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March 30, 2016

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC
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Attention: Ms. Laurel Ross, Acting Commission Secretary and Director

Dear Ms. Ross:

Re: FortisBC Energy Inc. (FEI)
Natural Gas Demand-Side Management (DSM) – 2015 Annual Report

Attached please find the Natural Gas DSM Program 2015 Annual Report for FEI.

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,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachment



FortisBC Energy Inc.

**Natural Gas
Demand-Side Management Programs
2015 Annual Report**

March 30, 2016

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1. REPORT OVERVIEW

FortisBC Energy Inc. (FEI or the Company)¹, is committed to delivering a broad portfolio of cost-effective Demand-Side Management² (DSM) measures that address the expectations of customers while meeting the requirements for public utilities to pursue cost-effective DSM³. In 2015, the company achieved a combined portfolio MTRC⁴ of 1.2 on expenditures of \$31.9 million, meeting FEI's goal of cost-effective program delivery.

This DSM Annual Report (the Report) outlines the Company's actual results and expenditures for 2015. The Report follows a similar format to the 2014 and other previous Annual Reports, relying on detailed tables to demonstrate Program results and expenditures. The Report compares 2015 activity and results to the Company's 2014-18 DSM Plan, as provided in the FEI's 2014-2018 Performance Based Ratemaking (PBR) Application and approved by the Commission in Order G-138-14. Where the details of individual programs vary substantially from the 2014-2018 Plan, explanations are provided in the applicable Program Area sections of this report.

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

This Report details the Company's activities for the overall DSM portfolio and in each Program Area. 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 following cost effectiveness test calculations 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: Total Resource Cost (TRC), Ratepayer Impact Measure (RIM), Participant Cost Test (PCT), and Utility Cost Test (UCT). 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.

This Report also demonstrates that the Company is meeting the accountability mechanisms directed by the Commission in Order G-36-09. One such mechanism was the requirement to file DSM Annual Reports, which states:

¹ The three BC Gas utilities formerly known as FortisBC Energy Inc. (FEI), FortisBC Energy (Vancouver Island) Inc. (FEVI) and FortisBC Energy (Whistler) Inc. (FEW) were amalgamated into a single utility - FortisBC Energy Inc. - in 2014. 2015 was the first complete year that the company operated as a single utility, which is reflected throughout this document by eliminating the breakout of separate FEI, FEVI and FEW statistics and results.

² Throughout this Annual Report the use of the term Demand-Side Management or "DSM" is intended to refer to demand-side measures in BC as defined in the BC Demand-Side Measures Regulation.

³ BC Utilities Commission Act, Section 44.1 (2) and Section 44.1(8) (c), and BC Demand-Side Measures Regulation Section 3.

⁴ 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).

A requirement that Terasen [now FEI] 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 [DSM] initiatives and activities, expenditures and results for TGI and TGVI.

1.2 Organization of the DSM Annual Report

The following describes how each section of the Report presents the results of 2015 DSM activities:

Section 1: Report Overview

- Provides a high-level background for the Report.

Section 2: Portfolio Overview

- Provides a summary and detail regarding the actual 2015 expenditures for DSM activities, along with an explanation of expenditures held in both the DSM deferral account and another deferral account set up for DSM incentive amounts provided to Alternative Energy Services (“AES”) projects in which FEI is a participant.
- Section 2.5 discusses any new requirements from the Commission concerning information to be included in the 2015 DSM Annual Report.

Section 3: Funding Transfers

- Provides a discussion on funding transfers.

Section 4: Energy Efficiency and Conservation (“EEC”) Advisory Group Activities

- Provides information regarding EEC Advisory Group (“EECAG”) activities in 2015, including a summary of meetings and accountability considerations.

Sections 5 - 9 provide information on:

- 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 2015, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC and other cost-

effectiveness test results. Additional tables outline the individual 2015 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 2015 are also included in these program detail sections.

Section 10: Conservation Education and Outreach Initiatives

- Provides both a summary and details regarding actual 2015 expenditures for the Conservation Education and Outreach (“CEO”) Program Area.

Section 11: Enabling Activities

- Provides both summary and detail regarding actual 2015 expenditures for the Enabling Activities that support the work of the DSM portfolio as a whole.

Section 12: Evaluation

- Provides both summary and detail regarding pending and actual expenditures for 2015 program evaluation activities, as well as summary results from evaluations and studies completed in 2015.

Section 13: Data Gathering, Reporting and Internal Controls Processes

- Provides a summary of the Company’s data tracking, process control and reporting for 2015 DSM activities, and a high level description of the Company’s internal approval process for programs.

Section 14: 2015 DSM Programs Annual Report Summary

- Summarizes the Report and the Company’s 2015 DSM activity.

2. PORTFOLIO OVERVIEW

In this Section, FEI provides its DSM energy savings, expenditures and cost-effectiveness test results at an overall portfolio level for 2015. A summary of the overall portfolio results is provided in Table 2-1, demonstrating that the Company achieved a combined portfolio MTRC of 1.2. DSM expenditures were almost \$32 million and recorded natural gas savings were over 434,000 GJ.

Table 2-1: Overall DSM Portfolio Results for 2015

Annual Gas Savings (GJ/yr.)	434,550	
NPV of Gas Savings (GJ)	3,238,526	
Utility Expenditures, Incentives (\$000s)	20,976	
Utility Expenditures, Non-Incentives (\$000s)	10,889	
Utility Expenditures, Total (\$000s)	31,865	
Benefit/Cost Ratios	TRC	0.7
	MTRC	1.2
	Utility	0.9
	Participant	2.3
	RIM	0.3

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

Table 2-2: Overall DSM Portfolio Level Results by Program Area - 2015

Portfolio Level Results														
Portfolio	Annual Gas Savings (GJ/yr.)		NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
	2014-2018 EEC Plan	2015 Actual		Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
				2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual					
Portfolio Level Activities														
Total	No Direct Savings			n/a	n/a	n/a	1200	n/a	1200	No Direct Savings				
Residential Sector														
Total	141,535	121,377	1,160,795	8,086	10,531	3,065	2,204	11,152	12,735	0.5	1.5	0.9	1.3	0.4
Commercial Sector														
Total	304,786	270,933	1,756,471	9,355	8,740	2,218	2,006	11,573	10,746	1.2	n/a	1.4	2.2	0.6
Industrial Sector														
Total	142,349	16,575	132,597	1,686	578	671	412	2,357	989	1.0	n/a	1.1	2.2	0.6
Low Income														
Total	26,920	24,100	171,948	1,520	910	1,303	640	2,822	1,550	1.4	2.2	1.3	3.3	0.6
Conservation Education and Outreach														
Total	No Direct Savings			n/a	n/a	2,400	2,830	2,400	2,830	No Direct Savings				
Innovative Technologies														
Total	72,204	1,564	16,715	438	217	780	409	1,218	626	0.2	n/a	0.2	0.8	0.2
Enabling Activities														
Total	No Direct Savings			n/a	n/a	5,015	1,189	5,015	1,189	No Direct Savings				
TOTAL PORTFOLIOS														
Total	687,795	434,550	3,238,526	21,086	20,976	15,452	10,889	36,537	31,865	0.7	1.2	0.9	2.3	0.3

Notes:

- Portfolio Level Activities are those activities for which the costs cannot be assigned to individual DSM programs. It should be noted that these activities are distinct from the Enabling Activities specifically listed in Section 9 of the 2014-18 Plan. These distinct Portfolio Level Activities include expenditures such as EECAG activities, DSM 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:

- 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.
- A “Non-Program Specific Expense” line item has been included for each program area. These expenditures represent the costs attributable to that program area but 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 FEI’s 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 Company’s DSM 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 FEI is using to report energy savings from DSM activity is highly conservative in that it includes the free ridership impact, which serves to reduce reported energy savings, but in most cases does not include the energy savings benefits of spillover⁵ effect. FEI intends to continue identifying and incorporating spillover effects into reporting of energy savings impacts from DSM activity on a program-by-program basis, wherever 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 Company’s DSM activity. Until 2014 when FEI claimed energy savings from the Residential New Home Program, the Company had not historically claimed any energy savings from the implementation of these standards. FEI will not be claiming any such energy savings in 2015. The Company continues to believe the claimed savings are conservative and do not represent all of the savings attributable to FEI’s codes and standards work. FEI 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 \$2.8 million in 2015. These activities do result in energy savings; however, since these savings remain difficult to quantify, FEI does not currently attribute energy savings to them. Thus, these benefits are not reflected in the TRC. FEI continues to explore approaches to determining energy savings from CEO activities and may account for these energy savings in the future.

⁵ 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.

- Enabling Activities – Enabling Activities similarly had expenditures of \$1.2 million in 2015 for work that contributes to energy savings but that cannot currently be quantified. Since these savings are not included in the portfolio TRC calculation, FEI believes the portfolio energy savings benefits are higher than reported.

FEI's DSM 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 FEI's portfolio include the Innovative Technologies programs (see Section 8), education and community engagement programs (see Section 10), and Codes and Standards related DSM 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 portfolio as a whole. These measures are therefore not subject to the 33% 'MTRC Cap' (see Section 2.1). Additionally, these measures cannot be determined to be "not-cost effective" under the Utility Cost Test.

In summary, FEI's 2015 DSM expenditures, including specified DSM, were cost-effective under the BC *Demand-Side Measures Regulation*.

2.1 Portfolio Level MTRC Calculation and Results

In 2015, FEI met the conditions of the Province's *Demand-Side Measures Regulation*, achieving a portfolio MTRC value of 1.2 with 32 percent of the portfolio enabled by the MTRC cost-effectiveness test. While FEI strives 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 this threshold. Some of these benefits include making programs available to those customers that would otherwise be underserved (such as low income and residential customers), 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 in determining program

and portfolio cost effectiveness. 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 energy and allows for the inclusion of non-energy benefits (NEBs).⁶

Utilities can implement natural gas 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. FEI refers to this 33 percent as the “MTRC Cap”. Table 2-3 shows both the TRC and MTRC of those programs with measures to which the MTRC cost effectiveness test is applied, along with the expenditures⁷ related to those measures. Table 2-2 shows that the overall portfolio MTRC is 1.2 in accordance with the *Demand-Side Measures Regulation* and the Commission’s approval to assess cost effectiveness on an overall portfolio basis⁸.

Table 2-3: Programs with Measures Subject to MTRC and Proportion of 2015 Portfolio Spend

Program	Program TRC	Program MTRC	Expenditure (\$000s) subject to cap	% of Portfolio Spending
EnergyStar Domestic Hot Water	0.4	1.5	2,448	7.7%
Furnace Replacement	0.5	1.4	3,528	11.1%
Domestic Hot Water Conservation * Program / Low Flow Fixtures	2.2	n/a	73	0.2%
EnerGuide 80 New Construction	0.4	1.5	1,296	4.1%
Energy Efficiency Home Performance (HERO)	0.4	1.4	1,709	5.4%
Energy Conservation Assistance Program (ECAP)	0.5	1.8	1,015	3.2%
Total			\$10,069	31.6%

2.2 Meeting Approved Spending Levels

The Company’s DSM expenditures were within the approved levels. FEI filed its 2014-2018 Performance Based Ratemaking (PBR) Application with the British Columbia Utilities

⁶ 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. As the DSM Regulation stipulates, the value that the FEI has 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).

⁷ The expenditures listed in Table 2-3 are associated with those measures within each program that do not pass the TRC and therefore to which the MTRC avoided cost of energy and NEBs apply when calculating the MTRC portfolio cost effectiveness test. For this reason, expenditures in Table 2-3 may differ from total program expenditures listed elsewhere in this report.

* The Energy Star Washers and Dryers that are part of the Domestic Hot Water Conservation / Low Flow Fixtures program have individual measure TRC values of 0.6 and 0.4 respectively.

⁸ The Commission approved the assessment of the cost effectiveness using an MTRC of 1 or greater on an overall portfolio basis as part of its decision on the 2012-2013 RRA Decision, Order No. G-44-12, page 174. While this approval is not explicitly stated in the PBR decision (Order No. g-139-14), FEI interprets this approval to be implicit in the approval of the 2014-2018 DSM Plan.

Commission (the Commission) on June 10, 2013. As part of the PBR Application, FEI 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. The Commission approved the PBR application on September 12, 2014 including a 2015 DSM expenditure limit of \$36.5 million⁹.

In the 2014-2018 PBR application, FEI proposed to maintain the 2012–2013 approved approach that only \$15 million of the requested annual DSM budget be added to the DSM rate base each year of the PBR period, with any additional DSM spend being captured in an DSM non-rate base deferral account attracting AFUDC. FEI requested approval to transfer any new amounts accumulated in the non-rate base DSM deferral account to FEI rate base DSM deferral account in the following year. This included approval to transfer the balance in the non-rate base DSM incentive deferral account as of December 31, 2013 to the rate base DSM deferral account on January 1, 2014. In the 2014-2018 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 DSM rate base deferral account. In its decision, the Commission Panel approved FEI's request to (i) continue the DSM accounting treatment approved for 2012–2013 and, (ii) to transfer any new amounts accumulated in the non-rate base DSM deferral account to FEI rate base DSM deferral account in the following year. In accordance with this decision, \$16.75 million was transferred to the non-rate based DSM deferral account in 2015.

FEI notes a small difference in the total DSM rate base (\$15 million) plus non-rate base deferral account amount (\$16.75 million) versus the total 2015 expenditures (\$31.87 million) reported in Tables 2-1 and 2-2. This difference is due to some program activity that occurred in late 2015 but for which the payments were not processed prior to the 2015 year-end.

FEI has managed its 2015 DSM activity within the funding limits approved by the Commission. Section 3 discusses funding transfers between program areas in 2015 within the overall DSM funding envelope and within rules for transferring funds between program areas as set out by the Commission.

2.3 DSM Incentives for AES/TES Projects

Commission Order G-44-12 directed FEI to hold all DSM incentives that are provided for Alternative Energy Services (AES) or Thermal Energy Services (TES) technologies for projects in which the FEI is a participant in a separate deferral account. Up until 2015, FEI reported on the amounts being added to this deferral account in its DSM Annual Report. In 2015, by Order G-86-15, the Commission approved both the transfer of these amounts to the rate base deferral account and the discontinuation of the AES/TES deferral account. As such, FEI will no longer be reporting on these amounts.

⁹ BCUC Order G-138-14, page 277 of the Decision.

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 DSM 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.

FEI has met all the requirements for adequacy. There are a number of programs for low income customers, which are discussed in their own section (see Section 6). Although there are a number of Commercial and Low Income energy efficiency programs intended for use by owners of rental buildings, including the Energy Specialist Program (see Section 7), FEI applied and received approval for the Rental Apartment Efficiency Program (RAP) pursuant to Commission Directive 148 from the 2014-2018 PBR decision, Order G-138-14. That order required FEI to file one or more DSM programs intended specifically to address the unique market barriers to energy efficiency faced by renters. The RAP program, launched in late 2015, spans both the Residential and Commercial Program Areas. The expenditure details for RAP are presented and discussed in each of the respective Program Area sections (Sections 5 and 7) and a full program overview for RAP is presented in Section 7.2.1.

In terms of education programs, FEI's School Education Program, Commercial and Residential customer education programs and other energy efficiency and conservation outreach initiatives are presented in Section 10.

2.5 Addressing BCUC Directives from the FEI 2014-18 Performance Based Ratemaking Decision

FEI filed its 2014-18 EEC Plan and associated funding request to the BCUC with the FEI 2014-18 Performance Based Ratemaking Application. There were a number of Commission directives from that Decision that are specific to the 2014-18 EEC Plan. Many of these directives were required to be addressed in the 2014 Annual Report and as such do not need to be addressed again in this or subsequent Annual Reports. In this section, FEI addresses the BCUC directive regarding labour costs that applies to the overall 2015 DSM Portfolio. Program specific directives are addressed in the applicable program area sections of this report.

2.5.1 LABOUR COSTS

The Commission Panel directed FEI to allocate 'labour costs coded to DSM' to its DSM programs during the 2014-2018 expenditure approval period, with the exception of costs related to Evaluation, Measurement & Verification.

As with the 2014 Annual Report, FEI has included labour cost coded to each DSM program in the reported "Administration" expenditures for each program. This information is included in the specific Program tables included in each DSM Program Area section of this report (Sections 5-11). FEI Notes that while the 2014 – 2018 DSM Plan was approved by the Commission as set out in FEI's application, program and program area costs were not re-cast with labour included at the program level. This change therefore impacts the direct comparison of actual program and program area spending to planned spending. The inclusion of Labour costs at the Program level can cause program area expenditures to appear higher than the approved amounts even though non-labour costs are within approved amounts. Actual spending in the "Enabling Activities" program area will also be lower than planned since a substantial amount of labour costs planned for this program area are being reported within other program areas. This issue is also discussed in Section 3 on funding transfers.

2.6 Collaboration & Integration

FEI continues to collaborate and integrate DSM programming among BC's largest energy utilities, as well as with other entities such as governments and industry associations. The Company recognizes that doing so 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.

FEI and BC Hydro continued to expand on their program and project collaborations 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 two utilities agreed to extend the MOU for a further three year period covering August 2015 through August 2018. In 2015, the electric utility FortisBC Inc. (hereafter referred to as FBC) also joined the collaboration and signed the MOU.

FEI and BC Hydro again conducted a joint review of incremental cost efficiencies created as a direct result of the partnership over the April 1, 2014 to March 31, 2015 time period (BC Hydro fiscal year). This review examined the costs incurred for each program and project collaboration that was in place over that time period and determined that FEI and BC Hydro combined had total incremental cost efficiencies of approximately \$5.4 million as a result of working together. FEI, 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

FEI's DSM portfolio met the goal of cost effectiveness with a MTRC value of 1.2 in 2015. The Company is 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. FEI expects 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 DSM portfolio will be continue to be cost effective.

3. FUNDING TRANSFERS

Two Program Areas – Residential and CEO – incurred actual program expenditures that were greater than their respective approved Program Area funding amounts¹⁰. In the case of CEO, exceedance of the approved Program Area funding level was the result of reporting labour expenditures at the program level as directed by the Commission¹¹. The approved 2014 - 2018 EEC Plan was based on labour being reported at the portfolio level, and planned Program Area expenditure levels were not re-cast subsequent to the Commission's decision regarding the reporting of labour costs. Therefore, the approved Program Area funding limits do not include labour. Since the expenditures for CEO as shown in Table 2-2 include labour, and since the approved CEO funding level would not be exceeded if labour costs were removed, no funding transfer is required.

For the Residential Program Area, expenditures other than labour costs exceed the approved funding level by \$1,241,000 as a result of the success of the residential programs. To accommodate these additional expenditures in the Residential Program area, \$827,000 of available funding within the Commercial Program Area and \$414,000 of available funding in the Industrial Program Area have been transferred to the Residential Program Area. None of these amounts exceed 25% of the respective program area approved funding levels¹².

¹⁰ Order G-138-14.

¹¹ Directive 145, Order G-138-14

¹² According to Directive 151, Order G-138-14, funding transfers in excess of 25% of program area approved funding levels require prior approval from the Commission.

4. EEC ADVISORY GROUP ACTIVITIES

4.1 Overview

The Energy Efficiency and Conservation Advisory Group (EECAG) provides insight and feedback on FEI's portfolio of DSM activities and related issues. This includes: DSM program and portfolio performance, development and design; funding transfers; policy and regulations that may impact DSM 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 FEI's regulatory proceedings.

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

4.2 Summary of the 2015 Workshop

EECAG workshops provide a forum for stakeholders to learn about DSM programs and engage in constructive dialogue with FEI. Since FEI was in the second year of an approved plan for DSM activities and because both the regulatory framework and market dynamics for DSM programming has remained stable during this time, a single workshop in 2015 was sufficient to update EECAG members and seek their input on programming issues. The EECAG workshop was held on November 4th in Vancouver and was well attended by EECAG members or their alternate delegates. The EECAG Independent Facilitator was engaged in workshop design and facilitation of the workshop. Copies of materials and minutes for these meetings were distributed to EECAG members and other workshop attendees.

At the November workshop, FEI provided:

- Program area updates and highlights for 2015;
- An update and discussion on the Conservation Potential Review, an in-progress study being undertaken to examine available technologies and determine their conservation potential, which includes the amount of energy savings that can be achieved over the study period for each of the four largest utilities in BC (FEI, FBC, BC Hydro and Pacific Northern Gas);
- An overview of newly approved programs and an Innovative Technologies Pilot project (Condensing Make-up Air Unit Pilot);

- Plenary sessions, led by the independent facilitator, to discuss two specific issues that FEI is currently experiencing in its DSM programming and gather feedback from the group on potential solutions:

1. Claiming and accounting for energy savings from Conservation, Education and Outreach (CEO) activities that encourage the implementation of energy efficiency measures or that change behavior to conserve energy use.

2. The application of measurement and verification (M&V) approaches to industrial projects to address the challenge of high M&V costs and administrative burden on smaller industrial projects.

- An opportunity for EECAG members to share their own initiatives and insights on energy efficiency and conservation efforts in their own organizations or areas of influence.

With respect to the plenary sessions, the following key discussion points and feedback were raised:

CEO Activities:

FEI believes that CEO activities do result in energy savings, however, the majority of these savings are difficult to track and report since they are often behavioral in nature and involve events where energy efficiency messaging is delivered to large audiences with no way to track the subsequent energy consumption behavior of each individual. In this session, FEI presented three CEO initiatives (in-store rebates, Empower Me Energy Savings Kits and employee promotions) for which activity could be tracked and a conservative estimate of savings developed.

EECAG members were generally in favour of identifying and claiming the savings for these three initiatives where good data exists with which to determine the savings. A number of ideas for additional information sources on tracking and calculating savings on behavioral programs were offered by group members. FEI explained that they were seeking a summer student to further explore methodologies for determining behavioral energy savings. Such savings have not been claimed for 2015 but may be claimed in future annual reports.

Industrial M&V Approach:

A review of the industrial market segment and industrial programming was provided to EECAG members along with a refresher on M&V practice as it currently applies to FEI's Industrial Optimization program. FEI staff explained using examples that M&V costs are currently very similar across projects at around \$20,000 (external, 3rd party costs based on projects completed to date) and typically require a similar level of effort, regardless of the magnitude of natural gas savings or cost of the project. For smaller projects, this level of cost and effort could cause a project to fail current cost effectiveness tests and therefore be a barrier to implementing energy efficiency measures. FEI sought feedback from the EECAG on alternatives to the current M&V approach to industrial projects.

EECAG members sought clarification on the types of projects supported by industrial DSM incentives, variables contributing to the level of confidence in M&V results and savings persistence. Members also put forward ideas on how to reduce M&V costs for smaller projects. A range of approach suggestions and a few examples from industrial customers were provided by EECAG members for consideration by FEI. Scaling M&V practices based on project size, project savings and/or the level of risk inherent were common themes.

In addition to the plenary feedback sessions discussed above, FEI and EECAG members discussed the following key points throughout the workshop:

- FEI continues to maintain good relationships with the contractor community, and is now expanding industry relationships to include equipment manufacturers and distributors.
- Members would like to receive a mid-year update on annual portfolio progress.
- Members are interested in what role the utility could play on regulatory and building code compliance.
- Members would like to see more focus, if possible, on behavioral programs in the CPR study than there has been in past studies.
- It was clarified that the CPR does not make recommendations on program design such as identifying more low income programs, but rather examines available measures and their cost effectiveness which becomes an input into utility program design.
- The benefits of reaching out to renovators as well as contractors in the residential market in order to improve program awareness and energy literacy.
- The potential benefits of and barriers to deeper retrofits in the residential sector.
- The idea of developing a repository of energy efficiency technologies, housed at an educational facility.

To close the workshop, members discussed a range of initiatives and studies related to energy efficiency and conservation that are being taken by their own organizations or members. A number of follow up action items were identified and included in the workshop minutes for follow-up by various parties.

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 voiced during the workshops or submitted to FEI via evaluation forms distributed at each workshop. The results from these evaluation forms are compiled and all comments are considered when planning future workshops.

1 In an ongoing effort to improve EECAG interaction, results from feedback are considered in
2 collaboration with the EECAG Independent Facilitator, to help design future EECAG sessions
3 and workshops. Feedback received during the 2015 workshop indicated that adjustments made
4 to the workshops based on prior feedback were helpful and that degree of consultation in 2015
5 was appropriate. FEI's efforts to share with EECAG members how their input was being used
6 was appreciated and a good balance has been struck between providing informational sessions
7 and facilitating sessions designed to obtain feedback on important topics.

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5. RESIDENTIAL ENERGY EFFICIENCY PROGRAM AREA

5.1 Overview

The Residential Energy Efficiency Program Area was successful in reducing annual natural gas consumption by 121,000 GJ and achieving an overall TRC/MTRC of 1.5. Over \$12.7 million was invested in Residential Energy Efficiency upgrades in 2015, and 82 percent of this investment was customer incentive spending.

Table 5-1 summarizes the projected and actual expenditures for the Residential Energy Efficiency Program Area in 2015, 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 870,000 homes in the FEI service territories. For DSM purposes, these customers predominantly include end-use customers living in residential single-family homes, row houses, townhomes or mobile homes.¹³ Some in-suite measures in Multi-unit residential buildings ("MURBS") are also included in this funding envelope. These measures may include low flow fixtures and a small number of fireplaces and water heaters in MURBS or individually metered units. Residential programs serve retrofit and new home applications. In combination with FEI's education and outreach activities, these programs play an important role in driving the culture of conservation in British Columbia.

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

Program	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
	2014-2018 EEC Plan	2015 Actual		2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual					
Non Program Specific Expenses														
Total	No Direct Savings			0	0	540	396	540	396			No Direct Savings		
Energy Efficiency Home Performance (HERO)														
Total	40,846	15,508	165,673	1,065	1,397	423	312	1,488	1,709	0.4	1.4	0.9	0.8	0.4
Furnace Replacement Program														
Total	31,413	31,261	314,454	2,984	3,228	356	300	3,340	3,528	0.5	1.4	1.2	1.0	0.4
Enerchoice Fireplace Program														
Total	15,485	30,123	274,355	1,040	1,826	321	383	1,361	2,209	2.4	n/a	1.1	7.4	0.4
Appliance Service Program														
Total	No Direct Savings			356	535	100	81	456	616			No Direct Savings		
ENERGY STAR® Domestic Hot Water "DHW" Technologies														
Total	16,918	24,885	237,337	1,353	2,319	119	370	1,472	2,688	0.4	1.5	0.8	1.0	0.4
Domestic Hot Water Conservation Program /Low Flow Fixtures														
Total	12,826	9,483	67,288	190	99	100	126	290	226	2.2	n/a	2.5	6.6	0.6
New Home Program														
Total	8,347	7,126	80,670	848	1,096	188	199	1,036	1,296	0.4	1.5	0.6	1.2	0.3
New Technologies Program														
Total	1,450	0	0	191	0	97	0	287	0			No Direct Savings		
Rental Apt Efficiency (RAP)* Residential Portion														
Total	0	2,992	21,017	0	31	0	35	0	66	n/a	n/a	n/a	n/a	n/a
Customer Engagement Tool for Conservation Behaviours														
Total	14,250	0	0	0	0	706	0	706	0			No Direct Savings		
On-Bill Financing														
Total	No Direct Savings			59	0	115	0	174	0			No Direct Savings		
ALL PROGRAMS														
Total	141,535	121,377	1,160,795	8,086	10,531	3,065	2,204	11,152	12,735	0.5	1.5	0.9	1.3	0.4

¹³ Programs for Multifamily Dwellings served under Rate Schedule 2 or 3 are included in the Commercial Energy Efficiency Program Area (please refer to Section 7) with a few exceptions as noted in text.

Notes:

- * The Rental Apartment Efficiency Program (RAP) includes a combination of residential and commercial measures, each funded from their respective Program Areas. The *Residential Portion* details of this program included in Table 5-1 shows only those Residential Program Area expenditures. These expenditures are associated with the direct install of residential fixtures, and a portion of the communication and evaluation costs. Commercial Program Area expenditures that are part of RAP are presented in Tables 7-1 and 7-10. Cost effectiveness values for only the *Residential Portion* of RAP are not provided as they do not represent a complete program view. Please refer to Table 7-11 for a complete program view and further program details including program cost effectiveness results.

5.2 Residential TRC and MTRC Results

FEI's DSM Program Principles state that programs should be universal, offering access to programs for all residential and commercial customers. Although many Residential 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 a greenhouse gas (GHG) emissions reduction perspective. 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 2015 Residential Program Area TRC was 0.5 with a blended TRC/MTRC result of 1.5.

5.3 2015 Residential Energy Efficiency Programs

Tables 5-2 through 5-9 outline the specific Residential Energy Efficiency programs undertaken in 2015, including program and measure descriptions and a breakdown of non-incentive spending.

Table 5-2: Energy Efficient Home Performance Program -Home Energy Rebate Offer (HERO)

Program Description	This collaborative program promotes energy-efficient home upgrades while educating homeowners on the value of whole home performance. Utility partners administer the program. Federal, provincial and local governments co-promote this program and other related initiatives including capacity building for the trades, home labeling and the introduction of NRCan's Home Energy Rating System in spring of 2016.						
Target Market	Residential customers						
New vs Retrofit	Retrofit						
Partners	BC Hydro, FortisBC (Electric), BC Ministry of Energy and Mines, Natural Resources Canada and local governments						
Eligible Measures	Draftproofing	Attic Insulation	Basement Insulation	Wall Insulation	\$750 Bonus Offer		
Incremental Measure Cost	\$989	\$1,880	\$1,463	\$1,953	N/A		
Incentive Amount	Up to \$500	Up to \$600	Up to \$1000	Up to \$1200	\$750		
Savings Per Participant	6.6 GJ	8.9 GJ	6.1 GJ	5.6 GJ	N/A		
Measure Life & Source	9 years for Draftproofing, 25 years for Insulation Consultations with BC Hydro, Habart & Hood, 2010 Conservation Potential Review and Dunskey Energy Consulting.						
Free Rider Rate & Source	20% average assumed based on past program analysis and NRCan evaluation. <i>Final Report: Analysis of Net-to-gross Survey Results for the ecoENERGY Retrofit for Homes Program.</i> Bronson Consulting Group. August, 2010						
Sources of Assumptions	Habart and Hood, Hot 2000 Energy Modeling Reports 2010, 2011 2010 Conservation Potential Review Dunskey Energy Consulting, Hot 2000 Modeling 2012, 2013, 2015 2012 Residential End Use Study, FortisBC BC Hydro PowerSmart, Evaluation of the LiveSmart BC Efficiency Incentive Program F2009-F2011						
Participants	2015	Projected	Actual				
	Total	3,276	2,010				
Expenditures (\$,000s)	2015	Incentives	Non-Incentive Expenditures				
			Industry Support	Admin	Communication	Research & Evaluation	Total
	Total	1,397	51	176	45	40	1,709

Notes:

- This program is a collaboration between FEI, FBC and BC Hydro with support from BC Ministry of Energy and Mines and Natural Resources Canada
- Energy savings estimates were provided by Dunskey Energy Consulting through the evaluation of HERO participant records in comparison to LiveSmart BC measure uptake, BC Hydro Evaluation of the LiveSmart BC Efficiency Incentive Program and Hot 2000 modeling estimates.
- Measure costs were based on HERO participant records and market analysis provided by Dunskey Energy Consulting.
- Industry support includes application support fees to energy advisors and FEI's contribution to Year One establishment of the Home Performance Stakeholder Council "HPSC", The HPSC is an industry led group comprised of key industry players tasked with addressing the fragmented interests, opportunities and challenges that exist in BC's nascent home performance industry which is continuously evolving. The HPSC is supported by a three year funding agreement between FEI, FBC, BC Hydro and Ministry of Energy and Mines.

Table 5-3: 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, incentives and industry outreach, encourages them to replace the equipment immediately, 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	\$2,115	\$2,115	\$3,560				
Incentive Amount	\$800	\$800	\$800				
Contractor Incentive	\$50	\$50	\$50				
Savings Per Participant	8.5 GJs	6.0 GJs	9.3 GJs				
Measure Life & Source	Furnace - 18 years and Boiler - 18 years - Navigant Consulting report, BC Hydro Power Smart QA Standard, NRCan						
Free Rider Rate & Source	Early Replacement Methodology						
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 2015 Analysis of Program Participants						
Participants	2015	Projected	Actual				
	Total	3,276	4,035				
Expenditures (\$,000s)	2015	Incentives	Non-Incentives				
			Dealer Incentives	Admin	Communication	Research & Evaluation	Total
	Total	3,228	193	82	22	4	3,528

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 energy savings per unit. However, cost effectiveness tests have been challenged by the following factors:
 - Over time the proportion of old standard efficiency replacements (8.5 GJs savings) to mid-efficiency replacements (6.0 GJ savings) has declined resulting in decreased energy savings overall. In 2013, standard replacements comprised 76% of total program participants while in 2015 standard replacements comprised only 66% of total participants. This is consistent with trends of the installed base of furnaces observed in the 2012 Residential End Use Study indicating that the proportion of standard efficiency furnaces has declined from 44% in 2008 to 23% in 2012.
 - The incremental cost (economic cost as developed through Early Replacement Methodology) of furnaces increased by 15% and boilers by 13% in 2015 over 2014 which adversely affects cost effectiveness. This is likely due to the declining Canadian dollar.
 - Cost effectiveness was favoured in that contractor estimates of furnace remaining life averaged 5.0 years in 2015 and 4.1 years in 2014.
- Contractor incentives of \$50 per participant are allocated to the administration portion of non-incentive spend.

Table 5-4: EnerChoice Fireplace Program

Program Description	This program promotes the purchase and installation of energy-efficient EnerChoice fireplaces for zone heating. The program educates consumers and dealers about the EnerChoice label and the benefits of selecting natural gas fireplaces based on energy-efficiency and heating attributes rather than just decorative features. Program awareness and participation was 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	\$300					
Contractor Incentive	\$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 - indicates market transformation of the EnerChoice brand					
Sources of Assumptions	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 2015 FortisBC Enerchoice Fireplace Program Impact Evaluation by Sampson Research Inc.					
Participants			New			
		Projected	Retrofit	Construction	2015	
			Total	Total	Total	
	Total	3,468	5,113	975	6,088	
Expenditures (\$,000s)			Non-Incentives			
	2015	Incentives	Dealer Incentives	Admin	Communication	Research & Evaluation
	Total	1,826	253	59	42	29
						2,209

Notes:

- The EnerChoice Fireplace Program Impact Evaluation and Market Effects Study demonstrated the need to redefine the EnerChoice eligible products directory to improve minimum efficiency standards. Therefore the EnerChoice program was temporarily suspended to undertake industry and government consultation for 2016 program design. The 2016 program is expected to be in market in Q2 2016.
- Contractor incentives of \$50 per participant are allocated to the administration portion of non-incentive spend.

Table 5-5: Appliance Service Program

Program Description	This program will provide customer education related to the importance of regular appliance maintenance to ensure efficient operation of natural gas appliances. This program will also create opportunities for contractors to dialogue with customers about upgrading appliances to more efficient models.				
Target Market	Residential customers				
New vs Retrofit	Retrofit				
Partners	N/A				
Eligible Measures	Furnace Service (69%), Fireplace Service (31%)				
Incremental Measure Cost	N/A				
Incentive Amount	\$33				
Savings Per Participant	N/A				
Measure Life & Source	N/A				
Free Rider Rate & Source	N/A				
Participants (no. of services)	2015 Total	Projected 0	Actual 21,380		
Expenditures (\$,000s)	2015 Total	Incentives 535	Admin 54	Non-Incentives Communication 28	Research & Evaluation 0 Total 616

Notes:

- The incentive amount of \$33 represents the average incentive awarded per participant based upon a portion of the participants having both a furnace and fireplace serviced at \$25 (incentive) per service.

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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 Minimum 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	3.0 GJ	6.5 GJ	8.3 GJ		7.3 GJ		5.0 GJ			
Measure Life & Sources	17.2 years Weighted average - 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. 2012									
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 and 2015 Program Participant Feedback. A Canadian high efficiency natural gas water heater pilot project. Project # 417311. Natural Gas Technologies Centre. Prepared by Adam Neale. 2012 FortisBC Residential End Use Study. 2010 Conservation Potential Review.									
Participants	2015	Projected Total	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.
	Total	3,900	3,237	45	162	106	1,304	312	378	224
Expenditures (\$,000s)	2015	Incentives	Non-Incentives				Total			
			Dealer Incentives		Admin	Comm.	Research & Evaluation			
			Total	2,319	261	64	45	0	2,688	

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- The Canadian high efficiency natural gas water heater pilot project conducted by Natural Gas Technologies Centre based on sub-metering analysis of 38 homes confirmed that the stated energy savings estimates are valid with overall energy savings of about 37% across new technologies over the base line 0.62 EF storage tank water heater. This study was published in 2014.
- Based on data from 2015 program participants, incremental costs for water heaters was unchanged or slightly decreased over 2014, unlike the cost increase noted for furnaces and boilers in 2015.

Table 5-7: Domestic Hot Water Conservation - Low Flow Fixtures and Washer Promotions

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 and dryers.				
Target Market	Residential customers				
New vs Retrofit	Retrofit				
Partners	BC Hydro, FBC, Non-Governmental Organizations (NGOs), and Municipalities				
Eligible Measures	Low-Flow Fixtures; ENERGY STAR® Washers and Dryers				
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 0.8 GJ / Kitchen fixtures 0.8 GJ/ Shower 1.3 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 - IMEF of 2.76 to 2.93, and WF of 3.5 to 3.3 • \$100 rebate (FEU contributes \$75) on qualifying ENERGY STAR clothes washers - IMEF of 2.94 or higher, WF of 3.2 or less				
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	2015	Projected	Actual Low Flow Fixtures	Actual ENERGY STAR Washers	
	Total	N/A	10,116	501	
Expenditures (\$,000s)		Incentives	Admin	Non-Incentives Communication	Research & Evaluation
	Total	99	71	18	37
					Total
					226

Notes:

- The Low Flow Fixtures project in Table 5-6 summarizes 2015 activity for the Tap by Tap project on Vancouver Island and the BC Hydro MURB project for municipalities in the Lower Mainland. This pilot has been replaced in market by the Rental Apartment Program outlined in Table 5-9.
- The Washer promotion was a collaboration with BC Hydro for a spring promotion in May-June and fall promotion in September-October. In addition FEI collaborated with FBC from May 2015 through December 2015.

Table 5-8: New Home Program

Program Description	This program provides education and financial incentives to support energy-efficient building practices for the Residential sector. 2015 expenditures are related to a wrap-up of projects with 2014 building permits that qualified for the 2014 EG80 program. This program supported efficiency updates to the BC Building Code (effective Dec. 2014). In June 2015, the utilities launched ENERGY STAR® for New Homes as the new whole home performance standard. As new builds take time for completion, there are no applications to date.					
Target Market	Builders of residential properties – single family homes and townhomes and homeowner builders					
New vs Retrofit	New Construction					
Partners	BC Hydro and FBC					
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 Dunskey Energy Consulting					
Free Rider Rate & Source	15% for EnerGuide 80 and 40% for Boilers					
Participants	2015	Projected	Actual			
	Total	191	EG80 SFD 407	EG80 Rowhome 0	Boiler 295	Total 702
Expenditures (\$,000s)	2015	Non-Incentive Expenditures				
		Incentives	Admin	Communication	Research & Evaluation	Total
	Total	1,096	127	48	24	1,296

Notes:

- FEI has collaborated with BC Hydro Power Smart and FBC 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 FBC and BC Hydro.
- In 2014, the FEI's attribution for energy savings for the advancement of Codes and Standards as a direct result of the New Home Program included an estimate of 2015 program participants. The program advanced Codes and Standards by way of helping builders, developers and contractors become more knowledgeable in building more energy efficient homes and enabling the market transformation to more stringent codes. 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. For more information please refer to the 2014 EEC Annual Report Section 5.3, Table 5-8 New Home Program.

Table 5-9: Rental Apartment Efficiency (RAP) – Residential Portion (New Program)

Program Description	There are three components to the RAP program. The first component is to provide direct install in-suite energy efficiency upgrades to building owners or property management companies of rental properties (hereinafter referred to as Participant(s)). These devices will be installed by an agent of FortisBC into each individual rental suite. The second component is to simultaneously provide those Participants with energy assessments recommending building-level energy efficiency upgrades such as condensing boilers, high efficiency water heaters and lighting upgrades. The last component is to provide the Participant with support in implementing those energy efficiency recommendations and applying for rebates. Expenditures associated with the energy assessment, implementation support, boiler/water heater rebates as well as a portion of the communication and evaluation costs are covered by the Commercial Program Area.				
Target Market	Purpose-Built Rental Apartment Buildings				
New vs Retrofit	Retrofit				
Partners	FortisBC Inc.				
Eligible Measures	1.3 GPM Showerheads, 1.3 GPM Handheld Showerheads, 0.8 GPM Bathroom Aerators, 0.8 GPM Kitchen Aerators				
Incremental Measure Cost	Varies				
Incentive Amount	Full cost				
Savings Per Participant	Varies				
Measure Life & Source	Varies				
Free Rider Rate & Source	Varies				
Participants	2015	Projected	Actual		
	Total	0	3,078		
Expenditures (\$,000s)	2015	Incentives	Admin	Non-Incentives Communication	Research & Evaluation
	Total	31	24	5	6
					Total
					66

Notes:

- Expenditures associated with direct install activities and a portion of the communication and evaluation costs are covered by the Residential Program Area. Expenditures associated with the energy assessment, implementation support, boiler/water heater rebates as well as the remaining portion of communication and evaluation costs are covered by the Commercial Program Area.
- Full program details including both residential and commercial activity and cost effectiveness results are available in Section 7, Table 7-11.
- Below is a list of the 2015 measure participant counts that are covered under the Residential Program Area.

Installed Measure Type	Installed #
1.5GPM Bathroom Aerators (Gas)	1023
1.5GPM Handheld Showerhead (Gas)	153
1.5GPM Kitchen Aerators (Gas)	995
1.5GPM Showerheads (Gas)	907

5.4 2015 Residential Energy Efficiency Programs Planned But Not Launched**5.4.1 CUSTOMER ENGAGEMENT TOOL**

FEI developed the business case and released an RFP for vendor selection in 2014. A Customer Engagement Tool (CET) relies heavily on social norms, i.e. a customer's energy usage is compared to the average of their neighbours in order to prompt behavioural change, i.e., energy savings. The CET is being reviewed to ensure that customer data exchanged with

the vendor is secure and is in compliance with the Personal Information Protection Act and corporate privacy policies. The project will be re-evaluated in 2016.

5.4.2 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, in 2014 FortisBC partnered with CIBC to offer a competitive financing package through the Trade Ally Network. Partnerships with additional financial institutions, such as VanCity, were developed in collaboration with BC Hydro and promoted through the Home Energy Rebate Offer.

5.4.3 NEW TECHNOLOGIES

FEI continues to explore New Technologies through the Innovative Technologies Program. There were no new technologies ready for deployment in 2015. Combination heat and water heating systems are currently under evaluation and a pilot was launched in early 2015. Pilot implementation learnings will be used to assess the business case, which if cost effective will be presented to BCUC for consideration for a 2017 program.

5.5 Summary

Residential Energy Efficiency Program Area activity in 2015 resulted in over 121,377 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 FEI's DSM 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.

6. LOW INCOME ENERGY EFFICIENCY PROGRAM AREA

6.1 Overview

In 2015, FEI saw continued success with the Energy Savings Kit (ESK) Program and the Energy Conservation Assistance Program (ECAP). The Company also implemented another successful Residential Energy Efficiency Works (REnEW) session, and developed three new Low Income Programs (described under 6.3 2015 Low Income Programs Planned But Not Launched).

In addition to FEI's own Low Income programs, progress continues to be made on investing the \$5.2 million in funds granted to FEI by the Ministry of Energy, Mines and Natural Gas in 2009 to enable energy efficiency in low income households. In 2015, the Company invested \$377 thousand of this funding primarily on retrofits in low income homes, partnership funding of the REnEW program, development of a building operator online training system, and an energy advisor position focused on the non-profit building sector. None of these investments are included in the spending amounts shown in Table 6-1. The remaining granted funds will be invested over the next 1-2 years.

Table 6-1 summarizes the planned and actual expenditures for the Low Income Program Area in 2015, 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 programs 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.

Table 6-1: 2015 Low Income Program Results Summary

Program	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
	2014-2018	2015		2014-2018	2015	2014-2018	2015	2014-2018	2015					
	EEC Plan	Actual		EEC Plan	Actual	EEC Plan	Actual	EEC Plan	Actual					
Non Program Specific Expenses														
Total	No Direct Savings			0	0	305	89	305	89	No Direct Savings				
Energy Saving Kit (ESK)														
Total	9,312	18,463	129,673	86	236	57	128	143	364	5.0	n/a	4.1	7.8	0.9
Energy Conservation Assistance Program (ECAP)														
Total	7,569	5,638	42,275	1,101	674	743	342	1,844	1,015	0.5	1.8	0.5	1.7	0.3
Residential Energy Efficiency Works (REnEW)														
Total	No Direct Savings			0	0	81	72	81	72	N/A				
*Low Income Space-Heat Top-Ups														
Total	2,569	0	0	71	0	15	3	86	3	N/A				
*Low Income Water-Heating Top-Ups														
Total	751	0	0	12	0	5	3	16	3	N/A				
*Non-Profit Custom Program														
Total	6,718	0	0	249	0	98	3	348	3	N/A				
ALL PROGRAMS														
Total	26,920	24,100	171,948	1,520	910	1,303	640	2,822	1,550	1.4	2.2	1.3	3.3	0.6

6.2 2015 Low Income Programs

Tables 6-2 through 6-4 outline the specific Low Income programs undertaken in 2015, including program and measure descriptions and a breakdown of non-incentive spending.

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

Program Description	<p>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.</p> <p>Promotional activities include bill inserts, event promotions such as food banks, targeted digital campaigns and partnerships with government ministries and non-profits that serve the low income population.</p>					
Target Market	Low Income Residential Customers					
New vs Retrofit	Retrofit					
Partners	BC Hydro and FortisBC Inc. (FBC)					
Eligible Measures	Bundle of measures, including high efficiency water fixtures, water heater pipe wrap, draft proofing tape, outlet gaskets, window film, etc.					
Incremental Measure Cost	\$ 22.44 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	\$ 22.44 Since the program is free to participants, the incentive equals the incremental cost.					
Savings Per Participant	2.4 GJ per year					
Measure Life & Source	10 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	2015 Total	2015 Projected 6,379	2015 Actual 10,538			
Expenditures (\$,000s)	2015 Total	Incentives 236	Admin 60	Communication 67	Research & Evaluation 1	Total 364

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

Program Description	<p>This program enables deep energy savings in low income customer homes that have moderate to high energy consumption.</p> <p>Promotional activities include bill inserts, customer endorsements, outreach, promotion at events and conferences, and partnerships with government ministries, housing providers, and other organizations that serve the low income population.</p>					
Target Market	Low Income Residential Customers					
New vs Retrofit	Retrofit					
Partners	BC Hydro and FBC					
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	\$516 Based on average cost of the customized bundle of measures installed. Includes the full cost of the gas measures installed in gas heated homes.					
Incentive Amount	\$516 Since the program is free to participants, the incentive equals the incremental cost.					
Savings Per Participant	4.5 GJ per year					
Measure Life & Source	11 years - Average based on the individual gas measures installed.					
Free Rider Rate & Source	4% (Source: Primarily third-party studies)					
Participants	2015 Total	2015 Projected 1,359	2015 Actual 1,305			
Expenditures (\$,000s)	2015 Total	Incentives 674	Admin 160	Communication 71	Research & Evaluation 110	Total 1,015

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

Program Description	<p>The goal of this program is to enhance the energy efficiency trade sector in BC in a manner that also enhances communities. This program targets individuals facing barriers to employment and provides training in energy efficiency retrofitting. The training is delivered by industry experts at no costs to participants.</p>					
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	2015 Total	2015 Projected 20	2015 Actual 13			
Expenditures (\$,000s)	2015 Total	Incentives 0	Admin 71	Communication 1	Research & Evaluation 0	Total 72

6.3 2015 Low Income Programs Planned But Not Launched

In 2015 FEI developed three new Low Income Programs: Low Income Space Heat Top-Up Program, Low Income Water Heater Top-Up Program, and the Non-Profit Custom Program. These three new programs have since been approved by the BCUC and will launch in 2016.

- 1 Each are described briefly below. Results of these new programs will be reported on in the
 2 2016 Annual Report.

3 **Table 6-5: Low Income Space Heat Top Up**

Program Description	<p>The existing Commercial Space Heat Program offers rebates to commercial customers for the installation of high efficiency space heating equipment in commercial applications. The Low Income Space Heat Top Up Program will piggyback on the existing Commercial Space Heat Program and offer an additional incentive over and above the commercial rebate if the customer meets the eligibility criteria.</p> <p>Promotional activities will include partnerships with BC Housing, BC Non-Profit Housing Association (BCNPHA), and the provincial and regional BCNPHA conferences, trade shows and educational seminars.</p>					
Target Market	The Low Income Space Heat Top Up Program is primarily focused on apartment buildings that are owned or operated by a First Nations band, a non-profit housing provider, or a housing co-operative.					
New vs Retrofit	Both					
Partners	N/A					
Eligible Measures	Condensing boilers and mid-efficiency boilers.					
Incremental Measure Cost	\$7,500 per appliance (Business case assumptions. No participants in 2015.)					
Incentive Amount	\$6/MBH (Business case assumptions. No participants in 2015.)					
Savings Per Participant	168 GJ/yr per appliance (Business case assumptions. No participants in 2015.)					
Measure Life & Source	20 Years					
Free Rider Rate & Source	18%					
Participants	Service Region	2015 Projected	2015 Actual			
	Total	22	0			
Expenditures (\$,000s)	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	0	3	0	0	3

Table 6-6: Low Income Water Heating Top Up

Program Description	<p>The existing Commercial Water Heater Program was launched in 2010 and it offers rebates to commercial customers for the installation of high efficiency water heating equipment in commercial applications. The Low Income Water Heater Top Up Program will piggyback on the existing Commercial Water Heater Program and offer an additional incentive over and above the commercial rebate if the customer meets the eligibility criteria.</p> <p>Promotional activities will include partnerships with BC Housing, BC Non-Profit Housing Association (BCNPHA), and the provincial and regional BCNPHA conferences, trade shows and educational seminars.</p>					
Target Market	The Low Income Water Heater Top Up Program is primarily focused on apartment buildings that are owned or operated by a First Nations band, a non-profit housing provider, or a housing co-operative.					
New vs Retrofit	Both					
Partners	N/A					
Eligible Measures	High Efficiency Storage Tanks, High Efficiency Domestic Hot Water Boilers, High Efficiency Tankless Domestic Hot Water					
Incremental Measure Cost	\$6,678 per appliance (Business case assumptions. No participants in 2015.)					
Incentive Amount	\$1.67/MBH (Business case assumptions. No participants in 2015.)					
Savings Per Participant	\$76 GJ/year per appliance (Business case assumptions. No participants in 2015.)					
Measure Life & Source	12 Years					
Free Rider Rate & Source	5%					
Participants	2015 Total	2015 Projected 20	2015 Actual 0			
Expenditures (\$,000s)	2015 Total	Incentives 0	Admin 3	Communication 0	Research & Evaluation 0	Total 3

Table 6-7: Low Income Non-Profit Custom

Program Description	<p>This program will encourage non-profit housing societies to replace inefficient equipment and systems with high-efficiency solutions. This program will involve an energy study and will provide incentives based on the recommendations of the study. Incentives under this program will cover all or most of the incremental cost of the cost-effective measures.</p> <p>The proposed program is built around three components:</p> <ol style="list-style-type: none"> 1) An energy study: FEI will initially contribute up to 50% of the costs for the initial energy study for all eligible participants. Where appropriate, the Company will also provide funding so that the energy study provider can write a scope of work. 2) A capital cost incentive, equal to the incremental cost of the energy efficient measure, will be paid after the measure is installed. 3) A completion bonus: Upon implementation of at least one priority measure recommended by the energy study and deemed as eligible for incentives, the Company will contribute the remaining 50% cost of the energy study. <p>Promotional activities will include partnerships with BC Housing, BC Non-Profit Housing Association (BCNPHA), and the provincial and regional BCNPHA conferences, trade shows and educational seminars.</p>					
Target Market	The Non-Profit Custom Program is primarily focused on apartment buildings that are owned or operated by First Nations bands, non-profit housing providers, or housing co-operatives.					
New vs Retrofit	Both					
Partners	N/A					
Eligible Measures	Eligible measures are expected to include mechanical equipment (i.e. boilers, ventilation systems, water heat/storage, etc.) and heating controls (i.e. zone controls, temperature set back controls, etc.). In addition there will be other more customized scenarios that will be assessed for savings and incentive potential as the opportunities arise.					
Incremental Measure Cost	Energy Study: \$13 thousand, Capital Incentive: \$38.2 thousand (Business case assumptions. No participants in 2015.)					
Incentive Amount	Energy Study: \$13 thousand, Capital Incentive: \$38.2 thousand (Business case assumptions. No participants in 2015.)					
Savings Per Participant	831GJ/year (Business case assumptions. No participants in 2015.)					
Measure Life & Source	14 Years (Business case assumptions. No participants in 2015.)					
Free Rider Rate & Source	5%					
Participants	2015 Total	2015 Projected 10	2015 Actual 0			
Expenditures (\$,000s)	2015 Total	Incentives 0	Admin 3	Communication 0	Research & Evaluation 0	Total 3

6.4 Summary

The Low Income Program Area has been an important priority for the Company since the initial creation of the DSM Program Principles. The goal of creating programs that are accessible to all has been achieved through the continuation of the ESK Program, the REnEW Program and ECAP and will be further enhanced by the addition of the three new Low Income programs in 2016.

7. COMMERCIAL ENERGY EFFICIENCY PROGRAM AREA

7.1 Overview

In 2015, 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 over 270,000 GJs and achieved an overall TRC of 1.2. Nearly \$11 million was invested in Commercial Energy Efficiency, of which 81% was incentive spending.

Table 7-1 summarizes the projected and actual expenditures for the Commercial Energy Efficiency Program Area in 2015, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC and other cost-effectiveness test results.

Table 7-1: 2015 Commercial Energy Efficiency Program Results Summary

Program	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
	2014-2018 EEC Plan	2015 Actual		Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
				2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual					
Non Program Specific Expenses														
Total	No Direct Savings			0	0	1,100	635	1,100	635	No Direct Savings				
Space Heating Program														
Total	53,081	91,688	971,341	1,722	4,002	109	248	1,831	4,249	1.9	n/a	2.1	3.0	0.6
Water Heating Program														
Total	13,833	14,251	113,189	220	282	59	137	279	419	1.0	n/a	2.3	1.6	0.7
Commercial Food Service Program														
Total	13,350	13,698	108,802	294	414	137	229	431	643	1.1	n/a	1.4	2.4	0.5
Customized Equipment Upgrade Program														
Total	57,575	18,395	155,074	2,473	1,009	222	410	2,696	1,419	0.8	n/a	1.0	1.6	0.5
EnerTracker Program														
Total	31,154	30,937	30,937	394	221	148	62	543	283	0.8	n/a	0.7	2.2	0.4
Continuous Optimization Program														
Total	134,793	72,958	299,142	1,983	995	202	18	2,185	1,013	1.2	n/a	2.3	1.9	0.7
Commercial Energy Assessment Program														
Total	0	16,229	16,229	379	67	87	26	466	93	1.4	n/a	1.1	3.5	0.4
Energy Specialist Program														
Total	0	9,414	58,394	1,890	1,716	144	200	2,034	1,916	n/a	n/a	n/a	n/a	n/a
Mechanical Insulation Pilot														
Total	1,000	0	0	0	0	8	0	8	0	n/a	n/a	n/a	n/a	n/a
Rental Apt Efficiency (RAP)* Commercial Portion														
Total	0	3,363	3,363	0	34	0	41	0	76	n/a	n/a	n/a	n/a	n/a
ALL PROGRAMS														
Total	304,786	270,933	1,756,471	9,355	8,740	2,218	2,006	11,573	10,746	1.2	n/a	1.4	2.2	0.6

Notes:

- * The Rental Apartment Efficiency Program includes a combination of residential and commercial measures, each funded from their respective Program Areas. The *Commercial Portion* details of this program included in Table 7-1 and 7-10 show only those Commercial Program Area expenditures. These expenditures are associated with the commercial energy assessment, implementation support, boiler/water heater rebates as well as a portion of the communications and evaluation costs. Residential Program Area expenditures that are part of the RAP program are presented in Tables 5-1 and 5-9. Cost effectiveness values for only the *Commercial Portion* of RAP are not provided as they do not represent a complete program view. Please refer to Table 7-11 for a complete program view and further program details including program cost effectiveness results.

7.2 2015 Commercial Energy Efficiency Programs

The following tables outline the specific Commercial Energy Efficiency programs undertaken in 2015, 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 efficiency space heating equipment in commercial applications. Currently only rebates for high efficiency boilers are offered. Rebates for condensing rooftop units may also be offered via the program in 2016.					
Target Market	Commercial					
New vs Retrofit	Both					
Partners	N/A					
	Retrofit		New Construction			
Incremental Measure Cost	\$19,279		\$35,751			
Incentive Amount	\$14,233		\$27,669			
Savings Per Participant	418 GJ		438 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	2015	Projected	Actual			
	Total	143	267			
Expenditures (\$,000)	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	4,002	222	15	11	4,249

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					
	Retrofit		New Construction			
Incremental Measure Cost	\$6,235		\$9,366			
Incentive Amount	\$1,892		\$3,493			
Savings Per Participant	115 GJ		108 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	2015	Projected	Actual			
	Total	115	132			
Expenditures (\$,000)	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	282	89	35	14	419

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 it may also provide other incentives relevant to commercial food service participants such as low-flow pre-rinse spray valve or faucet aerator installs.					
Target Market	Commercial					
New vs Retrofit	Both					
Partners	N/A					
	Retrofit		New Construction			
Incremental Measure Cost	\$5,309		\$7,270			
Incentive Amount	\$2,598		\$3,880			
Savings Per Participant	125 GJ		184GJ			
Measure Life & Source	12 Years - Foodservice Incentive Program Study 2012, Fisher-Nickel Inc., Marbek Conservation Potential Review (2010) and Database for Energy Efficiency Resources (DEER). San Francisco, CA, California Public Utilities Commission, 2011.					
Free Rider Rate & Source	20% - Foodservice Incentive Program Study 2012, Fisher-Nickel Inc.					
Participants	2015 Total	Projected 368	Actual 126			
Expenditures (\$,000)	2015 Total	Incentives 414	Admin 114	Communication 116	Research & Evaluation 0	Total 643

Notes:

- During Q3/Q4 2014, as part of the Commercial Food Service Program, FEI in partnership with BC Hydro and the City of Vancouver participated in a program to install low-flow pre-rinse spray valves and faucet aerators in Vancouver food service establishments. All spray valves and aerators were installed in 2014, thus the participants, energy savings and incremental costs were included in the 2014 Energy Efficiency and Conservation Annual Report. The Implementation Contractor's final report and invoice were not received by FEI until 2015 however; therefore, the incentive expenditure has been included in the 2015 program incentive expenditure without associated participants, energy savings and incremental costs.

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				
Partners	BC Hydro (New Construction)				
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.				
Expenditures (\$,000s)	FEW	0	0		
	Total	87	56		
Expenditures (\$,000s)	Labour	0	57	0	57
	Total	149	68	3	220
Expenditures (\$,000s)	Labour	0	196	0	196
	Total	860	339	0	1,198

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:
 - 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. Participants are recorded when the energy simulations or the new buildings are complete, and the incentive becomes payable.
 - The '2015 Actual' participants include 6 completed energy simulations, and 2 completed buildings with implemented measures. The associated natural gas savings from these 2 projects is approximately 3,875 GJ/year.

- 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. As such, in years where a high number of energy studies are completed but few projects complete installation, the program's benefit/cost ratios will be impacted as incentive expenses will be incurred without obtaining natural gas savings to offset them.
- The '2015 Actual' participants includes 41 completed energy studies, and 7 projects where Energy Conservation Measures were installed. The associated natural gas savings from these 7 projects is approximately 23,177 GJ/year.
- The increased number of completed energy studies in 2015 versus 2014, along with the low number of completed Measure installations, has contributed to a lower TRC ratio compared to last year. Customers have continued to demonstrate interest in the program, leading to an increase in energy studies completed in 2015. However, since the majority of energy studies completed in 2014 were completed in the latter part of the year, these projects are still within their 18-month implementation stage of the program, and will not complete installation of their Measures until after the 2015 reporting year has closed. Projects that completed energy studies in 2015 and are eligible for capital incentive funding are expected to complete implementation in 2016/2017.

Table 7-6: EnerTracker Program

Program Description	This 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, and to assist in the identification of additional natural gas conservation measures.					
Target Market	Commercial customers with existing AMR devices (FEI only)					
New vs Retrofit	Retrofit					
Partners	N/A					
Eligible Measures	Energy Management Information System					
Incremental Measure Cost	\$938/yr (Average)					
Incentive Amount	\$938/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	2015 Total	Projected 540	Actual 236			
Expenditures (\$,000s)	2015 Total	Incentives 221	Admin 19	Communication 0	Research & Evaluation 43	Total 283

Notes:

- As there is currently insufficient AMR (Automated Meter Reader) infrastructure in the Vancouver Island service territory to support the rollout of this pilot, program availability is limited to the Lower Mainland and Interior service territories.
- Note that participation in the program is cumulative, meaning that a participant is enrolled for multiple years, claiming savings and incurring costs on an annual basis for the duration of the EMIS software license.
- An Evaluation of the pilot is underway but was not completed in time for this annual report. Findings will be included in the 2016 Annual Report and will be used to determine what role the EnerTracker Program will play in the Commercial Energy Efficiency Program portfolio moving forward.

Table 7-7: Continuous Optimization Program

Program Description	The Continuous Optimization Program (C.Op) 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. C.Op is offered in partnership with BC Hydro. In the FortisBC electric service territory, C.Op is offered in partnership with FortisBC Inc. as the Building Optimization Program (B.Op).					
	The program funds re-commissioning 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 ft ² 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 2015 observed average implemented incremental cost: \$26,096					
Incentive Amount	Average nominal program duration incentive amount (7 years): \$15,915 2015 observed average implemented incentive amount: \$14,213					
Savings Per Participant	Average expected annual natural gas savings: 1,465 GJ/year 2015 observed average implemented natural gas savings: 1,042 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	2015	Projected	Actual	Participants Implementing in 2015	Cumulative Program Participants	
	Total	270	0	70	420	
Expenditures (\$,000s)	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	995	18	0	0	1.013

Notes:

- The C.Op. Program is conducted in partnership with BC Hydro and FEI. BC Hydro and FEI act as the primary administrators of program activities, with FEI providing financial and process support.
- Participation in these 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 2015 observed average implemented incremental cost represents the incremental costs incurred specifically in 2015 divided by the total number of participants who implemented in 2015.
- 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 2015 observed average implementation incentive amount represents the incentive paid specifically in 2015 divided by the total number of participants who implemented in 2015. Due to the nature of the program, the incentive amount paid is not solely attributable to those who implemented in 2015.
- 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 2015 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 2015 divided by the total number of participants who implemented in 2015.

Participant count clarification:

- 2015 Actual represents the number of new participants who were approved in 2015. There were no new participants because the program has been closed to new participants since September 2013..
- Participants implementing in 2015 represents the number of participants who have successfully completed implementing the bundle of energy conservation measures in 2015.
- Cumulative Program Participants represent the total number of approved program participants from the entire multi-year duration. Program participants have the option to discontinue participation in the program during the multi-year duration. Since the 2014 Annual Report was finalized, 13 participants chose to discontinue participation, resulting in a lower cumulative participation number in 2015 versus last year.

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	FortisBC Inc.					
Incremental Measure Cost	\$1,550					
Incentive Amount	\$1,375					
Savings Per Participant	502 GJ					
Measure Life & Source	1.07 Years - 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 and database for Energy Efficiency Resources (DEER). San Francisco, CA, California Public Utilities Commission, 2011.					
Free Rider Rate & Source	34% - 2010 Friuch Energy Assessment Evaluation					
Participants	2015	Projected	Actual			
	Total	523	49			
Expenditures (\$,000s)	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	67	26	0	0	93

Notes:

- At the time of writing the 2014-2018 EEC Plan, the FEI 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 2015 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.

Table 7-9: Energy Specialist Program

Program Description	This program funds Energy Specialist positions within customers' organizations, up to \$60,000 based on an annual contract. Funded Energy Specialists' key priority is to identify and implement opportunities for their organization to participate in FortisBC's DSM programs, while also identifying and implementing non-program specific opportunities to use natural gas more efficiently. 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 2015 verified (non-EEC program) annual natural gas savings = 9,414 GJs/year					
Measure Life & Source	N/A					
Free Rider Rate & Source	7% weighted average against the verified savings - Evaluation of 2015 Energy Specialist Program completed projects.					
Participants	2015	Projected	Actual			
	Total	32	32			
Expenditures (\$,000s)	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	1,716	134	0	66	1,916

Notes:

- The Energy Specialist Program continues to experience success as an enabling program. In 2015, organizations with Energy Specialists were responsible for 43% of the gross natural gas savings and 43% of the incentives paid out by the Commercial DSM programs that Energy Specialists can directly participate in, not including the Energy Specialist Program itself. This is in addition to the Conservation Education and Outreach, Innovative Technologies, Low Income, and Residential programs and incentives that Energy Specialists promoted and utilized in 2015.
- 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 2015 that did not directly receive incentive funding from another DSM program.
- In 2015, FEI continued to co-fund six Business Energy Advisors (BEAs) with BC Hydro which was increased to eight part way through the year at BC Hydro's expense. FortisBC is a minority funding contributor in this arrangement, contributing \$60,000 per funding year for all eight Business Energy Advisors combined. This is equivalent to the funding of one Energy Specialist. Business Energy Advisors are tasked with the same objectives as Energy Specialists but target small to medium sized businesses. As a collective they are expected to achieve FortisBC DSM 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: Rental Apartment Efficiency (RAP) – Commercial Portion (New Program)

Program Description	There are three components to the RAP program. The first component is to provide direct install in-suite energy efficiency upgrades to building owners or property management companies of rental properties (hereinafter referred to as Participant(s)). These devices will be installed by an agent of FortisBC into each individual rental suite. The second component is to simultaneously provide those Participants with energy assessments recommending building-level energy efficiency upgrades such as condensing boilers, high efficiency water heaters and lighting upgrades. The last component is to provide the Participant with support in implementing those energy efficiency recommendations and applying for rebates.					
Target Market	Purpose-Built Rental Apartment Buildings					
New vs Retrofit	Retrofit					
Partners	FortisBC Inc.					
Eligible Measures	Walkthrough Energy Audits, Implementation Support, Condensing Boilers, Energy Efficiency Water Heaters					
Incremental Measure Cost	Varies					
Incentive Amount	Varies					
Savings Per Participant	Varies					
Measure Life & Source	Varies					
Free Rider Rate & Source	Varies					
Participants	2015 Total	Projected 0	Actual 26			
Expenditures (\$,000s)	2015 Total	Incentives 34	Admin 29	Communication 7	Research & Evaluation 5	Total 76

Notes:

- The Participant number listed under Table 7-10 represents the number of Energy Assessments conducted. Incentives for implementation support and building-level upgrades such as condensing boilers and high efficiency water heaters were not realized in 2015 due to the program's entry into the market late in the year and the time required for the Participants to make building-level upgrade decisions.

7.2.1 2015 PROGRAMS WITH JOINT PROGRAM AREA BUDGETS – FULL PROGRAM OVERVIEW**Table 7-11: Rental Apartment Efficiency (RAP)**

Program	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
	2014-2018 EEC Plan	2015 Actual		2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual					
Rental Apt Efficiency (RAP) - Commercial Portion														
Total	0	3,363	3,363	0	34	0	41	0	76	0.3	n/a	0.3	3.4	0.2
Rental Apt Efficiency (RAP) - Residential Portion														
Total	0	2,992	21,017	0	31	0	35	0	66	2.6	n/a	2.6	8.8	0.6
Overall Program														
Total	0	6,356	24,380	0	65	0	77	0	142	1.5	n/a	1.4	6.5	0.5

Notes:

- The Rental Apartment Efficiency Program was launched in October 2015 in response to Commission directive 148 of Order G-138-14 and Commission approval of Order G-138-14. This Table provides a complete Program View of expenditures and savings for both the Residential and Commercial Program Areas. Please refer to Table 5-9 and Table 7-10 for more details regarding the Rental Apartment Efficiency Program specific to each Program Area. Expenditures associated with the direct install activities and a portion of the communication and evaluation costs are covered by the Residential Program Area. Expenditures associated with the energy assessment, implementation support, boiler/water heater rebates as well as a portion of the communication and evaluation costs are covered by the Commercial Program Area. The higher

non-incentive expenditures for the Commercial activities relative to the energy savings result in a TRC of 0.3 while the TRC for the Residential activities is 2.6. The TRC for the Rental Apartment Efficiency Program (Overall) which includes both the Commercial and Residential activity expenditures is 1.5.

7.3 2015 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 FEI was unable to conclude a satisfactory agreement with a 3rd party contractor to deliver the project. FEI is not presently pursuing this pilot further.

7.4 Summary

Commercial Energy Efficiency Program Area activity in 2015 successfully achieved 270,933 GJ of annual natural gas savings and a positive TRC of 1.2. The Space Heat program continues act as the corner stone program as it invests more in natural gas efficiency projects than the other commercial programs. However all programs continue to experience growth in participation, incentive spend and natural gas savings. The Commercial Food Service Program in particular experienced significant growth in 2015, helping food service establishments in British Columbia reduce natural gas consumption and costs. Moving forward, the programs will continue to generate natural gas savings and foster market transformation in the commercial sector.

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 DSM programs in other Program Areas. This is accomplished through pilot and demonstration projects, pre-feasibility studies and the use of Industry Standard Evaluation, Measurement and Verification (EM&V) protocols to validate manufacturers' claims related to equipment and system performance. Results from Innovative Technologies activities are used in making future DSM programming decisions and technology inclusions.

Just as important as identifying new technologies that should be incorporated into the DSM 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 2015 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,"¹⁴ 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 portfolio as a whole.¹⁵ 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*.¹⁶

Table 8-1 summarizes the projected and actual expenditures for the Innovative Technologies Program Area in 2015, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC and other cost-effectiveness test results where applicable.

Table 8-1: 2015 Innovative Technologies Program Area Results Summary

Program	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
	2014-2018	2015		2014-2018	2015	2014-2018	2015	2014-2018	2015					
	EEC Plan	Actual		EEC Plan	Actual	EEC Plan	Actual	EEC Plan	Actual					
Non-Program Specific Expenses														
Total	No Direct Savings			n/a	0	n/a	200	n/a	200	No Direct Savings				
Pilot/Demonstration Projects														
Total	n/a	1,564	16715	438	217	780	194	1,218	411	0.2	n/a	0.4	0.8	0.2
Studies														
Total	No Direct Savings			n/a	0	n/a	15	n/a	15	No Direct Savings				
ALL PROGRAMS														
Total	n/a	1,564	16,715	438	217	780	409	1,218	626	0.2	n/a	0.2	0.8	0.2

¹⁴ 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.

¹⁵ Subsection 4(4) of the Demand-Side Measures Regulation, and the Decision on the 2012 – 2013 Revenue Requirements Application and Natural Gas Rates Application, page 175.

¹⁶ 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.

Notes:

- Innovative Technologies are considered a “specified demand-side measure,” 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 portfolio as a whole.

8.2 2015 Innovative Technologies Activities

Tables 8-2 to 8-3 outline the specific Innovative Technologies activities undertaken in 2015, including program and measure descriptions and a breakdown of non-incentive spending¹⁷.

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 Make-up Air Unit (CMUA) Pilot	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 were completed in Q3 2015 and handed off to the Commercial Program Area.					
	2015 Total	Participants 0				
Apartment Fireplace Efficiency Retrofit (AFER) 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.					
	2015 Total	Participants 33				
Combination Space and Water Heating System (CURP) 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.					
	2015 Total	Participants 78				
Participants	2015 Total	Projected n/a	2015 Actual 111			
Expenditures (\$,000s)	Non-Incentive Expenditures					
	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	217	68	14	113	411

¹⁷ 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 8-3: 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 Unit Space and Water Heating Performance Assessment	Study facilitated through the Canadian Gas Association and in partnership with Natural Resources Canada to assess the Combo performance in a lab controlled environment, identifying the different sources of energy loss followed by a comparison of the performance to the base-case system. The final report is expected to be completed for Q2 of 2016.					
Expenditures (\$,000s)	2015	Incentives	Non-Incentive Expenditures			Total
			Admin	Communication	Research & Evaluation	
	Total	0	15	0	0	15

8.3 Summary

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

In 2015, the Company received outcomes from the .67 EF Water Heater pilot that were used to inform program decisions for the ENERGY STAR water heater program and internal statistics of relative DHW loads. The Measurement and Verification study (M&V) was conducted over a 2 year period from November 2012 to December 2014. Based on the M&V results, the 0.67 EF Energy Star water heater resulted an average of 6 GJ or 15% of energy savings in residential use across the nine M&V participants. The M&V results confirmed that it's more cost-effective to upgrade from a standard efficiency water heater to a 0.67 EF Energy Star water heater if the rate of the Domestic Hot Water use per day is very high.

Additionally, in 2015 FEI received outcomes from the Condensing Make-up air unit ("CMUA") pilot that resulted in those technologies being included as eligible measures within the Commercial Program Area. Condensing Make up air units extract a portion of the latent heat available in the combustion products through condensation of the flue gas, boosting the nameplate efficiency from 80% to 90% or greater. The M&V was conducted over a 2 year period from January 2013 to July 2015. Based on the M&V results, the CMUA's indicated natural gas savings of 28% relative to pre-existing make up air units and 17% relative to new 80% efficient make up air units.

Furthermore, the Innovative Technologies Program Area were successful in identifying technologies that should not proceed to full pilots at the time of writing or not to be included as an eligible measure within an existing program. In 2015, FEI received outcomes from the Coil Cleaning Pilot that resulted in excluding it as an eligible measure within the Commercial Program Area. The intake air of an air handling unit (AHU) is filtered and conditioned through

1 the heating and cooling coil before entering the occupant space for space heating and
2 ventilation. The intake filters are only effective to a certain degree in cleaning the intake air
3 which causes the downstream heating and cooling coils to plug up. Cleaning of the heating and
4 cooling coil was expected to save natural gas due to increased heat transfer on the heating coil.
5 The analysis of the measurement data shows that the average normalized energy consumption
6 at the heating coils (BTU/°C/cfm) are marginally different between the two systems. The
7 marginal difference in heating coil effectiveness, expressed as units of BTU to raise one cfm by
8 one °C, between the two systems does not provide a conclusive natural gas energy savings
9 result.

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

15

9. INDUSTRIAL ENERGY EFFICIENCY PROGRAM AREA

9.1 Overview

In 2015, the Industrial Energy Efficiency Program Area continued to encourage industrial customers to consume natural gas more efficiently and achieved an overall TRC of 1.0, with a combined net natural gas savings of 16,575 GJ/yr.

2015 Industrial Optimization Program activities resulted in seven new Technology Implementation funding agreements being executed and five projects being commissioned. In addition, eight energy audit reports were completed and identified energy conservation measures with the potential to provide natural gas savings of over 200,000 GJ/yr.

Table 9-1 summarizes the projected and actual expenditures for the Industrial Energy Efficiency Program Area in 2015, including incentive and non-incentive spending, annual and NPV gas savings, as well as TRC and other cost-effectiveness test results.

Table 9-1: 2015 Industrial Energy Efficiency Program Results Summary

Program	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
	2014-2018 EEC Plan	2015 Actual		Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
				2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual					
Non Program Specific Expenses														
Total	No Direct Savings			0	0	262	130	262	130			No Direct Savings		
Industrial Optimization Program														
Total	104,103	16,575	132,597	1,368	578	328	282	1,696	860	1.1	n/a	1.3	2.2	0.6
Specialized Industrial Process Technology Program														
Total	38,246	0	0	318	0	81	0	399	0			No Direct Savings		
ALL PROGRAMS														
Total	142,349	16,575	132,597	1,686	578	671	412	2,357	989	1.0	n/a	1.1	2.2	0.6

Notes:

- For the purpose of cost-effectiveness tests, 16,575 GJ in savings have been claimed for 2015. As a project's total incentive can be made across multiple years, the annual natural gas savings reported for each project are pro-rated based on the proportion of the project's total incentive that is made in any given year. Please refer to the Industrial Optimization Program description below for further details on this methodology and 2015 application.
- Please refer to section 9.3.1 below for Specialized Industrial Process Technology Program details.

9.2 2015 Industrial Energy Efficiency Programs

The following table outlines the Industrial Energy Efficiency Program Area activity undertaken in 2015, 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.					
Target Market	Medium and large industrial facilities					
New vs Retrofit	Both					
Eligible Measures	Variable. Natural gas measures with a TRC \geq 1.0					
Incremental Measure Cost	Dependent upon participant's proposed energy conservation measures					
Incentive Amount	Varies by measure. If TRC \geq 1.0 then approximately \$5 / GJ saved over 3 years					
Savings Per Participant	Variable					
Measure Life & Source	Variable. Dependent upon participant's proposed energy conservation measures					
Free Rider Rate & Source	10% Technology Implementation; 20% Industrial Energy Audit, Plant Wide Audit, Feasibility Study. Source: Best estimate.					
Participants	2015 Total	Projected 26	Actual 13			
Expenditures (\$,000s)	2015	Incentives	Admin	Communication	Research & Evaluation	Total
	Total	578	206	8	68	860

Notes:

- The Industrial Optimization Program includes measures that allow industrial customers to identify, investigate, and implement natural gas energy efficiency projects. Measures include Plant Wide Audit, Feasibility Study, Industrial Energy Audit and Technology Implementation. The Plant Wide Audit and Feasibility Study measures were introduced in 2015 and are designed as a high level, facility wide audit and a detailed system or process specific study respectively. These two new measures replace the Industrial Energy Audit measure. As such, Industrial Energy Audit applications are no longer being accepted and it is expected that the last participant will complete their energy audit in 2016.
- The Industrial Energy Audit, Plant Wide Audit and Feasibility Study measures do not include direct savings as the incentives are aimed only at identifying energy saving opportunities and the participant is not bound to implement energy conservation measures identified in the audit process. The Industrial Optimization Program claims 16,575 GJ of net natural gas savings in 2015 which are attributable to Technology Implementation projects.
- 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 commissioning and based on the natural gas saving performance in each year. Hence, for larger incentives, only a portion of the incentive is paid on project commissioning. For consistency in performing cost benefit analyses, 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 2015, only 25% of the project cost and only the NPV of 25% of the project's savings would be used as inputs). This approach was adopted in 2013.
- In the 2012 EEC Annual Report, the cost-effectiveness ratios for the only project commissioned under the Technology Retrofit Program were calculated using the NPV of the total estimated natural gas savings, the total estimated project cost, but only twenty five percent of the calculated incentive. As such, the incentive paid in 2015 towards this project was necessarily included as an input to the 2015 cost-effectiveness ratios, though any energy savings, project costs, and participant count were not, as these had been recorded in full in 2012. Any subsequent incentives paid for this project will be included in future reports, without any corresponding costs,

benefits, and participant counts until such time as the full value of the incentive commitment has been accounted for.

- The time between Technology Implementation funding agreement execution and project commissioning can span across multiple annual reporting periods due to the lead times associated with energy conservation measure procurement and the often limited and predetermined maintenance shutdown windows in industrial facilities. To provide greater insight into program activity, seven funding agreements were executed under the Technology Implementation measure in 2015 and are estimated to result in 80,438 GJ/yr of net natural gas savings. Five projects were commissioned in 2015.

9.3 2015 Industrial Energy Efficiency Programs Planned But Not Launched

9.3.1 SPECIALIZED INDUSTRIAL PROCESS TECHNOLOGY PROGRAM

The Commission's Decision to FEI's Multi-Year Performance Based Ratemaking Plan for 2014-2018 requested that detailed plans for the program were to be approved by the Commission prior to incurring expenditures. FEI developed plans associated with the Specialized Industrial Process Technology Program more fulsomely in 2015. Detailed plans of this program were submitted to and approved by the Commission in early 2016.

9.4 2015 Industrial Energy Efficiency Program Closures

There were no program closures for the Industrial Energy Efficiency Program Area in 2015.

9.5 Summary

The Industrial Energy Efficiency Program Area activity in 2015 resulted in 16,575 GJ/yr of net natural gas savings and a TRC of 1.0. The Industrial Optimization Program was enhanced by introducing the Plant Wide Audit and Feasibility Study measures and participation in the program continued to grow. The conversion rate from the energy study component to the implementation component of the program increased in 2015 and is demonstrated by the number of projects initiated and commissioned throughout the year. These projects will lead to significant additional natural gas savings in the years to come.

In 2016, FEI will look to further refine and enhance the Industrial Optimization Program to encourage continued growth in participation and implementation of natural gas energy efficiency projects. In addition, FEI has recently received the Commission's approval of the Specialized Industrial Process Technology Program business case and will be launching this program into market.

10. CONSERVATION EDUCATION AND OUTREACH INITIATIVES

10.1 Overview

The CEO portfolio continues to support the DSM 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 2015, giving the team new learnings and new insights into behaviour change and customer attitudes on efficiency. Educating all types of customers including residential, commercial and students – remains a strong priority and we are continuing to ensure steps are taken to make the information relevant and timely for these customers.

Continued collaboration with the FBC was executed in an effort to maximize efficiencies across both teams. In 2015 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 2015, leading to a new collaboration with the Workplace Conservation Awareness (WCA) Program focusing on post-secondary institutions. Our ethnic outreach program, Empower Me continued to reach out to our Punjabi and Chinese communities through a community based social marketing approach. BC Hydro and FortisBC worked closely together in that development and continued to support the program expansion into new regions and new audiences. New retail and point-of-sale opportunities were also explored in partnership with BC Hydro in 2015.

CEO continued to provide 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. FortisBC won Chartwell's 2015 Best Practices Bronze Award in Program Marketing for our behavior change digital tool The Conserver Club. FortisBC also continues to support various training seminars and educational workshops in collaboration with such organizations as the Greater Vancouver Home Builders Association and other industry associations. In addition, our first annual Efficiency in Action awards were held to recognize those commercial organizations that have most effectively utilized FEI's DSM programs.

As these are not incentive-based programs, FEI has not attributed direct savings to them in 2015. The following tables do not contain information about eligible measures, incentive amounts, savings levels, free-ridership, spillover or participation levels. CEO costs are included at the portfolio level and incorporated into the overall DSM portfolio cost-effectiveness results. Although there were no energy savings attributed to the CEO Program Area in 2015, it should be noted that the FEI continues to explore ways to identify and confirm energy savings from CEO activities.

Table 10-1 summarizes the projected and actual expenditures for the CEO Program Area in 2015. The approved spending for 2015 was \$2.4 million and actual spending in 2015 was \$2.8 million.

Table 10-1: 2015 CEO Initiative Results Summary

Program	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	2015 Actual		2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	TRC	MTRC	Utility	Participant	RIM
Non-Program Specific Expenses														
Total	No Direct Savings			0	0	240	145	240	145	No Direct Savings				
Residential Education Program														
Total	No Direct Savings			0	0	990	1,795	990	1,795	No Direct Savings				
Commercial Education Program														
Total	No Direct Savings			0	0	450	282	450	282	No Direct Savings				
School Education Program														
Total	No Direct Savings			0	0	720	609	720	609	No Direct Savings				
Street Team														
Total	No Direct Savings			0	0	0	0	0	0	No Direct Savings				
ALL PROGRAMS														
Total	No Direct Savings			0	0	2,400	2,830	2,400	2,830	No Direct Savings				

10.2 2015 CEO Programs

Tables 10-2 through 10-4 outline the CEO initiatives undertaken in 2015. This includes 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 2015 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, FEI continued to focus on behavioural change opportunities that resulted in energy savings.																						
Target Market	Residential customers and general public																						
New vs Retrofit	Both																						
Expenditures (\$,000s)	<table><tr><td></td><td></td><td colspan="3">Non-Incentive Expenditures</td><td></td></tr><tr><td>2015</td><td>Incentives</td><td>Admin</td><td>Communication</td><td>Research & Evaluation</td><td>Total</td></tr><tr><td>Total</td><td>0</td><td>1,092</td><td>659</td><td>44</td><td>1,795</td></tr></table>							Non-Incentive Expenditures				2015	Incentives	Admin	Communication	Research & Evaluation	Total	Total	0	1,092	659	44	1,795
		Non-Incentive Expenditures																					
2015	Incentives	Admin	Communication	Research & Evaluation	Total																		
Total	0	1,092	659	44	1,795																		

Table 10-3: Commercial Education Program

Program Description	<p>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.</p> <p>Promotional activities for 2015 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.</p> <p>In addition, the Companies furthered partnerships with organizations such as the Business Improvement Associations of BC (BIABC) and Climate Smart, who all work with small to medium-sized businesses.</p> <p>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.</p>																		
Target Market	Commercial customers, multi-family, energy specialists, energy management staff																		
New vs Retrofit	Retrofit																		
Expenditures (\$,000s)	<table><tr><td></td><td></td><td colspan="3">Non-Incentive Expenditures</td><td></td></tr><tr><td>2015</td><td>Incentives</td><td>Admin</td><td>Communication</td><td>Research & Evaluation</td><td>Total</td></tr><tr><td>Total</td><td>0</td><td>227</td><td>50</td><td>5</td><td>282</td></tr></table>			Non-Incentive Expenditures				2015	Incentives	Admin	Communication	Research & Evaluation	Total	Total	0	227	50	5	282
		Non-Incentive Expenditures																	
2015	Incentives	Admin	Communication	Research & Evaluation	Total														
Total	0	227	50	5	282														

Table 10-4: School Education Program

Program Description	<p>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 Company's service area.</p> <p>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.</p> <p>Some of the activities included were: Energy is Awesome, Green Bricks, Energy Champion assembly presentations 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 activities included in-residence and on-campus education campaigns.</p>																							
Target Market	Students																							
New vs Retrofit	Retrofit																							
Expenditures (\$,000s)	<table><tr><td></td><td></td><td colspan="3">Non-Incentive Expenditures</td><td></td></tr><tr><td>2015</td><td>Incentives</td><td>Admin</td><td>Communication</td><td>Research & Evaluation</td><td>Total</td></tr><tr><td>Total</td><td>0</td><td>523</td><td>6</td><td>79</td><td>609</td></tr></table>								Non-Incentive Expenditures				2015	Incentives	Admin	Communication	Research & Evaluation	Total	Total	0	523	6	79	609
		Non-Incentive Expenditures																						
2015	Incentives	Admin	Communication	Research & Evaluation	Total																			
Total	0	523	6	79	609																			

10.3 Summary

All of the Conservation Education and Outreach initiatives described above are designed to foster a culture of energy conservation in BC. This portfolio is immensely important to FEI's overall DSM effort 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 Company will help communities reach their goals, help customers save energy and money, increase participation in DSM programs and ultimately support the shared goals of FEI 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 2015, Enabling Activities continued to support and supplement FEI's DSM program development and delivery, advancing energy efficiency in British Columbia. This included:

- the ongoing Trade Ally Network program;
- work completed in advancing national and provincial building codes, appliance/equipment standards, and regulations;
- maintenance on the Company's DSM program tracking system;
- work on a new Conservation Potential Review; and,
- continued funding to support post-secondary energy management programs.

While these activities play a very important role in FEI's portfolio of DSM activities by advancing the delivery of all Program Areas, the Company has not claimed any energy savings in 2015 for work completed in this area.

While no energy savings will be claimed for Enabling Activities in 2015, FEI developed an acceptable methodology for measuring and attributing energy efficiency savings from Codes and Standards work for the 2014 Residential New Home program (see Table 5-8, page 32 of the 2014 Annual Report). Attribution savings were not available to be claimed in 2015 as there were no changes to energy efficiency regulation in the BC Building code energy efficiency that came into effect in 2015. FEI will continue to examine and, where appropriate, adopt methodologies for claiming energy savings from Codes and Standards for future programs.

Table 11-1 summarizes the projected and actual expenditures for the Enabling Activities in 2015.

Table 11-1: 2015 Enabling Activities Results

Program	Annual Gas Savings (GJ/yr.)		Actual NPV Gas Savings (GJ)	Utility Expenditures (\$000s)						Benefit/Cost Ratios				
				Incentives		Non-Incentives		All Spending		TRC	MTRC	Utility	Participant	RIM
	2014-2018 EEC Plan	2015 Actual		2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual	2014-2018 EEC Plan	2015 Actual					
Trade Ally Network														
Total	No Direct Savings			n/a	n/a	500	643	500	643					No Direct Savings
Codes and Standards														
Total	No Direct Savings			n/a	n/a	35	182	35	182					No Direct Savings
TrakSmart Maintenance														
Total	No Direct Savings			n/a	n/a	80	126	80	126					No Direct Savings
Conservation Potential Review														
Total	No Direct Savings			n/a	n/a	500	137	500	137					No Direct Savings
Energy Management Education Funding														
Total	No Direct Savings			n/a	n/a	150	101	150	101					No Direct Savings
ALL PROGRAMS														
Total	No Direct Savings			n/a	n/a	1,265	1,189	1,265	1,189					No Direct Savings

11.2 2015 Enabling Activities by Program

The following tables outline the specific Enabling Activities undertaken in 2015 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 DSM programs and energy-efficiency messaging. FEI 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)	2015	Admin	Communication	Research & Evaluation	Total
	Total	265	378	0	643

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. FEI'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.				
<i>Policy Initiatives consultation process</i>	Evaluation, analysis and review of national, provincial and municipal initiatives for energy efficiency.				
<i>Industry consultation process</i>	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.				
<i>Involvement with supporting projects</i>	Active participation for supporting projects like: the Natural Resources Canada new EnerGuide rating system and Leadership in Energy Efficiency Partnerships (LEEP).				
<i>Codes and Standards Strategy</i>	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.				
<i>Codes and Standards Maintenance</i>	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. Participation in the Standards Council of Canada, committee on Domestic gas cooking appliances ISO/TC 291.				
<i>Internal awareness of Code and Regulatory changes</i>	Development of internal documents and updates for relevant program areas and personnel.				
<i>Standards library</i>	Purchase of up to date standards for reference.				
Expenditures (\$,000s)	2015	Admin	Communication	Research & Evaluation	Total
	Total	181	1	0	182

Table 11-4: TrakSmart Maintenance

Program Description	Ongoing IT license and maintenance costs related to the portfolio DSM tracking system.				
Expenditures (\$,000s)	2015	Admin	Communication	Research & Evaluation	Total
	Total	126	0	0	126

Notes:

- Spending on TrakSmart maintenance was higher than Plan (see Table 11-1 for Plan amount) as a result of enhancements completed to improve incentive application processing time. These enhancements were not anticipated when the 2014-2018 Plan was prepared.

Table 11-5: Conservation Potential Review

Program Description	FEI considers the CPR to be an important tool for use in developing, supporting, and assessing current and future DSM 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. This project is being worked on in collaboration with BC Hydro, Pacific Northern Gas and FortisBC Electric. Core work on the CPR began 2015. As of end-2015 the CPR project was approximately one third complete.				
Expenditures (\$,000s)	2015	Admin	Communication	Research & Evaluation	Total
	Total	137	0	0	137

Table 11-6: 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)	2015	Admin	Communication	Research & Evaluation	Total
	Total	101	0	0	101

11.3 2015 Enabling Activities Planned But Not Launched

11.3.1 HOME ENERGY EFFICIENCY WEB PORTAL

This project concept was to develop 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 were to include the provincial government, BC Hydro and FBC. The budget was to cover building the site communications to launch the site, and ongoing support. This project has been delayed while utilities address branding issues and customer information privacy concerns associated with a joint web portal. These funds may be accessed in 2016 as utility partners assess options for online forms and administrative functionality of the Home Energy Rebate Offer.

11.4 Summary

Enabling Activities are critical initiatives that support and supplement DSM program development and delivery. The success of the Residential Furnace Replacement program (see Section 5, Table 5-3), which was promoted through the contractor network, demonstrates the value of the Trade Ally Network program. Communications were immediate and responsive through the network and at the end of the program, 73% per cent of the program's participants used contractors who were members of the Trade Ally Network.

FEI's involvement in codes and standards work in 2015 continued to encompass varying degrees of activities including monitoring, reviewing and responding to existing and proposed regulatory changes and direct participation in various working groups that explore the development of future targets, codes and standards. For the first time, BC Hydro, Pacific Northern Gas, FEI and FBC began collaboration on a Conservation Potential Review study. The Conservation Potential Review project contract was awarded in 2015 and was well underway by the end of the year.

12. EVALUATION

FEI continued to advance their evaluation activities in 2015 by conducting evaluation studies¹⁸ on a program by program basis. In alignment with the Company's Evaluation Measurement & Verification (EM&V) Framework and industry standard practice, program evaluation activities are assessed at different stages of each program's lifecycle. Based on this ongoing assessment, all programs are evaluated when appropriate. The 2015 evaluation activities presented here reflect the number of programs in market, the different stages of their lifecycle, and the type of evaluation activities required to provide program feedback. The evaluation activities conducted in 2015 are in accordance with the evaluation principles presented in the Company's EM&V Framework.

12.1 2015 Program Evaluation and Evaluation Research Activities

In 2015, FEI's various evaluation activities included quantifying energy savings, assessing participant awareness and satisfaction, identifying barriers to participation, assessing the effectiveness of education initiatives, and conducting industry research. Measurement and Verification (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.

Table 12-1 presents an inventory of all program evaluation and evaluation research related activities undertaken in 2015. Expenditures for these activities have been accounted for within the applicable program or Program Area, non-incentive costs included in previous sections, 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 2015 evaluation activities; the Program Area each activity occurred in; the general type of evaluation activity undertaken; the Company's actual 2015 evaluation expenditures; and, a status update on each activity. The total expenditure for program evaluation and research activities in 2015 was \$459,000.

¹⁸ Types of evaluation activities include: Communication 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 & Verification, to monitor real time energy savings associated with energy conservation measures.

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Table 12-1: Inventory of DSM Program Evaluation and Evaluation Research Activities Conducted in 2015¹⁹

Evaluation Name	Program Area	Type of Evaluation	Years the program has been running ²⁰	Evaluation Partnership	Actual Evaluation Expenditure (000's)	Evaluation Status ²¹
FortisBC Communications Tracking: Energy Efficiency and Conservation	C&EM Portfolio	Communication	ongoing	none	\$10	Customer engagement and awareness of C&EM activities. Completed December 2015 by TNS
Residential Outreach Program - Empower Me	Conservation Education and Outreach	Process	2	FortisBC Inc. and BC Hydro	\$20	Mentor and Champion survey conducted for the program evaluation. Expected completion by Q3 2016
Furnace Replacement Pilot Program - Contractor Survey (2014 Contractors)	Residential	Process	3	none	\$3	Contractor Survey for 2014 program year. Completed January 2015 by TNS
EnerChoice Fireplace Evaluation - Participant Survey & Billing Analysis	Residential	Process & Impact	3	none	\$5	Customer survey and billing analysis conducted for program evaluation. Completed April 2015 by Samspon Research Inc.
EnerChoice Fireplace Evaluation - Market Study	Residential	Market Analysis	3	none	\$24	Analysis of the program's influence on the fireplace market. Expected completion by Q2 2016
Home Energy Rebate Offer (HERO) - Participant Survey	Residential	Process	1	FortisBC Inc. and BC Hydro	\$15	Customer survey conducted for the program evaluation. Expected completion by Q3 2016
Home Energy Rebate Offer (HERO) - Quality Study of Insulation	Residential	Evaluation Study	1	FortisBC Inc. and BC Hydro	\$13	On-site visit of homes with insulation and draft proofing measures Expected completion by Q3 2016
Home Energy Rebate Offer (HERO) - Quantitative Analysis	Residential	Evaluation Study	1	FortisBC Inc. and BC Hydro	\$12	HERO participant analysis to determine inputs for cost effectiveness tests and feedback on 2016 program design. Completed December 2015 by Dunskey Energy Consulting
Rental Apartment Efficiency Program (RAP)	Residential / Commercial	Evaluation Study	new	none	\$1	Ongoing performance testing for RAP participants. This test uses a flow meter bag measuring device to measure the flow timed to one minute of pressure/flow per suite before and after the installation of the in-suite water-efficient devices. Flow testing will be conducted on 5 units within each participating building location.
Rental Apartment Efficiency Program (RAP)	Residential / Commercial	Process	new	none	\$10	Building owner and Tenant survey for program evaluation. Expected completion by Q4 2016
Energy Conservation Assistance Program (ECAP)	Conservation for Affordable Housing	Evaluation Study	5	BC Hydro	\$45	Ongoing Quality Assurance to ensure all products are installed according to vetted installation policies and procedures.
Energy Savings Kit (ESK)	Conservation for Affordable Housing	Process	5	BC Hydro	\$1	Ongoing BC Hydro participant survey to assess customer satisfaction and program awareness.

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¹⁹ Table 12-1 does not include Prefeasibility Studies. Please refer to the Innovative Technologies section (Section 8) for details.

²⁰ Measurement & Verification studies require time to conduct the M&V activities which include but not limited to project commissioning and coordination, 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.

²¹ 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 DSM Program Evaluation and Evaluation Research Activities Conducted in 2015¹⁹ (continued)

Evaluation Name	Program Area	Type of Evaluation	Years the program has been running ²⁰	Evaluation Partnership	Actual Evaluation Expenditure (000's)	Evaluation Status ²¹
Energy Specialist Program Energy Savings Audit (Update for 2015)	Commercial	Impact	6	none	\$40	The study is an update to the Energy Savings Audit to verify energy savings for projects completed in 2014. Completed June 2015 by Prism Engineering Ltd and ClearLead Consulting Ltd.
Energy Specialist Program Energy Savings Audit (Update for 2016)	Commercial	Impact	6	none	\$25	The study is an update to the Energy Savings Audit to verify energy savings for projects completed in 2015. Expected completion by Q2 2016
EnerTracker Pilot Program - Impact Evaluation	Commercial	Impact	3	none	\$43	Billing analysis of the program participants' energy usage. Expected completion by Q2 2016
Commercial Water Heating Program	Commercial	Impact	5	none	\$13	Customer survey and billing analysis conducted for program evaluation. Expected completion by Q2 2016
Condensing Gas-Fired Ventilation Units (CMUA)	Innovative Technologies	Measurement & Verification	2	none	\$44	M&V and Final report completed - November 2015 by Fresco Building Efficiency and SES Consulting
Apartment Fireplace Efficiency Pilot (AFER)	Innovative Technologies	Measurement & Verification	1	none	\$57	Completion of M&V Plan, purchase and installation of monitoring equipment, and baseline monitoring started December 2014. Expected completion of M&V + Final Report by Q3 2016
Combination Space/Water Heating Units Pilot	Innovative Technologies	Evaluation Study & Measurement & Verification	1	none	\$11	Implementation of a participant survey. Expected completion of M&V + Final Report by Q1 2017
Industrial Optimization Program	Industrial	Measurement & Verification	4	none	\$68	There were 12 projects requiring M&V activity in 2015. The M&V activities include the completion of an M&V plan, commissioning validation site visits, and M&V reports. Expected M&V completion dates by project: 2016 - 2 projects 2017 - 2 projects 2018 - 4 projects 2019 - 4 projects

- 1 Table 12-2 contains a summary of all program evaluation studies and pilot program reports completed in 2015 and includes a brief
 2 description of the methodologies and key findings.

3 **Table 12-2: Summary of Key Findings and Methodology for 2015 Completed DSM Program Evaluation Studies and Pilot Program**
 4 **Reports**

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
FortisBC Communications Tracking: Energy Efficiency and Conservation	C&EM Portfolio	Communication	Online interviews conducted over two waves with 1,200 (600 per wave) British Columbia adults living within the FortisBC service territory.	<p>Results: The percentage of participants had aided awareness of at least one of the three main energy efficiency activities undertaken by FortisBC improved from 53% in 2014 to 64% in 2015.</p> <p>Overall, half of the participants surveyed were classified as being at least somewhat engaged with energy efficiency. The level of engagement improved significantly during the second wave.</p> <p>Outcome of Key Findings: Continue to emphasize the overarching energy efficiency activities rather than individual programs to build awareness.</p>
Furnace Replacement Pilot Program - Contractor Survey (2014 Contractors)	Residential	Process	102 telephone interviews were conducted between November 24 and November 30, 2015 with Contractors who participated in the program.	<p>Results: The key findings are: 1) 54% of contractors stated that over 80% of all furnaces sold / installed during the 2014 program period received a rebate from the program which increased from 23% in the 2013 program. 2) Contractors are very satisfied with the amount of the rebates and the selection of furnaces that qualify for the program. They also noted that the information made available regarding the program has improved. 3) Contractors suggest FortisBC could provide more program promotion, maintain the program for a longer duration or a different seasonal timing.</p> <p>Outcome from Key Findings: Continue to work closely with industry on program design and communication efforts.</p>

Table 12-2: Summary of Key Findings and Methodology for 2015 Completed DSM Program Evaluation Studies and Pilot Program Reports (continued)

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
EnerChoice Fireplace Evaluation - Participant Survey & Billing Analysis	Residential	Process & Impact	A combination of an online participant survey (n=1,559), estimation of net-to gross factors including free ridership and participant spillover, and a fixed effects billing analysis (n=591) were used to evaluate the 2011 to 2013 program years.	<p>Results:</p> <p>1) 93% of participants were satisfied with the overall program and 89% satisfied with the selection of program qualifying fireplaces.</p> <p>2) 45% of participants surveyed replaced an inefficient gas fireplace and the remaining replaced either a wood or electric fireplace, or a new install.</p> <p>3) The average increase in annual gas consumption for wood-to-gas, electric-to-gas, and new installations was estimated at 13.1 GJ.</p> <p>4) The average increase in annual gas consumption for retrofits was estimated at 8.6 GJ which is attributed to the increase hours of use in the post-program period.</p> <p>Outcome from Key Findings: Internal decision was made to put the program on hold while we collaborated with industry stakeholders on program design to continue to raise the minimum efficiency standards for fireplaces. Further analysis and research are to be conducted to provide support for program design.</p>
Home Energy Rebate Offer (HERO) - Quantitative and Qualitative Analysis	Residential	Evaluation Study	Quantitative and qualitative analysis of the overall program. Analysis included a review of the following: n=3,110 program participants (54% natural gas, 46% electric), contractor survey n= 68, stakeholder interviews, comparison to LiveSmart BC for energy savings, overall program performance and program design recommendations.	<p>Results: Assumptions for cost effectiveness tests are provided in Section 5.3. Contractor feedback is favorable overall. Program design recommendations include increasing wall and basement insulation amounts and raising insulation maximum payouts as a means of increasing multi-measure uptake.</p> <p>Outcome from Key Findings: Updated program offer will be introduced into market in 2016 Q2 or Q3. Contractor engagement is key to reduce application declines and improve quality of workmanship.</p>

Table 12-2: Summary of Key Findings and Methodology for 2015 Completed DSM Program Evaluation Studies and Pilot Program Reports (continued)

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
Energy Specialist Program Energy Savings Audit (Update for 2016)	Commercial	Impact	<p>The methodology remains consistent with the Energy Savings Audit -2015 Update.</p> <p>A total of 28 completed projects were reviewed by Prism Engineering 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.</p> <p>Energy Specialist gas savings projects verified were those that did not take advantage of an existing FortisBC incentive program.</p>	<p>Results: A total of 28 completed projects for 2015 were reviewed to represent savings in 2015.</p> <p>The total verified savings of these 28 projects is 9,414 GJ/year. NPV gas savings equate to 58,394 GJ which is calculated using a methodology to account for the potential that projects may not persist over the anticipated measure life.</p> <p>Outcome of Key Findings: Continue to provide the Energy Specialists with support where required to properly document estimated energy savings.</p>
Condensing Gas-Fired Ventilation Units (CMUA)	Innovative Technologies	Measurement & Verification	<p>The M&V Plan: Complies with the International Performance Measurement & Verification Protocol. The selected IPMVP option and measurement boundary was Option B²²</p> <p>M&V: M&V was conducted on 8 commercial sites within the Lower Mainland and Victoria regions. Baseline data was collected and measured for 3 months during the heating season and for 12 month post-retrofit of the CMUA.</p>	<p>Results: The M&V results indicated natural gas savings of; 28% relative to pre-existing make up air units, 17% relative to new 80% efficient make up air units.</p> <p>Outcome from Key Findings: Data to be used to justify inclusion of CMUA as an eligible measure in the Commercial Custom Design Program. Will also be used for inclusion as a prescriptive measure under the Commercial Space Heat program.</p>
ENERGY STAR® 0.67 Storage Tank Water Heater Pilot	Innovative Technologies	Measurement & Verification	<p>The M&V Plan: Complies with the International Performance Measurement & Verification Protocol. The selected IPMVP option and measurement boundary was Option B²²</p> <p>M&V: M&V was conducted and monitored for hot water usage, and natural gas and electricity consumption by the water heaters for 9 residential homes within a 15 month period.</p>	<p>Results: Based on the M&V results, the 0.67 EF Energy Star water heater resulted an average of 6 GJ or 15% of energy savings in residential use across the nine M&V participants. The M&V results confirmed that it's more cost-effective to upgrade from a standard efficiency water heater to a 0.67 EF Energy Star water heater if the rate of the Domestic Hot Water use per day is very high.</p> <p>Outcome from Key Findings: Transitioned 0.67 Water Heater Pilot results to Residential Program Team. Data to be used to inform program decisions and internal statistics on relative Domestic Hot Water loads.</p>

²² IPMVP Option A - Measurement of key parameters governing energy use to assess consumption. www.evo-world.org

12.2 Evaluation Collaboration

The FEI have continued to seek opportunities to increase collaboration activities with FBC, BC Hydro, and other entities to conduct program evaluation for DSM 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 conducted in partnership with other organizations. Three jointly funded evaluation projects were initiated in 2015 as a result of the collaboration efforts between FEI and BC Hydro; Residential Outreach Program – Empower Me Participant Survey, Home Energy Rebate Offer (HERO) – Participant Survey, and Home Energy Rebate Offer (HERO) – Quality Study of Insulation. In addition, BC Hydro and FEI continue to collaborate in the evaluation projects for the Energy Conservation Assistance Program (ECAP) and the Energy Savings Kit Program (ESK).

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 FEI, FBC and BC Hydro 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 FEI has business practices in place to ensure DSM activities and associated spending are in compliance with Commission Orders and the Company's internal control processes. In its 2009 Decision, the Commission directed the FEI to include a discussion in the DSM Annual Report of the Company's internal data gathering, monitoring and reporting control practices. FEI continues to provide this information. This section addresses that directive by providing general information on data gathering and on FEI's business practices related to program development and application processing.

13.2 Program Tracking, Evaluation and Reporting Functions

FEI staff responsible for tracking, evaluation and reporting of DSM activities 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 DSM pilot or program can be implemented, a business case must first be developed. FEI is 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. FEI uses an in-house cost-benefit modeling tool developed in partnership with expert industry consultants²³ 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.

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

In addition to the internal business case process, the Commission, in its' 2014-2018 PBR decision, has directed FEI to submit a written request and business plan for any new programs

²³ Willis Energy Services Ltd. and The Cadmus Group Inc. provided input into this in-house cost-benefit modelling.

they want to implement that have not previously been identified within the approved DSM 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 DSM programming among different customer groups. In 2015, business plans were submitted to the Commission for the new RAP program, the Low Income Top-up Programs and the Specialized Industrial Process Technology Program. Each program submission received Commission approval and is discussed in each of the relevant Program Area sections above.

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. FEI has a number of mechanisms in place to ensure DSM 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

FEI regularly engages the Company's own Internal Audit Services (IAS) group to review the internal controls associated with the DSM activities. 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). This audit has been conducted annually up until 2015. In 2015, the IAS group determined that since each of its previous audits determined that FEI's DSM activities were satisfactorily in compliance, the frequency of the audits would be reduced. Therefore, this internal audit was not conducted in 2015. FEI expects the next audit to be completed in late 2016 or early 2017.

13.6 Summary

FEI is committed to strong internal controls in all aspects of the DSM programs. As demonstrated in this section, the Company's business practices related to program development, application processing and ongoing monitoring are all sound and subject to continuous improvement.

14. 2015 DSM PROGRAMS ANNUAL REPORT SUMMARY

In 2015, FEI's DSM portfolio expenditures reached 87% of Plan with 66% of actual DSM program spending going toward customer incentives. With more than 434,000 GJ of annual savings, DSM programming continued to contribute options for customers to reduce their energy use. The FEI cost-effectively delivered these programs within the spending limits approved by the Commission, and in accordance with the BC Demand-Side Measures Regulation. FEI believes that they have made every reasonable effort to ensure DSM programs are operating in compliance with the Company's own DSM Guiding Principles and are meeting provincial requirements for adequacy. FEI also continues to implement good internal data gathering, monitoring and reporting control practices.