are designed and operating effectively, is included in Appendix A.

13.6 Summary

The Companies are committed to strong internal controls in all aspects of the EEC program. As demonstrated in this section, the Companies' business practices related to program development, application processing and ongoing monitoring are all sound and subject to continuous improvement.

14 2014 EEC ANNUAL REPORT SUMMARY

2014 saw the transition from FEU's 2012-13 activity to those activities proposed in the 2014-18 EEC Plan, as accepted by the Commision in the PBR Decision. EEC programming continued to contribute options for customers to reduce their enegy use. The companies cost-effectively delivered these programs within the spending limits approved by the Commission, and in accordance with the BC Demand-Side Measures Regulation. The Companies believe that they have made every reasonable effort to ensure EEC programs are operating in compliance with the Companies' own EEC Guiding Principles, as well as meeting provincial requirements for adequacy. The Companies also continue to implement good internal data gathering, monitoring and reporting control practices.

Appendix A

INTERNAL AUDIT SERVICES REPORT

FortisBC Energy Inc.
Internal Audit Report

Date: August 21, 2014

To: **Roger Dall'Antonia**, EVP, Customer Service & Regulatory Affairs

CC: **Sarah Smith**, Director, Energy Efficiency & Conservation
David Bennett, VP, Information Systems, General Counsel & Corporate Secretary

From: **Edward Olson**, Director, Internal Audit

Re: Energy Efficiency & Conservation Program – Internal Control and Process Review

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INTRODUCTION

The Energy Efficiency and Conservation Program ("the Program" or "EEC") is designed to provide customers with tools and incentives to manage their natural gas consumption, reduce their energy costs, and lower their greenhouse gas emissions.

In April 2012, the British Columbia Utilities Commission ("BCUC") granted approval for the Program expenditure of $35.6 million for 2013 in order G-44-12 for new and existing programs. The Program includes rebates and incentives on a number of energy efficient appliances, equipment and systems as well as education and outreach initiatives to increase awareness of the energy efficiency and environmental benefits that can be achieved by using clean burning natural gas in high efficiency appliances.

SCOPE AND OBJECTIVES

An internal audit of the Program was completed for the years 2010 through 2012. This is a follow-up to those projects as requested by management for 2013.

The objective of the review was to evaluate the design and operating effectiveness of project management processes and controls as established for facilitation of the Program using the following criteria:

- Identify key risks and determine whether risks are appropriately managed;
- Review existing policies, procedures and practices with reference to best practices;
- Review the level of adherence to, and compliance with, existing policies and procedures;
- Develop recommendations and potential action plans to address any significant issues or opportunities for improvement that may be identified; and
- Review for compliance with the BCUC decision regarding EEC.

OBSERVATIONS

The TLC Program now provides a $25 cash incentive which is a change from the previous $25 gift card incentive for customers who service their furnace or fireplace. With this change of incentive, there are a total of 1,007 ($25,175) gift cards remaining in inventory as undistributed. Although the gift cards are securely maintained, they should be repurposed so as not to leave idle and/or unutilized.

EEC has been developing an electronic system to satisfy program tracking and internal/external reporting requirements. This system, called TrakSmart, currently has 1 Residential program and 4 Commercial programs in use of the 12 programs currently in place (this does not include Electric incentive programs). The original TrakSmart project completion date was to be the end of 2010. Delays have been experienced which have continued to push back full installation and has delayed full realization of benefits on costs incurred to date. The current issue being resolved relates to the reconciliation between SAP and TrakSmart residential program customer specific gas accounts for ultimate rebate payments. When fully operational, management should ensure user training is documented and provided as well as to quarterly review user access privileges. Management should also ensure reports are created to provide for reasonable monitoring of all programs.

Even with the development of TrakSmart not yet complete, existing policies and procedures are in place to ensure timely monitoring of program effectiveness in all program areas by management. Based on work performed, the processes around the programs are adequately designed and operating effectively to manage the risks associated with the programs.

CONCLUSION

Based on our review, we have concluded that the EEC project management processes and controls are designed and operating effectively. The program is also operating in compliance with the BCUC decision.